Synergetic
Preventive medicine

Basics and results
multidisciplinary intervention epidemiology

for researching and influencing interactions
between
professional, family, personality-related
and
physical factors

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Table of contents

General introduction:

Foreword by Professor Werner Wittmann

Ronald Grossarth-Maticek contacted me a year ago at the suggestion of the late psychologist Prof. Dr. Hans Eysenck (University of London), with whom he had written numerous joint publications, to discuss methodological and conceptual aspects of his research work.
I then asked Mr. Grossarth-Maticek and his closest colleague Dr. phil. habil. Herrmann Vetter to provide me with some of the original data on which this book is based for critical analysis. I must admit that I was initially extremely skeptical about the quality of the data. Firstly, because Grossarth-Maticek is repeatedly attacked in the public debate, and secondly, because it is difficult to imagine a database that delivers such interesting and remarkable results and also appears internally consistent and credible.

In the meantime, I have intensively analyzed excerpts of the data and have come to the conclusion that this is an extremely credible and consistent database that shows no internal contradictions in all checks. To produce such data by forgery or manipulation would require a forgery genius. In this foreword, I will present some of the results of my reanalyses, which can verify and substantiate the consistency of the data.

First of all, I would like to explain the general method that Grossarth-Maticek uses in his research, primarily because it is not only an extremely original methodology in many respects, but also a method that can inspire further development in global psychology and epidemiology. At the same time, the combination of longitudinal studies with experimental, randomized interventions used by Grossarth-Maticek is an internationally recognized method with a high evidential value, but one that has only rarely been applied due to its enormous personnel and financial costs.

Of the many methodological aspects of Grossarth's studies that are worthy of appreciation, only one important aspect should be mentioned here. Grossarth-Maticek develops research programs in which the method of data collection and experimental intervention can be broken down into several well-planned individual steps that are interrelated. In the area of data collection, Grossarth-Maticek first conducts free interviews and collects experiences inductively. This initially gives rise to hypotheses, for example about the causes of certain chronic illnesses. He then develops semi-standardized measuring instruments, which are then standardized through further intensive interviews. From the original inductively gained experiences and hypotheses, deductive, i.e. predictive, hypotheses are then developed and tested in prospective studies. The well-known psychologist Norbert Bischof praised this method in his book "Das Kraftfeld der Mythen" (published by Piper) as the "three-step plan". The inclusion of additional intervention programs is suitable for differentiating between causes and effects. The method of data collection by trained interviewers and the multiple measurements carried out in different periods of time, so that process analyses are possible, also speak for an extremely developed interactive research program, which is certainly absolutely unique worldwide. The scientific theorist Reichenbach distinguished between the "context of discovery" and the "context of justification". Grossarth-Maticek's life's work followed both lines and brought him more controversy than many others, with just as many excellent scientists in the camp of his supporters as in the camp of his opponents. I have not yet been involved in any of these controversies and have at best observed the disputes from a distance.
The basic theoretical concept of Grossarth's studies is extremely interesting in terms of Reichenbach's distinction. Firstly, it is claimed and empirically proven that a large number of physical risk factors interact with psychosocial factors. Taking such factors into account, it is even possible to make differential predictions between different chronic diseases and the maintenance of health into old age, as can be read in this book. However, this is not always easy due to the complexity of the research program being pursued. The second theoretical assertion, which has also been empirically proven, is that the complex interactive systems are controlled by emotional-

cognitive processes and interactions, among other things, and that the control factors can be influenced preventively and therapeutically.

Grossarth-Maticek and his research team are thus opening up an interesting methodological and theoretical field of research that is relevant to practical prevention. As a Hegelian dialectician, he endeavors to introduce his antitheses to existing theses into today's research practice in order to achieve new syntheses and possibly dialectical leaps in knowledge at a very high scientific level. This tendency is entirely in the spirit of the philosopher Paul Feyerabend, who always called for methodological and theoretical pluralism in scientific development.

Grossarth-Maticek received 68,000 representatively selected addresses from the residents' registration office of the city of Heidelberg before data collection began in 1973. Various studies were carried out from this data pool. Causes of death and other research on health status were recorded from 1973 to 1998. The exact date of birth and date of death were recorded. For parts of the study that have not yet been anonymized, the original data, the times of the interviews and the interviewers' signatures are well documented. The review of the methodological procedure, the questioning of the individual interviewers (for example, the interviewers were questioned separately in several rooms about the methodological procedure) and the review of the results from a representative study were carried out very precisely by the Institute for Statistics and Mathematical Economic Theory at the University of Karlsruhe (by the then Director Professor Dr. Martin Rutsch and Privatdozent Dr. W. D. Heller). The results of this research were published internationally by Professor H. J. Eysenck. The results of the research were also positively acknowledged in the expert opinion of the Institute in Karlsruhe.

The two data sets that were made available to me are the randomized control group experiment (N=62), which can be found in the flow chart on page 79 of the book, and a prospective cohort study (N=187) with largely identical predictor variables of potential risk and protective factors of health status. In the experiment, 31 people received autonomy training developed by Grossarth-Maticek and 31 people served as a control group. If the randomization was perfectly successful, the intervention group would only differ from the control group with regard to the intervention, but not on all other conceivable variables. Differences between intervention and control can then be unambiguously attributed to the intervention and rival alternative explanations can be excluded. My checks showed that the randomization was obviously excellent. At the start of treatment, the two groups did not differ statistically on a wide range of variables that I checked. Fig.1 shows the results of this experiment over time, the period over which both groups were followed is exceptional. The figure shows the mortality rate from 1982 to 2000, i.e. over almost two decades as a function of the intervention. The descriptive parameters (proportion of deaths) are linked to inferential statistical error intervals in order to answer the question of how likely it is that these differences occurred by chance. If these intervals do not overlap, random differences can be excluded with a high degree of probability. In 1982 all participants are still alive, in 2000 approx. 85% of the control group have died, but only 55% in the intervention group, a dramatic effect of a 30% lower mortality rate in the intervention group, which had received the autonomy training. From 1983 onwards, the mortality rates between the control and intervention groups began to change dramatically. After six more years, i.e. in 1991, the first participants in the intervention group die. Up to 1996, the increase in the death rate in the intervention group is still significantly lower, only after that is the increase in both groups approximately the same. The treatment effect thus lasts between eight and 14 years, depending on the criterion. An incredible result. Nevertheless, due to the randomization, both groups were the same at the beginning of the intervention, so the effect must be attributed to the intervention if differences in what happened in the meantime can be excluded and there is no evidence that the intervention group would have experienced special additional protective conditions independently of the intervention.

Fig. 1:

Randomized control group experiment (N=62)
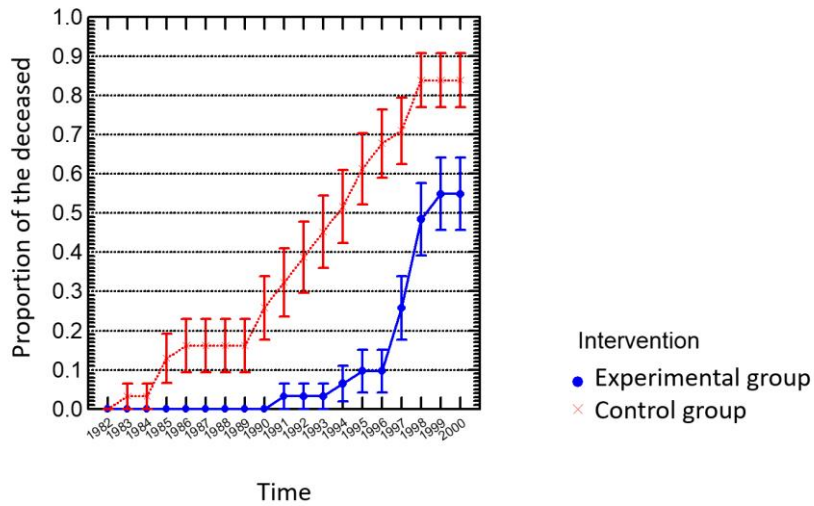
A consistency test was carried out in Fig. 2, as it is known that men die earlier on average than women. The figure therefore shows the course of mortality rates for both groups differentiated by gender. For the men in the control group, we see the phenomenon of a higher death rate reported in many epidemiological studies; the differences in the period 1990-1994 are also statistically significant despite the now smaller samples. Surprisingly, however, there are no significant differences in the intervention group. Men and women benefit equally from the protective factors triggered by the autonomy training.

Fig. 2:

Randomized control group experiment (N=62)
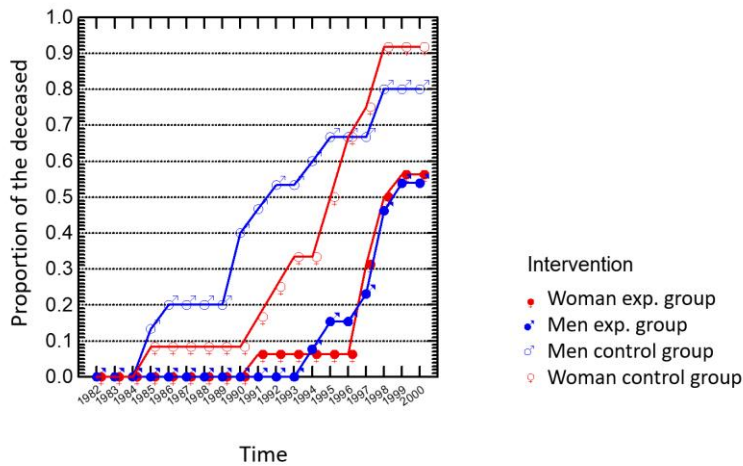
But what are these protective factors? In the context of discovery, Mr. Grossarth-Maticek exploratively searched for a large number of such factors and incorporated them into the assessment of the control group experiment. Many of these variables are correlated with each other and reflect the complexity of the event. However, a simple strategy is to compress this complexity with the help of data reduction methods. For example, if we factorize the 29 variables of the block V4_1n - V429n, we obtain eight factors that are compressed into eight independent causal complexes using the technique of principal component analysis with orthogonal rotation. The first factor is marked by variables such as how strongly one feels loved in general, how great the ability is to solve everyday problems, how great the ability is to solve tasks in important areas of life that lead to well-being, how strong the love of God is and how high the regular ability to recover is. These variables combined make up the first complex, with high numerical values indicating a positive expression in this complex.

The second factor is characterized by the extent of integration of professional skills and requirements, the extent of opportunities for self-design of professional activities, the possibilities of influence in working life, well-being in working life and the absence of excessive demands in working life, with higher numerical values again making up the positive pole of this factor. Fig. 3 now shows that the experimental and control groups differ significantly in the mean values for these two factors, but these differences are again related to the intervention, as the two groups did not differ in any way on these underlying variables before the intervention. For all other factors, the differences only tended to be significant or not significant and therefore no effect of the intervention could be statistically proven.

Fig. 3:

Profile comparison of selected cause complexes

Y-axis: Characteristics of the factor values
X-axis: Eight cause complexes (FAC1_6, FAC2_6, FAC3_6, FAC4_6, FAC5_6, FAC6_6, FAC7_6, FAC8_6)

Groups
● Autonomy group
× Control group
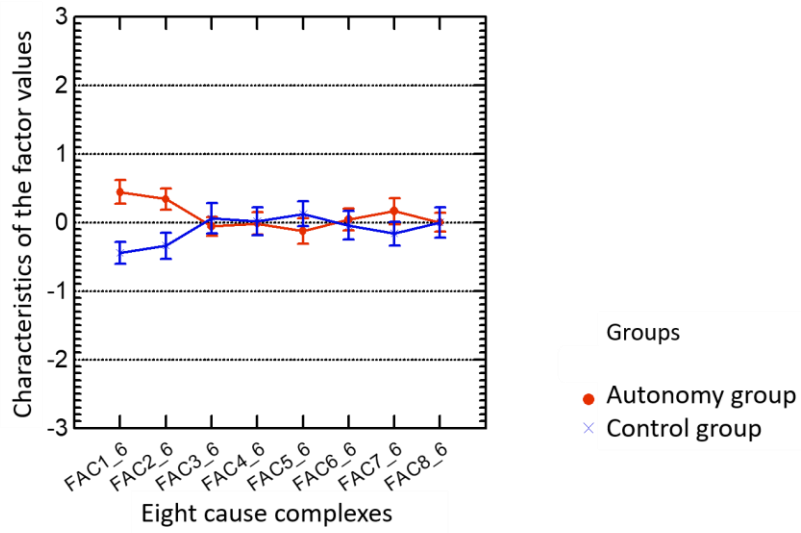
Fig. 4:

Profile comparison of selected cause complexes
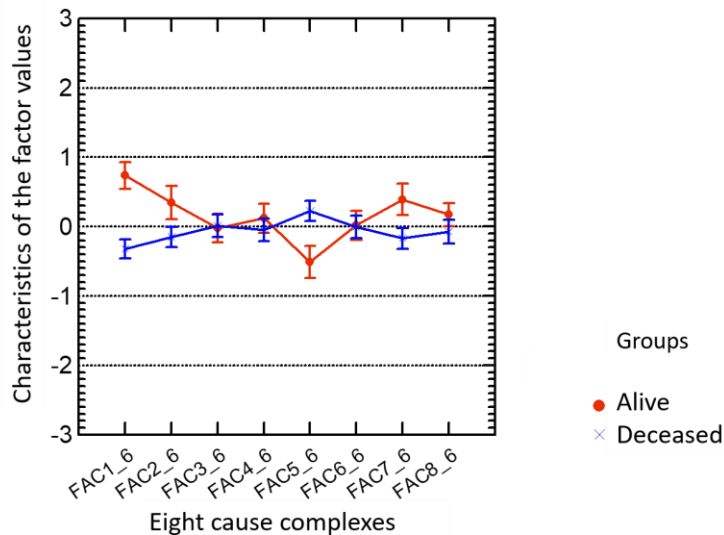
Figure 4 shows the profile differences between the group that died by 2000 and the group that is still alive in 2000. We see strong differences in the first factor, but also significant differences in the second factor. Large differences can also be seen in factors 5 and 7. Remember that differences in the first two factors are causally attributable to the intervention, but the large differences in factor complexes 5 and 7 are not. Since all factor complexes are kept independent of each other by the type of compression, these four causal complexes add up in the prediction of the survival rate. So what is not explained by the intervention? Factor complex 5 is characterized by the variables love for the parents, mental and physical impairment in professional life, factor complex 7 mainly by recognition in professional life contrasting with recurring excessive demands in professional life. Factors 1, 2 and 7 are positively associated with the survival rate, while factor 5 is negatively associated. If a multiple regression is carried out classically or as a logistic regression due to the dichotomous criterion, 48.1% of the variance can be explained with these four factors (adjusted R²= .445). If one separates the explained variance only with regard to the experimentally influenced factors 1 and 2, one obtains 29.6% and for the two factors 5 and 7 alone 18.5%. Since all factor complexes are independent of each other, both proportions add up to the total explained variance (48.1%). The larger proportion is therefore attributable to the experimental intervention.

A further consistency test for causal effects consists of checking the specificity of these cause complexes, i.e. they should be particularly specific for one form of disease but not for another. Of the total number of 62 participants, 18 were still alive at the time of the last survey, 23 had died of cancer, 17 of cardiovascular disease, strokes and 3 participants of other causes. Fig. 5 shows the profiles of three groups, firstly those still alive in 2000, secondly those who died of cancer and thirdly those who died of cardiovascular failure or strokes. The profiles of these three groups differ greatly and significantly in individual cause complexes. Not only are the differences between the two groups of deceased in relation to those still alive remarkable, but above all the large differences between heart/CNS and cancer, which indicates a high specificity. Factors 3, 6 and 8 strongly separate the two causes of death. High values on factor 3 mean a strong expression of love for family members and important fellow human beings, a strong need to mediate harmony in people who quarrel with each other but are both loved, the opposite is the mediation of harmony

where there is a clear sympathy for one of the quarrelling partners. Are there futile attempts at conflict resolution in the background with a strong need for harmony? People who have died of cancer have markedly high values, whereas people who have died of cardiovascular/stroke diseases have markedly low values. Factor 6 is mainly characterized by high and strong disturbances at work, which lead to negative feelings, anger and helplessness, combined with the tendency to be overburdened in important areas of life; people who died of cardiovascular/stroke accidents have high values here, but the cancer group has rather low values. Factor 8 separates heart/CNS with low values from the other two groups. However, low values here mean high pressure in working life, with frequent and prolonged adherence to views and behaviors that usually do more harm than good, combined with rather low recognition and appreciation for performance and commitment. The specificity test can therefore also be rated as successful.

Fig. 5

Causes of death reflected in causal complexes
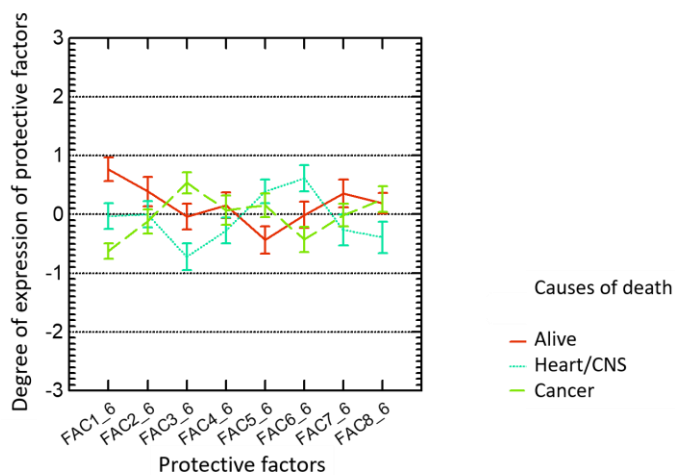
The second data set of N=187 persons is a prospective cohort study without experimental variation, but here too all cause complexes were recorded in 1977 with identical questions to the experimental study. Fig. 6 shows the course of the death rate over a period of more than twenty years, broken down by gender. Over time, men have a significantly higher death rate than women. In 2003, approx. 43% of men died, but only approx. 22% of women. The sample of the randomized experiment was a high-risk group, while the cohort sample was significantly more heterogeneous in terms of risk factors; this aspect of the result also appears plausible and consistent in connection with the higher mortality rate of men.

Fig. 6:

Mortality rate as a function of protective causes (N=187)
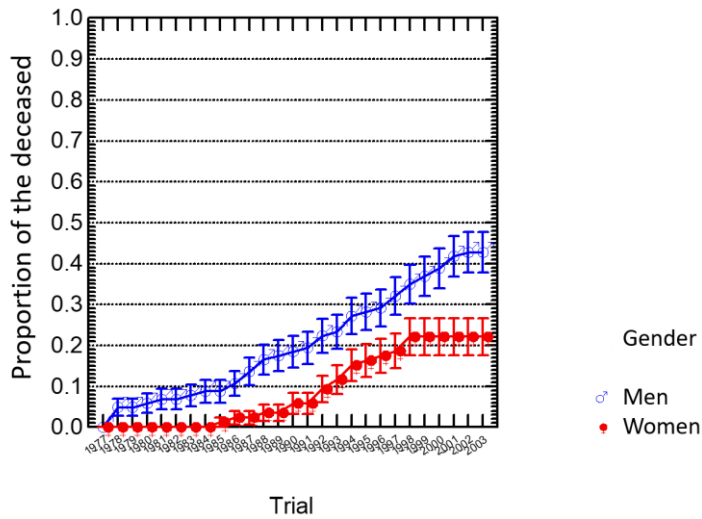
A consolidation of the questions in the same block as in the experimental study (4_1- 4_29) yielded five factors or cause complexes in contrast to the eight factors in the first data set. This result is also not surprising, as the more heterogeneous sample leads to higher intercorrelations through greater variability, which in turn results in fewer factors. In terms of content, the first complex was characterized by all variables that comprised the first factor in the data set of the randomized experiment. If this factor is used to predict the mortality rate in 2003, it is given an extremely strong weight. In order to illustrate the significance of this causal complex, people whose values were above the mean and those whose values were below the mean were grouped separately into two groups and their progression over time was examined. Fig. 7 shows the differences between these groups, which differ in terms of high and low levels of protective components.

Fig. 7:

Mortality rate as a function of protective causes (N=187)

Year of death
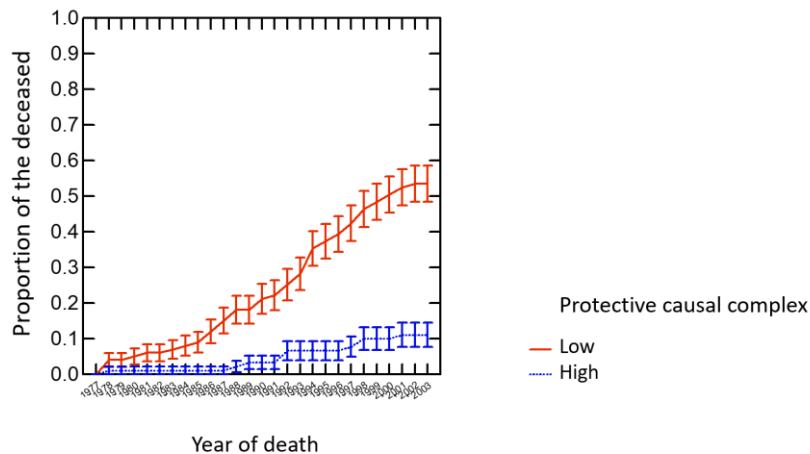
The differences are dramatic and increase continuously over the entire period observed.
I must confess that I was amazed when I analyzed all the data and results made available to me, especially as I only used a section of the data collected on risk and protective factors. I was unable to discover any systematic errors in any of the reanalyses.

What are the overall conclusions? The entire database collected by Mr. Grossarth-Maticek contains enormous potential for society and health, which must be taken seriously and requires careful discussion, debate, reanalysis and new studies. One can only hope that his working group receives sufficient financial resources to carefully archive and document this data so that it can then be made available to the scientific community for critical discussion.
The core of the debate will be, among other things, how is it possible for a relatively short but intensive intervention such as autonomy training to have such long-term effects? Is this a function of charismatic personalities rather than specific intervention components? What could the individual impact factors be and how can they be bundled? From my own research on the effect of inpatient rehabilitation measures for psychosomatically ill patients (Strauss and Wittmann, 2005, pp.772-773; Wittmann, Schmidt and Nübling, 2002), I came across the importance of the remoralization of these patients, which turned out to be a long-term effective factor and possibly forms a bridge to strengthening the immune system. In an experimental randomized control group study, Schulz and Hanusa (1978) were able to demonstrate the importance of controllability and predictability of one's own behavior as causal factors for medical and mental health status. A whole series of the causal complexes postulated and recorded by Grossarth-Maticek, especially factors 1 and 2 of the experiment and factor 1 of the cohort study, are very similar to these effect factors.
Epidemiology, medicine, psychology and the entire health and social sciences are called upon to organize these results, integrate them into competing theories and test them further.
It remains to be seen whether the theories preferred by Mr. Grossarth-Maticek and discussed in this book will stand the test of time. In any case, he has created a database that no one can ignore and whose implications must be taken seriously and discussed intensively. I wish this book a broad reception and critical discussion.

14

Mannheim, October 2007 Werner W. Wittmann

Literature:

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Strauß, B., & Wittmann, W. W. (2005). Psychotherapy research: Foundations and results. In W. Senf & M. Broda (Eds.), *Praxis der Psychotherapie - Ein integratives Lehrbuch* (3rd ed., pp. 760-781). Stuttgart: Georg Thieme Verlag.

Wittmann, W.W., Nübling, R. and Schmidt, J. (2002) Evaluation research and program evaluation in health care. Journal of Evaluation,1, 39-60.

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A Summary:

The basic idea of the book is:

(1) Beside conventional physical risk factors like smoking, pre-cancer diseases or heredity, psychosocial conditions are crucially relevant for predicting morbidity and mortality.

(2) Multivariate statistical methods are important for determining the statistical relevance of a variable in the context of others, which is a precondition for testing hypotheses of causality. These methods allow to determine the relevance of a variable when any number of other potentially relevant variables are held constant computationally - they need not be held constant physically e.g. by using groups or pairs equalized with respect to certain control variables (whose number is severely limited for practical reasons). A variable which is positively related to some criterion my become insignificant or even change the direction of its relevance when control or competing variables are brought in. Multivariate analysis allows to decide whether the variations in a criterion variable are "really" due to some risk factor when competing variables are taken into consideration, or rather to the latter. Multivariate models also allow to study interactions between variables, by which we mean that the efficacy of a risk factor depends on the level of some other risk factor, and vice versa.

More refined conclusions can be drawn when there are several consecutive measurements of the same variables. When there is only one, we have a correlation between x and y which is symmetrical and does not allow do decide between (a) x directly influences y, (b) y directly influences x, or (c) neither. With consecutive measurements, the relations (a) between x and a subsequent change of y, and (b) between y and a subsequent change of x are completely separate facts; (a) fixes the possible causal direction as x->y, (b) as y->x, and both relationships are possible simultaneously and independently of each other. The question of direct or indirect influence again depends on the role of competing variables.

(3) A crucial test for some hypothesized causal relationship is provided by an experiment. If it is found that (a) certain variables commonly associated with health or morbidity/mortality have been changed by the treatment in a favorable direction, and (b) that in a follow-up, health status is better than in an untreated control group (and is in fact associated with the changed values of these variables), then it seems safe to conclude that the treatment in question is a means for favorably influencing the health status of risk persons or diseased persons.

In the book in question, empirical results are presented which show (a) the multivariate relevance also of psychosocial variables in cohort studies, and (b) effects of training experiments corresponding to (3) above, again documenting the relevance also of psychosocial variables. In particular:

"Study B" (sec. 5.1-3) investigated more than 100 risk variables in a sample of 659 males, composed of selected groups (having died of various diseases vs. healthy at a high age). The results of a discriminant analysis for differential prediction of cause of death vs. healthy survival are presented in a separate paper "Differential prediction...".

Sec. 6.5 reports on analyses of several consecutive measurements as characterized at the end of (2) above.

Two experiments, one within "study A" (sec. 5.6), the other within "study B" (sec. 5.4), are extensively described in the book. Their results can be summarized as follows. Numerous changes in risk variables, virtually all in a therapeutically desirable direction, were achieved by the treatment, while in the control group no significant changes were found. The health status of the experimental subjects at follow-up was significantly better than in the control group, whereas the initial conditions in the two groups did not differ significantly. Thus it seems justified to conclude that the experiments led to health-promoting effects by changing relevant conditions of health.

In experiment B, the health relevance of the after measurements ssis in very good agreem
ent with the non-experimental health relevance of the same variables in the longitudinal study B.
Furthermore, the (great number of) relationships between the independent variables can be
systematized by saying that risk factors with each other and health factors with each other were
associated positively, while variables from different groups were associated negatively.

Systemic research - synergetic effects:

The scientific task of effective preventive medicine lies on the one hand in the development of diagnostic methods (for example through the use of test systems) and on the other hand in effective interventions that recognize chronic diseases in advance of clinical manifestation and prevent them in certain periods of time. The task of effective preventive medicine is also to recognize and stimulate factors that maintain health, well-being and safety and provide a basis for meaningfulness and development. The systemic character of preventive medicine lies primarily in the permanent ability to expand and modify the frame of reference and the factors included until statistically significant predictions and preventive effects can be achieved.

By a systemic approach, we basically mean the multivariate statistical approach, i.e. that more than one variable is considered simultaneously in a model. In multiple regression, for example, it is known that the "partial effect" of a variable in which the other variables are held constant ("controlled") may differ not only in magnitude but even in direction from the simple correlation of this variable with the validity criterion. This eliminates "spurious correlations" based on indirect causal effects. The genuine (own) effect of the variables within the framework of the model can be determined. Of course, dependencies between the regressors (which represent conditions for the dependent variable) can also be investigated and, if necessary, included in a special model. Such a multivariate approach is never complete because it is always possible that relevant factors are unknown or at least not included in the model. The decisive role of the model used to approach the data should also not be overlooked. The data does not speak for itself universally, but must be approached with specific questions and a specific statistical model must be used.

On the concept of synergetics:

The physicist Hermann Haken ("Synergetics", Springer, Berlin..., 1978) says of synergetics that it has "established connections between the theory of dynamic systems and statistical physics" (334). However, in "sociology and economics, for example, synergetics has also been discussed for a long time" (334). Since we are not explicitly dealing with dynamic systems, we cannot directly apply this physical concept of synergetics to our work. However, it undoubtedly has something to do with non-linearity, and in statistics, as we apply it, there is, for example, the concept of interaction in regression theory, which can also be defined as non-linearity. If, for example, the product of two independent variables appears in a regression equation (so that it is a bilinear model), this means that the effect of one variable (its regression coefficient) depends on the level of the other, and vice versa.

If the dependent variable is dichotomous (e.g. died - did not die), a bilinear model would lead to artifacts if applied directly to the relative frequencies, as these are capped at 0 downwards and 1 upwards. The logistic model avoids these limitations, but now many interactions relating to the relative frequencies are also lost, since the logarithm of the dependent variable is used, and if an additive model is set up for this, then a sum means that products occur at the level of the original dependent variable, the relative frequency, i.e. already a non-linearity. Of course, you can use a bilinear logistic model, but even if the interaction is significant, it is not as easy to visualize as with an additive model.

We would now like to draw attention to another aspect that could also be subsumed under the term synergetics. It is well known that the regression coefficient of a variable can change substantially and even reverse its sign when additional independent variables are included in the multivariate regression equation. Thus, our multivariate approach implies that the effect of a variable may be substantially different depending on the system within which it is considered. It is primarily in this sense that we would like the term synergetics to be understood here.

We are aiming for a systemic approach, and we would like to relate this to the concept of the interaction of risk or health factors.

An interactive relationship between two risk or health factors could initially be defined in such a way that their effects on the dependent variable are different than if only one factor is considered on its own. Such an interaction is the normal case in any ultivariate analysis as soon as the risk or health factors correlate with each other (are not statistically independent of each other). In the course of such an approach, a simple correlation may turn out to be a spurious correlation (i.e. actually caused by an associated risk factor) or even change its sign in the form of the partial regression coefficient.

A slightly broader definition of the interaction could be that the effect of one factor depends on the level of the other (and vice versa in a symmetric model, as we use). One would then have the situation, for example, that the effect of a physical risk factor, such as smoking, is dependent on the level of a psychosocial risk factor, i.e. that there is a psychosocially determined susceptibility of the individual to the physical noxious agent. Because of the symmetry, the effect of the psychosocial risk factor is also dependent on the presence of a physical noxious agent.

A good example of the fruitfulness of the second definition is the interactive relationship between work motivation and psychosocial conditions at the workplace (e.g. non-

recognition, disability, hurtful treatment or the opposite). The table in section 5.5.11 shows that under unfavorable conditions, high work motivation (which is constantly frustrated) is associated with a deterioration in health status, whereas under favorable conditions (recognition, reward) it is associated with an improvement. (The difference is statistically significant.) If only a linear and not an interaction model had been used, the two opposing effects of motivation would have more or less canceled each other out and no significant effect of motivation would have been found.

The findings described above could lead to the practical recommendation not to try to reverse the negative conditions mentioned above through particularly high personal commitment, but rather to strive for inner distancing. (In fact, the ability to distance oneself (question XXI.11) has proven to be a strong health factor). On the operational side, there is of course the recommendation to pay attention to motivation in general, but not only to it, but also to whether it meets an environment that does not turn its positive effect into its opposite.

Scientific advantages and novelty value of the multidisciplinary intervention epidemiology presented:

1. in this work, a complex interactive research program was developed rather than a scientifically limited research question. Interactive means that the method (e.g. preliminary investigation, data collection, randomization, etc.), the intervention and the research results are in a process of interaction and show synergetic relationships (i.e. one area requires the other areas to function optimally). Only with a specific method (e.g. data collection by interviewers) can certain hypotheses be proven, which in turn act as conditions for successful interventions. The successful intervention in turn confirms the method and affects the credibility of the results.

Here, the research procedure does not appear as an isolated bundle of different measures, but rather as the interactive functioning of a sensibly designed network to optimize knowledge.

2 Due to the interactive research program, both highly significant predictions and effective preventive measures were possible. Here, too, there is an interaction between the research results obtained, which make predictions possible, and the intervention effects. The latter are only possible if risk constellations and factors constituting health are identified.

3. despite the interactive complexity of disease development and maintenance of health into old age, in which a large number of different factors from different areas interact, we were able to show on the basis of various evaluations that there are relatively simple emotional-cognitive control factors that influence central interactive processes. The identification of control factors has even enabled us to discuss the so-called specificity problem (the assumption that different psycho-social processes underlie different chronic diseases) in certain areas. Here we refer to the problem of breast cancer, which is dealt with in this paper.

4 In this work we also attempt to achieve an integration between the nomothetic and ideographic methods, i.e. that the individual case becomes recognizable in its psychodynamics from the statistical analysis of large population groups and that the statistical supra-individual evaluation has an overarching concept in which each individual case appears identifiable in terms of content. The integration of the two methods has been attempted time and again in the history of psychology over the last hundred years, but ultimately abandoned as unsolvable.

5 This paper demonstrates a very close interaction of physical risk factors with emotional-cognitive and social factors. One group of factors requires the other in order to cause illness or health. The discussion about the so-called "cancer-causing personality" only shows how quickly monocausal views can lead to scientific incompetence. (regardless of whether they are opponents or proponents).

6. it was shown that the interactive change of risk factors in the intervention, which led to highly significant preventive effects, changed precisely those factors that have proven to be risk constellations in longitudinal studies.

7 The results show that there is a close interaction between factors from early childhood (e.g. continuous or interrupted mother/child relationship) with occupational, educational and personality influences. These interactive factors largely determine the manifestation of various addictive factors such as alcohol, cigarettes or malnutrition. If preventive interventions only address the addictive factors and do not recognize and influence the emotional-cognitive motivations, then the preventive measures fall short.

8. the multivariate statistical method is in an ideal interactive process with the scientist: on the one hand, preconceived, very specific hypotheses can be tested exactly, and on the other hand, the statistical evaluation in different areas provides highly meaningful and extremely valuable results for practice, which can also be confirmed by several studies with the same direction of results.

9 In addition, multivariate statistical results (e.g. the multiple regression coefficient) are forgery-proof when a large number of different factors are taken into account in view of millions of possible interactions, namely when meaningful and previously unforeseeable results repeatedly occur and there are no contradictions in the consistency of the data.

In summary, it can be said that a large number of coordinated scientific activities were undertaken in this work, which on the one hand explain the achievement of the excellent results, and on the other hand show that the work is at the forefront of international cutting-edge research in the field of multidisciplinary intervention epidemiology, both in the methodological field and in terms of its practical significance for the development of effective prevention.

The multidisciplinary results in this book are extremely diverse and extremely interesting for cutting-edge research in various disciplines. However, it seems impossible (as it would exceed the scope of this book many times over) to present and discuss the entire relevant international literature on the individual topics. It is expected that this step will be taken by the individual disciplines interested in integrating our results into their own field.

The relevance of our research to the individual fields is indicated in the explanations of opportunities for cooperation with other disciplines (which can be found at the end of the book).

The practical implementation of the results:

This work contains a large number of different results and correlations relating to the development of chronic diseases and the maintenance of health into old age. The results are underpinned by multivariate statistical methods. The results are of great scientific interest both with regard to the methodology of data collection and in terms of content, as they demonstrate that factors from different areas of life interact in complex ways. The question now arises as to how such results can be implemented in practical preventive medicine:

The measurement instruments and results will be used to develop an expert system. Once further empirical data has been evaluated, this system will function in such a way that each person will answer questionnaires and then be compared with a large number of other people. The comparison subjects have either remained healthy into old age or suffered from serious chronic illnesses at a relatively young age. Multivariate statistical methods are then used to determine risk and positive factors depending on the context. For example, a bivariate risk factor can appear as a multivariate positive factor and vice versa.

The expert system will not only identify generally known risk and positive factors, but will also recognize very specific, individual interdependencies. Based on the experience of autonomy training, training methods are made available to the person to reduce risk constellations.

Many of the relationships presented in the work can serve as orientation and inspiration for practical therapeutic work. For example, certain descriptions of dys- or eustress in relation to their effects can be used as orientation in scientific or therapeutic work.

In order to achieve preventive therapeutic effects, it is necessary to change an entire interactive-psychophysical system of risk factors for people with significant multiple risks.

The question now arises as to how such changes were achieved preventively and therapeutically, as it is difficult to imagine an intervention measure being developed for every risk factor. Experience from autonomy training shows that different people have different problems that make up their central suffering. As a rule, it is a question of chronic error maintenance. In other words, behavioral activities are developed that are expected to have positive consequences, even though negative consequences are constantly occurring. These can ultimately lead to complete emotional and physical decompensation (e.g. in the form of mental and physical exhaustion).

In general, people have ability-oriented behaviors that are capable of eliminating the behavior that leads to expectations of failure and initiating behaviors with positively experienced consequences. When this happens (and the autonomy training method achieves such changes), not only does well-being, pleasure and security develop in relation to the reduction of troublesome behaviors, but at the same time there is also a reduction in a large number of other risk factors and an increase in positive factors (e.g. more exercise, a diet that generates well-being, improvement in the partner relationship, etc.).

The method of autonomy training can lead to considerable preventive medical effects in the context of public health through the training of doctors and therapists and even through the self-guidance of people with psycho-physical risk factors.

The fast-acting and effective method of autonomy training - usually 1-3 hours in a group (approx. 20-30 people in the group) - is enormously favorable in terms of the cost-benefit ratio (considering that 1-3 hours of intervention almost halves the onset of serious chronic illnesses in high-risk groups over an observation period of approx. 20 years).

The results can also make a significant contribution to the standardization of the various therapeutic approaches currently available on the market, the effectiveness of which has generally not yet been scientifically proven by randomized experiments.

The results in this book can inspire the correction and expansion of a large number of monocausal and monodisciplinary research projects if it is recognized how complex systems work interactively and to what extent the monocausal factors are context-dependent in their effect. Many a monocausally oriented epidemiologist and natural scientist would have to recognize that the world is not as simple as it is in their scientific conceptions. Questions such as whether cloudy apple juice is healthier than noncloudy apple juice or whether tomatoes protect against cancer or whether there is a cancer-causing personality appear to be nonsense in the context of multidisciplinary interaction research. Especially the discussion about the so-called cancer-causing personality is as naive when considering our multidimensional relationships as if car manufacturers were seriously discussing whether a car engine can drive without a body and wheels. Precisely because monocausal questions are being formulated more and more frequently in modern science, I have decided to demonstrate the practical advantages of multidisciplinary research.

The highest scientific development in the context of basic research is achieved when the practical application can demonstrate a high level of predictability and significant prevention effects through interventions. With regard to such a demand on practice, our multidisciplinary intervention epidemiology does not shy away from worldwide comparison with all research groups that endeavor to make a contribution to preventive medicine through monocausal and monodisciplinary research work.

Instead of a foreword:

Professor Hans Schäfer on Grossarth-Maticek

I have known Dr. R. Grossarth-Maticek since 1967 and was in permanent, i.e. mostly monthly, contact with him between 1967 and 1978. The scientific contact lasted until around 1980, after which the collaboration between R. Grossarth-Maticek and Hans-Jürgen Eysenck as well as the Dutch psychosomatist Jan Bastiaans and the Heidelberg family researcher Helm Stierlin intensified. My relationship with Grossarth-Maticek was highly ambivalent for long periods, and the discussions and debates were always very creative and stimulating. I am sure that I parted ways with Grossarth-Maticek at least 20 times after controversial discussions. Sometimes I took the initiative to see him again, but mostly he sought renewed contact. The unusual thing is that the often emotionally-charged contradictory positions contributed to a factual clarification, so that in the end a mutual understanding of the positions developed. Despite intensive contact, we remained scientific strangers to each other for long periods, did not quote each other and yet always had a fairly honest mutual acceptance. From this perspective, I would like to give my opinion of Grossarth-Maticek's research work here.

I would like to share my impressions of Grossarth's research here in the hope of contributing to a better understanding of his monumental work. Grossarth-Maticek does not carry out individual research projects that are only loosely or completely unrelated to each other. Grossarth-Maticek strives to build up an interactive network as part of a long-term research program in which he pursues an unusually large number of scientific questions, whereby knowledge of other contexts he has researched is necessary to answer individual questions. In his research work, Grossarth-Maticek covers a large number of relevant aspects that interact with each other, such as

a) socio-psycho-biological interactions and synergy effects are of the utmost importance in the development of chronic diseases

b) human self-activity and the cognitive-emotional control factors play an important role both in the development of chronic diseases and in the maintenance of health

c) Adequate behavioral training that stimulates human self-regulation and autonomy (which in Grossarth-Maticek's case is not only based on a learning theory approach, but also incorporates a system-oriented psychoanalytical concept) achieves important effects for the primary and secondary prevention of chronic diseases. Grossarth-Maticek shows that not only the physical risk factors and their interactions are important, but that psychological dependencies with misdirection and deregulation, e.g. mislearned expectations of pleasure, well-being and security, are also extremely relevant risk factors. If people learn to move on from misguided expectations in their expectation system in favor of a real sense of well-being, they not only do a lot for their quality of life, but also for the maintenance of individual and social health.

Grossarth-Maticek backs up his theories with an enormous amount of data from citizens, some of whom were still healthy and some of whom were suffering from cancer. They were followed for many years, so that it was possible to research and document causes of death again and again for years after the interviews. Grossarth-Maticek combines enormous diligence with exceptionally keen powers of observation and a sense for strategic planning of many research steps in an extremely complex research program.

As the socio-psycho-therapeutic intervention developed by Grossarth-Maticek is effective in just one to a few hours of health training and is relatively easy for doctors and psychologists to learn, the spread of Grossarth's ideas and his therapeutic interventions could make a significant contribution to public health and to reducing the explosion of costs in the healthcare system.

Grossarth-Maticek is also an excellent methodologist. In his attempt to integrate medicine, sociology and psychology, he slavishly adopts non-existent methods of social research because he might not be able to achieve his objectives with the usual methods. In addition to external standardization, he also developed the concept of internal standardization in the application of psychological questionnaires (for example, by having the subjects report on their typical

behaviour, positive and negative experiences for half an hour before they are prepared for the actual questioning).

Grossarth-Maticek is also not a one-sided specialist in empirical social research. He often uses surveys and systematic observations from different areas in order to answer philosophical questions within the framework of a network of observation results, e.g. on the subject of the relationship between man and God or on the design of an adequate image of man. For example, when Grossarth-Maticek comes to the conclusion that man is a God-seeking, God-loving system that interacts with the concept of God in individually specific ways and needs God, this is based on several mutually coordinated observation steps, such as the following:

- prospective impact of health data on the impact of spontaneous, conventional religiosity and atheism,
- Analysis of biographies and health data of people who pray for others or for themselves (e.g. he observed that cancer patients pray more for others than for themselves, while people who also pray for themselves achieve health into old age)
- Observation of the fate of social groups and entire political systems that aggressively and atheistically evade the human-God relationship
- Observation of soccer fans, enthusiastic nationalists and people with other addictions that they personally experience as meaningful.

If people with meaningful dependencies outside the human-God relationship live significantly shorter lives and fall ill earlier, as do people and societies that aggressively turn away from the relationship with God, and if people who experience a loving relationship with God and pray for themselves live longer and cope better with illness (all empirical results that are already available), then Grossarth-Maticek is making his statements within the framework of systematic research. It becomes even more complicated when he takes into account different interactions and includes social, physical and psychological factors.

I have been thinking about Grossarth for many years and have repeatedly asked myself what criterion would be the best way to categorize Grossarth-Maticek's scientific efforts in international research. This task did not seem easy to me due to the extraordinary diversity of Grossarth's achievements. Grossarth-Maticek is a gifted observer, an excellent methodologist, an outstanding psychotherapist, if psychotherapy is also understood as health training. The range of Grossarth's qualities could be extended to include many individual disciplines, e.g. he is an excellent sports psychologist, political psychologist, etc. There is much to suggest that he founded new disciplines, e.g. systemic-synergistic epidemiology or health medicine. All these achievements make it difficult to answer the question: What does Grossarth-Maticek do at the core of his scientific work? I have come to the conclusion that the focus of Ronald Grossarth-Maticek's efforts is on complementing and incorporating new factors into known systems, so that understanding, predictability and desirable treatability are significantly improved through an understanding of system dynamics. Grossarth's work often makes various phenomena that are observed in medicine, sociology, psychology and political science, and which are still largely misunderstood, more comprehensible. Grossarth-Maticek not only reveals new correlations, but also outlines very specific methods that are necessary through replication by independent scientists. It remains to be hoped that different research groups will be motivated to carry out genuine replication studies. This would be a better appreciation of Grossarth's work than the attempt to disqualify his work with superficial judgments or prejudices (I must confess that I have made this attempt myself several times and have nevertheless always been able to re-establish a relationship with Grossarth's work).

I know that Grossarth-Maticek's studies have caused extreme polarization in the scientific world. But you have to take a closer look at the actors in this polarization in order to reach a conclusive verdict on the work of this unusual researcher. As a rule, Grossarth-Maticek's intentions, theory and method were accepted by almost all major thinkers in the field of psychosomatic and social medicine worldwide. I would like to mention just a few names here, such as George F. Solomon, the co-founder of psychoneuroimmunology, the famous Dutch psychiatrist and psychosomatist Prof. Jan Bastiaans, Hans-Jürgen Eysenck, one of the founders of modern behavioral therapy, Johannes Siegrist, the leading German medical sociologist, Prof. Norbert Bischof, a classic name

in German-speaking psychology and a student of Konrad Lorenz, and so on. His supervisors, colleagues and co-authors not only endeavored to understand and appreciate Grossarth-Maticek's theoretical and methodological achievements, they also set up a perfect control system to monitor his data. For example, Prof. Jan Bastiaans observed and reviewed his psychotherapeutic sessions, while Prof. Eysenck carried out data controls, as did Prof. Bischof from Zurich. The Karlsruhe Institute for Statistics and Mathematical Economic Theory and other German institutes for statistics and methodology (e.g. under the direction of Prof. Peter Schmidt) were also involved. Despite control measures that are unique in the world, it cannot be expected that such a fundamental work with such enormous consequences for the healthcare system, but also for political practice, will remain uncriticized. The criticisms range from justified in some areas to a complete misunderstanding of Grossarth's work and systematic and completely untenable denunciations.

I know of no work in international research that integrates so many aspects into a systematic and systematic overall view at such a high level of abstraction and in such a way that the presentation of the individual results becomes sharper than if only a topic-related research work is carried out, which possibly leaves more questions open than it can answer.

I can only warmly recommend to scientific research, health policy and other areas such as labor market research or political radicalism research that it is better to look at Grossarth-Maticek's studies and the resulting consequences for practice twice than not at all.

There is much to suggest that modern medicine will be supported by several pillars in the future, such as technical developments in diagnostics and therapy and the further development of molecular genetics. In my opinion, this also includes systemically interactive, synergistic medicine, taking into account the control mechanisms of the central nervous system, as developed by Grossarth-Maticek. While a large number of talented scientists work in the first-mentioned disciplines with great financial support, Grossarth-Maticek is developing his specialist discipline almost single-handedly with a relatively small international research team, although many scientific achievements, such as those of J. Siegrist or the Israeli health researcher A. Antonowsky, go in the same direction. I would also like to add my own achievements in the context of German social medicine. However, Grossarth-Maticek's integration work, with which he developed medicine, sociology and psychology in different areas into a unified discipline, is and remains unique.

Over the many years of scientific discussions with Grossarth-Maticek, I have always been impressed by the intensity of his concentration on individual questions and the resulting generalizations. On the one hand, he concentrates with almost dogged attention and enormous diligence on the pursuit of individual questions, ranging from the effect of the anthroposophical cancer remedy Iscador to the mental factors in soccer teams to the significance of self-regulation for successful aging or the emergence of the motive for murder in political radicalism. Grossarth-Maticek gives the impression of a high level of competence in each area of research, and as an expert in the individual field, one gets the feeling of gaining important new insights. Beyond this, the impression arises that Grossarth-Maticek pursues the individual areas out of an overarching interest and that he is much more interested in philosophical questions than in the individual results of his empirical studies. In Grossarth's research, there is an extremely interesting interaction between the empirical pursuit of individual questions and the design of an overarching image of man, in which he also shows the conditions for successful social functions that extend to meditative and God-related communications.

Critics who are motivated to negate Grossarth-Maticek's entire oeuvre, e.g. by accusing it of some kind of error, appear somewhat one-sided when measured against the overall achievement. In terms of its social significance, I would compare Grossarth-Maticek's work with that of Hegel, Goethe, Einstein or Heisenberg. It is a great achievement in itself to show that complex systems are emotionally and cognitively controlled and that individual self-activity interacts with physical factors and social structures and thus causes phenomena that we have to deal with on a daily basis. Grossarth-Maticek gives modern civilization the message that individual and social self-activity, which shapes conditions, is at least as important a factor as the existing conditions in economics, politics, physiology and genetics. An even greater merit of Grossarth-Maticek is that

individual, problem-solving, health-maintaining self-activity can be controlled through health therapy. By changing the emotional-cognitive control, socio-psycho-biological control systems change. Such a finding must be integrated into modern medicine and society, although it is currently diametrically opposed to the passivity-generating and dependency-creating culture. This is simply because it corresponds to functional and social needs.

I am extremely reluctant to use the word "*genius*" and will not use it when assessing Grossarth's work. However, if this term had to be attributed to an interdisciplinary scientist working in international social research, then I would not hesitate for long and give it to Grossarth-Maticek.

Prof. Dr. med. Dr. hc. Hans Schäfer
University of Heidelberg, 1996

1 Overview

1.1 Basics of our research work:

Our multidisciplinary research also corresponds to my scientific career. My medical training led to the consideration of a large number of *physical risk factors*. My intensive cooperation with *personality and family researchers,* as well as my personal experience with *autonomy training,* led to the consideration of personality and family-related variables. As a *medical sociologist* with a doctorate, I also paid particular attention to the importance of factors from professional communication in this study (albeit in constant interaction with factors from other areas). Results from my earlier prospective intervention studies can be found in the extensive bibliography.

All our research work serves to establish a new scientific discipline: multidisciplinary intervention epidemiology as the basis for synergetic preventive medicine!

Not only is the significance of individual risk factors for the genesis of certain diseases being researched here, but ~~multiplen~~multiple psychophysical risks are used to identify people who have a very high risk of ~~Entsthungen~~developing various chronic diseases. An intervention method has also been developed for these high-risk groups, the effectiveness of which has been empirically proven.

In the context of multidisciplinary epidemiology, the effectiveness of science is measured by two sets of results: Successful predictability (Section 5.3) and successful preventive intervention (Sections 5.4 and 5.6). A relatively large pool of knowledge about the different interactions and significance of the individual risk factors in the overall complex (Chapters 5.1, 5.2) serves on the one hand to expand knowledge and on the other hand to plan successful intervention strategies.

Multidisciplinary preventive medicine is inspired by monodisciplinary research~~,~~ and is intended to provide new ideas and impetus for both research and practice. ~~, zu setzen.~~

Our concept has developed its own methodological foundations (Chapter 4) as well as its own theoretical concepts and interventions (Chapter 3). *It is* therefore a *separate, self-contained research program, on the basis of which, for example, a differential prediction for different chronic diseases and the maintenance of health into old age is possible.*

This program has now been developed to such an extent that long-term cooperation with various specialist areas is possible.

This study also shows the importance of the interactions between work-related, family-dynamic, personality-related and physical factors and their effects on the maintenance of health, which can, among other things, ensure long-term employability. It can be shown that the work variables are modified in their health-relevant effects by factors from other areas. A large number of such interactive relationships are presented in the results section (Chapters 5.5, 5.8, 5.9).

In addition, the results cited show that **highly significant differential predictions** of heart attack, bronchial carcinoma, Alzheimer's disease, pancreatic carcinoma and health into old age are possible (e.g. 5.3). At the current state of research, such results could not be achieved with monodisciplinary instruments that only take into account, for example, diet, cigarette smoking, burn-out syndrome or occupational sociological stress.

In addition, the results of multidisciplinary intervention epidemiology not only show that specific interactions of factors from different areas of life precede the onset of chronic diseases (Section 5.1), but also that the systematic modification of specific risk factors can delay or prevent a specific disease outbreak (5.4). It is possible to make very precise statements about which specific risk factors need to change in which specific risk constellations in order to actually achieve preventive effects.

The concepts and results are based on the Heidelberg prospective intervention studies (Grossarth-Maticek 1998, see also Chapter 4).

One focus of our research is *human self-regulation (i.e. the self-active creation of conditions in communication that enable the achievement of attractive goals)*. Based on the assumption that people with good self-regulation, for example, tend to experience eustress and therefore live much healthier/longer lives, one of the goals is to reduce (occupational) dysstress (avoid illness) - if possible by activating oneself to achieve states of eustress. *We speak of self-regulation in the sense of learned, active influencing and bringing about states that are problem-solving and satisfying for the individual, so that well-being is achieved.*

The intervention method we have developed is **autonomy training**.
Here, the self-active, ability- and needs-oriented shaping of communication between the individual and their environment is stimulated. The results show that the self-active, ability- and resource-oriented stimulation of individual abilities represents a large social capital that can hardly be overestimated. Autonomy training is based on the assumption that different factors from different areas *condense* into individual symptoms and emotional-cognitive problems. When new forms of communication are created, individual activities and reactions can develop that can lead to symptom-resolving behavioral changes. If specific interacting systems in different areas of life change, then preventative health effects can be achieved, creative solutions to problems in working life can be stimulated, accidents, early retirement and unemployment can be reduced. The intervention can only be successful if it changes interacting systems from different areas *simultaneously* and not if it only covers and changes one area (Ch. 3, 5.4).

With regard to the application possibilities of multidisciplinary dysstress and eustress diagnostics in working life and the stimulation of self-active problem solving with the help of autonomy training, cooperation steps were initiated with the managers of a company (Chapter 9).

The multidisciplinary research approach implies systemic interactions at different levels. For example, even the multidisciplinary research methodology is part of the multicausal scientific interaction system (Section 6.4).

The prospective intervention study is used as the **central method** of evidence generation, i.e. longitudinal studies and experimental interventions are interactively combined.

In the prospective intervention studies presented in this paper, relevant physical risk factors, personality factors, family dynamics and a large number of work-related variables are recorded. (Results from our earlier prospective intervention studies can be found in the detailed bibliography). All the factors mentioned are bivariate and highly relevant for the development of chronic diseases and the maintenance of health, but they are part of a complex interaction system, i.e. there is mutual influence and dependence. Occupational variables are of great importance.

The results obtained in the randomized, preventive experiments show similarities with the results from the practical application of stress reduction in a company. It is therefore hoped that an effective method has been developed that contributes to the reduction of dysstress, promotes effective preventive measures– in work organizations and makes a significant contribution to maintaining health into old age.

According to the results of our research, interactive dysstress (in interaction with physical factors) is the number one contributory factor to illness. We define dysstress so broadly that it provides a basis that is not only highly relevant for medical causal research and prevention, but can also adequately analyze and influence economic and political problems.

Dysstress is any consequence of internal and/or external stress that cannot be eliminated or reduced by activated resources (e.g. skills), resulting in the development of various symptoms.

Eustress is the result of every successful activation of resources in the direction of eliminating internal or external stress, combined with pleasant feelings of well-being, pleasure and security.

Dysstress always arises when a certain goal or an inner need is pressing for realization or satisfaction and this tendency is confronted with internal or external barriers that block the achievement of the goal. When this state occurs, the person tries to activate their resources in the social-psycho-biological system with the aim of removing the barrier. This can lead to failure and they try to achieve other goals, whereby barriers can once again get in the way and the resources fail again. If the person can no longer see any light on the horizon and hopelessness sets in, various symptoms can occur, but usually mental and physical exhaustion. Here we speak of an interactive burn-out. By this we mean not only different blockages of different important goals, but also the repercussions of mental and physical exhaustion in the sense of a reduction in motivation to achieve new goals.

Knowledge-enhancing results on the subject of dys- and eustress can be found in all chapters.

1.2 General orientation: Goals - Data - Results

The *aim* of our multidisciplinary epidemiological research is to do justice to the analysis and influencing of complex systems as far as possible by recording a large number of factors from different areas of life and empirically (statistically) proving their interactions. In the process, control factors are identified that contribute to the fact that complex interactions can be controlled/channeled in certain functional directions.

A further aim is to identify extremely pronounced risk constellations from a large, representatively selected population.

This should make it possible to provide a relatively small subgroup at high risk with effective preventive therapy, on the assumption that the treated group will develop chronic disease significantly less frequently than the non-treated group over a certain observation period.

At the same time, mortality and incidence in the overall population will be reduced because the small isolated subgroups will fall ill more frequently than average without preventive therapy.

Established extensive preventive medicine attempts to provide the entire population (in contrast to intensive preventive medicine) with various "isolated" health-preserving measures, such as smoking cessation, exercise training and nutritional advice. The problem with extensive prevention offered on a voluntary basis is that, as a rule, only people who already have a high level of health awareness take part and people with multiple risks rarely appear.

The results of intensive preventive medicine based on prospective intervention epidemiology are to be replicated on a broad basis and then systematically applied to the population as a whole.

The positive results would lead to an enormous reduction in healthcare costs.

Decades of research have enabled us to **identify the** following key **aspects <u>with statistical certainty:</u>**

1. all **phenomena** (e.g. maintenance of health into old age, development of a chronic illness, development of individual creativity and innovation) from different areas of life **are the result of interactions in extremely complex socio-psycho-biological systems.** (Due to the enormous context dependency of individual impact factors, the predictive ability and intervention success of monocausal approaches is very modest).

2. a large number of factors enter into complex interactions and all individual **impact factors are dependent on the impact context of other factors.** The results show, for example, that occupational dysstress represents a considerable health risk and that it arises in the complex interaction field of factors from different areas (family, personality, physical risk factors) and through circumstances in working life. The factors recorded show *synergy effects* between the different areas in the direction of health or illness.

3. the results presented in this manuscript show that the state of our multidisciplinary research **enables** a very **high differential prediction of chronic diseases and health into old age**. It also appears possible to recognize the degree of vulnerability of individual risk factors in the context of other risk factors. When using different measurement instruments, it is possible either to make very precise statements about the development of disease and to determine the identification of different risk factors involved, or to proceed pragmatically and "only" use some risk factors as predictors, in the knowledge that these also correlate with other risk factors not recorded here. For example, we could use Grossarth's type I (isolation suffering with inhibition of ego-related expression) to significantly predict cancer, but we could do so knowing from other

evaluations in this report that type I is not a cause of cancer, but is coupled with many other relevant risk factors.

4. if different risk factors from different areas are considered simultaneously (this includes both psychosocial and physical risk factors), then **people who have high multiple risks can be identified**.

5 **Complex interaction systems are** generally **activated by *relatively simple* control mechanisms and their functional effects can be controlled in a coordinated manner**. If the control mechanisms are known, an intervention that is able to recognize the dynamics of the control mechanisms is extremely effective.

6 **It** has also been shown that an **intervention measure** (autonomy training) that stimulates the individual's self-regulation and enables him or her to reorganize communication (e.g. in professional life or in family relationships*) **can have considerable preventive effects in terms of maintaining health.** If the individual experiences problem-solving in an area that emphasizes pleasure, then a large area of interacting risk factors changes in the direction of positive factors. This happens under permanent consideration of the functioning of the *central nervous system* and the brain.

In order to achieve such an objective, the ***following individual research steps had to be integrated in a coordinated manner into a functional interaction system***:

- a viable methodology for demonstrating relevant correlations (prospective intervention study)
- a plausible theory of multidisciplinary pathogenesis
- an effective intervention measure
- and the retrospective use of the research results obtained in therapeutic considerations.

Our research shows such good results in terms of both the *predictability* and *effectiveness of preventive measures* that these must be explained by the theoretical basis and the content of the data collected:

In our prospective intervention studies, we have permanently combined hard (scientifically measurable) with soft (emotional-cognitive) data.

Initially, the assumption (which has been confirmed by the empirical data) was pursued: The emotional-cognitive factors (e.g., persistent distress due to rejection by a parent) interact with the objective data and often form synergistic effects. **Emotional-cognitive data can extremely modify hard data** (e.g. the effect of smoking).

The hard data is measured using scientific methods and its effects are rationally explained (e.g. due to the proven carcinogenic substances in cigarette smoke). Soft data is generally the result of the interactive processing of impulses from the environment and the organism by the central nervous system. *However, the computer in our head does not work on a rational basis, but is largely oriented towards irrational or emotional processes.* This is due to the fact that humans are still largely determined by their emotional impulses, including those from the limbic system, in their experienced motivation. The irrational results of brain activity, which can be recorded through experienced cognitive-emotional states, must now be rationally explained by the scientist and brought into context with the hard data. Even if brain research makes progress in the scientific sense, *it will always remain important to record the emotional-cognitive effects experienced, because these have been proven to have a direct influence on the development of disease and social behavior.*

Of course, it is very difficult to record (operationalize) **the soft data in such a way that their objective effectiveness can be scientifically proven** (e.g. by causing certain chronic diseases). In *order to achieve such a goal*, our research first had to separate very relevant emotional-cognitive processes from a large number of irrelevant factors. This was possible by repeatedly talking to a large number of people with different illnesses compared to people who have

remained healthy into old age. *This showed that chronically ill people repeatedly described very similar conditions when reflecting on their biographies* (e.g. suffering due to rejection and lack of understanding by a parent, helpless agitation due to disturbing and threatening fellow human beings). After a large number of individual observations, different classifications were undertaken and the theoretical basis was developed, on the basis of which, for example, a healthy experience/behavior could be explained from an illness-producing one. The theory of the pleasure/displeasure relationship was developed. The consideration of the experienced sources of pleasure/displeasure in the data collection is very useful for two reasons: Firstly, there is a good memory of pleasure/displeasure-producing experiences, and secondly, the collected data are of very high predictive relevance, i.e. e.g. that they can predict certain types of cancer better with emotional-cognitive data than with physical variables, although an even better prediction is possible by recording both variables simultaneously (see Chapter 5.3 "Differential prediction of health and various causes of death using physical and psychosocial risk factors").

The secret of the excellent predictability and preventive intervention of our study lies in the fact that, on the one hand, very relevant psychosocial data were collected and, on the other hand, that they were used in combination with very relevant physical factors in their interactions.

The message to the natural sciences is that taking emotional-cognitive data into account enables better predictability of phenomena and more effective interventions than simply considering the "hard" data.

However, it should also be expressly pointed out that various individual scientific disciplines make important contributions to the recording of risk and positive factors, whereby the context dependency and the interactive effect of the individual factors with other constellations are generally not given central consideration.

1.3 Physical risk factors - attractors - attractive targets:

On the one hand, various physical risk factors are taken into account that are relevant to the development of chronic diseases or the maintenance of health (e.g. hereditary factors, cigarette smoking, alcohol consumption, lack of exercise, malnutrition, etc.). On the other hand, dysstress and stress are taken into account as key variables. This is where our theoretical construction, which was developed in the 1960s, coincides with modern chaos research. A central concept in chaos research is that of the attractor. In order to vividly explain the significance of the vast majority of our variables and theoretical assumptions, which also form the basis of the intervention (autonomy training), we will be guided here by modern chaos research (although we have modified the concept of the attractor somewhat).

Attractors are information-driven behavioral and communication programs inherent in the system, i.e. specifications or determinants that activate or stimulate attractive goals (desirable goals, goal orientations, movements towards a goal).

Attractors are dependent on the respective state of a system and can be influenced by changing the communication of the system with its environment.

In the context of preventive health research (causes and interventions), the inclusion of our attractors means a considerable shift away from traditional causal research, which is limited to material risk factors, and a focus on attractive goals that always include an orientation towards the future. If attractive goals, which are of the greatest emotional significance and are predetermined by the respective system, are achieved, then an interactive process towards self-organization, maintenance and restoration of health can be stimulated. If, on the other hand, attractive goals are blocked in the interaction with the physical and social environment, then the basis for illness and poor disease progression can be co-determined.

Attractors and attractive goals (e.g. the goal of losing weight, cutting down or giving up cigarettes, etc.) can only be activated voluntarily to a very limited extent. As a rule, they are the result of a new way of communicating with oneself and the environment.

The autonomy training we have developed is a method for activating attractors that stimulate goal-oriented and achievable behaviors by redesigning communication. In autonomy training, the art lies in activating communication that not only creates attractive goals, but also makes them achievable. In autonomy training, the person learns to understand themselves better in their past behavior and to develop new attractors for the future that lead to greater well-being, pleasure and security.

Traumatic blockages of attractors:

When emotionally intense needs for closeness, love and recognition coincide with an extreme prevention (frustration) of these desires (attractive goals), the basis for traumatic experiences with a lasting effect is created. This can lead to different reactions and developments:

1) The traumatic experience leads to a generalized blocking of the development of attractors and attractive goals, so that, for example, chronic lack of stimulation or apathy develop. People can carry trauma-related blockages of their entire attractor system (attractors and attractive goals) for decades, possibly without anyone in their immediate environment being able to observe this.

2) The traumatic event, e.g. in childhood through separation or experiences of rejection by a parent or an entire trauma-triggering relationship structure, develops attractors in the system, i.e. attractive goals, in the direction of a "desire for repair" by creating a communication structure in adulthood that is reminiscent of the original situation in which the trauma occurred.

If, for example, a person has been rejected by their mother in childhood because she turned to a man (and this was precisely when the child's emotional expectations were at their strongest), then this person will react hypersensitively to similar relationship patterns. They will also expect that the symbolic attachment figure will then turn intensively to their own person in the hope of healing from the original traumatic experiences.

If this does not happen, the negative experiences can come back with a vengeance and this can also lead to a generalized blockage in the development of further attractors and attractive goals.

3) A third possibility is to avoid the negative effects of traumatic experiences, e.g. through repression, idealization, etc. Although this protects the person from emotional pain, it results in a persistent lack of stimulation because the most important emotions are blocked. As a rule, a strong addictive tendency develops. Addiction to substances ultimately leads to health impairment and thus to emotional and physical pain.

In addition to the development of addiction, the consequence of unprocessed traumatic experiences is chronic mental and physical exhaustion.

The connection between blocked attractors and the development of chronic diseases and disease progression is illustrated here using breast cancer as an example.

Initially, there are often massive experiences of rejection and separation from the mother. Already in early childhood and adulthood, a continuous, mutually loving and appreciative relationship is broken. The person experiences the isolation from the desired mother as traumatic and as ultimately insurmountable.

In adulthood, there is an attempt at repair, e.g. in the hope that a loved one will show affection in the long term. After renewed disappointments, all attractive goals collapse. This state leads to mental and physical exhaustion and possibly to an increase in various physical risk factors, e.g. alcohol consumption, malnutrition, chronic inflammation, etc. In the long term, the person is not able to experience their role as a woman as attractive, but rather as a disappointed child.

In the development of all chronic diseases, there is an extremely close interaction between blocked attractors and compensatory tendencies through physical risk factors. As a rule, a definitive breakdown of all attractors in the system, which no longer function as targets for attractive goals, plays a central interactive role. It can be seen here that complex interactive attractor research is miles away from the extremely naïve and monocausal concept of a cancer-causing personality (there is no personality that does not interact closely with its physical environment).

Attractors can have a humane and social content, i.e. they motivate goals, but can also have a self-destructive and externally destructive content, for example as a response to extreme frustrations in childhood or in professional life. Different attractors are often in opposition, i.e. they are mutually exclusive. This results either in a development in which one attractor prevails or in a blocking of clear behavior because both attractors inhibit each other. (for example, when hate and love influence each other in relation to a parent)

Health and recovery are also closely linked to attractors in the system that stimulate attractive goals. Provided, of course, that the attractive goals are achieved and that pleasure, well-being, security, meaningfulness and development are achieved.

The human being as a socio-psycho-biological interaction system related to the experienced image of God is permanently oriented towards well-being, pleasure, security and development. Unfortunately, attractive goals are often blocked or prove to be completely misleading and disease-inducing, e.g. in the direction of addiction. Even attractive health-promoting goals can often arise from experienced suffering and a counter-concept seeking well-being.

The system-immanent attractors do not develop by chance, but are also the product of forms of communication determined by life history. If children grow up in a healthy family structure in which, for example, they experience an uninterrupted loving mother-child relationship for the first four years and also have a loving and supportive father, as well as being breastfed, then the basis develops for attractors that strive for attractive goals and that are also achieved with a high degree of self-confidence and flexibility.

If, for example, the child was not breastfed, was traumatically separated from the mother in the early years of life, e.g. by being hospitalized for several days, and had to learn that the parents seriously considered aborting it, then other attractors will naturally develop and the achievement of attractive goals will be more difficult. In addition, there are also important social experiences, e.g. whether the child and the person were accepted in adulthood in school, education and work, promoted and accepted according to their abilities, or whether they were negated, rejected and prevented through bullying. Other determinants are added here, such as a pronounced trusting relationship with God, etc.

The great advantage of modern statistical multivariate analysis is that the weights of all the factors recorded can be calculated with mathematical precision, both individually and in their interactions. On the basis of empirical data collection, the success of the autonomy training developed by us can also be presented as an effective preventive measure.

2 State of research and criticism from a multidisciplinary perspective[1]

2.1 Medical approaches

Risk factors for pancreatic and bronchial carcinoma, heart attack

The international epidemiological literature mainly emphasizes cigarette smoking as a risk factor for pancreatic cancer. Insulin-treated diabetes is also considered a risk factor (LUIGINA 1996). Advanced age is also an important predictor. Eighty percent of all pancreatic carcinomas occur between the ages of sixty and eighty. Genetic factors also appear to play a role. Alcohol and coffee consumption are interpreted as less severe risk factors. Alcohol in combination with cigarette smoking is possibly discussed as a risk factor (KEITH 2000).

From the perspective of multidisciplinary epidemiology, an attempt is made to capture monocausal risk factors, such as cigarette smoking, in a multidimensional field of action with a large number of other risk factors. The aim is to investigate complex interactions rather than the effect of a single factor while statistically taking other factors into account and keeping them constant.

Cigarette smoking is a general risk factor for lung cancer as well as for heart attacks and pancreatic cancer. Only relatively few studies have so far demonstrated the interaction between psychosocial factors and cigarette smoking in relation to bronchial carcinoma. In 1996, KNEKT was able to show the synergistic effect between cigarette smoking and depression in the development of bronchial carcinoma as part of a large-scale Finnish prospective study.

The interactions and correlations between cigarette smoking and psychosocial factors were also shown in our early prospective studies (GROSSARTH, BAASTIANS, KANAZIR 1995). Relationships between physical and psychosocial factors in relation to the development of myocardial infarction have been researched in an extensive international literature (e.g. STANSFELD 2002).

In the context of multidisciplinary research, efforts to demonstrate interactions between a large number of psychophysical factors come to the fore rather than testing known hypotheses and results in the context of monocausal epidemiology (e.g. the significance of cigarette smoking for lung cancer and pancreatic cancer). We also assume that the literature that deals with the medical risk factors we have recorded in relation to the development of various chronic diseases is largely known (e.g. the significance of total cholesterol or high blood pressure in relation to heart attacks) and do not present it here (for reasons of space alone).

Similarly, there is only limited interest in replicating already known results from the medical and sociological literature.

We will nevertheless endeavor here, albeit to a limited extent, to build some bridges between our results and the international literature.

Above all, it is interesting to investigate the extent to which known risk constellations, e.g. the model of "occupational gratification crises", are dependent on a system of other risk and protective factors in their disease-causing effect.

It is therefore possible, on the one hand, to empirically replicate the model with regard to its disease-causing effect and, at the same time, to identify interactive constellations of risk and protective factors under which there is either a very high or a minimal risk due to the above-mentioned model.

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[1] The German and international literature on various aspects of monodisciplinary medical and occupational sociology, scientific epidemiology and personality and family research is only briefly outlined in this paper, as it is assumed to be largely known.

2.4.2.2 Psychoneuroimmunology and brain research

This section looks at some of the literature that deals with the influence of the psyche on physical functions. The research field of psychoneuroimmunology is highly developed and characterized by an enormous number of publications. The majority of these studies relate to correlations between certain well-defined psychosocial variables and specific neurobiological functions. There are still many open questions in the field of psychoneuroimmunology that do not allow certain hypotheses and results to be accepted as absolute, e.g. the relationship between the immune system and the central nervous system (BELLINGER et al. 1994).
The aim of our presentation is not to present the state of the art of psychoneuroimmunology as a whole, but only to indicate the interactions between the brain as an organ of communication with biological and social factors using a few selected approaches.
 Various medical fields have investigated how psychological processes such as pain affect the hormonal system, how stress interacts with personal factors (e.g. the feeling of fear or great stress) and how the brain interacts with the immune system. These selected examples are intended to show how important it is not only to consider monocausal modes of action of certain influencing factors, but also to see the mode of action of substances, processes etc. in the context of the complex systems that harbor them.

Psyche and endocrine system

The endocrine system regulates the metabolic processes of the cells. For example, the basal metabolism of most body cells, activity levels, sexual activity, stress reactions etc. are controlled by the endocrine system. Important functions of this system can be influenced by psychological processes, e.g. stress, pain, moods, etc., which release certain hormones that also function autonomously, but whose activity can also be influenced by external factors. Disturbances in this system or in the function of organs involved can be involved in the development of psychosomatic illnesses.

ROSSI (1991), for example, deals with the psychological modulation of the endocrine system and the associated influence on genes. In other words, his focus is on the influence of the mind on the genes via the vehicle of the endocrine system. His aim is to develop hypnotherapeutic methods that can be used to modulate gene activity and thus achieve health. The underlying assumptions are based on cell metabolism, in which the genetic material fixed in the cell nucleus is involved insofar as the neurotransmitters and hormones in exchange with the DNA (e.g. via the formation of messenger RNA) model the genetic-cellular exchange. Rossi postulates a three-phase model that describes how the conversion process takes place. The third phase is central, in which the hormones penetrate the cell nucleus in order to trigger the gene processes there. "The genes provide the information needed to build new proteins, which in turn are the building blocks of the cells or enzymes that promote the biochemical processes of the individual cells" (ROSSI, 1991: 175). The messenger RNA formed in the cell nuclei transmits information to the ribosomes in the cytoplasm as to which type of peptides, proteins or similar should be synthesized. This process is triggered by hormones whose production can be triggered by psychological processes; for example, stress triggers the production of aldosterone in the adrenal gland. Rossi therefore concludes that the psyche controls gene activity via the "cortical-limbic-hypothalamic-pituitary axis" (see above). SELYE (1974) describes that stress can make people ill and in what way, in the form of a series of adaptive diseases that can be attributed to increased stress (such as high blood pressure, cardiovascular diseases, kidney diseases, sexual disorders, digestive and metabolic diseases, cancer, etc.). However, Rossi does not provide an explanation of the connection between the psyche and the genes for these diseases, but instead calls on specialists from medicine and psychology to research the connections so that hypnotherapeutic methods can then be derived.
Some facts therefore suggest that the psyche is indirectly involved in the development of health or illness insofar as, for example, stress reactions are controlled by the endocrine system, which in turn is guided by the psyche.

Dialogue between the brain and the immune system

With the emergence of psychosomatics, the question of the regulation of the immune system, among other things, has arisen anew. Previously, it was assumed that the immune system was a self-regulating system that reacted relatively autonomously. However, psychoneuroimmunology has used molecular biological methods to shed more and more light on how the immune system works. It has shown that the communicative organ systems, central/peripheral nervous system, endocrine system and immune system are networked with a "common language, i.e. they use common signal carriers (mediators) and their receptors." (SCHAUENSTEIN, 2000).

Research over the last decade has also shown that all higher centers of the brain are involved in the brain's dialogue with the immune system. In particular, the limbic system plays a role in immune defense, in which learning, i.e. the processing of exteroceptive and interoceptive stimuli, also takes place and affective and emotional processes are regulated.

Looking at psychosomatics has also drawn new attention to the concepts of health and salutogenesis.

Health as a dynamic balance

According to Ivars Udris, health is "a transactional dynamic balance between the physical and psychological protective and defense mechanisms of the organism on the one hand and the potentially pathogenic influences of the physical, biological and social environment on the other (...). Being healthy is a constructive process of self-organization and self-renewal. Health must be constantly produced by the organism: as immunologically understood defense as well as adaptation or purposeful change of the environmental conditions by the individual. This dynamic balance is dependent on the availability and utilization of health-protecting (protective) or restorative factors in the person and in the environment, which are referred to as internal (personal) and external (situational) resources." (RIMANN, UDRIS in SCHÜFFEL 1998: 353). This process-oriented definition of health includes many modern concepts that consider aspects of salutogenesis, for example (e.g. ANTONOWSKY 1997; WYDLER, KOLIP, & ABEL 2000; SCHÜFFEL et al., 1998; FRANKE & BRODA 1993). Here, the health and illness process is described on a continuum of "health-ease/dis-ease" and aspects of being and becoming healthy are considered.

Strain and stress play an important role in these models (e.g. strain-stress model, job strain, person-environment fit, etc.). Emphasis is placed above all on the person's own active (proactive) part in maintaining health (for empirical material MUSSMANN et al., 1993; FALTERMAIER, et al., 1998). The personal resources that a person can activate to maintain their health include cognitive belief systems (e.g. control beliefs, SOC ('sense of coherence' according to Antonowsky)), general and health-related coping skills and psycho-physiological factors (e.g. physical condition, genetic disposition, etc.). The concept of self-regulation, as conceived by Grossarth-Maticek (1999, 2000, 2001), for example, is also related to this.

The person's own activity is the greatest resource for maintaining health, as this is where the individual interaction between the person, the physical environment and the socio-economic environment takes place. Kriegesmann also writes: "Only "own experiences" create the basis for safety and health-oriented behavior. However, lifestyle-changing measures are generally only implemented when the individual wants to change their personal lifestyle themselves." (2005, S. 48)

Stress - Brain

The biologist Gerald Hüther, among others (e.g. WYDLER, 2000; SCHÜFFEL, 1998; FRANKE, 1993), deals with the opportunities and dangers of stress, describing on a neurobiological level under which circumstances stress can be a beneficial factor and under which circumstances stress is more likely to be harmful. In short, Hüther postulates that stress changes the neuronal circuitry in the sense of a new formation of connections or a reorganization of existing connections to adapt to new conditions. The neuronal circuits control thinking, feeling and acting; the changes in the neuronal connections may also cause the loss of previous structures of thinking, feeling and acting (HÜTHER et al. 1996).

A stress response is a complex reaction of the central and peripheral noradrenergic system (LACHUER, 1991), the limbic system, the prefrontal cortex and the neuroendocrine system,

which culminates in the increased release of cortisol, the "stress hormone" (MOORE, 1979). To cope with the reaction, appropriate neuronal circuits are activated, which, the more frequently they are activated, the more they are expanded and are more readily available for future needs. If there is no external stress, such neuronal circuits are neither built up nor stabilized and it is not possible to adapt the associated thoughts, feelings and actions. If the cortisol level is elevated for too long (e.g. because there are no adequate methods of stress reduction or, as Hüther emphasizes: an uncontrollable reaction takes place), this can lead to the destabilization of already established neuronal networks and nerve growth is reduced (TSUDA & TANAKA, 1985).

Hüther counters the established formula "stress makes you ill" with a model that aims to explain why stress does not always have to make you ill and, if it does, why. According to Hüther, whether stress leads to negative consequences depends on whether the perceived physical strain leads to anxiety, i.e. to a stagnation in problem-solving using previously successful methods. He calls this type of stress reaction an uncontrollable mental strain. Hüther therefore distinguishes between situations in which the current stress represents controllable challenges and uncontrollable stress, each of which has different effects (stabilization and further development vs. stabilization and stagnation) on the neuronal network in the brain. He points out that whether a stressful situation has one effect or another depends on the coping strategies, i.e. the person's self-regulation, namely the way in which they deal with psychosocial stress situations, integrate goals and needs, etc.

Grossarth-Maticek's pleasure-unpleasure theory

attempts to answer the question of the functional relationship between certain brain regions in the context of an individual's social and physical communication. It is assumed that the brain, as an organ of communication, registers impulses from the organism and the environment and encodes these in a pleasure-displeasure system.

If different sources of pleasure assert themselves emotionally as dominant, then an integrating organization of different bodily functions and a high motivation towards a pleasure-focused life is created. Conversely, if a certain amount of displeasure prevails that is more pronounced than the sources of pleasure and the hope of pleasure dwindles, various physiological processes are affected and the human motivation to want to live is reduced. It is assumed here that the cortical functions (complex thinking, development of a strategic problem-solving ability ...) are ultimately in the service of the centers in which emotional experiences are stored (e.g. the limbic system). Social organizations also function according to the same principle, i.e.: if social communication and work organization produce an unbearable level of displeasure, then it is more likely that there will be signs of dissolution than if pleasure potentials are created.

For this reason, good integration between emotional and rational factors is extremely important, i.e. harmonious interaction between the cortical and limbic systems, for example. If the rational system places itself in the service of emotional experiences in a socially just manner and vice versa, if the emotional demands modify the rational system, then the basis for good self-regulation (i.e. the self-active production of states that generate well-being) is created!

In the pleasure-displeasure theory, it is assumed that the pleasure-displeasure relationship not only provides the central motivations for human behaviour, but also an extremely important organizing principle of bodily functions in the direction of illness or health. On the one hand, multidisciplinary medical research records a very large number of objective factors and at the same time deals with the question of how these are recoded in the pleasure-displeasure relationship. It is conceivable that a person has optimal working conditions, physical and familial prerequisites, but for some reason is still unable to integrate these into the pleasure system. In this case, the activation of unpleasure reactions in the brain is dominant, e.g. due to the permanent activation of an unprocessed childhood experience. It is also possible for a person with relatively high levels of stress and negative socio-biological factors to nevertheless have a good implementation in the pleasure system. (In fact, there is generally a statistically verifiable correlation between negative communication factors and a pronounced lack of pleasure potential and vice versa).

The pleasure-displeasure theory considers the central nervous system and its functions as a permanent communication organ, i.e. social factors, personal reactions and activities and physiological processes (e.g. activation of the interactive pleasure centers) are taken into account (GROSSARTH-MATICEK, EYSENCK, RAKIC 1991).

2.5. 2.3 Integrative approaches - psychophysical interactions

In a large-scale epidemiological study, KNEKT (1996) found synergistic effects between cigarette smoking and the emotional state in relation to the development of bronchial carcinoma. Grossarth-Maticek and his numerous co-authors have published by far the most frequent study results on the subject of psychophysical interactions in the development of chronic diseases on an epidemiological and intervention-epidemiological level (see bibliography).

In most publications, synergy effects between different physical and psychosocial risk factors were presented. In this study, a considerably larger number of psychophysical interactions from different areas of life were analyzed. The general result here is that many significant risk factors do not act in isolation, but in very complex interactions in the socio-psycho-biological system. Only a monodisciplinary focus on individual risk or positive factors creates the illusion that these act independently of their interactive system. With regard to the assessment of intervention measures, it is also important to recognize that the modification of individual risk factors only produces preventive effects to a very limited extent and that an entire interactive system must change, which affects different areas of life and stimulates the pleasure/well-being and safety system. Multidisciplinary research therefore does not end in a diffusion of numerous correlations, but is able to show how different changes in different areas of life ultimately determine the system of illness or health.

Our **criticism** of the state of research into the relevance of social, work-related and personality-related variables and physical risk factors to the development of chronic diseases and the maintenance of health is derived from the concept of a multidisciplinary, multicausal and synergistic approach. The highly relevant individual factors that have been researched in the individual disciplines are often isolated, giving the impression that they have an independent effect on the development of disease, regardless of whether this is interpreted as positive, negative or neutral.

In reality, there is obviously a strong connection between relevant areas, so that an integration of individual disciplines and recorded variables into an overall concept appears necessary. In methodological terms, many individual studies that record specific factors are, at best, prospective studies. In these studies, causes of effects cannot be clearly identified. Prospective studies with experimental interventions are required.

Multidisciplinary research and intervention has become established in some areas in terms of theory and content, resulting in a paradigm shift from monodisciplinarity to multidisciplinarity. Examples include multidisciplinary sports science (HUBER 1996) and modern gerontology (KRUSE 1996, 1993; LEHR 1996, 2003).

LEHR (2003), for example, develops an interactionist model of the conditions for longevity in psychophysical well-being in which she theoretically considers factors such as activity, diet, physical exercise and biological factors and points to the interdependence of these factors. At the same time, Lehr emphasizes that it still seems premature to derive theories about longer life expectancy from this (although the results of empirical research suggest that many factors interact).

It goes without saying that psychosomatic medicine and modern psychiatry are oriented towards multidisciplinary concepts, among other things. Terms such as self-regulation are also playing an increasingly central role in modern behavioral therapy and are therefore also opening up to multidisciplinarity.

The highly specialized research disciplines concentrate on structural and functional problems (e.g. which organic structure and which functional disorder leads to the development of a clinical picture, or which socio-economic structure and function leads to phenomena such as unemployment).

As a rule, the interdependencies of different structures and functions that lead to the emergence of a problem are insufficiently analyzed and influenced.

Modern scientific research concentrates on ever smaller sections of causal research. In this context, we speak of reductionist research because relevant factors from different areas of life that influence complex systems are not sufficiently taken into account. In multidisciplinary

research, factors that can be condensed into measurable interactive constellations are taken into account. These constellations are predictable, observable, influenceable and, to a certain extent, meaning-driven.

Because multidisciplinary research investigates interactive constellations with the aim of demonstrating that only the integration of highly specialized knowledge from different fields of knowledge can enable us to better understand and solve social problems, it stimulates a paradigm shift. This paradigm shift, which requires the integration of monodisciplinary concepts into multidisciplinary concepts, is by no means an easy path, as its realization requires extreme creativity that is able to interactively and multidisciplinarily integrate individual areas that are relatively incapable of solving problems into functional interactive structures.

Multidisciplinary research demonstrates competence in the investigation of interacting factors from different areas of life with regard to the emergence and causes of different phenomena.

As a rule, the competence of the monodisciplines is not sufficient to solve practical problems such as successful prediction and effective preventive interventions. At this moment, the representatives of the monodisciplines are tempted to suggest a non-existent practical problem-solving ability while simultaneously ignoring disciplines that would be interactively necessary to solve problems (for example, politicians who argue exclusively with economic policy arguments or even professors from the economic sciences could give the impression that their measures would achieve great effects in terms of reducing unemployment). Scientific cancer researchers can give the impression that they will kill the cancer cell with the discovery of a molecular biological or biochemical factor ... . Raising hopes with regard to the effectiveness of interventions that far exceed monodisciplinary potency in practical problem-solving stands in the way of multidisciplinary integration of specialist disciplines that could contribute to problem-solving (e.g. by interactively incorporating mentality, consideration of the central nervous system, psychosomatics). When specialized monodisciplines raise hopes for practical solutions to problems that they cannot in reality achieve without multidisciplinary integration, an extremely serious social problem arises because an increasing inability to solve problems develops due to the monocausal trap of thinking that is often established and maintained by excellent monodisciplinary research approaches. This is where the goal of multidisciplinary integration comes in, in order to show that the complex problems in reality can only be solved if the interacting factors and constellations arising from them are understood and influenced.

The highly specialized medical sociological approaches in the context of stress research and stress prevention in the workplace must also achieve integration with other interacting factors and constellations from other disciplines in order to increase their analytical and therapeutic potency.

Monodisciplinary research demonstrates a high level of specialized competence in researching an isolated section of contexts and tends to derive generalizing assumptions and explanations that usually become extremely incompetent when they attempt to draw on other disciplines for explanation.

2.4 Work and medical sociological approaches

The development of the world of work towards increasing flexibility and the trend towards a loss of importance of the 'normal employment relationship' is ambivalent for those in employment. Greater opportunities (in terms of individual time and freedom of action) are offset by increasing risks (e.g. loss of security, growing personal responsibility). As a result, demands for self-organization and self-regulation on the part of those in employment are coming to the fore over institutional and legal regulations on working and employment conditions.

According to Kriegesmann (2005), a paradigm shift is being introduced, according to which it will hardly be sufficient to focus solely on risk-oriented health protection, which includes calls to avoid health hazards. Instead, an offensive perspective will come to the fore that emphasizes the development of individual health resources, which, among other things, is an important condition for employability in changing occupational fields.

In terms of salutogenesis research, too, the potentials of health should be emphasized rather than focusing exclusively on risk concepts (see also: "...alternatively, the search for specific precarious cores and also successful constellations in the sense of prevention and salutogenesis has been proposed." PRÖLL & GUDE 2003, 173)). Similarly, the rather reductionist research designs, which focus on the immediate organizational environment, no longer seem to do justice to the constantly growing diversity of working conditions; they ignore possible "remote effects" of stress and strain on health status and do not include, for example, the family environment. There are also complaints in state occupational health and safety that elementary questions of modern prevention are easily neglected (see above).
Apart from the fact that mental illnesses are becoming increasingly common, experts believe "... that seven out of eight heart attacks in middle age could be avoided with an appropriate lifestyle, ... According to estimates, cardiovascular diseases could be reduced by 30-50% through appropriate preventative measures." (BAuA brochure: "Mastering the future with experience" 2004, 32). This means that prevention can actually improve health status and at the same time 30-40% of sickness-related absences could be avoided (BAuA brochure: Mit Sicherheit mehr Gewinn. Dortmund 2004, 20).

The present study by Grossarth-Maticek and Vetter takes up the above-mentioned aspects insofar as it provides a basis for the required paradigm shift through years of research work (including numerous longitudinal studies) by presenting statistically proven, far-reaching findings for improved prevention, but also presents possibilities for implementation in practice through its own theoretical concept.

International medical sociology research repeatedly varies the relationship between stress and resources in different topics. Stress refers, for example, to performance requirements and obstacles in working life. Resources are understood to be protective factors such as the ability to recover (ERTEL, JUNGHANS & ULLSPERGER 1998).
Other studies speak of dysstress in working life when there is a mismatch between the person and the working environment (theory of person-environment fit, FRENCH, Caplan, van Harrison, 1982). This includes, for example, the degree to which abilities and skills match the requirements of working life.

Dysstress is generally explained in modern medical sociology and occupational psychology studies as the result of the interaction of high stress and low resources.

Karasek and Theorell, for example, present an interaction model between two variables, namely the possibilities for control and the demands in the workplace. The combination of high demands and high control, for example, is referred to as active and reduces dysstress. Dysstress means high work demands with low control possibilities (KARASEK & THEORELL, 1996).

Over the past 20 years, Johannes Siegrist and his research group have developed the stress theory model of occupational gratification crises and tested it in extensive epidemiological and experimental studies. As described in detail in his book 'Social Crises and Health' (1996), the

focus of this stress theory concept lies in the connection of basic functions of positive self-regulation of people with their social environment in the medium of social roles.

Three central functions of self-regulation relate to the experience of self-efficacy, the experience of self-assessment or self-esteem and the experience of self-integration into a group/community. Siegrist's core thesis states that successful self-regulation is mediated by these three functions due to the social nature of human beings in a social-communicative field and is thus realized by acting in social roles. The unequal availability of social roles is mediated by the macro-social stratification and inequality structure of a society. Central social roles in adult life are the partner and family role, the employment role, membership roles in organizations, etc. Using the employment role as an example, it is postulated that, in a favorable case, options of positive experiences of self-efficacy, self-esteem and stress-physiologically significant effects on the organism, mediated via negative emotions and neuroendocrine or neuroimmune processes, are associated with it. The model of occupational gratification crises starts at this point: The gainful employment role forms a prime example of a social exchange relationship based on the principle of reciprocity: Required performance is provided in return for reward. The model of occupational gratification crises postulates that this social reciprocity is violated in the working life of certain occupational groups or under certain conditions: There is an imbalance between high effort on the one hand and inadequate reward on the other. This affects at least the aspects of positive self-efficacy and positive self-esteem. This imbalance is maintained under three conditions: First, if the worker has no alternative to this unfavorable occupational situation; second, if this unfavorable situation is maintained for a certain period of time for strategic reasons; and third, if a certain psychological attitude pattern (exaggerated occupational control strivings) impairs perception (and thus the realistic assessment of demands and reward opportunities) due to achievement striving and the need for recognition. Good overviews can be found in TSUTSUMI (2004) and v. VEGCHEL (2005).

In four prospective studies and around 30 other epidemiological and experimental studies (some as case-control studies, some as cross-sectional surveys, some as intervention studies), the model of occupational gratification crises has so far been tested internationally with regard to various disease risks. In general, it can be said that the risk of cardiovascular disease, cardiovascular risk factors, depressive illnesses and gastrointestinal disorders is between 50 and 300% higher in employees who suffer from corresponding stress levels - depending on the population and clinical picture. There are also increased relative risks with regard to self-assessed unfavorable health, psychosomatic complaints, musculoskeletal complaints and burn-out symptoms. Experimental studies also show increased systolic blood pressure and heart rate values as well as reduced heart rate variability values during work in people suffering from occupational gratification crises (ambulatory monitoring).

There are also initial indications of increased excretion of stress hormones in saliva. An overview of the most important research results available to date on the model can be found in: SIEGRIST/THEORELL (2001), MARMOT (1999) or SIEGRIST (2001).

Recently, this medical-sociological concept has been transferred or extended to non-occupational social roles, primarily partner and parental roles as well as other social roles in civilian life. Results on possible health effects are not yet available. Overall, the work represents a theoretically based contribution to social epidemiological research into socially unequally distributed disease risks in modern societies. With the scientific bridging concept of social reward deficiency (see SIEGRIST, 2000), Siegrist's research aims to make a contribution to linking the psychobiological and sociological levels of human disease and health promotion.

This integrative research approach, based on a biopsychosocial model of health and illness, provides important new impulses for prevention, primarily in the area of workplace health promotion, but also in the increasingly important area of creating the conditions for healthy ageing.

Studies that only relate stress to resources are interesting and relevant, but insufficiently differentiating because they do not include other essential aspects.

Pröll, Gude & Ertel undertake an important differentiation of the "stress at work" model by incorporating the model of self-regulation largely developed by Grossarth-Maticek. Here, self-regulation is understood as a requirement-related, cognitive-emotionally controlled self-activity that interactively influences both stress and resources (PRÖLL GUDE 2003).

The current stress-strain model (ERTEL, BEERMANN, FREUDE 2004) initially serves as a basic orientation for the theoretical framework and the specific scientific objectives of our work. Mental stress is understood to be the totality of all detectable influences that come from outside and have a psychological effect on a person (definition according to DIN EN ISO 10075-1: 2000).

In the area of working conditions, there are different areas of mental stress, e.g. work tasks, type and scope of work, working environment (physical and chemical effects), work organization (regulation of working hours ...).

Different influences affect a person and trigger psychological processes in them, whereby it is always difficult to determine which psychodynamic processes control a person, so that they react very differently to certain stresses.

Mental stress is defined as the direct effect of mental strain on an individual depending on their respective long-term and current conditions, including their individual coping strategies (definition according to DIN EN ISO 10075-1: 2000).

Mental stress is influenced by different individual characteristics, behaviors and psychodynamic processes (e.g. abilities, experiences, motivations, coping strategies) Other factors such as health status, age, eating habits, etc. also play a role. Furthermore, psychological, physical, genetic and social conditions determine mental stress. It is also influenced by individual coping strategies with which a person specifically uses certain behaviors to solve problems (SCHEUCH 1997).

The effects of psychological stress on the individual can have positive and negative consequences in the short and long term, depending on the individual's long-term and current conditions and behavioral strategies. Positive consequences include, for example, well-being, activation, exercise, further development of physical and mental abilities and health maintenance.

The negative consequences of stress in relation to strain include, for example, fatigue, mental and physical exhaustion, stress, impairment of health, etc.

The theoretical stress-strain model provides useful information on how to organize work with a view to reducing mental stress and positive stress management, e.g. by optimally exploiting or influencing human resources.

Two further terms that are of central importance to the sociology of work are stress and resources. Resources are to be understood as supporting factors in coping with work demands, i.e. as protective potentials against over- and under-demanding burdens, so that potential stressors are pushed back (RICHTER 2000). The European Commission defines stress as a state characterized by high levels of activation and strain and often associated with the feeling of being unable to cope with the situation (Directorate-General V, 1997).

Under the aspect that the extremely changing world of work leads to completely new burdens/challenges (e.g. dealing with ambivalent conflicts of objectives), Kriegesmann demands, among other things, that the previously neglected field of health policy, the potentials of health, be given more consideration (KRIEGESMANN 2003c). This is not only important from the point of view of changing forms of work, but also in view of the demographic development, this demand for a fundamental reorientation is justified. "From an economic point of view, companies will be 'forced' to create conditions that enable employees to grow older in a healthier way or to (learn to) manage their own resources throughout their lives (SIEGRIST 2002, 10).

Despite the success of occupational health and safety approaches, particularly in the area of traditional working conditions and their stresses, which have so far been largely geared towards avoiding risks, the proportion of early retirements caused by mental illnesses, for example, is increasing; the World Health Organization (WHO) and the International Labour Organization (ILO) have also pointed out that work-related stress and mental disorders have become epidemic among employees in the last ten years as a result of globalization, automation and increasing mechanization. (ERTEL & PRÖLL 2004).

Previous concepts have obviously not been able to halt this development, as KRIEGESMANN notes: "If the case study results are pooled, contradictions between the explicit knowledge about

safety and health and the actual patterns of action of individuals become clearly apparent."
(2005, 48).
In line with the salutogenesis concept (ANTONOWSKY 1979), factors that promote a healthy
lifestyle in the sense of sustainable health literacy are moving into focus; the influence of
lifestyle on health is becoming increasingly evident. "Today, it is assumed that around 30 - 50 %
of cancers are linked to malnutrition or the use of addictive substances (cf. HANKEY 1999;
WORLD CANCER RESEARCH FUND 1997), and an unhealthy lifestyle is held responsible for
around 60 % of all new cardiovascular diseases." (Kriegesmann 2005, 18) and "in addition,
there is the obvious perspective of building up health resources, which - in a more potential-
oriented approach - makes employability in changing occupational fields possible in the first
place." (KRIEGESMANN 2005, 11 and others based on UDRIS 1999).

"Health and illness are never one-dimensional consequences of stress, but should be seen as a
"dynamic balance between demands and the availability of suitable resources as a prerequisite
for performance" (cf. BRÖDNER, 2002), Kriegesmann notes the following with regard to
resources: "... the level of available human resources thus represents an important and obvious
lever of (company) health policy, which goes far beyond approaches aimed at risk avoidance."
(2005, 33).

The starting point is considered to be the individual person who must learn to deal with the
changed conditions and, according to Ertel and Pröll (2004), should change/expand the
individual coping repertoire accordingly, whereby KRIEGESMANN rightly asks to what extent
the individual's competencies for self-control are sufficient to be able to deal with the changed
requirements (2005, 14). Simply imparting "knowledge about" is not enough to lead to lasting
changes in behavior; rather, self-competent behavior must be a prerequisite (KRIEGESMANN
2005, 19).
On the one hand, however, the difficulty lies in the fact that behavioral changes in health
behavior represent a particularly difficult hurdle, as the pressure to act is often not considered
great enough by those affected (Kriegesmann 2005, 27), on the other hand: Health-damaging
behaviors "are deeply anchored in people and are difficult to change" (DECKER & DECKER
2001, 49). "The willingness to act in a safety and health-oriented manner is therefore not the
result of a rational assessment of objectively foreseeable consequences, ... but is subject to
numerous subjectivisms and distortions resulting from the interaction of individual motive
structure and situational perception and evaluation." (KRIEGESMANN 2005, 4).
The following factors/aspects are also mentioned in connection with health literacy or in the
context of resources: 'deep-structural' control variables of individual action competence
(KRIEGESMANN 2005, 30), cognitive control beliefs (e.g. optimism, self-esteem (see 31
above), action patterns (RICHTER AND HACKER 1998), but social resources naturally also
play a role alongside physical risk factors. (e.g. ILLMARINEN TEMPEL 2002).
The so-called burn-out syndrome represents a risk constellation that is obviously linked to a
breakdown in self-regulation. It appears to be increasing dramatically in the flexibilization
process of the modern working world, in which extreme work intensity is associated with blurred
competence expectations (PÖLL and GUDE 2003). Burnout is described in the medical-
sociological literature as a psychophysical condition that is worthy of illness, in which various
symptoms occur, e.g. emotional exhaustion, severely restricted work and performance capacity,
coupled with sub-depressive symptoms, such as overstimulation, withdrawal behavior, etc.
(MASLACH and SCHADE 2003). (MASLACH and SCHAUFELI 1993). There is a gradual
depletion of resources, whereby burnout always presupposes a 'burning out'. The symptoms are
linked to various behavioral and experiential elements, such as an increasing inability to
distance oneself from negative and stressful situations and behaviors, an inability to recover
(e.g. sleep disturbances), feelings of anxiety, etc. In addition, there is the subjective experience
of a severe personal crisis that no longer allows the continuation of existing coping practices,
resulting in a collapse of work-related resources and one's own sense of efficiency and
competence.
Siegrist considers burn-out syndrome to be the final stage of a problematic career of exhaustion
(1996). The following factors, which were recorded by the "RGM self-regulation and health"
questionnaire, describe variables that are associated with burn-out syndrome: mental and
physical exhaustion, inability to recover, inability to separate from factors in professional life with

negative consequences, excessive demands experienced in professional life, low well-being in professional life, low pleasure, pronounced displeasure and uncontrollable anxiety. Both in Study B and in the randomized experiment, these factors correlate positively with the development of chronic illnesses. In the randomized experiment of Study B and in the company model (see below), measurements before and after the intervention showed that, among other things, factors describing burn-out syndrome were also significantly reduced.

Final quote:
"Health-oriented behavioural changes that are not merely temporary until the (supposed) alleviation of symptoms, but are internalized into the routine behavioural repertoire, as it were, only result from reflecting on the effects of one's own lifestyle. This means that "staying in dialog with oneself", evaluating one's own behavior, etc. are important foundations for long-term safety and health-oriented behavior." (KRIEGESMANN 2005, 50).

The content of this study is based precisely on the concepts outlined very briefly here:
The available data provides the basis for a concrete concept that can be used to identify the factors that are the cause of, among other things, a lack of competence to act (and which are therefore 'treatable'). If these can be specifically changed, for example through autonomy training, a kind of snowball system is set in motion, which almost inevitably moves in the direction of strengthening resources, stress management mechanisms and maintaining health on a very broad basis.

~~2.2.~~2.5   Family-dynamic and personality-related approaches

Personality-related, standardized test systems, which are mostly based on self-response, have produced relatively weak results in the international literature on personality and illness. In a prospective study, Amelang et al. applied various standardized measurement instruments from the international literature and came to the conclusion that their predictive and differential potential for predicting chronic diseases (especially cancer and cardiovascular diseases) was rather weak (AMELANG 1997). In the years 1965 - 1972, when the measurement instruments of the Heidelberg studies were developed, Grossarth-Maticek was also convinced that the standardized form of different questionnaires for the prediction of chronic diseases and maintenance of health into old age were relatively useless (e.g. because grievances and different emotional states could not be controlled during the questioning). Likewise, most of the standardized questions only covered certain partial aspects and not psychodynamic processes due to intensive questioning on the self-construction of personality variables and the way they were recorded in the interview process. Nevertheless, the content of many variables coincides with later studies and theoretical concepts. Some question constructs were also developed based on existing psychodynamic concepts (e.g. the concept of rejection and attachment was developed in cooperation with and based on the models of STIERLIN (1982)).

2.6 The novelty value of multidisciplinary research

To summarize, the most important novelty of Grossarth-Maticek's multidisciplinary studies is the *scientific proof* that the phenomena observable in reality are the results of complex interactive effects in which monocausal effects often dissolve or diminish depending on the context, so that they can no longer be viewed in isolation but in an interactive context.

In this section, the implicit criticism of monocausal, monodisciplinary research concepts with regard to the insufficient consideration of context dependencies will be clarified by presenting our own concept, as well as the possibility of integrating existing scientific approaches into multidisciplinary research and intervention systems.

The so-called established monodisciplinary health research usually records a risk factor (e.g. cigarette smoking, lack of exercise, malnutrition) or a psychodynamic process (e.g. family rejection, attachment, lasting shock experiences, lack of a sense of belonging) or a behavioral complex that contains several elements in the form of a combined variable (e.g. recording burn-out syndrome or the behavioral complex of high expenditure and low reward). They control for a limited number of competing risk factors with the aim of demonstrating that the factor they capture is of high health relevance. The multidisciplinary research conducted by Grossarth-Maticek regards this state of affairs as an illusion (monocausal fatamorgana) for the following reason:

If not only individual but a large number of competing factors are included in the analysis, i.e. if complex context dependencies are taken into account, then the effect of individual monodisciplinary impact factors is often insignificant, although it was identified as highly significant bivariate or even when controlling for a limited number of risk factors. Sometimes there is even a repressor effect that reverses the effect of the risk factor (from a significant risk factor to a significant positive factor). Such effects were demonstrated in this study using the example of rewards in the work process (see Chapter 5.8).

Many other analyses not presented in this paper show the same result, e.g. that the effect of burn-out syndrome, family stress and chronic diseases (which are relevant for certain types of cancer) lose their monocausal function in the process of disease development and become extremely dependent on the context of other risk and positive factors.

While individual, monocausally and monodisciplinarily defined risk factors generally reduce or lose their significance when a large number of other relevant risk and positive factors are taken into account, the significant predictive ability increases when the entire recorded interactive system is taken into account (the more variables are taken into account, the better the predictive ability).

The preventive intervention also shows that a large number of different variables from different areas changed during the intervention when preventive effects were achieved. (While changes in individual areas that are not able to affect other areas do not have a major impact).

The novelty value of these results means that monodisciplines need to be motivated to integrate in order to relate their valuable individual results to other disciplines in the overall interactive context. Multidisciplinary intervention measures need to be developed.

With regard to the methodology, the novelty value is the so-called prospective intervention study (see Chapter 4) and the conditions of data collection in the interview process (preliminary interview, explanation of questions, etc.) (see 6.4.)

The present studies show interesting results in comparison to research projects by other authors, who are generally unable to identify factors from other areas (that do not directly belong to their discipline) that compensate for or reinforce their risk factors. This applies equally to scientific work from medical sociology, such as Karasek and Theorell's stress model or Siegrist's model of occupational gratification crises, as well as other risk factor research, such as that relating to the harmful effects of smoking on health. The medical-sociological stress models have generally been recorded in prospective or retrospective studies and their health-relevant effects evaluated, but have only very rarely been coupled with experimental interventions, e.g. by reducing the recorded stress through targeted interventions in randomized experiments. Surprisingly, this methodological deficiency applies not only to medical sociological studies, but also to research into relevant risk factors such as cigarette smoking. In the absence of experimental interventions and the realization that a large number of competing

risk factors are effective in complex systems, it is difficult to speak of proven causes in international epidemiology; rather, the results should be described as impressive correlations.
In the context of autonomy training, one of the novelties is the realization that the symptoms are dependent on and can be influenced by the form of communication and that training effects are therefore only possible if alternative forms of communication are defined and practiced.

Based on these assumptions, the relevant occupational sociological and occupational health risk and positive factors are not analyzed and presented independently of context, but are considered in their interaction with other factors and influenced by interventions.
Note:
A precisely defined separation, e.g. between stress and resources, which is clearly described in the medical and occupational sociology literature and in many respects contributes to clarity in the analysis, is not readily possible in the multidisciplinary statistical analyses because major interactive dependencies occur (since resources and stress also have an interactive relationship). For this reason, too, the focus was placed on interactions and mutual dependencies between occupational variables and variables from other areas, in which the involvement of occupational factors in the health process was not only statistically proven, but it was also shown that the effect of some seemingly objective factors is relativized by the analysis of their interactive context dependencies.

Of course, there is an awareness that even the variables recorded by Grossarth-Maticek represent less than a fraction of the real causal relationships in view of the enormous complexity of interactive systems. However, the fact that effective prediction and intervention can be achieved with the available data is a major step towards optimization.

The above arguments illustrate the relationship of Grossarth-Maticek's multidisciplinary intervention epidemiology and preventive behavioral medicine to so-called 'established' research directions.

This shows that the concept cited here by no means claims a scientific outsider role by 'only' offering an alternative concept, but itself lays claim to a leading role in the field of multidisciplinary intervention epidemiology, which is of the utmost scientific importance and practical urgency. Here an integration approach of monodisciplines is achieved, without which many practical objectives and scientific findings would not be possible.

3 Own theoretical concept

Obviously, existing monocausal approaches cannot adequately explain different phenomena and their complex histories.

One of the primary tasks, not only of epidemiological science, is to be able to predict phenomena and to provide appropriate options for influencing them if necessary.

The theoretical basis of multidisciplinary epidemiology consists on the one hand of a fixed basic framework (e.g. the theory of pleasure-displeasure management) and on the other hand of a variable part that is reorganized depending on the specific analysis (e.g. the question of what role stress plays in the development of disease or in the explanation of interactions in connection with the development of certain types of cancer).

The initial research question was: What factors play a role in the development of illness and health, assuming that both illness and health are phenomena of extremely complex systems of effects that can be better understood if their genesis is considered.

After Grossarth-Maticek identified the interactions of certain psychological dispositions with physical risk factors in connection with specific diseases (e.g. heart attack, cancer) in the early years of his research, he developed both a theoretical framework and measurement instruments (cf. for example the questionnaires in the appendix "RGM self-regulation and health" and "RGM professional life, personality, family"), which on the one hand enabled him to describe psychological dispositions and dysstress in an increasingly specific way and on the other hand delivered good results in terms of predicting the development of illnesses. The special feature here is that the focus of multidisciplinary epidemiology, the method of which is directly associated with the name Grossarth-Maticek, is on the interactions of the most diverse systems with the main aim of developing effective preventive medicine.

At the same time, he developed the tried-and-tested intervention method of autonomy training, in which he specifically changed certain factors that were important based on his research findings.

THAT the areas/factors of health, illness, psyche and body, stress, success, sustainable work ability, personality and social environment, among others, are interconnected and influence each other is difficult to deny.

In the following, a concept is presented that offers a possibility of HOW these areas can relate to each other and how they interact.

The investigations focus on four main areas:

Work, family/personality, physical and health/illness.

3.1 Theory of the interactive areas

We assume that the areas of work, family, personality and physicality interact. Both within the individual areas and between the areas themselves interact and form complex interaction systems. Certain phenomena are caused by the specific nature of the interactions.

Interactive area: Family of origin
Some central aspects and their interactions are relevant in the individual's communication with their family of origin.
The subjective memory of childhood communication between the individual and their parents is of great importance. Based on Helm Stierlin, an interaction model with the factors experienced rejection (the person does not feel accepted, recognized or accepted by the parents), experienced excessive attachment (very high expectations are placed on the person and they are emotionally bound by the parents, i.e. not let go) and experienced autonomy with loving acceptance are differentiated here.
Another important memory factor is whether there was physical contact between the child and its parents (e.g. affectionate carrying in the arms, long periods of breastfeeding).
The parent-child relationship experienced in the present also plays an important role (e.g. whether childhood in the present is experienced as fun-filled and providing security or as unpleasant and causing insecurity).
The factors mentioned interact with each other. For example, it is assumed that loving, autonomy-stimulating communication in the parental home with affectionate physical contact and pleasant memories of childhood is an interactive factor for maintaining health (and vice versa).

The family impact factors (especially those from early childhood) are of great and particularly lasting importance because the child experiences emotions of the greatest intensity in communication with its parents, but is still insufficiently developed rationally to understand the situation, e.g. experiences of rejection. As a result, needs of the highest emotional significance can remain blocked for a lifetime. An extremely close bond between a child and its parents can also cause lasting affective problems that can have an impact into professional life. Flexibility and autonomy learned in the family environment can also strengthen resources in professional life.

Interactive area: Work
In this study, various factors are recorded that are directly related to dysstress. These are variables such as: negative communication in the workplace (e.g. pressure of expectations and work pressure, non-transparent flow of information in the company, lack of reward/recognition, lack of perceived opportunities to shape and influence the work process) or burn-out syndrome (e.g. mental and physical exhaustion, ability or inability to recover, inability to separate factors in professional life with negative consequences, perceived excessive demands in professional life, low level of well-being in professional life).
Positive communication in the workplace is characterized, for example, by recognizing employees' strengths and compensating for weaknesses. When positive communication is coupled with individual behaviour, which is characterized, for example, by a high level of integration of activated skills with professional requirements, this leads to pleasant feelings, such as a sense of well-being in professional life and a strong sense of belonging. In such a system, the individual develops a self-active career design, is given sufficient scope for creativity and experiences rewards.
When we talk about stress in this interactive area, we primarily mean the subjectively experienced influences that affect the individual from outside (e.g. through communication with colleagues), but we also take into account factors that fall under the term "circumstances" in occupational sociology terminology.
The *subjective reactions* to stress can be divided into two areas:
a) Reactions of excessive demands - dysstress and
b) Reactions based on the individual's potential (e.g. abilities). These potentials are referred to as resources. This area includes factors such as needs-oriented working life, pronounced

flexibility, ability-oriented working life, high work motivation. The individual factors interact closely and influence each other.

Dysstress includes factors such as excessive demands in professional life, mental and physical exhaustion, inadequate ability to recover, excessive demands experienced in professional life....

In the statistical evaluation of the data, either the interaction of experienced external influences (strain) and the subjective reactions to working conditions (resources and dysstress or eustress) is assumed or an additional division is made in which the subjective reactions are further divided into eustress/dysstress and resources, so that in this case the interaction of three factors is assumed (strain - resources - stress), whereas in the former division two factors are assumed (strain and subjective reaction).

The interplay between stress and subjective reactions at work is important in the development of illness and the maintenance of health, and the areas can compensate for each other, as has been shown.

Ratio- Behavioral changes

Whether a person's career development opportunities are inhibited or promoted depends on two factors:
- the subjective reactions to stress (see above) and
- the operational circumstances and conditions. Factors such as a transparent or non-transparent flow of information are important here. Certain conditions can block a high level of work motivation, give the individual no opportunities to shape their work, do not reward them sufficiently and still exert a high level of work and expectation pressure. Negative conditions in the company and in social communication are characterized by the fact that weaknesses are sought/underlined (e.g. in the form of demotivating criticism...) and strengths are overlooked/negated.

As described above, there is a permanent interaction between one's own active behavior in professional life, the conditions and circumstances found in the company and the subjective reaction to both.

It can be statistically proven that in the case of behavioral interventions, the behavior-dependent variables are more likely to be changeable, while the relationship factors, such as insufficient information flow in the workplace or inadequate reward systems, tend to remain uninfluenceable. This presupposes that both behavioral and relational changes must be targeted as part of an optimal intervention.

interactive area: Personality

Here, typical behavioral patterns interact with experience structures, individual abilities/competencies and external factors.

Typical behavioral patterns that are repeated in various forms include a tendency to suffer in isolation, an inability to distance oneself from disturbing objects, egocentric self-centeredness, inner autonomy (independence from external determinations, etc.), the ability to self-regulate (e.g. the ability to integrate rational and emotional parts in such a way that the confrontation of both emotions does not lead to permanent, insurmountable conflicts), rational-antiemotional or emotional-anti-rational behavior.The ability to integrate rational and emotional components in such a way that the confrontation of both impulses does not permanently lead to insurmountable conflicts), rational-antiemotional or emotional-antirational behavior (see 3.2.5 or Grossarth's typology theory (2000)).

Individual skills and competencies are, for example, the ability to cope with stress, to enjoy pleasure, but also to practice renunciation, blockages in the correction of behaviors with negatively experienced consequences or the ability to achieve states of well-being through self-activity.

Personality-related experience structures are, for example, the ability to experience pleasure/well-being, love and self-love in certain intensities, stimulation/inhibition of lust for life, chronic emotional pain.

External factors influencing personal behavior: Shock experiences, social isolation.

Other behavioral dispositions (personality factors) also interact with the areas described above, e.g. the ability to love (self-love, love for parents, partner, God) and forms of religiosity. People

who are able to express their loving feelings and have a loving and supportive relationship with the image of God they experience are also more successful in coping with stress (see "Relevance of religious attitudes" 6.2).

interactive area: physical risk factors
The following factors are included in this area:
Consumption of stimulants and medication (cigarettes, alcohol, coffee / stimulating, inhibiting psychotropic drugs, aspirin)
Physiological data (blood pressure, total cholesterol)
Nutrition and physical activity
Previous organ damage / chronic illnesses at the time of the interview (e.g. diabetes melitus, liver cirrhosis)
Family history of chronic diseases
The factors mentioned interact in relation to the development of serious chronic diseases and have a specific function in relation to the development of certain diseases (e.g. chronic obstructive bronchitis in combination with pulmonary tuberculosis and cigarette smoking is a specific risk constellation for bronchial carcinoma)

3.1.1.3.1.1 The importance of interactions

The individual interactive areas, which already exhibit significant interactions in themselves, interact with each other in complex but empirically (statistically) ascertainable and diverse ways, as could be demonstrated in Study B and in parts of Study A.
Although influences from professional life are highly relevant for health and illness, it can by no means be assumed that these act independently of other relevant factors from family, personality and physical risk factors.
Certain experiences and experiences from the family of origin form specific personality dispositions that often last a lifetime. If the person feels isolated and rejected by a parent, e.g. the mother, and has the feeling of never achieving the desired closeness, then such a feeling can often be intensified in private life, e.g. in the partner relationship, as a tendency to suffer in isolation and rejection. It can find expression in personal behavioral dispositions, such as the so-called Type I behavior in the context of Grossarth's typology (suffering in isolation from desired, longed-for, but unattainable objects, so that the feeling arises of not receiving the desired attention despite the greatest effort and not being able to achieve it through the activated behavior). Family dispositions in interaction with personality factors (behavioral dispositions) can be directly transferred to behavior and experience in professional life and activated by certain experiences of rejection in professional life, so that, for example, experiences of isolation are particularly strongly activated in professional life. If, for example, a person feels rejected and unacknowledged by a parent, they may experience even greater psychological stress from a rejecting superior than a person who has not had rejecting experiences in the family and has learned to address communication problems. (see, for example, 5.9 "Influence of the family of origin on relationships in professional life").
A person with diabetes is more likely to be psychophysically exhausted under unfavorable workloads than a person without diabetes and regular physical training.
If a person smokes a lot, develops chronic bronchitis, also drinks alcohol, suffers from a lack of exercise and has a permanent malnutrition, then such risk factors not only affect the body (e.g. by promoting arteriosclerosis or stimulating cancer), but also have a massive effect on the psychosocial system, e.g. by generating unwillingness to work, increasing feelings of discomfort and anxiety, or reducing motivation to work. These psychosocial factors in turn have a motivating effect on the expression of risk or positive factors. For example, happiness in a partnership or the enjoyment of dealing with family conflicts can stimulate motivation to exercise, reduce cigarette smoking or change one's diet. Our results show a very close interaction between physical and psychosocial factors (Section 5.1). It can be assumed as very likely that physical risk factors can increase psychological stress in working life and weaken resources (and vice versa).

Formatiert: Nummerierung und Aufzählungszeichen

Due to the complex interaction of professional life, family and personality influences in combination with physical risk factors, there is a high and effective potential for preventive intervention, because preventive intervention, including autonomy training, is conceivable for various factors that are of central importance to the individual. For one person, for example, a pleasure-related and creative change in communication with a superior; for another, a greater focus on their own abilities; for a third, a reappraisal and creative change in communication with a parent and for another, physical activation and a change in diet can be of such importance that an entire system changes in the direction of health (by strengthening resources in professional life in such a way that they take on a stress-reducing function).

~~3.2.~~3.2 Theme of pleasure-displeasure management

The human organism, as an extremely complex interaction system, develops an enormous number of needs on different biological, psychological and social levels (for example, to minimize the constant tensions between the actual and desired state).

We assume that the *goal of a socio-psycho-biological individual is to achieve a maximum level of interactive satisfaction of needs (in different systems) that leads to pleasure and well-being, so that ultimately a sense of well-being can be experienced.* The organism also repeatedly attempts to eliminate or circumvent sources that lead to acute or long-term inhibitions of need satisfaction.

The central nervous system systematically registers sources of displeasure and pleasure and relies in particular on emotionally and cognitively stored information (e.g. in the limbic system). In the process, *the qualities of pleasure experienced as the highest in the individual's life history* (from memory) *are activated again and again and an attempt is made to repeat them or to recreate them in a similar way* (e.g. with similar objects or objects associated as similar that originally evoked strong pleasure reactions). Similarly, sources of extreme unpleasure are stored in the memory, whereby an attempt is made to avoid them in the future.

The way in which a person tries to achieve these goals (partly through very complicated emotional-cognitive behaviours) characterizes the personality to a very high degree, as people seek/avoid their sources of pleasure/displeasure in a wide variety of ways; just as the fingerprint is unique to a person, *pleasure/displeasure management is unique because it is learned in fundamentally different communication conditions and is lived accordingly on an individual basis.*

The pleasure-displeasure theory does not only refer to the explanation of the consequences of pleasure-displeasure experiences (e.g. depression or good self-regulation), but also analyzes people in their social-communicative system. Sources of pleasure or displeasure arise in primary family communication as well as in school, training, at work or in people's public activities. It is therefore of central importance for problem solving of all kinds in which communication systems people strive for and achieve pleasure, well-being, security and development and in which systems blockages occur.

The interactive interplay of different factors is represented in the central nervous system, where it is recoded into pleasurable and unpleasurable experiences. These experiences are in turn interpreted cognitively.

The specifically experienced pleasure/displeasure relationship is a central driver of human behavior and allows us to explain motivations and actions.

The relationship between pleasure and displeasure in the dynamic experience image

The pleasure-unpleasure relationship is also represented in the dynamic experience picture. When hope for satisfaction is experienced, more pleasure qualities are implied, while displeasure predominates in resignation. An unemployed person who has high expectations in their professional life, for example, but is constantly exposed to rejection, has a higher potential for displeasure than an unemployed person who develops sources of pleasure in other areas. Different experiences from the past, situations in the present and the anticipated future are represented in the emotional-cognitive experience, which has a corresponding dynamic component.

An unpleasant, painful experience that cannot be corrected by behavioral strategies can be represented interactively with physical factors in the organic area.

The pleasure/displeasure ratio as an expression of an interactive balancing of risk and positive factors

Whether a person suffers massively from sources of displeasure without pleasurable compensation or whether they predominantly experience well-being and pleasure is also largely dependent on the interactive effect and existence of different risk factors (which are associated with the onset of chronic illnesses) and positive factors (which correlate with health into old age). In the experienced pleasure/displeasure relationship, there is a kind of resulting balance between risk and positive factors both in terms of the quality experienced and the intensity experienced. These correlations are statistically verifiable. For example, we were able to show that reactions (whereby factors such as well-being and pleasure experiences play a central role) are highly dependent on conditions (circumstances) and risk factors.

This general theory is important for analyzing the effects in the different areas presented above. For example, it can be shown that negative communication in the workplace is linked to an accumulation of unhappiness, while positive communication and high resources are linked to well-being at work. A reduction in physical risk factors, an improvement in family communication or individual self-regulation also ultimately always has the effect of increasing the potential for pleasure.

The pleasure-displeasure relationship is also highly relevant for diagnostics and therapeutic training measures because it represents the *interface between impact factors* such as lack of reward in working life and subjective conversion into emotional-cognitive areas of experience.

The pleasure-unpleasure-oriented behavior can also become a source of considerable dysstress. For example, a chronically activated and simultaneously blocked desire expectation in relation to objects of the greatest emotional significance is not only an extremely pronounced dysstress, but also empirically proven to be an important interactive source in relation to the development of chronic illnesses. Such behavior is usually found in type I of Grossarth's behavioral typology. (see chapter 3.2.5)

Lust aberrations

Individual activities are often developed in the expectation of increasing the feeling of pleasure, well-being and safety, but the opposite occurs: Massive displeasure. Here we speak of individual pleasure aberrations. It is often the case that people only become aware of this often insidious mechanism at a late stage or sometimes not at all.

Family influences in early childhood play a role in pleasure-displeasure management. If a person feels rejected and unaccepted when expressing emotionally intense needs in childhood, they can react hypersensitively to experiences of rejection by emotionally significant people throughout their lives and develop such a fear of rejection that they strive for harmony with others at all costs.

If a person feels overly attached to a parent and has an (overly) strong loyalty to this parent, then such a person can make a lifelong effort not to develop a close emotional bond and loyalty to other people (so as not to create competition with parental loyalty, which would be experienced by the person as a break with the parent). In this context, we speak of an attachment-loyalty fixation, while in the case of rejection experiences we speak of a rejection fixation. (Often both forms of these fixations occur in combination).

While traumatic experiences of rejection and/or excessive loyal attachments to a parent can affect a person over a long period of their life, autonomous communication in early childhood (loving recognition without claiming excessive attachment and loyalty) largely protects against these forms of fixation and forms the basis for autonomous, health-promoting self-regulation. Only autonomous communication enables a successful and loving detachment from both parents.

In the case of unresolved experiences of rejection and/or attachment, the adult has two basic behavioral options:

I Traumatic experiences of rejection:
In current communication with emotionally significant people (in private or professional life), the conflict from childhood is reactivated. For example, rejection by a partner or superior is again actively produced, which - as learned in childhood - is followed by emotional suffering. When this happens, there are again two possible reactions: the person falls into uncontrollable suffering and massive unhappiness is activated (e.g. in the form of fear, despair) or (and this is the "positive variant") the person receives attention and can express their own feelings, such as fear and love. In this case, pronounced feelings of pleasure can arise. (However, this does not mean that all the rejection experiences from childhood no longer have an effect and that there can be no renewed projections of other childhood traumas into the present).

People whose behaviour is strongly motivated by experiences of rejection are more likely to try to establish harmony with different people to whom they are loyal, even if these people are in mutual conflict (e.g. between spouse and mother-in-law). Here we speak of a *harmonizing loyalty conflict*.

II People with *strong loyalty and attachment* to a parent show a marked tendency to devalue all objects/persons that stimulate them in the present in order to avoid competing emotionally with the central parental object. We call this mechanism, in which every object/person compared with the parent is permanently negatively devalued/rejected, the *polarizing loyalty conflict*. (For example, spouses can NEVER achieve the quality of the mother).

There is also another way to deal with unprocessed rejection or/and over-attachment in the present: Avoidance:
This strategy avoids all people who evoke strong emotions and instead enters into relationships that neither activate rejection experiences nor pose a challenge to a parent's emotional loyalty. Such behaviors are often accompanied by, for example, a lack of stimulation, negative pleasure difference or compensatory addictive behavior, whereby outwardly complete normality and social adaptability are feigned. Inwardly, however, this person is not happy because they largely refrain from expressing their most important needs or are unable to resolve their central conflict. This repeatedly leads to a state that we call ambivalent pleasure blockade (see below), i.e. the person is unable to develop positive feelings either with or without a close attachment figure. (For example: A wife associates (negative) characteristics of her own mother with her partner. Now she is in a highly ambivalent relationship with him: on the one hand she loves him, on the other hand he is a kind of "representative of her own mother" for her. Now a state develops in which the woman can neither distance herself from the maternal representative with pleasure nor is she able to live together with him with pleasure (as a husband). Such a state can, for example, trigger depressive reactions.

The way in which a person combines their experiences of attachment, rejection and autonomy is a highly individual process and we speak here of the individual pleasure/displeasure behavior strategy.
For example, one person may repeatedly manipulate rejections in order to then radically separate from the rejecting person, while another person may suffer when they are rejected, but then become active again, for example to meet new partners.

In the context of autonomy training, the individual pleasure/displeasure behavior and strategy is analyzed (by finding out, among other things, whether the person suffers more from experiences of rejection or from overly strong loyalty bonds) in order to then find optimal pleasure-generating forms of communication through which, for example, existing ambivalences can be resolved. *Multidisciplinary epidemiology is characterized by the fact that it takes into account the interaction of structural influences (e.g. family forms of communication, conditions in the workplace) on the one hand and individual experience and behavioural mechanisms (e.g. experiences of rejection or attachment) on the other.*

Correction blockage
It is normally to be expected that behaviors that lead to negative consequences will be corrected and/or abandoned by the person's own behavior (self-regulation). In the context of so-

called pleasure aberrations, in which positive consequences of behaviors are permanently expected, but which in reality lead to negative consequences, massive correction blockages occur again and again. In other words, *the person has a pronounced and consistent inability to give up behaviors with negative consequences*.

The more pronounced the so-called negative pleasure difference is (previous feelings of pleasure were more intense than the present and a feeling of displeasure predominates in the present) and the more pronounced the inhibition of pleasure-generating self-regulation, the more the person is geared towards compensating for the displeasure through addiction. The corrective blockade manifests itself with particular intensity.

Life tendency as a result of sources of pleasure and death tendency as a result of unbearable displeasure - relevance for health/illness

The pleasure/displeasure ratio not only expresses factors of a good or bad quality of life, but also has the highest health-relevant significance for the following reason: (Based on our research, we have observed the following trends)

If the interactively experienced unpleasure becomes emotionally unbearable (e.g. through negative, unbearable emotions) and there is no hope of achieving pleasure, then a feeling of no longer wanting or being able to live can arise, whereby this usually happens with continued social adaptation.

When interactive pleasure and the hope of pleasure dominate, a need for life and increased socio-psycho-biological integrity with positive health effects develop. Emotional-cognitive processes experienced in this way then give rise to new reactions that confirm or modify a behavioral direction.

But here too, the pleasure-displeasure system does not work monocausally (e.g. in the sense that unbearable emotions automatically lead to neurobiologically induced self-destruction). Inhibited and blocked pleasure usually initially leads to the compensatory activation of addictive potential (e.g. smoking, alcohol, drugs, medication, malnutrition). The negative organic consequences of addiction have a synergistic effect with the inhibited pleasure from social communication towards the development of chronic diseases. An individual weakened by addiction will exacerbate the listlessness.

3.2.1 Models for the development of disease

For the identification of risk constellations and for preventive interventions, *an empirically* tested **dysstress-addiction model** of disease development could be developed (both through multiple measurements at intervals and through prospective intervention studies):
In studies with follow-up data measured at annual intervals, a model of disease development, e.g. in relation to bronchial carcinoma or myocardial infarction, could be confirmed
 with high statistical significance (see Chapter 6.4). This step was necessary because a large number of different risk factors have a pathogenic effect, so that a theory about the temporal sequence of the risk factors, among other things, proved to be useful.
This shows, for example, that at the beginning there is extreme dysstress (e.g. from lasting shock effects and negative pleasure difference (fixation of pleasure expectations on a desired but unattainable object)),
This leads to the strengthening and new formation of various addictions (e.g. strengthening of addiction to food, alcohol, cigarettes) and intensification of other risk factors such as lack of exercise, malnutrition.
This is followed by the unpleasant consequences of addiction, such as nausea caused by malnutrition and physical symptoms due to the increase in cigarette smoking. This is where an inhibition/blockade of the ability to correct the behavior sets in.
The first organic consequences then develop, such as chronic bronchitis, a permanent increase in body weight, total cholesterol and blood pressure levels. In the final stage, synergy effects between increased psychosocial stress and irreducible physical risk factors can lead to the development of chronic diseases.
Two examples of the genesis of bronchial carcinoma and myocardial infarction will be presented:
Bronchial carcinoma: Initially, a massive dysstress appears in the life history, informing the so-called type I behavior. The person suffers from isolation from desired but unattainable objects. In order to reduce the isolation and facilitate everyday communication, the person begins to smoke, usually with increasing consumption. If they are exposed to passive smoking, they rarely protest and tend to smoke silently. The addiction to cigarette smoking is followed by the consequences of the addiction, e.g. chronic obstructive bronchitis. The damage to the lungs can be exacerbated by other co-factors, such as pulmonary tuberculosis. This is followed by a chronic corrective blockade, i.e. the person is neither able to reduce their dysstress through their behavior nor to reduce smoking, despite massive negative consequences (e.g. severe cough with sputum). In the state of permanent dysstress and organic damage, there is persistent mental and physical exhaustion with little ability to recover. As a result, both the dysstress and the physical symptoms develop in the direction of malaise, which can lead to a reduction in enjoyment of life. Statistically, we have been able to prove that people who suffer from dysstress, smoke actively or passively, suffer from chronic obstructive bronchitis and have previously had pulmonary tuberculosis or another lung disease and live in a state of chronic mental and physical exhaustion, with a regular increase in cigarette consumption, are highly significantly more likely to develop lung cancer than people who have only one of the above factors.
In the case of a heart attack, dysstress is also initially caused by helpless excitement caused by a disturbing object from which the person is unable to distance themselves (type II behavior). Following the dysstress, addictive behavior develops, e.g. in the form of cigarette smoking and malnutrition. The consequences of addiction develop, e.g. calcification of the arteries, obesity, increased cholesterol levels, lack of exercise.

The person is unable to correct either the dysstress or the addictive behavior. The negatively experienced consequences of dysstress and addiction are reinforced, reducing the ability to develop behaviors that produce well-being. Further risk factors can be added to this interaction cycle, which are only partly caused by dysstress, such as diabetes mellitus. Here, too, it can be shown statistically that the interaction between the above-mentioned factors is more likely to lead to heart attacks than if only one or no factor is effective.

Our research has also identified a second disease-causing model: The so-called **dysstress-ascetic model**:

Here, the person with massive dysstress behaves in such a way that they refrain from any addictive behavior and try with all their might to practice only health-relevant behaviors (e.g. regular exercise, healthy eating, abstaining from alcohol and cigarettes).

We call a third model of disease development: The **familial genetic model:**

In this case, people fall ill more frequently if they have an extreme family history.

Further statistical evaluations not yet presented in this paper will show the relevance and percentage share of the three models of disease development.

The model of maintaining health (non-addictive pleasure) describes a pattern of behaviour that is characterized by repeatedly achieved well-being and pleasure-based satisfaction, without addictive behaviour, with a pronounced ability to correct behaviours that lead to short-term displeasure or addiction. There is a pronounced capacity for mental and physical recovery. The desire to live and the need to live are strongly pronounced.

The empirical results strongly confirm the interactive behavioral models of illness or health presented here.

3.2.2 Interactive control processes in complex systems

In living, i.e. highly complex socio-psycho-biological systems, there are central control processes that perform different functions, e.g. the coordination of psycho-biological factors in order to achieve a desired goal.

Control processes can be identified at the biological, social and psychological levels of interaction in the socio-psycho-biological system.

On the one hand, the control mechanisms are the product of interactions between factors from different areas of life and, on the other, they actively influence the functional reorganization of goal-oriented processes.

In autonomy training, a method for creative problem solving by redesigning communication, control factors are first identified through analysis in order to then inactivate inhibiting control mechanisms and activate desired ones.

Emotionally and cognitively learned control mechanisms appear to be of central importance for maintaining health and creative problem solving in different areas of life. These are generally the product of brain functions based on interactive communication between the central nervous system and its environment.

To illustrate this, here is an example from the multidisciplinary intervention epidemiology of cancer: The type I behavioral pattern described by Grossarth-Maticek appears to be a central controlling factor that interactively influences other risk factors: individuals who suffer in isolation from desired and unattained objects smoke more, drink more alcohol, and are more likely to exhibit prolonged mental and physical exhaustion. If such people learn to resolve their isolation suffering in autonomy training and at the same time receive antidepressants, then an interactive control factor has been activated in the direction of maintaining health.

Such people are more likely to give up smoking, drink less alcohol and reduce their mental and physical exhaustion.

The analysis to identify control mechanisms (individual and social) and the multifactorial influence of these is of central importance in our multidisciplinary preventive medicine and in prospective intervention epidemiology. Without this identification, effective preventive medicine is not possible.

3.2.1. 3.2.3 Individual and professional self-regulation

By self-regulation we mean any individual activity related to the physical and social environment, as well as to one's own organism and person, which aims to influence conditions and increase well-being and reduce or eliminate sources of unpleasantness.

The human being is a self-active system with the ability to actively influence the environment and their own organism, resulting in changes and effects that lead to the satisfaction of needs. If an individual is able to achieve states through their own activity that activate a high level of clear and long-term sources of pleasure, then we speak of successful self-regulation. (If activities are

developed that activate sources of displeasure and block sources of pleasure, we speak of inhibited self-regulation).

Successful self-regulation implies, among other things, the development of complex behavioral strategies that lead to the satisfaction of needs and the triggering of pleasurable experiences in different communication systems.

The human being appears to be a communication system that strives for pleasure, well-being, security, meaningfulness and development, but which also repeatedly finds itself in situations in which displeasure and discomfort develop on a massive scale. Human self-regulation is always involved in such processes.

Self-regulation is learned in different phases of socialization. The first influences are in early childhood (possibly intrauterine), but certainly in the first years of life in communication with a parent who evokes the strongest emotions. Here, experiences such as systematic rejection and non-acceptance of the child can have a major and lifelong inhibiting effect on self-regulation. If, for example, certain emotional needs were not satisfied in childhood, these can persist for a lifetime and prevent the person from developing pleasure-oriented activities in other areas of life.

Shock experiences in childhood and adulthood also have a considerable influence on self-regulation because they block other areas of self-activity, e.g. through pre-occupation with a traumatic event.

Religious experiences can also either have an inhibiting effect on self-regulation (e.g. if they are associated with unpleasant experiences, e.g. with an incomprehensibly strict religious upbringing) or stimulate self-regulation enormously, e.g. if they are connected with a pleasurably experienced image of God (e.g. God as a source of love and creative intelligence).

Different social states (e.g. social isolation) and sources of experience such as well-being, inner autonomy, as well as conflict situations within the person (e.g. poor integration between rational and emotional elements) are both the result of a certain form of self-regulation and their cause in the complex interaction system.

If there is a chronic inhibition of self-regulation, then particularly negative emotional states can stabilize with a certain individual helplessness, so that they are experienced as no longer changeable (e.g. in the state of the so-called negative pleasure difference, in which the sources of displeasure appear dominant and are perceived as no longer influenceable).

Individual self-regulation mainly relates to dealing with one's own family, with physical risk or health factors and the activation or inhibition of certain personality potentials. Individual self-regulation also includes how people deal with the image of God they experience and their own active engagement with social and cultural norms.

Occupational self-regulation refers to people's own active interaction in the communication process of work and occupation. In the organization of work, people become social beings by performing in a society based on the division of labour and expecting rewards and, above all, social affiliation. In professional life, roles and expectations are formulated (e.g. high work pressure) and there are constant opportunities for interaction between structures in the workplace and the individual's own active influence on the work process. Here too, professional self-regulation plays a central role. It can fluctuate between extreme inhibition and extreme activation, between successful and unsuccessful. A person can, for example, suffer under extreme work pressure, not be rewarded for their own performance, be exposed to sources of interference and isolation, endure additional stress outside of work, be overburdened with tasks and not be able to compensate for the resulting mental and physical exhaustion at work through recovery. Such conditions indicate, for example, poor occupational self-regulation, regardless of whether they are caused by unfavorable conditions at the workplace and, for example, fear of losing one's job or by blocked individual self-regulation.

Successful professional self-regulation is indicated, for example, by a good integration of skills and requirements in professional life, a tendency to actively shape one's own career, needs-oriented work activity, the development of professional visions and a pronounced ability to separate negative and non-controllable factors.

In professional life, there are constant interactions between positive and negative states in professional communication (e.g. transparent information flow, unmanageable work pressure,

inadequate rewards for performance, blocking work motivation (e.g. through demotivating criticism), experienced social insecurity (e.g. fear of job loss) with elements of successful or inhibited self-regulation, i.e. self-active influence on professional communication. In the complex socio-psycho-biological system of the individual, a distinction can only be made between the individual areas of self-regulation (e.g. individual and professional) for didactic reasons. In reality, there is a permanent interaction of all areas in which self-regulation is manifested, i.e., for example, behaviors and motivations learned in the family can be transferred to the professional sphere and vice versa. Certain areas of inhibited self-regulation can synergistically potentiate or compensate for each other (so that an area in which successful self-regulation occurs can influence another area with poor self-regulation in the direction of improved self-regulation).

Successful self-regulation ultimately manifests itself in an increase in interactively experienced pleasure, well-being and security, while inhibited self-regulation gives rise to sources of displeasure.

Self-regulation should therefore not be seen as a monocausal sole cause of pleasure or displeasure; rather, individual self-activity is always confronted with structural, social, organic and physical structures. However, there is enormous potential for change in individual and professional self-regulation, which can always produce surprising results when used creatively.

~~3.2.2~~ 3.2.4 Self-regulation - stress prevention - health

Health describes a functional balance in which different physical and emotional-cognitive functions interactively support and compensate for each other. It enables the individual to adapt to their physical and social environment and actively influence it. Health also means permanent compensation and, if possible, repair of damage caused to the organism and the emotional-cognitive experience.

If damage that has occurred can no longer be repaired or compensated for interactively and these interactions inhibit/block the interactive functioning of the organism, then the basis for chronic illness arises. This shows the relationship between chronic illness and dysstress, as this is described as emotional-cognitive suffering that can no longer be reduced by the individual's own behavior (this suffering can interact with various physical damage (e.g. cigarette smoking)). Burn-out syndrome also describes a syndrome that has a chronic effect (e.g. as psychophysical exhaustion) and cannot be reduced by the individual. In contrast, the ability to recover refers to the ability to regenerate in the emotional-cognitive area as well as the body's ability to recover and regenerate. Maintaining health into old age appears to be an interactive phenomenon in which permanent recovery and regeneration abilities are activated and thus represent the opposite of burn-out syndrome (interactive blockade of the ability to recover).

Of course, the functional ability of the organism to recover and repair interacts with behavioral activities as well as with environmental influences and structural characteristics of the organism (e.g. genetic makeup).

The activation of self-regulation in the direction of reducing sources of unpleasure and stimulating sources of pleasure plays a central role in stress prevention, both individually and in professional life. Autonomy training specializes in creatively activating individual and professional self-regulation so that changes are made that enable the individual to feel more pleasure and well-being while at the same time reducing sources of insecurity and displeasure.

Flexibility and creative problem solving play a major role in autonomy training because it is assumed that the individual has more than just one behavioral option in different conflict situations and that they often get in their own way when solving problems due to communication errors and assumptions they have learned. All variables in study A and B refer either to direct characteristics of individual or occupational self-regulation or to their interactive preconditions and effects.

For example, the ability for individual self-regulation (self-active creation and modification of ways of communicating that lead to well-being, pleasure, satisfaction of needs and security) is certainly a factor that influences the reduction of stress and increase of resources in working life.

The connection between inhibited self-regulation and the manifestation of uncontrollable displeasure is a central motivation for compensatory addiction potential (e.g. cigarettes, alcohol, medication, malnutrition, etc.). Physical functions are also influenced (e.g. high blood pressure). The interaction between the effects of addiction, impaired bodily functions and an intolerable lack of pleasure leads to an increased risk of chronic diseases (this condition is exacerbated by a family predisposition to certain chronic diseases).

Successful self-regulation in the context of activated well-being and pleasure is characterized not only by relative freedom from addiction, but also by activation, stimulation and coordination of physical functions (e.g. less diabetes, normal blood pressure, normal blood cholesterol). The interactions between well-being, freedom from addiction, lack of physical risks, motivated exercise, well-being-generating nutrition ... have a positive effect on maintaining health into old age.

3.2.5 Grossarth's behavioral typology

Grossarth-Maticek basically distinguishes between six different behavioral patterns, which are referred to as the Grossarth typology.

These are behavioral patterns from psychodynamic personality analysis, which Grossarth-Maticek has described based on his many years of observation. The typology should not be viewed in isolation; rather, it is directly related to numerous other variables from different areas.

Type 1: Suffering in isolation: The person suffers in isolation from a desired but unattainable object (e.g. people, goal realization) and without compensatory possibilities (compensatory

competence), so that they are permanently helplessly at the mercy of the suffering. This results in a sense of hopelessness, i.e. the person cannot find a way to free themselves from sources of unpleasantness (e.g. mental and physical exhaustion) and achieve a lasting sense of well-being.

Type 2: Suffering in the vicinity of disturbing objects: The person lives close to a disturbing, negatively valued object (e.g. spouse), which is negatively differentiated from the desired (e.g. highly valued) object and is unable to distance themselves from it, so that they feel helplessly at the mercy of the negatively experienced objects. There is a permanent sense of hopelessness due to the feeling of not being able to free oneself from disturbing objects and achieve situations that generate well-being.

Type 3: alternating phases with maladjusted competence (narcissistic ambivalence)
The person shows phases in which intense isolation suffering comes to the fore, alternating with phases of isolation anxiety and substitute attachments and with phases of abrupt separation and distancing from objects with strong emotional significance. In between, there are phases of short-term feelings of extreme pleasure and well-being. The person does not react helplessly to chronic suffering over a long period of time, but instead repeatedly finds ways to find new inspiration, stimulation and short-term overcoming of painful experiences (in order to then return to new painful situations). Again and again, hopes are experienced, a feeling of the realizability of desired pleasure and well-being, usually through egocentric and changeable, sometimes extremely non-conformist and sometimes extremely conformist behaviour.

Type 4: Well-being through autonomous self-regulation
The person shows autonomous (no excessive dependence on objects), self-regulating and well-being-generating behavior with pronounced adaptive competence in the area of socially adapted behavior. (They are able to stimulate themselves and their fellow human beings in a positive way.) They repeatedly experience hopes, a feeling of the realizability of desired pleasure and well-being, usually through socially adapted behaviour in which both their personal needs and those of their fellow human beings are taken into account. The person is largely self-active and thus achieves long-lasting communication that generates well-being (i.e. less dependent on disturbing, isolating or ambivalence-generating objects, e.g. due to good regulation of beneficial closeness and distance).

Type 5: rational-antiemotional behavior
Pronounced emotional blockages in the expression of feelings with extremely pronounced compensatory tendencies through (almost exclusively) rational, reason-guided behavior. Emotional satisfaction and stimulation can generally only be achieved when rationally justified contexts trigger positive emotions, while rationally unfounded emotions are completely ignored and experienced more as a threat.

Type 6: Emotional-antirational behavior
Blockage of the emotional perception of one's own rejected areas (e.g. severe traumatization in childhood) with a permanent attempt to compensate through emotional-antirational behavior, which is characterized, for example, by unfounded aggressiveness, absurd interpretations of situations, misjudgment of one's own effect on the environment. Well-being and pleasure arise when there is affection or aggressive behavior that corresponds to the current emotional state.

A person usually shows different proportions of the individual behavior patterns.
Type 1 and type 2 correlate positively with each other, while other combinations correlate negatively. In addition, the individual behavioral patterns show correlations in an interactive relationship with physical risk factors. For example, there are synergistic effects between type 1 and physical predispositions to certain cancers. Type 2 increases physical risk factors towards heart attack/brain stroke, type 3 correlates with chronic anxiety, but less with the development of chronic diseases. Type 4 is a characteristic of people who remain healthy into old age. Types 5 and 6 are disease-causing when they are combined with type 1 and type 2. (for typology see also RGM Self-Regulation and Health Questionnaire XVff)

Communication in professional life

Human work is not only of central importance sociologically as a cooperative activity for maintaining individual living conditions for the individual and society, but also plays an important role in maintaining health into old age and in the development of diseases.

Since human work is characterized, among other things, by the content of communication in the accomplishment of common tasks, it seems logical to analyse work-related health and illness under the aspect of disturbed or needs-satisfying and goal-achieving communication. Communication in the workplace is determined by a large number of factors that influence each other. For example, *positive communication is* characterized by the following elements: Rewards for performance, opportunities to influence work processes, highly developed work motivation in combination with a sense of belonging in the workplace, constructive coworkers and superiors, social security, given opportunity to combine skills with requirements ...).

Negative communication would be characterized, among other things, by: a lack of transparent information flow about decisions in the company, no sense of belonging with a pronounced work motivation, blocked work motivation (inner resignation), permanent exposure to destructive (demotivating) criticism, high work and expectation pressure (e.g. due to job cuts through rationalization) ...).

It is assumed that positive communication has a significant health-promoting influence (and vice versa - in the context of other impact factors, of course).

Occupational resources as modifiers of psychological stress (negative communication): In work-related communication, the individual is not simply passively exposed to communication conditions. In principle, they can influence the shaping of conditions in communication through their own activity.

Qualities such as the ability to separate; the ability to inspire colleagues with one's own ideas; flexible changes in behavior that do not lead to the desired success; aligning work activities with one's own abilities can promote the development of positive communication.

3.2.6 Stress - dysstress and eustress

The Directorate-General V (1997) definition of stress includes the following: Stress originally refers to any strain that causes a certain reaction, e.g. activation. One component in the European Commission's definition of stress is the subjective feeling that one cannot cope with the situation.

Dysstress is any cognitive-emotional suffering that cannot be reversed, changed or influenced by individual behavior. Dysstress always arises when the person cognitively perceives a burden (e.g. threat, isolation) and cannot activate a behavior that is assumed to reduce the burden.

Direct variables for dysstress are, for example
the split between negative experiences/problems and inadequate behavior, resulting in e.g. isolation suffering, helpless agitation.
The block to being able to correct behaviors with negative experiences is also both a product of dysstress and a condition for its maintenance. Past experiences with a lasting negative effect lead to the reinforcement of dysstress in the present, e.g. shock experiences or experiences of rejection and isolation in childhood.
People who exhibit a disintegration between rational and emotional impulses and who often suffer from blocked emotional perception are particularly susceptible to dysstress, for example because they are unable to resolve emotional suffering through emotionally and rationally controlled behavior. Shock experiences with long-lasting effects (e.g. unprocessed experiences in professional life or experiences of rejection from the family) can also block all active behavior aimed at solving problems, which again leads to increased experiences of dysstress.
This gives rise to negative feelings (e.g. anxiety, depression, irritability) which, together with the perception of threat and hopelessness, determine the phenomenon of dysstress.

One could also say that dysstress is the result of stress, a lack of behavioral resources (e.g. coping strategies) and a negative emotional reaction, so that harmful effects can no longer be influenced.

Three components determine the damaging effect of dysstress on the individual (and their organism):
1 Intensity of suffering
2 Duration (chronification) of the recurring suffering
3 Degree of absence of a dysstress-reducing behavior and communication system.

If the suffering is *extremely* pronounced and if it is chronic (i.e. cannot be resolved over a longer period of time) and if the person is not able to stimulate communications through their behavior that resolve the suffering and activate alternative pleasure, then dysstress has a damaging effect on physical functions and possibly on organic structures.

It can even happen that certain organ systems can become the 'symbolic arena' of unresolved problems (e.g. blocked desires) via as yet completely unknown neurophysiological processes, namely when they cannot be resolved at the behavioral and communication level in line with needs.

If the interactive dysstress is more pronounced than the ability to cope with dysstress, this can have the consequence that the desire to live is reduced and the displeasure (for example in the form of uncontrollable anxiety) increases to such an extent that the ability and will to live is massively reduced (see section "Pleasure-displeasure theory").

Dysstress-inducing stress can manifest itself in different areas of the socio-psycho-biological system, e.g. as a response to a chronic illness or as a reaction to social isolation.

In the emotional-cognitive and behavioral area, dysstress always means that a negative experience takes on a life of its own and can no longer be corrected by active behavior. In other words, there is an encapsulation, or rather an independence of a damage that no longer appears to be influenceable by the active behavior of the individual. Such damage can occur, for example, in the emotional-cognitive area or as part of an organic (functional) disorder. If influences and behaviors are found that eliminate the ongoing damage to the individual, the result is a reduction in dysstress.

Dysstress can therefore be reduced by changing behavior (behavioral change) or by changing the circumstances and influences that cause the dysstress (relationship change).

We also understand *eustress* as specific responses of the individual to stress and challenges. In eustress, stress is experienced more as a challenge and is overcome by the body's own ability to function and develop, creating a sense of well-being.

Other factors such as regular exercise, a healthy diet, etc. are factors that may increase the ability to cope with eustress. Psychosocial factors such as self-regulation and inner autonomy are also factors that stabilize eustress.

A large proportion of the variables recorded (see RGM questionnaires in the appendix) relate either directly to dys/eustress or to direct and indirect skills for coping with dysstress and transforming it into eustress (or vice versa: to factors that maintain dysstress and prevent eustress). This refers both to medical risk factors that increase the possibility of dysstress, e.g. cigarette smoking increases the possibility of chronic obstructive bronchitis or bronchial cancer. Both diseases can be described as massive dysstress, the effect of which on the organism and its ability to function is so stressful that active behavior can do little to counteract it.

Dys/eustress also plays a major role in professional life. Certain conditions in the workplace are suitable for activating eustress and reducing dysstress, e.g. reward and recognition, creating opportunities to exert influence at work, transparent information flow, etc.

Certain variables record *symptoms* of dysstress, e.g. mental and physical exhaustion, the feeling of being overwhelmed at work, blocked motivation to work, suffering from demotivating criticism, a feeling of social insecurity that cannot be influenced, a lack of a sense of belonging (experienced negatively).

Certain *individual skills* and learned personal activities can contribute to a certain extent to reducing dysstress and activating eustress. For example, the learned integration of personal skills with professional requirements or the tendency to work in a needs-oriented manner, to develop professional visions, to be flexible, etc. should be mentioned here.

Within the framework of *personal behaviour patterns, there are* also a number of intrinsic activities that can stabilize eustress and reduce dysstress, e.g. the ability to transfer childhood experiences to the present or to align one's own behaviour with pleasure-oriented goals. There are also a number of dysstress-generating and dysstress-maintaining states and behaviors, e.g. antagonistic activation of emotions and rational parts, repetition of memories that lead to experiences of isolation, exaggerated loyalty to people that restrict personal autonomy.

The results of our study show that dysstress is a significant disease factor and that eustress is closely related to the maintenance of health. They also show that large sections of the population have neither learned to recognize the phenomena and effects of dysstress in themselves nor are they aware of behavioural methods with which they can influence dysstress. For example, a high percentage of the population suffer from unresolved traumatic experiences of rejection in their family of origin well into old age, while another part suffers from conflicts and unresolved experiences at work. In addition, there is suffering that cannot be influenced due to partner relationships, in relation to one's own children, but also suffering in one's own personality due to experiences of insufficiency (e.g. lack of self-esteem).

In modern working life, especially in the context of globalization and flexibilization, the social conditions for the development of dysstress are intensifying, e.g. through increasing competition for fewer and fewer vacancies, suffering from isolation due to rejection in job applications, feelings of social insecurity and injustice, and a shaken sense of belonging. If people have not learned in their family and professional socialization to develop their own activities through which they can influence and create conditions in their professional life, then the risk of suffering from dysstress increases because the experiences from the different areas develop a resulting, usually highly individualized tendency to experience pleasure/eustress in certain areas and displeasure/dystress in others.

It has been shown that the individual's own activation (e.g. through autonomy training) can reduce essential factors of dysstress and activate eustress through alternative model learning.

Dysstress - Eustress - Summary
One dimension of dysstress and eustress is the relationship between resources and stress. The more pronounced the stress and the fewer the corresponding resources, the more pronounced the dysstress. And the more pronounced the resources are in relation to different stresses, the more pronounced the eustress.
Another dimension is the individual needs of high emotional significance.
If satisfaction and goal achievement are blocked or inhibited, negative feelings arise, e.g. hopelessness, anxiety. This condition is also referred to as dysstress.
When needs of high emotional significance are satisfied and pleasure and well-being are created, we speak of eustress.

Dysstress and eustress appear to be factors of great importance for modern medicine in the 21st century, and their relevance is increasing with socio-economic and socio-cultural development.

3.3 Autonomy training

On the one hand, this intervention method is based on research findings from multidisciplinary epidemiology (Grossarth-Maticek 2000); on the other hand, autonomy training is a diagnostic and therapeutic method that has been developed since 1972 and *is geared towards individual needs and emotional-cognitive behavioral controls in such a way that problematic behavior can be explained* (for example, by addressing specific psychodynamic motivation) *and thus a sustainable change in behavior towards health/well-being/fulfillment of meaning can be initiated. In* addition to applying the method in scientific experiments, Grossarth-Maticek has also demonstrated it to large audiences and experts in various cities.

The general basic assumptions of autonomy training are as follows:

1. If problems occur within the framework of a defined communication pattern and are maintained by this pattern, then it *cannot* be assumed that the same communication patterns have a problem-solving effect.
1. 2. People automatically develop skill-based solutions to private and professional problems, but can usually only realize them if supportive forms of communication are found in which the self-regulation processes are activated.
3. Problems can only be solved if the communication patterns in which they have arisen are changed in such a way that the solution to the problem results (usually almost) automatically from the alternative communication.
4. Illness is understood as a combination of several factors: e.g. long-term inner suffering experienced because no needs-satisfying communication has taken place with an emotionally extremely important person (see loyalty conflicts, fixations, etc.). Such unresolved problems bind forces that lead to physical exhaustion. If the person has no opportunity to activate the communication mechanisms that lead to a solution to the problem, a significant risk factor for chronic illness (which enters into interactive relationships with physical risk factors) arises.
5. When intervening, it is extremely important that the trainer ALWAYS operates at the person's level of competence.
6. It is equally important not only not to evaluate the person's descriptions, but to perceive them as "given conditions", but also to always focus on the person's self-perception.

Autonomy training stimulates the self-active, ability- and needs-oriented shaping of communication between the individual and their environment. The results here show that the self-active, ability- and resource-oriented stimulation of individual potential is a major asset that can hardly be overestimated. Among other things, this relates to the maintenance of health and, in the long term, in addition to activating creative solutions to problems, can also lead to a reduction in unemployment (see e.g. chapter 5.4).

Among other things, behavior-determining and communication-determining psychodynamic processes that were learned in the family of origin are analyzed and corrected with a comprehensive set of intervention tools.

In family structures, communication very often takes place that inhibits the child and the later adult throughout their lives and prevents them from finding their own pleasurable self as well as performing at work in a way that meets their needs and abilities (see chapter 3.2 Pleasure-displeasure management). This in no way means that the current professional situation is not just as important or that it is completely shaped by childhood experiences, but it does mean that it is worth analyzing the connection between structural conflicts in the workplace and emotional-cognitive dispositions from childhood so that a corresponding change can be initiated.

The funnel model

Although autonomy training is a systemic intervention and takes into account a large number of factors from different areas in the analysis and is able to change an entire interactive system over long periods of time, the conversation is initially oriented towards a problem that the person experiences as central and that they cannot solve themselves.

It is assumed that complex systemic interactions (e.g. psychodynamic conflicts and motivations) condense in a problem that is subjectively experienced as unsolvable in such a way that this *one* central problem may block the entire pleasure system. If the dynamic genesis of the symptoms is understood in their individual emotional-cognitive dynamics and if forms of communication are created in which the symptom can be resolved, then a large number of factors are activated that interactively work towards solving the problem (such results are shown in the evaluation of two therapy experiments, see Chapters 5.4 and 5.6).

It is obvious that only very few people are aware of the content of this central problem, especially as it often arose in childhood and the person tries to deal with it throughout their life by repeatedly using different forms of communication, which are ultimately inadequate because they do not touch the core of the *one* problem.
However, if this person can resolve their central problem through alternative communication, they simultaneously learn a *behavioral* model that intervenes in very different areas of competence and changes them all in the direction of satisfying needs with pleasure, i.e. the person then also tends to deal differently with certain problems and conflict situations in other areas.

3.3.1 Goals

► Autonomy training aims to solve problems by removing (transforming) fixations in pleasure/displeasure management and by activating resources and coping strategies in the interactive system by redesigning communication to meet needs.
► "Where the system aligns itself sensitively and creatively with its own needs, which have developed over the course of life, and at the same time takes into account the needs of the environment and achieves a creative integration of social and individual needs, there is also more autonomy, inner creativity and flexibility." (Grossarth-Maticek 2003, 83).
► If possible, by analyzing the one central problem, which is at least a very significant cause for most people, to bring about its resolution so that the entire system can move in the direction of experienced pleasure/well-being and security.
► Dissolve central sources of inhibition in such a way that the person can develop towards a higher level of self-active problem-solving ability.

3.3.2 Theoretical assumptions

Establishing needs-based communication

The behavior of people and social groups is dependent on specific communication, i.e. on the influencing factors of systems in which they are interactively integrated. In certain forms of communication, certain individually learned behaviors are virtually predetermined and cannot be corrected, despite negative consequences that are often chronic (see pleasure/displeasure theory). Only when the form of communication is redesigned and oriented towards the learned reactions and needs can needs-satisfying reactions be triggered. Here we speak of a needs-appropriate form of communication, e.g. one person has a particular need to be strongly rewarded in communication for their own creativity, while another person needs conditions for an orderly workflow. Or: If, for example, a person is emotionally attracted and rejected by a parent at the same time and the person has to live out their ambivalent feelings, then they need a different form of communication with their partner than a rejected person who is constantly striving for harmony.

In autonomy training, forms of communication that do not correspond to the learned structure of needs and behavior are replaced by creative redesign of communication. The redesigned communication is constructed in such a way that it meets the emotional-cognitive needs on the one hand and can be realized and maintained by the individual on the other. When this happens, not only are needs-satisfying reactions triggered, the individual also learns to use the self-active reorganization of communication as a method in future conflict situations.

Resolution of ambivalent conflicts

Another problem that is of central importance for the analysis in autonomy training and that also represents a central problem of human communication is emotional-cognitive behavior and motivations and their effects on health and behavior. People strive for behavior that is clearly oriented towards pleasure/well-being and problem solving, but are often blocked in their ability to achieve goals/resolve problems by ambivalent conflicts.

Ambivalence is characterized by the simultaneous activation of emotions and evaluations in relation to an object (e.g. person, group), which are mutually exclusive (e.g. love/hate, high evaluation and devaluation). Ambivalence is already activated in childhood (e.g. when a parent is loved and hated due to disappointments experienced). Ambivalent behavior manifests itself in partner relationships, at work, in the family and, last but not least, in relation to oneself. (see Conflicts of loyalty)

In autonomy training, highly effective methods are developed that resolve ambivalence and enable unambiguous human behavior that is both relevant to health and stimulates social problem-solving skills.

Orientation towards the pleasure/displeasure ratio

Another element is the orientation of autonomy training towards diagnostics and intervention on the emotional-cognitive experienced pleasure/displeasure relationship. Different life experiences and influences (e.g. working atmosphere, nutritional quality, partner relationship) are often represented in a very individually specific form in the pleasure/displeasure system.

In autonomy training, the person learns to concentrate on sources of pleasure/displeasure within the framework of their subjectively learned dispositions and also to take into account interactions between different factors that manifest themselves in the pleasure/displeasure system.

In autonomy training, specific sources of pleasure that are socially acceptable are activated and sources of displeasure are recognized and inactivated. Sources of unpleasure that cannot be avoided are also tolerated and long-term strategies are developed to eliminate them.

Stimulation of self-activity
The human being is an active system that influences and creatively shapes its environment and constantly strives to create conditions (e.g. in social communication, in one's own organism and in relation to the physical environment) that trigger needs-satisfying and goal-oriented reactions. In our culture, self-active and creative individual tendencies are often ignored, not encouraged and even blocked. This can result in a disease-inducing adaptation and external orientation that no longer correspond to one's own needs.
Autonomy training activates the individual's own active potential in the desired problem solving. In this way, the individual not only develops health-relevant self-activities, but also those that play a role in working life or in freeing one's own creativity from learned adaptations.

Integration of reason and emotion
Many people have the problem of not being able to harmonize their emotional impulses and rational insights (so that, for example, feelings are defended against rationality and rational decisions are emotionally supported).
A disintegration of emotion and rationality, for example, inhibits intuitive ability and human creativity. This state is also a significant interactive risk factor for the development of disease. Autonomy training uses methods that stimulate and enable the integration of rational and emotional parts.

Transformation of traumatic experiences
As a rule, people experience both traumatic, emotionally extremely negative situations in their life history, but also extremely pleasant situations that create a sense of well-being. Autonomy training uses methods that are able to *reinterpret* unpleasant, traumatic experiences and events (e.g. by recognizing their meaningfulness) and, by creating new forms of communication, to experience elements from the traumatic experiences in need-satisfying relationships in such a way that the negative effect dissolves and can even serve as a basis for positive experiences.

Orientation of autonomy training towards research results
A specific feature of autonomy training is the extreme orientation of diagnostics and intervention towards scientific studies that took place as part of prospective intervention experiments. Scientific results are used, for example, to identify health-related risks and to investigate changes resulting from the intervention, with which long-term desired effects appear predictable (e.g. health into old age). For example, certain very intense dysstress reactions with certain characteristics can even be scientifically identified as health-promoting and these can be distinguished from extremely disease-causing forms of dysstress (e.g. if intense dysstress in communication, which is also associated with a great deal of suffering, leads to the elimination of ambivalence, then this state has largely less harmful effects on health than if ambivalence is chronically maintained).

Autonomy training aims to achieve interactive intervention effects by simultaneously eliminating ambivalences, activating sources of pleasure, stimulating self-active problem solving, resolving traumatic experiences by reinterpreting and reconstructing elements of the experience where possible, achieving an integration of reason and emotion and all of this through a creative and needs-appropriate reorganization of communication. This is closely based on the research results of prospective intervention studies.

3.3.3 Procedure

The methodological approach is characterized by a pronounced personal, empathic competence of the trainer and a dialectical principle, which is characterized by a constant narration of the person - questions from the trainer - joint development of assumptions. The joint development of assumptions, which later turn into hypotheses, is achieved by the trainer expressing an assumption and specifying it until the person can wholeheartedly agree with the formulated assumption. (Of course, the assumptions are largely formulated on the basis of Grossarth's theory (e.g. pleasure-displeasure theory)).

Often the person does not initially recognize their central problem (see funnel model) and formulates one or more problems that appear to be psychodynamically secondary. The skill of the coach is to identify the potentially virulent problem as quickly as possible by asking specific questions in order to then work out alternative forms of communication together with the person. If these are fully accepted by the person, the person is instructed to try them out in practice. As a rule, an initial follow-up meeting is held 15-30 days after the autonomy training to check whether the training units discussed have been implemented and, if necessary, to look for alternatives. The further arrangements - how often, at what intervals and whether further meetings take place at all - are not subject to a fixed framework plan; this is decided on an individual basis.

The special thing about autonomy training, however, is that many people have been helped significantly after the first session, which usually lasts between 30 and 60 minutes.

Autonomy training is not only a psychotherapeutically relevant intervention that is able to influence social communication systems (here we speak of *pure autonomy training*), but it also allows the implementation of problem-related interventions within the framework of different specialist disciplines (for example, it makes use of research results in the context of pharmacological interventions, whereby all use of preparations was always carried out in close contact with a treating physician). Depending on the specific problem situation, not only the psychodynamic risk factors are influenced, but also, for example, the consumption of cigarettes and alcohol through hypnosis, organized walks in the forest, changes in diet, drug interventions (here we speak of *combined autonomy training)*.

The *criticism* could be: With so many interactions, it is not possible to achieve a successful intervention that produces a desired state. The results of the autonomy training were able to refute this argument by showing *that multiple interactions from different areas condense in a specific way in a symptom* (with which one usually struggles unsuccessfully and which is an important source of unhappiness). If the actual interactive constellation is found and a chronically acting system is identified, then alternative communication systems can be activated that not only resolve or alleviate the symptom, but set an entire interactive system in motion in the desired direction.

The fact that autonomy training is characterized by a problem- and potential-related multidisciplinarity and that further cooperation with a wide range of specialist disciplines is being sought makes it suitable for use in primary prevention networks, for example.

Specific case studies (with comments): see appendix

~~7.1.1.~~3.3.4 Image of man

which underlies multidisciplinary research and autonomy training

As a socio-psycho-biological system, humans not only try to maintain and stabilize the functionality of their organism, but are also a system that seeks pleasure, well-being, security, meaningfulness, social affiliation, problem solving and development, that interactively creates its own conditions, stimuli and states, that is also prone to pleasure aberrations and that is significantly influenced by family dynamics (learned life history) as well as *by current social affiliation and the experienced image of God*.

The human being is an interactively communicating system in which creativity and proactive problem solving play a major role. When problems arise, they develop alternative solutions, but these can only be realized once the necessary communication methods have been activated. In this interaction, the person achieves self-identity (self-awareness). When the socio-psycho-biological interaction leads to the resolution of tensions and the satisfaction of needs, a sense of well-being can be experienced. In this context, we speak of the *Pleasurable Self*.

Although humans are an active system that strives for pleasure/well-being/security, etc., they also repeatedly go astray and can have major problems correcting their own behavior. The human being is therefore also a permanently learning system that is oriented towards development or stagnation. Different stimuli and signals from the body as well as from the social and physical environment are given a subjective, emotional-cognitive representation in the individual experience.

Subjective realities are created on the basis of emotional experience qualities that are linked to cognitions (the reality experienced by the individual is thus composed of feelings and their interpretations, among other things).

If such a reality anticipates a catastrophic or a very optimistic outcome for the individual, very different neurobiological controls arise, which are also experienced emotionally and cognitively (see also section 2.4. "Psychoneuroimmunology and brain research").

The human brain plays a central role as an integrative communication organ and the scientific question arises as to the principles according to which it functions and the programs it uses to process information. We understand the brain partly as an active data-processing program and partly as a passive system that is dependent on communication and existing stimuli from the environment and the organism (i.e. it is only functional if it is served with corresponding emotional-cognitive stimuli).

An adequate analysis of people, especially with regard to the question of how their behavior can be changed, can only be made by taking into account the interactions of subjective experiences and objectively measurable influences and their interactions.

Multidisciplinary epidemiology (around Grossarth-Maticek) has set itself the task of researching these interactions and applying them in practice.

4 Methodology

4.1 Prospective study with experimental intervention

Since one aim of multidisciplinary epidemiology research is to provide empirical evidence of synergetic and additive interactions within preventive medicine, a special methodology is required in that this evidence can only be provided if biological, sociological and psychological data are collected and analyzed.

Multidisciplinary intervention epidemiology is interested in the identification and description of certain interactions that either maintain health into old age or precede specific chronic diseases and the extent to which specific interventions have preventive functions. It is only marginally interested in the extent to which the risk or positive constellations found are present in a representative population. However, it is possible for each person to use the available test systems to determine their individual risk in comparison to all the people surveyed.

In order to demonstrate the importance of socio-psycho-biological interactions in the development of chronic diseases and health into old age, three methods are coming to the fore:
Conducting prospective studies with selective selection
Conducting representative prospective intervention studies
Implementation of prospective, randomized intervention experiments

These three methods do not stand side by side, but form a joint interactive method, whereby the weaknesses and strengths of the respective methods complement each other perfectly:

In the *prospective studies with selective sampling,* we systematically sought individuals with significant psychosocial and/or psychophysical risk from a large study population who were willing to undergo different interviews over longer periods of time (see sample recruitment Study B). Here, individuals with incomplete data sets are systematically eliminated from the study in order to be able to test specific hypotheses relating to the interactions of massively occurring risk factors. *In the prospective randomized intervention studies, it can be shown whether people at considerable psychophysical risk can achieve preventive effects and under what conditions or changes.*

This involves examining whether a therapeutic reduction of certain risk factors and the strengthening of protective factors can have long-term effects in the prevention of chronic diseases. If such results can be achieved, then the selective results from the first type of study will be substantially confirmed.

In the *representative prospective studies, the* question can be answered as to whether the correlations found in the selective selection (possibly in a weakened form) also apply here.

Randomized experiments were also conducted (prospectively) as part of representative studies, again in people at the highest risk. The results of randomized experiments in the selective and representative groups can be compared.

The *strength of the selective selection is that* only people with complete data from a representative selection are integrated into the study, who##### have the corresponding data for the individual hypotheses in a *strong form.*

The *weakness of* this type of study is that many people are excluded from the study, so that it remains unclear whether the correlations are also valid in the context of representative studies. In our representative study, such questions can now also be answered, although there is a compulsion to include people in the study who have relatively incomplete data.

The *randomized experiment provides* the *strongest evidence* of causal relationships because both prospective relationships in the control group are investigated and the effects of the intervention can be used as evidence of the causal nature of the relationships.

The aim is to examine whether a therapeutic reduction of certain risk factors and the strengthening of protective factors can have long-term effects in the prevention of chronic diseases.

The *weakness of the randomized experiment* relates to the question of whether the actual change in risk factors as part of the intervention helped people to stay healthy for longer or

whether it was other factors (e.g. the personal charisma of the trainer). Such weaknesses are in turn compensated for in the prospective representative and selective studies.

If all three methods lead to the same or very similar results about correlations in the follow-up study, then the advantages of the respective method can be used because the disadvantages are compensated for by the other methods. Then we can speak of scientifically 'hard methods'.

Another characteristic of epidemiology is the fact that *different methods are sometimes* used *to record the same variables within the data collection process. For* example, when collecting Grossarth's behavioral typology, statements by the interviewee as well as statements by people close to the interviewee and observations by the interviewer in relation to the person were recorded. In this way, the subjective emotional world can be correlated with external observations.

4.1.1.4.1.1 About the history of data collection
in the context of the emergence of multidisciplinary prospective intervention epidemiology

Characteristic of our data collection and methodology is the permanent further development over long periods of time of data collection methods, hypotheses, theories and intervention measures, in that retrospective studies (interviews with people who are already ill) and prospective studies (interviews with people who have not yet been clinically diagnosed as ill) have always been carried out alternately and in a mutually complementary manner.

Throughout our research programs, data collection has always been a combination of initially retrospective and then prospective surveys, with experimental interventions always being linked to the prospective studies. During the prospective data collection, hypotheses are developed and statistically tested. Where no hypotheses were available and statistical results are nevertheless obtained, we can speak of retrospective evaluations within the prospective data collection. This always results in an interactive cycle of retrospective, prospective data collection in combination with experimental interventions.
This interactive cycle will be described in more detail here:
The first step is always a retrospective study of certain populations in order to gain hypotheses (e.g. a number of pancreatic cancer patients are compared with heart attack patients and with people who have remained healthy into old age). To this end, intensive discussions are held with the aim of discovering certain specific correlations and observations are made.
An example from practice: Before the first prospective study began in the former Yugoslavia in 1965, a certain number of patients diagnosed with heart attacks, cancer and psychiatric disorders and those who remained healthy into old age were interviewed intensively in the years 1963-1965 with the aim of finding risk factors and differential predictors between the four groups. These observational data became the basis of the first prospective study. After the final evaluation in 1976, new findings were collected which were incorporated into the Heidelberg prospective studies.
In the years 1968-1971, i.e. after the end of the data collection of the first prospective study, retrospective studies were again carried out in Heidelberg in order to gain new hypotheses and develop new methods (e.g. the introduction of experimental interventions, which did not take place in the former Yugoslavia).
In 1972, the first Heidelberg Prospective Study was conducted, with extended hypotheses and data sets (from the Yugoslavian study). These studies included a large number of people who already had cancer, heart attacks or other illnesses at the beginning and were therefore not included in the prospective study. However, there was an opportunity to expand the hypothesis potential in retrospective interviews. These findings then flowed into the large-scale second prospective intervention study, which was carried out from 1973 to 1978 and whose final evaluation is dated 1998. In the final evaluation, relatively small groups were identified from a large population that had both complete data and suffered from certain chronic diseases after the initial survey or had already died from them. For example, 138 people with pancreatic cancer can be identified. These can be compared with subgroups of people who later developed bronchial carcinoma or a heart attack. Smaller groups are again identified from

prospective studies and analyzed as prospective case-control studies (both with regard to existing hypotheses and from the findings of the subsequent statistical analysis).

Here is an example of the expansion of knowledge in the permanent retrospective - prospective - retrospective research process:
In the first Yugoslavian prospective study, a small group of about 60 people out of 1553 was identified who had fallen into apathetic depression (hopelessness, despair, shock, etc.) due to severe experiences of loss. Of these, a large number developed cancer within the next few years, but others did not.
In subsequent retrospective surveys, it was found that the people who developed cancer and who, like the people who did not develop cancer, suffered from extreme psychosocial dysstress smoked significantly more in comparison, had a higher cancer burden, suffered more from chronic inflammation, etc. The hypotheses about psychophysical synergy effects were born. This gave rise to hypotheses about psychophysical synergy effects, which were then incorporated into the Heidelberg prospective studies.

In a second step, after extensive retrospective investigations, the observational data from the retrospective study were operationalized, i.e. measurement instruments were designed and a data collection system was constructed (e.g. laboratory data, survey data, observational data, etc.).
Certain hypotheses were also formulated as far as possible.
Prospective studies are then conducted, i.e. the data are collected using the designed measurement instruments before the onset of a disease that is to be predicted.
After the final evaluation of the prospective study (e.g. after recording the mortality and morbidity data), the hypotheses are tested (e.g. using descriptive or multivariate statistical methods).
As a rule, the statistical analysis also reveals correlations that were not previously hypothesized.
At this point, a new retrospective evaluation of the prospectively collected data begins (e.g. correlations are "discovered" from the prospective study using different statistical methods, which can be very interesting for causal research). Based on such evaluations, new prospective studies can be carried out with extended and newly acquired hypotheses. This ensures an extremely high efficiency of knowledge acquisition and expansion.

4.1.2 4.1.2 Construction of the measuring instruments

The questionnaires used in this work were developed exclusively by the author using the following procedure: First, intensive discussions (open interviews) were conducted with different people who belonged to different groups (e.g. people who remained healthy and active in old age compared to people who developed cancer before the age of 55, for example). In this phase, factors were sought that differentiate optimally between the two groups and initial hypotheses were formulated. In the *second* phase, semi-standardized interviews were conducted in which the topics were systematically addressed within which differences, characteristic behaviours and effective factors were suspected. When this was confirmed again, the people were asked how they would express themselves in order to optimally capture the factors and make them comprehensible.
Only in the *third* stage was the standardized interview designed on the basis of the first two stages. This instrument was then used to conduct the standardized interviews. Such a procedure took between three and ten years of research. The standardized questionnaires were also subsequently presented to different groups and in some cases modified before final use. As a result of this procedure, only highly relevant and extremely selective instruments were created.
The psychologist *Professor Norbert Bischof describes* the so-called Grossarth-Maticek three-step plan described above. Bischof not only describes the method and illustrates the procedure with numerous examples, but also paints a picture of how measurement instruments are usually developed in social psychological practice. A quote: "In order to be able to adequately assess their (Grossarth-Maticek's) special character, one must be familiar with the practice of social psychological surveys. Those who construct a questionnaire usually - and there are notable exceptions - use surprisingly little psychological imagination in formulating the content of their

'items', as the individual question units are called. Here, where creativity, intuition and not least careful empirical preliminary clarification were necessary, one often enough encounters a strange kind of methodological Darwinism. The individual items are born more or less as random mutants; they have been hacked together somewhere, how and why is quickly forgotten. Scientific salvation is only expected afterwards from a statistical selection process: sophisticated methods are used to test the items for formal characteristics such as discriminatory power or reliability, and finally the entire mediocrity is validated against some external criterion, which above all must be objective; relevance is then again more a matter of luck. As expected, most of the questions fall out, but some remain in the network and are therefore statistically valid. It is often no longer possible to understand why they are valid, but this capitulation of common sense seems to be an advantage for representatives of the subject who believe in science anyway. ... The author (Grossarth-Maticek) spends the main work of test construction not only on formally securing his items, but rather on deepening their content. To this end, he developed a procedure that he called his "three-stage plan". ... This 'third stage' now contains the entire yield of the elaborate preparatory work: such questions could hardly have been thought up at the green table." (Bischoff 1996: 689).

4.1.3.4.2 Data collection process for studies A and B

First of all, it was clarified by telephone or in writing whether the people agreed to an interview, after which an initial 1-1.5 hour interview was held to find people who had a certain affinity to this topic (psychosocial factors) and who were committed to answering. Commitment was assessed by first asking people to report on experiences that were particularly pleasant or particularly unpleasant for them. They were also asked how they felt and behaved in these situations and whether they were also willing to provide information about medical factors and to be examined by laboratory doctors (also over a longer period of time).
Depending on the course of the interview, initial questions were now asked about physical risk factors (smoking, alcohol and coffee consumption, diet, chronic illnesses) and further psychosocial questions (e.g. relating to Grossarth's typology (mainly types I, II and IV)).
As a rule, male and female persons living in the same household (e.g. spouses) were interviewed by two interviewers at the same time. The interviewers were informed in advance that people with both physical risk factors and psychosocial risk factors were of particular interest for data collection, or
are conspicuous in only one of these areas or the
do not have any risk factors in any area. Consequently, during this interview, they were primarily asked to ask people in these groups to undergo further examinations. This group of people was particularly asked to undergo further examinations.
(People who were already suffering from one of the chronic diseases to be prospectively predicted (cancer, heart attack) at the first interview were excluded from the prospective study, as the aim of the study was to predict such diseases. However, these people who were already ill were then included in a second type of study: disease progression research.
If the interviewer had the feeling after this first interview that the person was also ready for further, more detailed interviews, further appointments were made. Depending on the situation, the subsequent interviews lasted between 1-4 hours. If the person agreed to multiple medical measurements, the examinations were completed after one year.
The second, longer interview also began with questions about particularly pleasant/unpleasant experiences in the interviewees' lives (and how they typically behaved) in order to build trust and focus attention on answering the psychosocial questions (internal standardization). Only then were the psychosocial questions asked. Finally, the medical data was collected.
(Note: For experimental reasons (for example, is the predictive power different for two different approaches to data collection?), the procedure was reversed for approximately every 13th interview: without an introductory and confidence-building discussion, the medical data was collected first and then the psychosocial data. (see chapter 7.4)

The interviewers were selected as follows:

The six lead interviewers were selected by the project manager and underwent intensive training over several months. They then recruited the other interviewers, 95% of whom were students.

Three of the managers were each responsible for around 37 interviewers. All interviewers received 2 hours of basic instruction. Interviewers with an increased interest received particularly intensive training and conducted almost all interviews in which the entire data (psychosocial and medical) was recorded.

~~4.1.4.~~4.2.1 Overview of the evaluations and samples in this project

The main objective of the evaluations presented in this study was to demonstrate that health status and even specific chronic diseases (focusing on bronchial and pancreatic cancer, heart attack/stroke and M-Alzheimer's disease), as well as the maintenance of health into old age with sustained work ability, are the result of effects and interactions from different areas, especially physical risk factors, family/personality influences and work life.

In contrast to monocausal and monodisciplinary research approaches (which investigate the significance of one factor by taking other factors into account but holding them statistically constant), our multidisciplinary approach aims to show that it is the interaction of factors and the consideration of their respective shares in multivariate events that is important.

In this context, it was necessary to record a very large number of variables from the areas mentioned above. On the one hand, such an approach must be methodologically and theoretically justified, on the other hand it requires an adequate statistical evaluation.

The prospective intervention study was the preferred method. The randomized experiment plays a central role here because not only are the intervention effects investigated, but the relevance of changes in factors is also taken into account through multiple measurements.

As part of the prospective study, Study A was evaluated as a representative approach in this work. The initial aim here was to investigate the relationship between working life, family/personality and physical risk factors in relation to health status, early retirement, accidents and long-term employability (measuring instrument: "RGM working life, family, personality" questionnaire). People were also found here who were willing to undergo a further detailed examination with the "RGM self-regulation and health" (22% of the original population). Some of the people found in this way took part in the randomized experiment.

(This is a replication in relation to the randomized experiment from study B).

In the prospective/selective evaluation of *Study B,* only persons were included who either had a confirmed diagnosis of lung cancer, pancreatic cancer, M-Alzheimer's disease, heart attack/brain stroke (hospital and death certificate) by the cut-off date of 1998, or who had reached a very advanced age in good health. The analysis deliberately did not include people with uncertain causes of death or people with other causes of death because the primary question is: Do the above-mentioned diseases differ from each other in such a way that they can be predicted differentially and is there a significant difference to people who have remained healthy and active into old age (see results in the appendix).

Differential success can only be expected from the comparison of clearly defined and clearly distinguishable groups, which is why this population was selected highly selectively.

In the statistical analysis, the selective sample is also regarded as a further non-randomized control group for the randomized experiments.

The combination of selectively chosen samples with randomized experiments in which similar risk factors are recorded is meaningful with regard to causal research if both study results show the same direction.

Since the same variables were recorded in the subpopulations in the representative study A as in study B, a further indication of co-causal factors can be found.

In view of the complexity of the issues, statistical evaluations were undertaken and presented here that are not usual in the context of monocausal epidemiology. For example, different evaluations were undertaken for different topics and these were each presented separately.

In addition, bivariate correlations with individual variables are shown at various points.

This approach seems appropriate in the context of multidisciplinary epidemiology because it illustrates how different factors from different areas are given their respective relevance in relation to health or disease. The evaluation of thematically summarized variables then shows the significance of the individual areas within the overall process.

The results presented in this study are only a relatively small percentage of the total evaluation options.

~~5.4.3~~4.3 Obtaining the sample for the study A and B

Obtaining the sample Study A: see 5.5.3
Study B is a subgroup from the Heidelberg Prospective Intervention Studies (data collection 1973 to 1978).
The research on causes of death was completed at the end of 2004, with the exception of the cut-off date of 1998, whereby for those who were still alive and healthy, research was possible until the end of 2003.

From a representative selection of 16,523 men (from 64,000 residents' registration offices), 15,848 men were contacted in an initial interview, as were 2,959 people from the circle of acquaintances and relatives of the men contacted (the aim was to identify people at high psychophysical risk).

A total of 18,807 people were contacted and asked whether they would like to undergo detailed interviews/examinations with regard to psychological and physical variables.   5,471 people refused.
8,372 people underwent the examinations, but not all data could be fully recorded. (These data were analyzed in other publications.) Only 86 people who were diagnosed with pancreatic cancer in the follow-up examination up to 1998 were included in this study.

Complete data could be recorded for 3,221 (at least 80%).
The health status of this population was researched up to 1998:
424 people reached a healthy, active and advanced age (between 70 and 90 years)
52 people died from pancreatic cancer
390 people died of heart attacks
86 died of stroke
128 people died from bronchial carcinoma
17 people were identified as having Alzheimer's disease on their death certificate (and underwent laboratory and psychological testing during their lifetime to establish the diagnosis)
496 people died from other causes of death
406 people died from other types of cancer/mortality
474 people were chronically ill (in 296 cases the illness was caused by a heart attack or stroke)
428 were included in a randomized experiment
320 people could no longer be identified
3,221 persons in total

From the people with complete data, people were first identified for a *randomized experiment, with a* particular focus on pronounced psychophysical risk factors. In particular, people were sought who, according to theory, were at risk of pancreas, lung cancer or heart attack.
In addition, subgroups were formed from the analysis of the complete data and these were regarded as a kind of extended control group for the randomized experiment, namely as a *selective prospective study*:
First, all 128 deaths from bronchial carcinoma and all 17 deaths from M-Alzheimer's were taken into account. Out of 424 people who reached a healthy and active old age, 170 people were isolated who had reached the highest age and were healthy, active and able to work for a long time.
Of the 390 people who died of a heart attack and 86 people who died of a stroke, 130 people were included for whom either an autopsy report or a confirmed diagnosis (made in a hospital before the death certificate was issued) was available.
The 52 causes of death from pancreatic cancer (see above) were combined with 86 causes of death from pancreatic cancer from the pool with partly complete data, so that a total of 138 causes of death from pancreatic cancer were available (of the 86 persons who died from

pancreatic cancer, the relatives of 41 persons were contacted with a request for additional information after the cause of death had been determined).

Study B was analyzed in combination with 211 people from Study A who also answered the "RGM Self-Regulation and Health Questionnaire".

The original evaluation plan was to determine whether the results of the selective and representative study showed similar directions in relation to the responses to the "RGM Self-Regulation and Health Questionnaire".

Graphical representation of the sampling process

64,000 representative Residents' Registration Office	
Men rep. 16,523 (plus those refusing contact: 1,017) Relatives: 2,959 (plus 318 objectors)	Women rep. 13,415 (plus contact refusers: 1,300) Relatives: 2,917 (plus 402 objectors)

of which in study B rep. 15,848 + 2,959 relatives (high risk) = 18,807 - Refusers: 5,471	of which in study A only from rep. 1,830 (of which 520 were refusals) = 1,310, drop-outs: 75

of which with "RGM Self-Regulation & Health Questionnaire" ("complete data", i.e. all variables of the questionnaire were recorded) N = 3221 Drop-outs: 320		of which with "RGM questionnaire work life, family, personality" N 1.011 Not to be determined during follow-up examination: 75 evaluated: 936
Complete data: 424 Healthy, active age 52 Pancreatic carcinoma 390 Heart attack 86 Stroke 128 Bronchial carcinoma 17 M. Alzheimer's disease 496 other causes of death 406 other cancers/mortality 474 live chronically ill 320 can no longer be determined 428 Randomized experiment 3,221 in total	reduced data[1] : 8.372 of which evaluated for health status (1998): 7,954 of which 1,319 cancer, mortality + incidence of which pancreatic cancer: 86 Drop-outs: 1743	"RGM self-regulation and health": 211 plus in the randomized experiment: 78 (62 could be evaluated) Complete data with the "RGM Self-Regulation and Health Questionnaire": 2786 of which in the randomized experiment: 583 (x2) (not yet evaluated) reduced data[1] : 8622

Combined evaluation of study B and A
integrated from Study B: 138 pancreas cases (52 with complete data (see above) plus 86 (see above left) with partially complete data) 130 Heart attack or stroke 128 deaths with bronchial carcinoma. 17 M. Alzheimer's (death certificate plus test and laboratory during lifetime) 170 people with the highest age (remained healthy) 583 in total

[1] The detailed "RGM Self-Regulation and Health Questionnaire" was not used, but a reduced questionnaire (psychosocial factors plus cigarette smoking, alcohol consumption, diet, exercise, medication) - questionnaire not shown in the appendix, as no evaluation has yet taken place in this regard.

The representative population was supplemented with a population at very high risk with the aim of achieving optimal utilization in the search for persons with a high hypothesis-conform psychophysical risk.

 Study B plus A was originally selected from a representative population of approx. 64,000 citizens (determined to be representative in 1973). If the high number of refusers is taken into account and the fact that only selective groups from different mortality groups were again evaluated and also the fact that subgroups were formed from studies B and A for the preventive

experiments and the autonomy-trained group in study B was not included in the prospective evaluation, then it becomes clear that study B plus A is a highly selective and by no means representative selection.

At no time was there an intention to conduct representative prospective studies. Prospective studies with experimental interventions were conducted here. The prospective studies, as selective as they may be, only provide an indication of relationships between the dependent and independent variables (which should by no means be interpreted as causal in the first instance). The same variables were used in the intervention experiment as in the prospective evaluation. If effective prevention is achieved by changing the values of the variables in the experiment and if these are the same variables that also have a predictive character in the selective prospective sample, then the correlation found there is confirmed by the experimental results in such a way that the selective character of the sample is no longer significant. In this case, the results of the experiment compensate for the weaknesses of the selective selection in the prospective study (data collection prior to the health status research that took place later).

The results of the selective prospective study also compensate for possible criticisms of the randomized experiment. The combination of selective prospective and experimental, randomized intervention studies is a method in which two approaches support each other in such a way that criticisms of selective selection are largely eliminated.

Composition of the sample Study B plus A

There were 691 = 87.0% men and 103 = 13.0% women. The age at interview was between 33 and 75 years with a mean of 56.0 years and a standard deviation of 9.2 years.

~~3.5.1~~ 4.3.1 Statistical programs

The statistical evaluations were carried out with common program packages such as SPSS, STATISTICA, SAS, with individual programs from various authors and occasionally with self-written programs.

The authors are available to discuss individual evaluation steps.

4.3.2 Explanation of the statistical and technical terms used in alphabetical order

Bivariate: see multivariate.

Chiquadrat test: a special statistical test.

Dichotomous: divided into two parts. A dichotomous variable only takes on 2 values, e.g. yes, no or male, female.

Discriminant analysis: a method of establishing a relationship between a number of quantitative variables and a classification (e.g. by cause of death).

Eigenvalue: e.g. in factor analysis, the variance contribution of a factor.

Factor analysis: a method for reducing a number of quantitative variables that have similarities to the smallest possible number of relevant dimensions. There is no dependent variable.

Factor loading: in factor analysis, the weight with which a "factor" is involved in the reconstruction of an empirical variable.

Misclassification rate: e.g. in discriminant analysis, the relative frequency of cases in which the true class was not correctly predicted on the basis of the quantitative variables.

Indicator variable: a yes-no variable (1-0 variable).

Interaction: a non-linear relationship between two variables. A linear relationship between x and y can be represented by an equation of the form $y=a+bx$. Non-linear relationships are, for example, those that are represented by a curved curve (e.g. a quadratic function: $y=a+bx+cx^2$). Of particular interest here are non-monotonic relationships that pass through a maximum or a minimum, so that y first increases with x and then decreases again, or vice versa.

"Intercorrelation": correlations between several variables of the same type.

Commonality: in factor analysis, the extent to which an empirical variable can be reconstructed by common "factors".

Correlation: a measure r of the extent to which the values of two variables are linearly related. If the relationship is non-linear, the correlation filters out the linear component, if present. Correlation measures take on values between +1 and -1, with positive values indicating an equal variation (y increases with x) and negative values indicating an opposite variation (y decreases with increasing x). At $r=+1$ or -1, the correlation is exactly (error-free) linear; at $r=0$ there is no linear correlation (no linear prediction possibility), but there could be (even an exact) non-monotonic correlation.

Monotonic: a possibly non-linear relationship between two variables in which one only ever increases (or remains the same) or only ever decreases (or remains the same) with the other.

Multivariate analysis: a relationship is established between several "independent" and (usually one) "dependent" variable. This shows what contribution an independent variable makes to the "explanation" (reconstruction) of the dependent variable when all other variables are held constant. This relationship can differ considerably from that of a bivariate analysis (1 independent and 1 dependent variable): it can strengthen or weaken, disappear completely or even reverse its direction.

Multiple correlation: in multiple regression, the correlation between the dependent variable and the best prediction function from all independent variables.

Multiple regression: multivariate regression.

Partial correlation: multivariate correlation (with other independent variables held constant).

Partial regression coefficient: see Regression.

Predictor: an independent variable that is used to "explain" (reconstruct) a dependent variable.

Randomization: Assignment of persons to the test and control group in an experiment by means of a formal random procedure (e.g. random numbers). This ensures that any (even unrecognized) confounding variable only differs between the experimental and control groups within the scope of the calculable random variation.

Regression: Establishment of a (generally multivariate) relationship between independent and a dependent variable, which does not have to be linear. The regression coefficient of an independent variable indicates the weight with which it is involved in the "explanation" (reconstruction) of the dependent variable.

Risk ratio: if mortality is x% in one group and y% in another, x/y is the risk ratio.

Rotation: in factor analysis, the acquisition of a different reference system, which may make it easier to interpret the "factors".

Significance: the "probability of error of the first kind" when testing a statistical "null hypothesis", e.g. that a frequency does not differ between two groups. It is the probability of obtaining an

empirical result that indicates a group difference despite the validity of the null hypothesis. Conventionally, this probability of error may not exceed 5%. When carrying out numerous statistical tests (e.g. when calculating the intercorrelations between numerous variables), the probability of obtaining an apparently significant result in any given case despite the validity of the null hypothesis increases. This effect can be neutralized by a higher significance level.

Standard deviation: the most common measure of dispersion for a distribution of quantitative individual values, for which the squared deviations from the mean value are used.

Statistical test: a procedure for testing null hypotheses. S. Significance.

t-test: a special statistical test.

Variable: a quantitative or qualitative characteristic, e.g. of persons, e.g. gender, age, score on a questionnaire.

Variance: the square of the standard deviation.

Analysis of variance: Procedure for establishing a relationship between 1 or more classifications and a quantitative dependent variable.

Variance contribution: Measure of the multivariate relevance of an independent variable.

A statistical test is distribution-free if, in particular, it does not assume a normal distribution for the variables involved.

5.5 Results of studies A and B

Connection between correlations and risk ratios

Numerous (simple and multiple) correlations between independent variables and health status are reported in various evaluations.

Health status is a 3-5 level variable, the independent variables are often 7-level response scales or multi-level values of physical risk factors.

All the variables involved can now also be dichotomized, for example health status→ mortality, 7 levels→ below/above median.

This results in four-field correlations that are not identical to the correlation values reported, but can serve as a reference point for establishing a connection with the risk ratio.

We therefore think of a four-field table with equally sized row and column groups, consider evenly graded four-field correlations and specify the *risk ratios* for these:

	50 50	55 45	60 40	65 35	70 30	75 25	80 20	85 15	90 10	95 5
	50 50	45 55	40 60	35 65	30 70	25 75	20 80	15 85	10 90	5 95
4.F-Correlat.	0,0	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9
Ris ratio.	1,00	1,22	1,50	1,86	2,33	3,00	4,00	5,67	9,00	19,00

5.1 Interaction of psychosocial and physical risk factors in the development of chronic diseases - Study B

using the example of a differential comparison between pancreatic CA,

Bronchial CA, myocardial infarction, M-Alzheimer's and longevity

In this chapter, the interplay of physical and psychosocial risk factors is recorded, enabling differential prediction of heart attacks, bronchial carcinoma, pancreatic carcinoma, Alzheimer's disease and staying healthy into old age.

It can be seen that, in addition to physical risk factors, work-related variables and family and personality factors are also important here.

First, bivariate correlations with regard to medical risk factors and other psychosocial variables are taken into account.

Finally, multivariate methods will be used to answer the question of the degree of misclassification with which a group classification can be made, i.e. how accurately it was possible to correctly predict years before the onset of one of the above-mentioned diseases.

5.1.1 Summary

The relevance of 70 physical and 94 psychosocial risk factors for the causes of death from pancreatic and bronchial carcinoma, heart attack/brain stroke and M-Alzheimer's was investigated in 659 male persons. A prediction of group membership is possible with misclassification rates in the order of a few percent to less than 1 %.

Groups of people
This is based on 6 exclusively male groups of people from studies A and B (all study B, except Gr.1):

Gr.0: 170 people who were on average 83.4 years old in 1998 and did not suffer from any chronic illness or significant disability;

Gr.1: 76 persons who had died of various diseases by 2002 at an average age of 63.9 years;

Gr.2: 138 people who had died of pancreatic cancer by 1998 at an average age of 67.6 years;

Gr.3: 128 persons who had died of bronchial carcinoma by 1998 at an average age of 67.7 years;

Gr.4: 17 people who had died of M-Alzheimer's disease by 1998 at an average age of 78.9 years;

Gr.5: 130 people who had died of a heart attack or stroke by 1998 at an average age of 72.5 years.

Variables

The variables collected on these groups of people are documented in the appendix/questionnaire. The Roman numerals I-XXIII denote the sections of the questionnaire. There are 70 physical and 98 psychosocial risk factors; of the latter, 4 (PS05-08) are not meaningful for males, so that 94 psychosocial risk factors were used.

5.1.2 Hypotheses on interaction effects in relation to the development of chronic diseases and the maintenance of health

Pancreatic carcinoma

The following factors play a role in the development of pancreatic cancer in additive and synergistic interactions:

1) chronic inflammation without taking non-steroidal anti-inflammatory drugs (with the exception of aspirin)

2) high fluctuations between minimum and maximum in total cholesterol with multiple measurements at intervals of 2 months

3) Cigarette smoking with a dose-response relationship (the longer people smoke and the greater the number of cigarettes, the higher the risk of pancreatic cancer)

4) Diet: unhealthy diet with digestive problems (chronic diarrhea and/or constipation)

5) Alcohol consumption (dose-response relationship between years of consumption and grams of alcohol per day)

6) Coffee consumption

7.) Diabetes treated with insulin for relatively few years

8) Forced regular or inadequate exercise

9) Chronic pancreatitis, liver cirrhosis, hepatitis B and gallstones

10) Pancreatic cancer in the family (straight line)

11) Elevated levels of lipase and amylase are predictors of pancreatic cancer (in interaction with other risk factors).

12) CNS-inhibiting psychotropic drugs in combination with CNS-stimulating psychotropic drugs

13) Atheistic attitude, inhibited self-regulation, disintegration between reason and emotion, correction blockade, lingering shock experiences, isolation experiences, negative pleasure difference, etc. are psycho-social risk factors.

14) Difference between mental and physical exhaustion at work and ability to recover

15.) Dysstress in professional life, especially extra workload, excessive demands, suffering from isolation, lack of recognition and high work pressure

16) Low self-love, combined with strong love for parents and family members and less love for God than for oneself.

17) Harmonizing and polarizing conflict of loyalties

18) With regard to Grossarth's typology: interaction between types V, I and II with weakly pronounced types III, IV and VI.

None of the risk factors mentioned above have a disease-causing effect on their own, but only in an interactive context with other factors. For example, chronic pancreatitis is not a risk factor on its own, but only in combination with a family history of pancreatic cancer and several of the above-mentioned factors (e.g. simultaneous high type V and I in combination with cholesterol fluctuations).

5.1.3 Differential predictors

for heart attack

1) Rising cholesterol levels with multiple measurements
2) Ingestion of large amounts of food with the subsequent feeling of discomfort
3.) Diabetes that has persisted for many years
4) systolic and diastolic high blood pressure
5) pronounced sclerosis in the fundus of the eye
6) Angina pectoris
7) Family history of heart attack or stroke
8) CNS-stimulating psychotropic drugs
9) Long-term use of aspirin has a preventive effect
10.) Social isolation
11) pronounced type II behavior (latently aggressive, helpless exposure to the effects of negatively experienced objects without the ability to distance oneself from them) in interaction with type I behavior (altruistic, symbiosis-seeking adaptation in isolation suffering [a longed-for, desired object is not achieved in accordance with needs])
12.) Excessive attachment to a person from the family of origin
13.) Polarizing conflict of loyalties
14.) pronounced rigidity and low flexibility
15.) Low level of personal competence, high pressure of expectations with little reward and few opportunities to shape professional life
16.) Negatively experienced sources of disruption in professional life

Differential predictors
for bronchial carcinoma

1) Cigarette smoking with increasing consumption
2.) Chronic obstructive bronchitis
3) Pulmonary TB
4) Family history of bronchial carcinoma
5) pronounced and unprocessed shock experiences
6) pronounced type I behavior
7) Harmonizing conflict of loyalty

5.1.4 Hypotheses for old and healthy age

1) constant, relatively low levels of total cholesterol
2) Complete abstinence from cigarette smoking (no ex-smokers either)
3.) Nutrition perceived as beneficial
4.) Healthy food in rather small quantities
5.) No coffee consumption
6) No alcohol consumption (not even an ex-alcoholic)
7.) No diabetes
8.) Low to normal blood pressure
9.) Beneficial physical exercise
10.) Regular and moderate or moderate-irregular exercise
11.) no pronounced organ damage (e.g. low degree of sclerosis in the back of the eye, no liver cirrhosis)
12.) Low family history of chronic diseases
13.) No long-term medication (even drugs with a high preventive effect, such as NSR [non-steroidal anti-inflammatory drugs], only have a relative effect, i.e. they prolong life and prevent disease if risk factors are already present)
14) pronounced type IV behavior (a pronounced type III and V also does no harm)
15.) extremely low pronounced type I and II behavior
16) Spontaneous relationship with God
17.) Good social integration
18.) pronounced private and professional well-being
19.) pronounced internal autonomy
20.) Good integration of reason, emotion and intuition
21.) pronounced ability to correct (ability to correct behaviors with negative consequences in such a way that experiences with positive consequences arise from them)
22.) Lack of shock experiences with a lasting effect
23.) high pleasant stimulation
24) Ability to transform negative feelings into positive ones
25.) Experienced autonomy in childhood
26.) Positive pleasure difference
27.) Low level of dysstress factors in professional life (e.g. low well-being, high expectation pressure, low reward, additional workload outside of work, excessive demands at work, etc.)
28.) pronounced ability to recover with low mental exhaustion
29.) Mutual stimulation between pleasantly experienced professional life and private life
30) Ability to combine personal interests and inclinations with professional life
31.) equally strong self-love with experienced love for parents, family members and important others
32.) experienced love of God as strong or stronger than love of self and others
33.) pronounced ability to cope with dysstress
34.) strong personal competence

5.1.5 Variable name

Physical risk factors
Numbered variables are:
ORGJ01-13: X previous organic damage of the respondent (years)
CAN01-14 : XI different types of cancer in the family (number of persons)
The other physical risk factors in alphabetical order of the variable names:
The relationship between the variables and their localization in the questionnaire is indicated here.

AG	V.1	Alcohol consumption (g per day)
AJ	V.2	" (years)
ALL	XX.5	Allergies (years)
ALZ	XII.3	M-Alzheimer's in the family (number of people)
ASPJ	XIII.3	Ingestion of acetylsalicylic acid
AUI	XX.6	Autoimmune diseases
AV	V.3	Alcohol consumption, tendency to change (3 levels)
BDD	VIII	Blood pressure, diastolic
BDS	VIII	Blood pressure systolic
BWM	IX	phys. Movement, quantity (5 levels)
BWSTIL	IX	" " , forced (5 levels)
BWW	IX	" " Well-being due to (3 levels)
CAN	(XI)	Total CAN01-14 - Cancer in the family (number)
ON	(XI)	Total CAN01-14 - Cancer in the family (number)
CBN	II	Blood cholesterol (regression function)
CH	II	" , mean value
CS	II	" , standard deviation
DIN	VII.1	Diabetes mellitus, years of insulin treatment
DOR	VII.2	" " " Oral treatment
ENTZJ	XX.2	Chronic inflammation (years)
ENTZN	XX.1	" " (number)
ERNM	IV	Nutrition, quantity (3 levels)
ERNQ	IV	" " (3 levels)
ERNW	IV	" , well-being due to the (3 levels)
FIEBG	XX.3	Fever (degrees)
FIEBN	XX.4	" (frequency)
GW	IX.9	Body weight (RR)
HEMJ	XIII.1	depressant medication
HEN	XII.1	Heart attack in relatives (number of people)
HIN	XII.2	Stroke " " (number of persons)
HN	(XII)	Sum of HEN and HIN
KAJ	VI.1	Coffee enjoyment (years)
KAM	VI.2	" (cups per day)
MEDJ	XIII.4	Other medications
NSAIDS	XIII.5	non-steroidal anti-inflammatory drugs
ORGJ	(X)	Sum of ORGJ (organ pre-damage years) 01-13
PARK	XII.4	Parkinson's in the family (number of people)
STIJ	XIII.2	stimulant medication
VDURCHF	IV.14	Chronic diarrhea
VERDSTOE	IV.13	" Digestive disorders
VERSTO	IV.15	" Constipation
ZJ	III.1	Cigarette consumption (years)
ZM	III.2	" (number per day)
ZV	III.3	" , tendency to change (3 levels)

Psychosocial risk factors

Here there are only numbered variables except SRA, SRB:

private well-being-28	XIV Behavior, stress, personality (private life)
TY1-6	XV-XVII Grossarth's patterns of behavior
ARB01-13	XVIII Work, family, environment
PSS01-16	XIX Self-love / love of others, conflicts
ARBB01-20	XXI Self-active career design and motivation
DYEU01-13	XXII Dysstress - Eustress
SRA	XXIII Self-regulation, average of 16 questions
SRB	XXIII Self-regulation, mean of 16 questions, repeated measurement

5.1.6 Results

<u>Group comparisons</u>

The following comparisons are made between the groups 0-5 mentioned in 5.1.1:

1. comparisons of an individual mortality group with the surviving group 0 are initially made on the basis of the individual risk factors; these are correlated with the indicator variables for groups 1-5.
The significant risk factors are then used together and the regression function provides an estimate of the classification error rate for the discrimination between the mortality group in question and Gr.0.
2. in order to obtain a characterization of the long-lived group 0, it is compared with the summary of all deceased groups 1-5.
3. an attempt is also made to differentiate between all groups simultaneously on the basis of the significant risk factors.

<u>Physical risk factors</u>

Individual mortality groups against long-livers
The table contains the correlations of the risk factors with the indicator variables for the groups, i.e. the bivariate relevance of the risk factors. The significance threshold is approximately at a correlation value of $|r|=0.25$.

Group 1: various (other) causes of death

Increasing alcohol consumption (tendency to change: increasing, decreasing, constant)	0.76
Soothing physical exercise (3 levels: soothing, neutral, discomfort-inducing)	-.75
Cigarette consumption - tendency to change (increasing consumption)	0.61
Nutrition that creates well-being (3 levels: beneficial, neutral, discomfort-inducing)	-.61
healthy diet quality (3 levels healthy, unhealthy, healthy and unhealthy)	-.61
High fluctuations of cholesterol in multiple measurements, around the mean value (standard deviation)	0.51
Alcohol consumption (g per day)	0.48
Sum of stroke and heart attack among relatives (number of persons)	.47
Diastolic high blood pressure	0.46
Heart attack in relatives (number of people)	0.43
physical exercise is encouraged	0.40
Coffee consumption (cups per day)	0.40
regular and moderate physical activity Exercise - quantity (5 levels)	-.39
High blood cholesterol (mean value from multiple measurements)	0.38
Cigarette consumption (number per day)	0.38
Prior organ damage (years): degree of sclerotization in the fundus of the eye	0.34
Stroke in relatives (number of people)	0.33 ->
Cigarette consumption (years)	0.33
Organ damage (years): Angina pectoris	0.31

Systolic high blood pressure	0.29
depressant psychotropic drugs	0.29
Diabetes mellitus (years of insulin treatment)	0.27
Nutrition - quantity (3 levels: little, medium, much)	0.26

Group 2: Pancreatic CA

High fluctuations of cholesterol in multiple measurements, around the mean value (standard deviation)	0.61
Soothing physical movement Movement (3 levels: beneficial, neutral, causing discomfort)	-.55
Cigarette consumption (number per day)	0.51
Chronic digestive disorder	0.49
Diabetes mellitus (years of insulin treatment)	0.48
Chronic diarrhea	0.47
Nutrition that creates well-being (3 levels: beneficial, neutral, discomfort-inducing)	-.46
Previous organ damage of the respondent (years): Liver cirrhosis	0.46
Cigarette consumption (years)	0.44
Family history (number of people) of cancer (taking into account all types of cancer)	0.44
Cigarette consumption - tendency to change (increasing consumption)	0.41
Sum of all organ damage	0.39
Alcohol consumption (grams per day)	0.36
healthy food quality (3 levels: healthy, unhealthy, healthy and unhealthy)	-.35
Heart attack in relatives (number of people)	0.35
Organ damage (years): Hepatitis B	0.34
Chronic constipation	0.33
Sum of stroke and heart attack in relatives (number of persons)	0.32
Organ damage (years): Gallstones	0.32
Cancer in the family (number of people): Liver carcinoma	0.30
physical exercise is encouraged	0.28
Coffee consumption (cups per day)	0.28
Previous organ damage (years): chronic pancreatitis	0.28
regular and moderate physical activity Exercise - quantity (5 levels)	-.27
Increasing alcohol consumption (tendency to change: increasing, decreasing, constant)	0.26

Group 3: Bronchial CA

High fluctuations of cholesterol in multiple measurements, around the mean value (standard deviation)	0.63
Cigarette consumption (number per day)	0.55
Cigarette consumption (years)	0.54
Cigarette consumption - tendency to change (increasing consumption)	0.52
Previous organ damage (years): chronic obstructive bronchitis	0.50
Sum of all organ damage	0.50
Family history (number of people): for cancer (taking into account all types of cancer)	0.49
Soothing physical exercise (3 levels: soothing, neutral, discomfort-inducing)	-.45
Family history (number of people): Bronchial carcinoma	0.45
Alcohol consumption (years)	0.42
Nutrition that creates well-being (3 levels: beneficial, neutral, discomfort-inducing)	-.38
Alcohol consumption (g per day)	0.37
healthy diet quality (3 levels: healthy, unhealthy, healthy and unhealthy)	-.34
depressant psychotropic drugs	0.31
Coffee consumption (years)	0.31
Coffee consumption (cups per day)	0.31
Organ damage (years): Lungs TB	0.30 ->
Organ pre-damage (years): degree of sclerotization in the fundus (4 stages)	-.30
Family history of all types of cancer (number of people)	0.27
regular and moderate physical activity Exercise - quantity (5 levels)	-.25

Group 4: M-Alzheimer's disease

Alcohol consumption (g per day)	0.64
M-Alzheimer's in the family (number of people)	0.63
Chronic constipation	0.61
Soothing physical exercise (3 levels: soothing, neutral, discomfort-inducing)	-.59
Diastolic high blood pressure	0.58
Chronic inflammation (number)	0.57
Diabetes mellitus (years of insulin treatment)	0.49
Previous organ damage (years): chronic obstructive bronchitis	0.48
Chronic inflammation (years)	0.47
depressant psychotropic drugs	0.45
Family history (number of people): for cancer (taking into account all types of cancer)	0.44
Family history of all types of cancer (number of people)	0.41
Fever (degrees)	-.40
Previous organ damage of the respondent (years): Liver cirrhosis	0.37
Cigarette consumption (number per day)	0.37
Organ pre-damage (years): degree of sclerotization in the fundus (4 stages)	0.37
regular and moderate physical activity Exercise - quantity (5 levels)	-.36
High blood cholesterol (mean value from multiple measurements)	0.35
Nourishment that produces well-being. (3 levels: beneficial, neutral, discomfort-inducing)	-.35
Organ damage (years): chronic atrophic gastritis	0.35
Fever Frequency	-.34
Sum of all organ damage	0.32
Blood cholesterol, change within the measurement period (regression function)	0.32
healthy food quality (3 levels: healthy, unhealthy, healthy and unhealthy)	-.32
Coffee consumption (cups per day)	0.31
Organ damage (years): Angina pectoris	0.31
Cigarette consumption (years)	0.30
Systolic high blood pressure	0.28
Allergies (years)	-.27
Organ damage (years): Hepatitis B	0.26
Family history (number of people): Testicular carcinoma	0.26

Group 5: Heart attack, stroke

Organ pre-damage (years): degree of sclerotization in the fundus (4 stages)	0.62
Diastolic high blood pressure	0.60
Heart attack in relatives (number of people)	0.52
Sum of stroke and heart attack in relatives (number of persons)	0.51
Systolic high blood pressure	0.50
Fever Frequency	-.45
Soothing physical exercise (3 levels: soothing, neutral, discomfort-inducing)	-.44
Organ damage (years): Angina pectoris	0.43
High blood cholesterol (mean value from multiple measurements)	0.43
Coffee consumption (cups per day)	0.43
Allergies (years)	-.41
healthy food quality (3 levels: healthy, unhealthy, healthy and unhealthy)	-.40
regular and moderate physical activity Exercise - quantity (5 levels)	-.38
Cigarette consumption (number per day)	0.37
Cigarette consumption (years)	0.35
Organ damage (years): Ventricular ulcer (resected)	0.35
Nourishment that produces well-being. (3 levels: beneficial, neutral, discomfort-inducing)	-.34
Coffee consumption (years)	0.34
Cigarette consumption - tendency to change (increasing consumption)	0.32 ->
Diabetes mellitus (years of insulin treatment)	0.31
Blood cholesterol, change within the measurement period (regression function)	0.30
physical exercise is encouraged	0.30

high fluctuation of cholesterol in multiple measurements, around the mean value (standard deviation)	0.28
Stimulating psychotropic drugs	0.26
Aspirin intake (years)	-.25

Psychosocial risk factors

The table contains the correlations of the risk factors with the indicator variables for the groups, i.e. the bivariate relevance of the risk factors. For the names of the variables, please refer to ("Psychosocial risk factors"). The significance threshold is approximately a correlation of |r|=0.25.

A positive correlation with the mortality groups characterizes a risk factor, a negative one a health factor.
Caution! The reverse scoring (0 = extremely strong, 7 = not at all) for ARBB14,15,17,20 and DYEU01,08-11,13 has obviously not been applied, the signs of the correlations correspond to the contents.

Group1: various causes of death

Self-regulation, mean of 16 questions, repeated measurement:	-.88
Self-regulation, average of 16 questions:	-.80
Recoverability:	-.75
Grossarth's behavior pattern type IV:	-.74
interactive stress management:	-.72
Integration of reason and emotion:	-.71
Blockade of emotional perception:	0.70
Type II (Type II: persistent agitation (helplessly at the mercy of negatively experienced states, without the ability to distance oneself))	0.70
negative pleasure difference (higher intensity of feelings in the past than in the present)	0.70
interactive displeasure (persistent displeasure due to the interaction of several factors)	0.69
Shock experiences (persistent emotional overload due to shock experiences)	0.69
interactive pleasure (feelings of pleasure through the interplay of factors from different areas of life) areas of life)	-.68
inner autonomy (independence from objects that lead to negative consequences, e.g. addiction)	-.67
Love for God	-.67
Inability to transform negative feelings into positive feelings in social communication	0.67
Inability to resolve problems through one's own behavior	0.67
private well-being	-.66
Self-regulation (ability to achieve needs-satisfying states through self-activity)	-.64
helpless overexcitement	0.62
Mental and physical exhaustion at work	0.62
Excessive demands in professional life	0.62
Corrective blockade (inability to change behaviors that lead to lasting negative consequences)	0.61
Self-love, self-respect	-.61
Excessive attachment to the family of origin	0.60
Type I: Separation from longed-for objects with persistent suffering in isolation	0.59
Polarizing loyalty conflict (split between negative and positive evaluation of objects to which the person feels loyal)	0.58
Basic ability to transform negative feelings into positive ones	-.58
Religiosity (believes in God, feels the positive effect of the Holy Spirit...)	-.57
Reward/recognition in professional life	-.56
feel loved	-.55
Love for important people	-.55
Well-being at work	-.54 ->
Distorted image of denunciation (traumatically experienced devaluation of one's own person)	0.53
Insulation suffering	0.53

No recognition/appreciation in professional life	-.51
harmonizing loyalty conflict (the need to create harmony between different people to whom the person feels loyal but who are in irreconcilable conflict with each other)	0.51
Experienced autonomy (recognition of their own person) and loving acceptance in the family	-.51
Flexibility	-.49
Interactive dysstress (excessive demands experienced due to the interaction of various factors from different areas of life)	0.49
Design options/influence in the workplace	-.48
Isolation/rejection in the family of origin	0.47
chronically unstimulated (persistent monotony, boredom)	0.47
Sources of interference in professional life	0.46
social isolation	0.46
unbroken love for partners, spouses, children, etc.	-.46
Integration of personal skills with professional requirements	-.44
Quick reconciliation in the family of origin	-.39
Rigidity	0.39
Quick reconciliation with your partner	-.37
Type VI: emotionally driven anti-rational behavior	0.36
Personal competence	-.35
Self-active career design	-.35
Extra workload	0.35
Type III: ambivalent adaptation, extreme fluctuations between closeness and distance	-.32
Suffering from isolation at work	0.28

Group2: Pancreatic CA

interactive displeasure (persistent displeasure due to the interaction of several factors)	0.72
Recoverability	-.71
Interactive stress management (ability to cope with dysstress)	-.71
Blockade of emotional perception	0.70
interactive pleasure (feelings of pleasure through the interplay of facts from different areas of life) areas of life)	-.69
Inability to transform negative feelings into positive feelings in social communication	0.69
Excessive demands in professional life	0.69
Inability to resolve problems through one's own behavior	0.68
Type I: Separation from longed-for objects with persistent suffering in isolation	0.66
negative pleasure difference (higher intensity of feelings in the past than in the present)	0.66
Shock experiences (persistent emotional overload due to shock experiences)	0.65
Type IV: Well-being through self-regulation	-.65
Integration of reason and emotion	-.64
Mental and physical exhaustion at work	0.63
harmonizing loyalty conflict (the need to create harmony between different people to whom the person feels loyal but who are in irreconcilable conflict with each other)	0.62
Excessive attachment to the family of origin	0.61
Insulation suffering	0.61
chronically unstimulated (persistent monotony, boredom)	0.61
Correction blockage	0.59
feel loved	-.56
inner autonomy (independence from objects that lead to negative consequences...)	-.56
Polarizing loyalty conflict (split between negative and positive evaluation of objects to which the person feels loyal)	0.55
Self-love, self-respect	-.55 ->
private well-being	-.55
No recognition/appreciation in professional life	0.54
Love for God	-.54
Flexibility	-.54
Reward/recognition in professional life	-.53
Self-regulation	-.52

Design options/influence in the workplace	-.52
Isolation/rejection in the family of origin	0.52
Basic ability to transform negative feelings into positive ones	-.52
Well-being at work	-.51
Type II: persistent agitation (at the mercy of negatively experienced states, without the ability to distance oneself)	0.51
Integration of personal skills with professional requirements	-.47
helpless overexcitement	0.46
Religiosity (believes in God, feels the positive effect of the Holy Spirit ...)	-.45
Self-active career design	-.44
Experienced autonomy (recognition of own person) and loving acceptance in the family	-.43
rational anti-emotional behavior	0.42
Suffering from isolation at work	0.41
Interactive dysstress (excessive demands experienced due to the interaction of various factors from different areas of life)	0.40
Personal competence	-.39
Extra workload	0.39
unbroken love for partners, spouses, children, etc.	-.37
Rigidity	0.36
Type III: ambivalent adaptation, extreme fluctuations between closeness and distance	-.31
Love for important people	-.27
Quick reconciliation in the family of origin	-.27

Group3: Bronchial CA

harmonizing loyalty conflict (the need to create harmony between different people to whom the person feels loyal but who are in irreconcilable conflict with each other)	0.83
interactive displeasure (persistent displeasure due to the interaction of several factors)	0.76
Type I: Separation from longed-for objects with persistent suffering in isolation	0.73
Interactive stress management (ability to cope with dysstress)	-.72
chronically unstimulated (persistent monotony, boredom)	0.70
Love for God	-.67
Blockade of emotional perception	0.66
Isolation/rejection in the family of origin	0.66
Type II: persistent agitation (at the mercy of negatively experienced states, without the ability to distance oneself)	0.66
negative pleasure difference (higher intensity of feelings in the past than in the present)	0.65
interactive pleasure (feelings of pleasure through the interplay of factors from different areas of life) areas of life)	-.65
Type IV: Well-being through self-regulation (creation of needs-appropriate states)	-.63
Mental and physical exhaustion at work	0.63
Insulation suffering	0.62
Recoverability	-.62
Integration of reason and emotion	-.61
Shock experiences (persistent emotional overload due to shock experiences)	0.60
Excessive demands in professional life	0.60
inner autonomy (independence from objects that lead to negative consequences, e.g. addiction)	-.59 ->

Excessive attachment to the family of origin	0.58
Self-regulation (ability to achieve needs-satisfying states through self-activity)	-.57
helpless overexcitement	0.56
Inability to transform negative feelings into positive feelings in social communication	0.56
Reward/recognition in professional life	-.56
private well-being	-.56
feel loved	-.55
Inability to resolve problems through one's own behavior	0.54
Corrective blockade (inability to change behaviors that lead to lasting negative consequences)	0.54
Suffering from isolation at work	0.52
Flexibility	-.52
Religiosity (believes in God, feels the positive effect of the Holy Spirit ...)	-.51
Social isolation	0.50
Polarizing loyalty conflict (split between negative and positive evaluation of objects to which the person feels loyal)	0.48
No recognition/appreciation in professional life	-.48
Interactive dysstress (excessive demands experienced due to the interaction of various factors from different areas of life)	0.48
Experienced autonomy (recognition of own personality) and loving acceptance in the family	-.48
Design options/influence in the workplace	-.47
Basic ability to transform negative feelings into positive ones	-.47
Self-love, self-respect	-.46
Personal competence	-.43
Integration of personal skills with professional requirements	-.43
Distorted image Denunciation (traumatic experience of devaluation of one's own person)	0.39
Type III: ambivalent adaptation, extreme fluctuations between closeness and distance	-.38
Well-being at work	-.38
Self-active career design	-.37
Rigidity	0.36
Sources of interference in professional life	0.33
Extra workload	0.32
pleasant environment (nature, living)	-.32
High expectations and work pressure in professional life	0.31

Group 4: M-Alzheimer's disease

mental training	-.87
Sustained physical contact with the partner	-.83
Permanent learning in professional life	-.78
Stimulation of zest for life	-.78
chronically unstimulated (persistent monotony, boredom)	0.76
Recoverability	-.75
antagonistic activation of rational and emotional impulses (inability to justify activated feelings rationally and to justify rational insights emotionally) - rational and emotional impulses are in conflict with each other	0.72
Inhibition in the regulation of closeness and distance to emotionally important objects	0.72
Enthusiasm for personal achievement in professional life	-.66
Professional life based on own abilities	-.65
High work motivation in professional life	-.64
Interactive stress management (ability to cope with dysstress)	-.64
Pleasurable transformation of childhood experiences in the present	-.64
Excessive demands in professional life	0.63
Needs-oriented professional life	-.62
Professional visions	-.62
No recognition/appreciation in professional life	0.60 →
Transparent flow of information in professional life	-.60

Reward/recognition in professional life	-.58
Self-active career design	-.57
Self-regulation (ability to achieve needs-satisfying states through self-activity)	-.57
Type IV: Well-being through self-regulation (creation of needs-appropriate states)	-.57
interactive pleasure (feelings of pleasure through the interplay of factors from different areas of life) areas of life)	-.56
Flexible self-activation in professional life	-.56
Well-being through indulgence and renunciation	-.56
Integration of personal skills with professional requirements	-.54
Design options/influence in the workplace	-.54
inner autonomy (independence from objects that lead to negative consequences, e.g. addiction)	-.53
Type I: Separation from desired objects with persistent suffering in isolation	0.52
Integration of reason and emotion	-.51
Flexibility	-.51
Inhibition of joie de vivre	0.50
Physical contact with parents	-.50
non-transparent flow of information in professional life	0.49
Separability in professional life	-.48
negative pleasure difference (higher intensity of feelings in the past than in the present)	0.47
Mental and physical exhaustion at work	0.47
Self-love, self-respect	-.47
Positive communication in professional life	-.46
private well-being	-.46
Flexibility in professional life	-.44
blocked motivation to work in professional life	0.43
Positive communication in professional life (mutual recognition of skills and compensation for weaknesses)	-.43
Insulation suffering	0.42
Ability to inspire professional partners	-.42
Social isolation	0.42
Inability to resolve problems through one's own behavior	0.41
Experienced autonomy (recognition of their own person) and loving acceptance in the family	-.41
Blockade of emotional perception	0.40
Basic ability to transform negative feelings into positive ones	-.40
Unpleasant transformation of childhood experiences in the present	0.40
feel loved	-.40
Type III: ambivalent adaptation, extreme fluctuations between closeness and distance	-.39
Isolation/rejection in the family of origin	0.37
harmonizing loyalty conflict (the need to create harmony between different people to whom the person feels loyal but who are in irreconcilable conflict with each other)	0.37
Personal competence	-.37
Inability to transform negative feelings into positive feelings in social communication	0.35
Well-being at work	-.34
Chronic uncontrolled anxiety	0.33
interactive displeasure (persistent displeasure due to the interaction of several factors)	0.33
pleasant environment (nature, living)	-.32
Sense of belonging in professional life	-.31
Positive communication before concluding professional contracts	-.30
Quick reconciliation with your partner	-.26

Group 5: Heart attack, stroke

Type II: persistent agitation (at the mercy of negatively experienced states, without the ability to distance oneself)	0.73
antagonistic activation of rational and emotional impulses (inability to justify activated feelings rationally and to justify rational insights emotionally) - rational and emotional impulses are in conflict with each other	0.69
Type IV: Well-being through self-regulation (creation of needs-appropriate states)	-.69
Sustained physical contact with the partner	-.66
Inhibition in the regulation of closeness and distance to emotionally important objects	0.65
Excessive attachment to the family of origin	0.64
Love for God	-.64
Well-being through indulgence and renunciation	-.63
Polarizing loyalty conflict (split between negative and positive evaluation of objects to which the person feels loyal)	0.63
helpless overexcitement	0.62
Recoverability	-.62
Pleasurable transformation of childhood experiences in the present	-.60
Type I: Separation from desired objects with persistent suffering in isolation	0.59
chronically unstimulated (persistent monotony, boredom)	0.58
inner autonomy (independence from objects that lead to negative consequences, e.g. addiction)	-.58
interactive displeasure (persistent displeasure due to the interaction of several factors)	0.57
unbroken love for partners, spouses, children, etc.	-.56
negative pleasure difference (higher intensity of feelings in the past than in the present)	0.56
Inhibition of joie de vivre	0.56
Positive communication in professional life	-.55
blocked motivation to work in professional life	0.55
Excessive demands in professional life	0.55
Physical contact with parents	-.54
Pleasure/unpleasure-emphasized transformation of childhood experiences in the present	0.54
Religiosity (believes in God, feels the positive effect of the Holy Spirit ...)	-.53
Stimulation of zest for life	-.53
Sense of belonging in professional life	-.53
Basic ability to transform negative feelings into positive ones	-.52
Inability to transform negative feelings into positive feelings in social communication	0.51
Mental and physical exhaustion at work	0.51
Chronic uncontrolled anxiety	0.51
High work motivation in professional life	-.51
Self-regulation (ability to achieve needs-based states through self-activity)	-.51
Separability in professional life	-.50
Shock experiences (persistent emotional overload due to shock experiences)	0.50
Interactive stress management (ability to cope with dysstress)	-.50
Reward/recognition in professional life	-.50
private well-being	-.50
Correction blockage	0.49
Insulation suffering	0.48
interactive pleasure (feelings of pleasure through the interplay of factors from different areas of life) areas of life)	-.48
Chronic emotional pain	0.48
Flexibility	-.47
Integration of reason and emotion	-.47
Religious orientation in professional life	-.47
Experienced autonomy (recognition of one's own personality) and loving acceptance in the family	-.47
Inability to resolve problems through one's own behavior	0.47
Non-transparent flow of information in professional life	0.46
Transparent flow of information in professional life	-.44 →

Positive communication in professional life (mutual recognition of skills and compensation for weaknesses)	-.44
No recognition/appreciation in professional life	-.43
Love for important people	-.43
Isolation/rejection in the family of origin	0.42
Sources of interference in professional life	0.42
feel loved	-.40
Social isolation	0.39
mental training	-.39
Social insecurity in professional life (fear of losing one's job)	0.37
Design options/influence in the workplace	-.36
Self-love, self-respect	-.36
Blockade of emotional perception	0.35
Quick reconciliation with your partner	-.35
Integration of personal skills with professional requirements	-.35
Quick reconciliation in the family of origin	-.34
Type III: ambivalent adaptation, extreme fluctuations between closeness and distance	-.34
Needs-oriented professional life	-.33
Distorted image of denunciation (traumatically experienced devaluation of one's own person)	0.33
Flexible self-activation in professional life	-.32
Type VI: emotionally driven anti-rational behavior	0.31
Well-being at work	-.31
Harmonizing conflict of loyalties	0.31
Professional life based on own abilities	-.30
interactive dysstress	0.30
Demotivating criticism in professional life	0.28
Enthusiasm for personal achievement in professional life	-.28
Flexibility in professional life	-.27
Self-active career design	-.27
Suffering from isolation at work	0.26

Joint use of physical and psychosocial risk factors

If we combine the significant risk factors for each of the groups 1-5 into a regression function and use it to predict membership of the relevant mortality group compared with the long-lived group 0, the following results are obtained:

Group	Misclassification rate (%)
0	2.7 see below ("Long-lived group vs. mortality group")
1	0,8
2	0,6
3	1,0
4	0,0
5	1,7

Longevity group versus all mortality groups

To characterize the long-lived group 0, it was compared with the entirety of mortality groups 1-5. The table contains the correlations of the risk factors with the indicator variable for group 0, i.e. the bivariate relevance of the risk factors, which are to be understood here as health factors. For the names of the variables, please refer to "Variable names". The significance threshold is approximately a correlation of |r|=0.25.

A positive correlation with Gr.0 characterizes a health factor, a negative one a risk factor. Caution! The reverse scoring (0 = extremely strong, 7 = not at all) for ARBB14,15,17,20 and DYEU01,08-11,13 has obviously not been applied, the signs of the correlations correspond to the contents.

Health factors - physical

Fever Frequency	0.47
Soothing physical exercise (3 levels: soothing, neutral, discomfort-inducing)	0.43
High fluctuations of cholesterol in multiple measurements, around the mean (standard deviation)	-.43
Allergies (years)	0.42
mild allergies (years)	0.41
Cigarette consumption (number per day)	-.40
Creating well-being. Nourishing. (3 levels: beneficial, neutral, causing discomfort)	0.40
Cigarette consumption (years)	-.38
healthy diet quality (3 levels: healthy, unhealthy, healthy and unhealthy)	0.36
Cigarette consumption - tendency to change (increasing consumption)	-.32
Diastolic high blood pressure	-.32
Alcohol consumption (grams per day)	-.29
Sum of all organ damage	-.28
Coffee consumption (cups per day)	-.27
regular and moderate physical activity Exercise - quantity (5 levels)	0.27
physical exercise is encouraged	-.26
Heart attack in relatives (number of people)	-.26
Family history (number of people): for cancer (taking into account all types of cancer)	-.26
Systolic high blood pressure	-.26

Health factors - psychosocial

Self-regulation, average of 16 questions, repeated measurement (self-active restoration of well-being-generating situation)	0.88
Self-regulation	0.80
antagonistic activation of rational and emotional impulses (inability to justify activated feelings rationally and to justify rational insights emotionally) - rational and emotional impulses are in conflict with each other	-.68
Sustained physical contact with the partner	0.68
Type IV: Well-being through self-regulation (creation of needs-appropriate states)	0.65
Inhibition in the regulation of proximity and distance to emotionally important objects	-.64
Well-being through indulgence and renunciation	0.64
Pleasurable transformation of childhood experiences in the present	0.62 →

Interactive dysstress management: Overcoming excessive demands by using different activities from different areas of life	0.59
Interactive pleasure (feelings of pleasure through the interplay of factors from different areas of life)	0.58
Interactive pleasure (use of different activities to achieve pleasure)	0.58
inner autonomy (independence from objects that lead to negative consequences, e.g. addiction in anticipation of positive experiences)	0.57
negative pleasure difference (intensity of pleasure in the present is lower than in the past)	-.57
Integration of reason and emotion	0.56
Inability to recover	-0.56
Stimulation of zest for life	0.56
Physical contact with parents	0.56
Self-regulation (ability to achieve needs-satisfying states through self-activity)	0.56
Type I: Separation from longed-for objects with persistent suffering in isolation	-.56
Positive communication in professional life	0.55
Inhibition of joie de vivre	-.55
private well-being	0.55
chronically unstimulated (persistent monotony, boredom)	-.54
Type II: persistent agitation (helplessly at the mercy of negatively experienced states, without the ability to distance oneself)	-.54
Excessive attachment to the family of origin	-.54
Love for God	0.54
High work motivation in professional life	0.54
Inability to transform negative feelings into positive feelings in social. Communication	-.53
Shock experiences (persistent emotional overload due to shock experiences)	-.53
blocked motivation to work in professional life	-.53
Blockade of emotional perception	-.52
Separability in professional life	0.52
Inability to resolve problems through one's own behavior	-.51
helpless overexcitement	-.51
Basic ability to transform negative feelings into positive ones	0.51
Pleasure/unpleasure-emphasized transformation of childhood experiences in the present	-.51
Corrective blockade (inability to change behaviors that lead to lasting negative consequences)	-.50
Sense of belonging in professional life	0.50
Excessive demands in professional life	-.49
Mental and physical exhaustion at work	-.49
Insulation suffering	-.49
Experienced autonomy (recognition of oneself), loving acceptance in the family	0.49
Chronic uncontrolled anxiety	-.48
Transparent flow of information in professional life	0.48
non-transparent flow of information in professional life	-.47
Religiosity (believes in God, feels the positive effect of the Holy Spirit ...)	0.47
Reward/recognition in professional life	0.46
Isolation/rejection in the family of origin	-.46
harmonizing loyalty conflict (the need to create harmony between different people to whom the person feels loyal but who are in irreconcilable conflict with each other)	-.46
Flexibility	0.45
Positive communication in professional life (mutual recognition of skills and compensation for weaknesses)	0.45
feel loved	0.45 →
Chronic emotional pain	-.44
mental training	0.43
No recognition/appreciation in professional life	0.42

Polarizing loyalty conflict (split between negative and positive evaluation of objects to which the person feels loyal)	-.42
Religious orientation in professional life	0.42
Self-love, self-respect	0.42
Needs-oriented professional life	0.39
Design options/influence in the workplace	0.39
Social isolation	-.38
Professional life based on own abilities	0.37
Integration of personal skills with professional requirements	0.37
Flexible self-activation in professional life	0.36
Enthusiasm for personal achievements in professional life	0.36
Well-being at work	0.35
Social insecurity in professional life (fear of losing one's job)	-.35
Type III: ambivalent adaptation, extreme fluctuations between closeness and distance	0.33
Distorted image of denunciation (traumatically experienced devaluation of one's own person)	-.32
Interactive dysstress (excessive demands experienced due to the interaction of various factors from different areas of life)	-.32
Personal competence	0.31
Self-active career design	0.31
Flexibility in professional life	0.31
Permanent learning in professional life	0.31
Suffering from isolation at work	-.30
Quick reconciliation in the family of origin	0.29
Professional visions	0.27
Demotivating criticism in professional life	-.27
Sources of interference in professional life	-.26
Quick reconciliation with your partner	0.26
pleasant environment (nature, living)	0.25
Ability to inspire professional partners	0.25
unbroken love for partners, spouses, children, etc.	0.25

To illustrate the correlations, we would like to show the specific distribution of the most important health factor. For each of its levels, it shows the proportion of the total group that did not die.

Group 0 (long-lived vs. all causes of death), 100-mortality
SRA (self-regulation)

	N	%
Not specified	18	
1 -3	51	2
4	31	58
5 -7	60	98

Simultaneous comparison of all groups

An attempt was also made to use the significant physical and psychosocial risk factors to differentiate between all groups simultaneously as part of a discriminant analysis. For this purpose, group 1 was excluded, in which the specific causes of death of groups 2-5 all occur and are mixed with others. <

The *result*:

Group: predicted:

actual	Longevity 0	Pancreas CA 2	Bronchial CA 3	M-Alzheimer's 4	Heart-brain 5	Total	Misclass rate.
0	164	0	3	0	3	170	3,5 %
2	2	113	20	0	3	138	18,1 %
3	2	6	114	0	6	128	10,9 %
4	0	0	0	17	0	17	0,0 %
5	1	1	8	1	119	130	8,5 %
Total	169	120	145	18	131	583	8,2 %

Even the differentiation within the two types of cancer succeeds with a misclassification rate of (20+6)/(20+6+113+114) = 10%. If the two types of cancer are combined (N=266), there are still 13 misclassifications = 5% and thus lies between the predictability of heart attack/stroke deaths (misclassification 8.5%) and that of the long-lived (3.5%). In the M-Alzheimer's group, the prediction succeeds without error.

5.2 Health into old age - an empirical comparison between early deceased and long-lived - Study B

5.2.1 Summary

The relevance of various psychosocial dimensions (including those relating to working life, family relationships and personality) and numerous physical risk factors is examined on the basis of the dependent variables mortality and health into old age.
While the work dimension is a highly relevant risk factor in itself, it recedes somewhat into the background in the multivariate competition with the other dimensions.
However, interactions with it can also be demonstrated, i.e. modifications of the effectiveness of the work dimension by the other dimensions or - which is the same in the context of the models used - modifications of their effectiveness by the working conditions.

5.2.2 Hypotheses

It is expected that variables relating to working life are also relevant for mortality and health into old age, specifically the dimensions of "stress", "resources" and "strain" (more details in 3.1).
However, mortality relevance is also expected for other psychosocial conditions - namely those relating to the family situation and personality - and of course for physical risk factors. Finally, it is expected that the relevant factors do not act independently of each other, but are mutually dependent in their effectiveness.

5.2.3 Sample of persons

This study is based on the following exclusively male groups of people:
170 people who were 83.4 years old on average in 1998 and did not suffer from any chronic illness or significant disability;
489 people who had died of various diseases by 2002.
We work with the indicator variable MORT(ality) for the second compared to the first group.

5.2.4 Independent variables

Independent variables relating to working life
The Roman numerals indicate the corresponding sections of the questionnaire in the appendix. There are 13 questions from XVIII and 20 questions from XXI, which are labeled ARB01-13 and ARBB01-20 respectively. However, the latter were only measured for around 200 people. The ARB dimension was formed from these questions as their multivariate regression function for MORT. We now report their relationship with the individual questions in the form of their simple correlations, ordered according to the magnitude of the correlation. The abbreviations "bel", "res" and "bea" denote a content-related assignment to the dimensions "stress from the work situation", "resources of the individual" and "strain" in the sense of the individual's reaction to the stress situation based on their resources. A positive sign indicates a risk factor, a negative sign indicates a health factor.

r with ARB

-0.69	ARBB19 bea Work motivation
0.69	ARB13 bea Exhaustion
0.68	ARB11 Overload (includes elements of bel and bea)
-0.68	ARBB11 res Distancing ability
0.67	ARBB20 bea Lack of motivation
-0.65	ARB03 reward/recognition
-0.64	ARBB16 bel Transparency
-0.61	ARB08 bel Recognition
-0.61	ARBB18 bea Sense of belonging
0.60	ARBB17 belies lack of transparency
-0.59	ARBB10 pos. comm. -> Recognition (elements v res u bel are included here)
-0.57	ARB04 bel Design option
-0.55	ARB05 Skills are integrated (elements v res u bel are included here)
-0.55	ARBB07 res Relationship with God in professional life
-0.53	ARB01 bea Well-being
-0.52	ARBB01 bea Needs-based approach
-0.51	ARBB06 Capabilities come into play (includes elements of res u bel)
-0.50	ARBB09 res Self-recognition
-0.50	ARBB02 res Flexibility
-0.46	ARB09 bel Design option
0.46	ARBB15 uncertainty
-0.44	ARBB05 res Diversification
-0.39	ARBB04 res Creativity
-0.39	ARBB08 res permanent learning
0.39	ARBB14 due to lack of recognition
0.38	ARB07 bel unjust deferral
0.37	ARB06 bel Faults
-0.34	ARBB13 res Communication skills
-0.33	ARBB12 res Ability to motivate
0.28	ARB10 charges non-occupational charges
0.16	ARB02 bel Working pressure
SIGNIFICANCE THRESHOLD	
0.14	ARB12 bea Frustration
0.09	ARBB03 res Mobility

The signs of the correlations consistently correspond to the expectations that arise from the brief descriptions of the questions above. The sub-dimensions bel, res and bea are all represented among the 6 highest correlating questions; the relationships with res questions appear to be among the lower correlations.

Independent variables relating to family relationships

For this purpose, 11 questions from XIV ("PS"), XIX ("PSS") and XXII ("DYEU") were provided a priori, and the dimension FAM was formed as their regression function for MORT. Here again their connections with the individual questions:

r with FAM

-0.87	DYEU07	pleasant physical contact
-0. 81	DYEU12	Pleasure-oriented connection between childhood and the present
0. 71	PS23	Excessive attachment to the family of origin
-0.70	DYEU06	Reconciling and problem-solving physical contact
-0.65	PS24	Autonomy with loving acceptance in the family of origin
0.60	DYEU13	Unfunny connection between childhood and the present
0.60	PSS07	polarized conflict of loyalties
0.58	PSS08	Non-polarized conflict of loyalties
0.55	PS22	Isolation, rejection in the family of origin
-0.40	PS27	Ability to reconcile in the family of origin
-0.35	PS28	Ability to reconcile with partner

Here, too, the empirical results are in line with expectations.

Personality-related independent variables and physical risk factors

The dimension PERS was formed from all questions from XIV-XVII, XIX and XXII that do not fall under family relationships as their regression function for MORT. In the same way, the dimension PH was formed from 70 physical risk variables. Due to the large number of questions involved, we do not report the individual correlations for both dimensions.

5.2.5 Relationships to mortality

Simple correlations

The correlations of the 4 dimensions formed with each other and with MORT are as follows:

	ARB	FAM	PERS	PH	MORT
ARB		0.74	0.76	0.65	0.72
FAM	0.74		0.82	0.65	0.77
PERS	0.76	0.82		0.71	0.85
PH	0.65	0.65	0.71		0.73
MOR	0.72	0.77	0.85	0.73	

It can be seen that the dimensions formed correlate significantly with each other, FAM correlates most strongly with PERS (r=0.82), PH weakest, which correlates most strongly with PERS (r=0.71), but with no other dimension weaker than r=0.65. *ARB holds the middle ground in terms of the strength of its relationships.* The relationships with mortality are strong for all 4 dimensions and differ little, with PERS taking the top position with r=0.85.

To illustrate this, we provide a concrete illustration of the relationship between ARB and MORT:

ARB	N	MORT(%)
K.Ang.	114	-
0	25	0
1	58	21
2	86	56
3	135	96
4	200	98
5	41	100

The correlation is uniform and very strong: in the extreme groups, mortality is 0% or 100%; in the last three groups (which account for more than half of all cases with N=376) it is 97.6%. It should be noted that the basis for the percentages does not correspond to a cross-section of the population, but consists only of the extreme groups of those who died and those who remained healthy into old age.

Individual ARB questions also show a strong correlation with mortality. We present one question each from the res and bel areas, both of which were only asked of around 200 people:

	Ability to distance oneself (ARBB11)		Transparency (ARBB16)	
Points	N	MORT(%)	N	MORT(%)
1	30	3	7	(0)
2	43	26	51	14
1-2			58	12
3	37	30	22	27
5	30	43	59	44
6	23	69	10	50
6	21	71	33	64
7	17	88	18	89
Total	201		200	

Here, too, the correlation is uniform and very strong, and in the extreme groups the deviation from 0% or 100% is nowhere more than 12%.

Simultaneous use of the 4 dimensions

Under multivariate conditions, there is "cut-throat competition" between the independent variables, and it can be seen that the fairly small differences between the simple correlations

now have a massive impact. The ARB dimension in particular is in danger of being pushed into insignificance, especially when FAM and PERS are used simultaneously.

We now list those (logistic regression) models in which ARB was able to assert itself significantly, whereby in each case only either FAM or PERS was used in addition to PH. The dependent variable is MORT.

Indep. variables	p (ARB)
ARB, FAM, PH	0.03
ARB, PERS, PH	0.02
ARB, PERS, PH	0.01

limited to the approximately 200 people for whom all 33 ARB variables were measured

The effects of the other dimensions are always (and usually considerably) stronger than those of ARB.

The result of this analysis is that family, personality and physical conditions are the main determinants of mortality and that the conditions represented by ARB only marginally modify the result.

This is despite the fact that ARB on its own, as reported in 5.2.5.1, is a strong and highly significant predictor of mortality, hardly inferior to the other dimensions.

We see the reason for the different multivariate relationships in the fact that there is a large common proportion of the explained variance for the 4 dimensions, so that only the part of the explained variance that can be traced back to a single dimension is reflected in the multivariate significance.

(The impression that the work variables are marginalized in the multivariate procedure arises because the personality variables are much more numerous. Completely different multivariate results appear where several combined variables are formed in relation to personality. Here it can be seen that the result depends on the form in which variables are summarized. - see joint analysis of study A and B)

5.2.6 Interactions

By an interaction between two risk factors, we mean that the effect of one depends on the level of the other, and vice versa.

We examined interactions between ARB and the other dimensions by also including the product of ARB with the other dimension in the logistic regression model for MORT.

We use PS to denote the combination of FAM and PERS. These models, each with three variables, produced the following results:

Indep. variables	Product:	
	p	Sign
ARB, PH	0.005	-
ARB, PS	0.003	-
ARB, PERS	0.01-	-
ARB, FAM	--	

The sign of the interaction is negative if it is significant, i.e. the risk factors weaken each other:

The more unfavorable the situation is with regard to one risk factor, the weaker the impact of unfavorable values on the other risk factor. There is therefore a kind of ceiling effect.

If the two dimensions are now defined in opposite directions as health factors and the dependent variable is also reversed to health instead of mortality, the signs of the two dimensions remain positive in the regression model, as can be easily calculated, while the product is given the opposite sign, in this case the positive sign.

This means that, defined as health factors, the two dimensions strengthen each other's effect, while they weaken each other in the form of risk factors.

This is not a special property of the available data, but a mathematical fact.

As an example of this, we present the interaction between ARB and PERS, whereby the two health factors are dichotomized for the sake of clarity (the values 0 and 1 mean "lower" and "higher"):

PERS	ARB	N	Healthy %
0	0	372	1
0	1	80	2
1	0	49	37
1	1	158	92
Total	659		

The interaction is significant (also with the dichotomized independent variables) in the logistic regression model (p=0.01). It consists of the fact that with unfavorable personality preconditions, even favorable ARB conditions have virtually no effect (2-1 = 1%), while with favorable PERS preconditions they increase the rate of those who remain healthy by 92-37 = 55% (difference 55-1 = 54%).

Similarly, under unfavorable ARB conditions, PERS only has an effect of 37-1 = 36%, while under favorable ARB conditions PERS accounts for 92-2 = 90% (difference again 90-36 = 54%).

The personality prerequisites therefore not only have their own effect, but also decisively modify the effect of the ARB conditions.

However, it should not be forgotten that personal abilities are also included in ARB in the form of the res sub-dimension, and that the stress situation (bel) is also seen through the eyes of the respondent.

5.3 Differential prediction of health and various causes of death - Study B

by means of physical and psychosocial risk factors

The following exclusively male groups of people are examined:

Gr.0: 170 people who were on average 83.4 years old in 1998 and did not suffer from any chronic illness or significant disability;

Gr.2: 138 people who had died of pancreatic cancer by 1998 at an average age of 67.6 years;

Gr.3: 128 persons who had died of bronchial carcinoma by 1998 at an average age of 67.7 years;

Gr.4: 17 people who had died of Alzheimer's disease by 1998 at an average age of 78.9 years;

Gr.5: 130 people who had died of a heart attack or stroke by 1998 at an average age of 72.5 years.

Total number: 583 people.

Number of physical risk variables: 68
Number of psychosocial risk variables: 94

From both groups of variables, the best predictors for the respective cause of death compared to the group of those who remained healthy were determined by stepwise regression analysis and the respective regression function was formed from them. These regression functions were used in a parametric discriminant analysis to differentiate the groups from each other, namely

(A) all groups with summary of the two cancer groups (2, 3),
(B) the two cancer groups (2, 3) against each other.

These discriminant analyses were carried out with the following groups of risk factors:
1. only with the physical,
2. only with the psychosocial ones,
3. with all risk factors.

5.3.1 Results

(1A) The aim here is to differentiate between the *healthy, cancer, Alzheimer's, heart attack/brain stroke* groups *using only* physical *risk factors.*

Frequency Row Pct	predicted				
	0	2	4	5	total
0	162 95.29	2 1.18	0 0.00	6 3.53	170
2	13 4.89	231 86.84	3 1.13	19 7.14	266
4	0 0.00	1 5.88	14 82.35	2 11.76	17
5	23 17.69	8 6.15	2 1.54	97 74.62	130
total	198	242	19	124	583

The misclassification rate (FCR) can be calculated in various ways.

(FKR1) Simple frequency calculation. Here, the frequencies on the main diagonal (the correct classifications) are added together, and the difference against the total number 583 gives the number of misclassifications. Their relative frequency is 13.6%.

(FKR2) FKR1 (like the multiple correlation) has a positive bias. This is largely eliminated with the method FKR2 "1 against n-1", in which the question of correct or incorrect classification is determined for each sample element using discriminant functions that were only formed from the remaining n-1 cases. In this way, what is otherwise achieved with the help of an independent test sample is achieved, but here without the group sizes being halved by the division into calibration and test sample.

The result here is FKR2=13.9%. The difference compared to the naive FKR1=13.6% is therefore small (due to the rather large sample). For this reason, we will restrict ourselves to the communication of the FKR1 in the following.

(FKR3) It is also possible to calculate a smoothed FKR in which the question of correct or incorrect classification is not answered with yes or no, but based on the group membership probabilities of the sample elements. This method of calculation leads to a slightly lower sampling error of the PCR. We refrain from reporting such PCRs here, especially as the differences compared to PCR1 and PCR2 are small.

(1B) This is about *distinguishing the two types of cancer from each other using only* physical *risk factors.*

Frquency Row Pct	predicted		
	2	3	total
2	134 97.10	4 2.90	138
3	5 3.91	123 96.09	128
total	139	127	266

FKR1=3.4%

(2A) The aim here is to differentiate between the groups *healthy, cancer, Alzheimer's, heart attack/brain stroke using only* psychosocial *risk factors.*

Frequency Row Pct	predicted				
	0	2	4	5	Total
0	165 97.06	5 2.94	0 0.00	0 0.00	170
2	13 4.89	241 90.60	0 0.00	12 4.51	266
4	0 0.00	0 0.00	17 100.00	0 0.00	17
5	3 2.31	7 5.38	1 0.77	119 91.54	130
Total	181	253	18	131	583

FKR1=7.0%

(2B) The aim here is to differentiate *between* the *two types of cancer using only* psychosocial *risk factors.*

Frquency Row Pct	predicted 2	3	total
2	116 84.06	22 15.94	138
3	14 10.94	114 98.06	128
total	130	136	266

FKR1=13.5%

(3A) The aim here is to differentiate between the groups *healthy, cancer, Alzheimer's, heart attack/brain stroke with the help of* all *risk factors.*

Frequency Row Pct	predicted 0	2	4	5	Total
0	166 97.65	4 2.35	0 0.00	0 0.00	170
2	7 2.63	254 95.49	0 0.00	5 1.88	266
4	0 0.00	0 0.00	17 100.00	0 0.00	17
5	3 2.31	2 1.54	1 0.77	124 95.38	130
Total	176	260	18	129	583

FKR1=3.8%

(3B) The aim here is to differentiate *between the two types of cancer using* all *risk factors.*

Frquency Row Pct	predicted 2	3	total
2	136 98.55	2 1.45	138
3	2 1.56	126 98.44	128
total	138	128	266

FKR1=1.5%

We summarize the results:

FKR1(%)	4 groups	2 cancer groups
phys.	13,6	3,4
Pssoz	7,0	13,5
both	3,8	1,5

With the phys. The two groups can already be distinguished very well with the physical variables, as there are very specific risk factors here, such as smoking and chronic bronchitis for bronchial CA or pancreatitis for pancreatic CA. Bronchitis for bronchial CA or pancreatitis for pancreatic CA. In contrast, the distinction between the 4 main groups (healthy, cancer, Alzheimer's, heart attack/stroke) is less successful.
This is much more successful with the psychosocial risk factors, which include Grossarth's types 1 and 2, which enable a differential prediction of cancer versus heart attack/brain

stroke. In contrast, the prediction of cancer localization is less successful, for which it is much less easy to imagine specific psychosocial conditions.

The joint use of both groups of risk factors (necessarily) leads to a better prediction success than either group alone.

Overall, it should be noted that this is not a cross-section of the population, but a selection of extreme groups where discrimination is so successful. The methodological caveat should also be made that the predictors were collected separately in the selected risk groups, so that it cannot be ruled out from the outset that the group mean values (on which the discriminant analysis is crucially based) may also have been influenced to a certain extent by a group-specific setting during the survey.

5.3.2 Variance contributions to the explanation of mortality

If we consider only mortality (deaths from pancreatic cancer, bronchial cancer, Alzheimer's disease, heart attack and stroke compared to people who remained healthy into old age) without taking into account the causes of death
, the relationships can be presented even more compactly
in the form of the variance contributions to the explanation of
mortality. We work with a summary of
all relevant physical (PH) and psychosocial (PS) predictors.

```
 Variance contributions to the explanation of mortality
------------------------------------------
PH alone 0.53
PS alone 0.58
both simultaneously 0.66
of which PH 0.11 highly significant
PS 0.18 highly significant
jointly 0.37 = 0.66 - 0.11 - 0.18 --------------------------------------------
```

 The univariate variance contributions (0.53, 0.58), as well as the
multivariate ones (0.11, 0.18), are slightly higher for PS than for
PH, but the two multivariate ones are considerably lower than the two
univariate ones. They are to be understood
in such a way that the other variable
is held arithmetically
constant. In addition to the two contributions fixed in this way (0.11 and 0.18, which
are still highly significant), there is a joint variance contribution (0.37),
which is based on the fact that PH and PS covary considerably
with r=0.69. It must therefore
be taken into account that in reality the variation of one variable is also
associated with that of the other, and this effect cannot be
attributed to
one or
the other variable alone (variance contribution: 0.37).

5.4 Results of the autonomy training - randomized experiment - Study B

Reduction of psychophysical risk factors and mortality over an observation period of 20 years

~~5.5.1.~~5.4.1 Summary

In one experiment, autonomy training led to an improvement in health status (mainly a reduction in mortality). The condition before and after the experiment is described by 115 psychosocial (32 of which related to working life) and 24 physical risk factors.
As part of a general hypothesis, each of these variables was assigned a positive or negative health direction (therapeutic desirability).
All significant and subsignificant changes in these variables in the experimental group were in a therapeutically desirable direction.
The empirical health relevance of the variables, if significant or subsignificant, also consistently followed this hypothetically postulated direction. The success of the therapy thus appears to be attributable to the change in numerous psychosocial and physical risk factors.
However, a cross-validation of the health relevance of the 1st and 2nd measurement was unsuccessful.
However, the 2nd health relevance agrees very well with the results of study B.
The relationships between the risk factors, insofar as they are significant, are consistently consistent with the hypothesis.

~~5.5.2.~~5.4.2 Explicit hypotheses

In this randomized experiment with people at high physical and psychosocial risk (unfavorable conditions at work and in the personal/family sphere), it can be shown that
1. autonomy training can reduce mortality from various chronic diseases, at least over an observation period of approx. 20 years.
2. ... the effects of autonomy training can be attributed to the reduction of health-damaging variables from all three areas (physical risk factors, family/personality, professional life).
3. ... The stronger the manifestation of psychophysical risk factors before autonomy training, the more effective the training.

~~5.5.3.~~5.4.3 Obtaining the sample

for the primary prevention of pancreatic and bronchial carcinoma as well as heart attack and stroke

472 people were included in an experiment and randomly assigned to 236 comparison pairs. All individuals were at high risk (generally heavy smokers in combination with other risk factors for bronchial carcinoma, myocardial infarction and pancreatic carcinoma).
It was not possible to find 11 people in the follow-up examinations and a further 11 people did not agree to take part in further interviews at the beginning (after randomization). This meant that 22 comparison pairs had to be excluded from the analysis.
428 people could be evaluated.
Based on our hypotheses and the data collected, these 428 people all had a very high physical and psychosocial risk of one of the three diseases described above. Particular attention was paid to people at risk of pancreatic cancer.
The 428 people were randomized into 214 comparison pairs (control and comparison group) and then the group that had been assigned to the training was asked whether they would be willing to provide additional information about their personal lives and, if necessary, listen to advice on disease prevention. In this study 5.4, 88 and 86 people were evaluated (see below).

Different interventions were used (in different experiments) to consolidate the general findings:
The test groups either received the autonomy training in combination with other methods (e.g. nutritional counseling, smoking cessation through hypnosis) or they were only treated with the autonomy training.

The population of the present study are people who have received the 'pure autonomy training'. Originally there were 91 couples in this group. Five people in the control group and three people in the trained group could no longer be found in order to research their health status. This means that there were 88 people in the autonomy training experimental group and 86 in the control group.

5.4.4 Introduction

A training experiment was carried out with an experimental group (experimental group) of 88 men and a control group (control group) of 86 men.

		Year of birth		
	N	Min	Max	Medium
Experimental group	88	1907	1934	1918,3
Control group	86	1906	1937	1918,5

The independent variables are the same as in study B.
They were measured twice in both groups, with experimental exposure in between in the experimental group.
Health status serves as the dependent variable, here with 5 levels from deceased to completely healthy.
In both groups, the difference between the 2nd and 1st measurement was calculated for each variable.
In the control group, no significant changes were found in 91 psychosocial (including work sphere) and 24 physical variables (criterion: $p < 0.05/91$ or $p < 0.05/24$). The control group thus proves to be completely stable; there are no systematic spontaneous changes.
It is therefore not necessary to compare the experimental group with the control group; instead, the changes in the experimental group can be tested against 0. This provides an advantage in terms of test strength: if the change were compared with the mean value in the control group, which is subject to sample variation, instead of the constant 0, the variances in the two groups would add up.

5.4.5 Formulation of the hypotheses

The psychosocial variables (including several pleasure response variables such as well-being or exhaustion) and health status were classified as positive (higher values go in the direction of health) or negative in the same way as in study B, and the negative variables were recoded as there.
Only type 3, which in study B was empirically shown to be clearly relevant to health, contrary to the hypothesis, was hypothetically classified as positive here.
There is therefore again the expectation that the intercorrelations of all variables standardized in this way are positive if they differ from 0. There is also the expectation that the after-before differences in the experimental group will be positive if different from 0.
A positive correlation with the health status is not expected immediately, but it is expected for the 1st and more strongly for the 2nd measurement - more strongly in the experimental group at any rate, since an experimentally changed value is decisive for the subsequent period.

5.5.6.5.4.6 Effects of the experimental treatment

The health status at the follow-up examination is higher in the VG than in the KG:

	unexplained	deceased	ill heavy	medium	light	healthy	total
KG	0	82	2	0	1	1	86
%	--	95.35	2.33	0.00	1.16	1.16	
VG	2	53	4	5	4	20	88
%	--	61.63	4.65	5.81	4.65	23.26	
total	2	135	6	5	5	21	174

Chiquadrat for ordered variables: 28.3 (1 degree of freedom)
Significance: p = 1 {-7} (read: 1 times 10 to the power of -7).

Changes in the independent variables

Of the 91 psychosocial variables, 73 changed significantly ($p < 0.05/91$), all in the direction of health, as did a further 6 variables that still met $p < 0.01$.
Of the 24 physical variables, 12 changed significantly ($p < 0.05/24$), all in the direction of health (e.g. less alcohol, more exercise, lower blood pressure), as did a further 6 variables that still met $p < 0.01$.
It can therefore be concluded that the experiment was effective and conformed to the hypothesis across the board.
The work sphere is well represented in the changes. Among the 73 significantly changed psychosocial variables, the standardized changes in the 24 A variables have a mean rank of 43, while those in the 49 non-A variables have a mean rank of 34.
Following this chapter, the standardized changes of all individual variables are shown for the original versions of the questions, so that there are numerous significant negative changes.

Relationship between initial value and change

For the 27 variables that changed the most (including no physical variables, i.e. always response scale 1-7), the correlation between the 1st measurement and the change to the 2nd measurement averages around -0.5.
Subjects who scored favorably at baseline therefore benefited less from the treatment than subjects who scored unfavorably. As an explanation, one might initially think that there was less room for a positive change with high values on the response scale than with low ones. But if you look at the individual distributions of the 2nd measurement, you could almost always easily imagine that the upper scores 5, 6, 7 would be represented considerably more frequently and thus the mean value of the variable would be considerably higher. It does not look as if the changes are often "triggered at the top".
There therefore appears to be a content-related effect in that subjects in need of therapy benefited more than those less in need of therapy. To what extent this was due to the focus of the training and to what extent to the dispositions of the test subjects cannot, of course, be clarified in this context.

Health relevance of the independent variables

For all variables, their correlation with health status was also determined (2nd measurement in the test group). Here, too, there is not a single significant or subsignificant correlation in a direction contrary to the hypothesis.

The work sphere is again well represented. Of the 47 psychosocial variables with significant health relevance, the relevance of the 14 A variables has an average rank of 25, while the 33 non-A variables have an average rank of 24.

It follows from the hypothesis conformity of the health relevance of the individual variables that all subgroups of variables (conditions, resources, pleasure reactions, etc.) are also relevant to health according to the hypothesis.

The health relevance of the individual variables corresponds very well with those from Study B, where the sampling error is lower due to the much larger sample size.

We report here the 12 most relevant variables from the 2nd measurement in the experimental group, plus the comparative values from Study B, not for the variables coded uniformly in the health direction, but for the original versions of the variables.

Correlation with health status:

Exp.	St. B	Question	
0,71	0,54	XIX 5	Love for God
0,69	0,59	XIX 11	general pleasure and well-being
-0,64	0,54	XVIII 13	Exhaustion at work
0,63	0,42	XXI 7	Reference to God in professional life
-0,61	0,53	XXI 20	Demotivation in professional life
0,58	0,59	XIV 9	Autonomy
0,57	0,58	XIX 14	Recoverability
0,56	0,52	XXI 11	Ability to maintain distance in professional life
-0,56	-0,58	XIV 25	Deterioration of the pleasure balance
0,56	0,39	XXI 1	needs-based professional life
0,55	0,64	XXII 3	Synergy between indulgence and renunciation
-0,55	-0,45	III 2	Cigarettes per day

Of these 12 variables, 5 relate to professional life. The similarity (correlation) between the relevance values (of the 12 variables) is r = 0.986.

Following this chapter, the health relevance of all individual variables is shown for the original versions of the questions, so that there are numerous significant negative relationships (see section 5.4.11, second table, p. 106).

5.4.7 Relationship between change and health relevance

There is a very close correlation between this health relevance and the standardized change in the relevant variables in the test group
(r = 0,94).
It is therefore understandable how the difference in health between the experimental group and the control group came about: the relevant variables were changed in the experimental group almost exactly in the direction and to the extent that corresponds to their relevance to health.

Even if the direction is disregarded and only the strength is considered, the similarity between change and health relevance of the variables is surprisingly still r = 0.78.
The consistency of the direction can be explained by the fact that the intended direction of change based on therapeutic experience was also the one that was actually relevant to health, and that the intention was largely realized.

The similarity of the strength of change and health relevance should be explained by the fact that the intended strength of the experimental influence was also controlled by the strength of the actual health relevance, and that it could be translated into a corresponding strength of change.

Cross-validation of health relevance (1st and 2nd measurement)

Assuming that the same health correlations apply to the unchanged and experimentally altered variables, the regression function for the health status from the 1st measurement, applied to the 2nd measurement, should be able to predict the health effects achieved. However, it failed almost completely; a significantly different one was valid. In fact, even the simple correlations of the variables of the 1st and 2nd measurement with the health status show no similarity whatsoever. It is even the case that the values of the 1st measurement - even with a given (constant) 2nd measurement - tend to be relevant in the opposite sense to those of the 2nd measurement.

This also applies to a somewhat lesser extent in the control group. It is therefore not only the final state achieved that is decisive for further development, but also the question of whether it was achieved with a larger or smaller jump. Although we know from the section "Relationship between initial value and change" (5.4.6.2) that subjects with unfavorable initial values benefited more from the therapy, this does not imply that the less favorable the previous state, the better the result for a given final state.

In this context, the test-retest correlations of 53 psychosocial variables (excluding the work sphere) were examined and found to average $r = 0.28$ in the experimental group. This value (which is hardly ever made so low by negative self-correlations) appears to be surprisingly low. (However, it should not be too high either, in order to leave enough leeway for the tendency of the first measurement to be inversely relevant to health). Of course, it must be taken into account that there was an experimental exposure between the two measurements. Obviously, this was so thorough that the initial values of the test subjects hardly play a role for the final values ($r = 0.28$). In the control group, where there is no systematic influence, the mean test-retest correlation is 0.59, which is also quite low, but makes the value of 0.28 in the experimental group appear more realistic.

Comparison with the health relevance from Study B

In this context, it makes sense to compare the health relevance of the variables in the 2nd measurement with that found in Study B. (In other words, the correlation coefficients of 115 variables are compared with the health status in the experiment and in study B).

The correlation is very close: $r = 0.89$, and restricted to the psychosocial variables: $r = 0.90$. If we do not consider the second measurement in the experimental group, but its difference from the first, the correlations are somewhat higher: $r = 0.90$, and restricted to the psychosocial variables: $r = 0.92$.

If we look at the 1st measurement in the test group instead of the 2nd, there is no similarity with the health relevance in Study B (which was to be expected, since, as stated in the previous section, there is no similarity between the health relevance of the 1st and 2nd measurement).

Looking at the control group, the similarity of the health relevance of the psychosocial variables with that in study B is considerable in the second measurement, but again absent in the first, although here the two measurements differ only as a test and retest without an intervening experimental effect.

5.4.8 Intercorrelations of the independent variables

None of the significant correlations between the 91 psychosocial variables (experimental group, 2nd measurement) is contrary to the hypothesis (negative).
In comparison to study B, it should be noted here that (due to N = 88 vs.
N = 794) only $|r| > 0.44$ leads to significance. This was the case in 1196 (of 4095 possible) cases.
It follows from the hypothesis conformity of the individual correlations that all subgroups of variables (conditions, resources, pleasure reactions, etc.) are also related to each other in accordance with the hypothesis.

5.5.8.5.4.9 Overview of results based on the variable categories

The independent variables are the same as in Study B, and we use the same categories:
A = Work sphere
P = Personality and family sphere (F)
Ph = physical risk or health factors
B = external conditions
Rs = Resources of the individual
R = Pleasure reactions of the individual

Each of these categories defines a subset of the variables used. In section "Formulation of the hypotheses" 5.4.5 (Study B), the expectation was derived that (after the uniform recoding of the variables) positive correlations exist between certain groups of variables or their members, as it is a cause-and-effect relationship such as between conditions and resources on the one hand and pleasure reactions on the other, or between the groups mentioned and health status.

There is only no such relationship between conditions and resources (although there are positive correlations here too).

Furthermore, we expect positive correlations between the variables within a category due to their similarity, which justifies their subsumption under a category.

In the experiment, the most important expectation is that the changes in the test group, if different from 0, are positive.

The result is that no significant negative changes and no significant negative correlations were found between the variables. As far as the latter is concerned, the assumed causal links are confirmed: Conditions and resources affect pleasure responses and these ultimately affect health status. The similarity of the variables belonging to a category is also confirmed (the categorization was only carried out in terms of content and not due to special features of the correlation pattern).

In the experimental group, there were significant changes in 97 of 115 variables, all in the therapeutically desired (hypothesis-compliant) direction. (Section "Explicit use of summarized variables" (5.4.10) shows that all categories are involved).

The experimental treatment thus improved the conditions, resources and pleasure responses and ultimately the health status in the A and P spheres.

This may seem problematic in the case of the conditions, as the conditions in the individual's life history and the conditions at the workplace could not be changed by the experiment.

However, it should be noted here that the descriptions of the conditions are also based on the statements of the test subjects and are therefore seen through their eyes. These glasses may have changed as a result of the experiment, both in terms of their own life story and the conditions in the workplace.

A different perspective and a different way of dealing with the - objectively unalterable - life story (e.g. conflict with the father) is precisely the decisive factor from a psychotherapeutic perspective. And in the work sphere, depending on the distance of the follow-up from the end of the experiment, something can even change objectively, for example if the person takes this or that initiative or sees superiors and colleagues differently and meets them differently, thereby triggering different reactions.

The possibility of changes in the ph-sphere is obvious: the subjects may have changed their smoking and alcohol consumption, diet and exercise, which may be reflected in well-being, improved blood pressure and cholesterol levels, etc.

The work sphere is involved in the results (pleasure reactions, health status) with a weight that is comparable to that of the personality sphere. This means that if someone enters working life with poor personality prerequisites, a satisfactory result can still be achieved if the conditions in the work sphere are favorable enough. Similarly, if someone enters working life with particularly favorable personality requirements, they can also "cope" with quite unfavorable conditions there.

5.4.10 Explicit use of summarized variables

The independent variables are the same as in Study B, and we use the same categories:
Definitions of the variable categories:

	all persons	232 persons Additional variables
Work sphere (A)	XVIII	XXI
Conditions (B)	XVIII 2-10	XXI 1, 6, 14-17
Resources (Rs)		XXI 2-13
Reactions (R)	XVIII 1, 11, 13	XXI 18-20
Personality sphere (P):	XIV-XVIII, XIX	XXII
Conditions:		XXII 6, 12, 13
Family of origin	XIV 22-24	
Resources:		
Typology	XV - XVII 1-6	
Self-regulation etc.	XIV 4, 9-11, 13, 16, 21 / XIX 1	
Religiosity	XIV 2 / XIX 5	XXI 7
Reactions (pleasure/displeasure, well-being)	XIV 1, 12, 14, 15, 17, 18, 25 XIX 11,12	XXII 1-3, 10, 11
Physical sphere (Ph)		
Own previous illnesses	X, XII	
Diseases i d relat.	XI, XIII	
Lifestyle (diet, exercise, smoking, alcohol ...)	III, IV, V, VI, IX	

The variable categories defined in the table above were used in the form of their multivariate regression function (experimental group, 2nd measurement) for health status.

We now indicate their health relevance in the form of multiple correlations with health status:
Multiple correlations of the variable categories with the health status and standardized mean value changes in the test group (2nd - 1st measurement):

	Health relevance	Changes
Work sphere (A)	0,74	0,8
Conditions (B)	0,61	0,78
Resources (Rs)	0,63	5,8
Reactions (R)	0,66	7,7
Personality sphere (P):	0,79	8,9
Conditions:		
Family of origin	0,49	8,9
Resources:		
Typology	0,52	6,2
Self-regulation etc.	0,62	8,3
Religiosity	0,66	6,6
Reactions (pleasure/displeasure, well-being)	0,72	8,1
Physical sphere (Ph)	0,68	0,58
Own previous illnesses	0,50	3,6
Diseases in the family	#	##
Lifestyle (diet, exercise, smoking, alcohol ...)	0,56	5,9

not significant ## not calculated

All summarized variables, with the exception of diseases in relatives, show highly significant multiple correlations with health status. (The direction is necessarily the right one because of the definition of the summarized variables as regression functions).
With a health relevance of 0.74, the A-sphere is only slightly inferior to the P-sphere (0.79) and exceeds that of the Ph-sphere (0.68).

All summarized variables (with the exception of the uninfluenceable diseases in the relatives) were changed highly significantly in the direction of health by the training. The correlation between change and health relevance is 0.45, which is lower than the reported value of 0.78 at the level of the individual variables for the absolute amounts (to which the unsigned multiple correlation corresponds here); lower because the health relevance and changes in the individual variables differ more than in the summarized variables.

At the level of the summarized variables, the results obtained at the level of the individual variables can therefore be consistently confirmed.

5.5.10.5.4.11 Consideration of the training success on the basis of the persons

Of course, the extent to which individuals have benefited from the training is also of interest. For this purpose, a prediction was also made in the test group for the A, Ps and Ph spheres using the regression function for the health status valid for the 2nd measurement based on the values of the 1st measurement and the difference to the prediction based on the 2nd measurement was calculated.
This difference indicates the extent to which the person has improved on average across all health-related variables in the relevant sphere.
Unit is the measure of the dependent variable health status:
0 = deceased, 1-3 = sick in 3 decreasing degrees of severity, 4 = healthy.

			Sphere		
			A	Ps	Ph
Moderate improvement through training:			0,9	1,1	0,9
Change in the forecast:					
	Deterioration:	more than 1 unit	9,1 %	7,9 %	10,2 %
		0-1 Unit	20,5 %	20,5 %	17,0 %
	Improvement:	0-1 Unit	30,7 %	22,7 %	26,1 %
		1-3 units	30,7 %	36,4 %	37,5 %
		more than 3 units	9,0 %	12,5 %	9,1 %

The relevance of the prediction functions is impressively illustrated by the following breakdown:

Mean actual health status

Predicted total status (2nd measurement)	Sphere		
	A	Ps	Ph
up to 1.5	0,33 (n = 57)	0,26 (n = 58)	0,47 (n = 54)
over 1.5	3,00 (n = 31)	3,14 (n = 30)	2,46 (n = 34)

(Section "Changes in the independent variables" 5.4.6.1)

Appendix to the report on the experiment,
(Section "Changes in the independent variables" 5.4.6.1)

Change in the variables in the test group from the 1st to the 2nd measurement, ordered according to the strength of the change, only significant variables:

Serial no.	Question	Size of the standardized change	Variable
1	XIV_25	- 8.02	negative pleasure difference
2	XIV_13	- 7.68	Blockade of emotional perception
3	XXII_09	- 7.49	antagonistic activation/ratio and emotio components
4	XVIII_05	7.45	Integration of skills and professional requirements
5	XIV_04	7.17	Self-regulation
6	XIV_12	- 7.04	Split between negative feelings and social communication
7	XIV_10	6.99	Integrat v ratio, emotio u intuitive parts
8	XIV_09	6.97	inner autonomy
9	XXI_20	- 6.97	blocked motivation to work
10	XXII_03	6.95	Integration of enjoyment and renunciation
11	XIV_11	- 6.93	Inability to solve problems due to behavioral insufficiency
12	XV_4	6.90	Type 4 Behavior / autonomous self-regulation
13	XXII_07	6.82	Physical contact with a partner
14	XIX_14	6.81	General ability to recover
15	XIX_11	6.78	interactive pleasure
16	XXI_11	6.67	Separable from negative influences in professional life
17	XXI_18	6.62	Sense of belonging in professional life
18	XIX_10	6.61	Ability to manage stress interactively
19	XXII_12	6.56	A pleasurable processing of childhood in the present
20	XXII_	- 6.52	Inhibition of the regulation of closeness and distance
21	XIV_20	- 6.29	General lack of stimulation
22	XXII_13	- 6.29	Unfunny processing of childhood in the present
23	XIV_15	- 6.27	Insulation suffering
24	XIX_05	6.23	Love for God
25	XIX_13	6.21	Self-competence in problem solving
26	XVIII_13	- 6.05	Mental and physical exhaustion in professional life
27	XXII_10	- 5.95	Chronic emotional pain
28	III_03	- 5.95	Increase in cigarettes
29	XIV_16	- 5.86	Correction block of behaviors with negative consequences
30	XXII_02	5.86	Stimulation of zest for life
31	VI_03	- 5.74	Coffee, cups per day
32	XIX_09	- 5.74	interactive dysstress
33	XVIII_01	5.69	Well-being at work
34	XV_3	5.69	Type 3- egocentric ambivalent behavior
35	XV_1	- 5.67	Type 1 isolation suffering
36	XVIII_11	- 5.67	Excessive demands in professional life
37	XXI_07	5.63	Religious orientation in professional life
38	XIV_01	5.61	general well-being
39	V_03	- 5.61	Alcohol, increase
40	XXI_10	5.59	Positive communication in professional life
41	XVIII_09	5.53	Self-active career design
42	XIX_12	- 5.45	interactive reluctance
43	XXI_16	5.42	Transparent flow of information in professional life
44	XXII_04	5.39	General positive communication
45	XXI_06	5.36	Skills orientation in professional life
46	XIV_02	5.23	Forms of religiosity
47	XVIII_04	5.22	Possibility of exerting influence at the workplace
48	XIV_17	- 5.19	Disruptive factors that cause helplessness
49	XXI_15	- 5.13	Social insecurity in professional life
50	XXII_01	- 5.05	Inhibition of joie de vivre
51	XIX_01	5.03	Self-love, self-respect
52	XIX_06	5.03	feel loved
53	XIX_04	4.99	Love for important people
54	XVIII_07	- 4.98	Suffering from isolation at work
55	XVIII_03	4.88	Reward, recognition in professional life
56	IV-13	- 4.76	Digestive disorders
57	XXI_01	4.75	Needs orientation in professional life
58	XIV_27	4.69	Ability to reconcile with the family of origin

59	IV_10	4.66	Nutrition Well-being
60	XVIII_10	- 4.61	Extra workload
61	V_02	- 4.48	Alcohol, g per day
62	III_02	- 4.44	Cigarettes per day →
63	XXI_05	4.42	Professional flexibility
64	IX_06	4.37	Movement. Well-being
65	XIV_24	4.35	Autonomy, loving acceptance in the family
66	XIX_08	- 4.33	Harmonizing conflict of loyalties
67	IV_1-9	4.32	Nutrition, quality
68	XIX_16	4.30	General flexibility
69	XVIII_08	4.29	Experienced recognition/appreciation in professional life
70	XXI_14	- 4.27	Demotivating criticism in professional life
71	IX_1-5	4.14	Movement, quantity
72	IV_14	4.10	Diarrhea
73	XVIII_06	- 3.96	Sources of interference in professional life
74	XIV_28	3.94	Quick reconciliation with your partner
75	XIV_22	- 3.94	Isolation/rejection in the family of origin
76	XIV_23	- 3.86	Excessive attachment to the family of origin
77	XIX_03	3.86	Love for family/partner
78	XV_5	- 3.85	Type 5-rational/anti-emotional behavior.
79	XXI_04	3.80	Professional visions
80	XIV_21	3.75	Ability to transform negative into positive feelings
81	XIX_07	- 3.62	Polarizing conflict of loyalties
82	XXII_05	3.55	Fever, frequency
83	XIV_26	3.54	pleasant environment
84	XXII_08	3.15	Autoimmune disease
85	XXII_06	3.12	Allergies
86	IX_02,04	- 3.03	Movement, forced
87	XXI_17	- 3.02	not transparent. Information flow in professional life
88	XXII_11	- 2.92	Chronic uncontrollable anxiety
89	XXI_12	2.87	Enthusiasm for others in professional life
90	XXI_02	2.84	Flexible activation in professional life
91	XVIII_02	- 2.84	Expectation and work pressure
92	IV_15	- 2.77	Constipation
93	XXI_13	2.77	pos. Communication in the run-up to work-related activities
94	XV_2	- 2.73	Type 2 - helpless excitement
95	XIII_02	- 2.72	Blood pressure systol
96	IV_1-9	- 2.72	Nutrition, quantity
97	XIV_03	- 2.70	Social isolation

Appendix to the report on the experiment,
Section "Health relevance of the independent variables"

Health relevance of the variables according to study B - ordered by strength of relevance, only significantly changed variables

No. No.	Question	Size of the correlation with health status	Variable
1	XXII_09	- 0.68	antagonistic activation of ration. and emotion. parts
2	XXII_07	0.68	Physical contact with a partner
3	XV_4	0.65	Type 4 Behavior/autonomous self-regulation
4	XXII_08	- 0.64	Inhibition of the regulation of closeness and distance
5	XXII_03	0.64	Integration of pleasure and renunciation
6	XXII_12	0.62	Pleasurable processing of the childh. i the present
7	XIX_10	0.59	Ability to interact. Stress management
8	XIX_11	0.59	interactive pleasure
9	XIV_09	0.59	inner autonomy
10	XIX_12	- 0.59	interactive reluctance
11	XIX_14	0.58	General ability to recover
12	XIV_25	- 0.58	negative pleasure difference
13	XIV_10	0.58	Integration of rational, emotional and intuitiv. parts
14	XV_1	- 0.58	Type 1 isolation suffering
15	XIV_04	0.56	Self-regulation
16	XXII_02	0.56	Stimulation of zest for life
17	XV_2	- 0.55	Type 2 - helpless excitement
18	XIV_01	0.55	general well-being
19	XXII_04	0.55	General positive communication
20	XXII_01	- 0.55	Inhibition of joie de vivre
21	XIV_20	- 0.55	General lack of stimulation
22	XIV_12	- 0.54	Split between negative feelings and social commun.

23	XIX_05	0.54	Love for God
24	XVIII_13	- 0.54	Mental and physical Exhaustion in professional life
25	XIV_23	- 0.54	Excessive attachment to the family of origin →
26	XX_04	0.53	Fever, frequency
27	XIV_13	- 0.53	Blockade of emotional perception
28	XXI_20	- 0.53	blocked motivation to work
29	XIV_11	- 0.52	Problems unable to be solved due to behavioral insufficiency
30	XIV_21	0.52	Ability to transform negative feelings into positive ones
31	XXI_11	0.52	Ability to separate from negative influences in professional life.
32	XIV_17	- 0.51	Disruptive factors that cause helplessness
33	XIX_08	- 0.51	Harmonizing conflict of loyalties
34	XXII_13	- 0.51	Unlustvol. Processing of children in the present
35	XIV_15	- 0.50	Insulation suffering
36	XIV_16	- 0.50	Correction block of behaviors with negative consequences.
37	XIV_24	0.50	Autonomy, loving acceptance in the family
38	XXI_18	0.50	Sense of belonging in professional life
39	XVIII_11	- 0.49	Excessive demands in professional life
40	XXII_11	- 0.48	Chronic uncontrollable anxiety
41	XXI_16	0.48	Transparent flow of information in professional life
42	XXI_17	- 0.47	non-transparent flow of information in professional life
43	XIV_02	0.47	Forms of religiosity
44	XIX_07	- 0.46	Polarizing conflict of loyalties
45	XIV_22	- 0.46	Isolation/rejection in the family of origin
46	XX_05	0.45	Allergies Number
47	XXI_10	0.45	Positive communication in professional life
48	III_02	- 0.45	Cigarettes per day
49	XIX_06	0.44	feel loved
50	XXII_10	- 0.44	Chronic emotional pain
51	IX_06	0.44	Movement. Well-being
52	XIX_01	0.44	Self-love, self-respect
53	IV_10-12	0.43	Nutrition. Well-being
54	XIX_16	0.42	General flexibility
55	XXI_07	0.42	Religious orientation in professional life
56	XVIII_03	0.41	Reward, recognition in professional life
57	XIV_03	- 0.40	social isolation
58	XXI_01	0.39	Needs orientation in professional life
59	XVIII_08	0.39	Experienced recognition/appreciation in professional life
60	XIX_09	- 0.38	interactive dysstress
61	XXI_06	0.37	Skills orientation in professional life
62	XXI_02	0.36	Flexible activation in professional life
63	XV_3	0.36	Type 3- egocentric ambivalent behavior
64	XXI_15	- 0.35	Social insecurity in professional life
65	IV_1-9	0.35	Nutrition, quality
66	XVIII_07	- 0.34	Suffering from isolation at work
67	XVIII_05	0.32	Integration of skills and professional requirements
68	III_03	- 0.32	Increase in cigarettes
69	XIV_27	0.32	Ability to reconcile with the family of origin
70	XVIII_01	0.32	Well-being at work
71	XVIII_04	0.32	Possibility of exerting influence at the workplace
72	V_02	- 0.31	Alcohol, g per day
73	XXI_05	0.31	Professional flexibility
74	IX_02,04	- 0.30	Movement, forced
75	XIV_28	0.30	Quick reconciliation with your partner
76	XVIII_06	- 0.28	Sources of interference in professional life
77	XXI_04	0.27	Professional visions
78	IX_1-5	0.27	Movement, quantity
79	XXI_14	- 0.27	Needs orientation in professional life
80	VI_02	- 0.26	Coffee, cups per day
81	XIV_26	0.26	pleasant environment
82	XVIII_09	0.25	Self-active career design
83	XXI_12	0.25	Enthusiasm for others in professional life
84	XIX_13	0.25	Self-competence in problem solving
85	XIII_02	- 0.24	Blood pressure systol
86	XIX_03	0.24	Love for family/partner
87	XXI_13	0.23	pos. Communica. in the run-up to work-related activity.
88	XXII_08	0.23	Autoimmune diseases
89	IV_13.	- 0.22	Digestive disorders
90	XIX_04	0.21	Love for important people
91	V_03	- 0.21	Alcohol, increase
92	XVIII_10	- 0.21	Extra workload
93	XV_5	- 0.20	Type 5 - rational/anti-emotional behavior

94	IV_14	- 0.19	Diarrhea
95	XVIII_02	- 0.17	Expectation and work pressure
96	IV_1-9	- 0.15	Nutrition, quantity
97	IV_15	- 0.15	Constipation

5.4.12 Descriptive results of the entire randomized experiment
with people at extreme risk of pancreatic, bronchial CA and heart attack

The multivariate statistical results of the randomized experiment presented here have so far only been calculated in subgroups (88 people in the experimental group and 86 people in the control group).

The *descriptive results* of the *entire* experiment on males will be presented here. In a few months, the multivariate statistical analysis will provide information on many aspects (e.g. on the actual comparability of the groups, relevant changes in risk constellations that are responsible for therapeutic success ...).

	Autonomy training (n = 214)	Control group (n = 214)	Total 100% each	Significance (Chiquadrat Test)
Pancreatic carcinoma	2 (11,1%)*	16 (88,9%)	18	0.001
Bronchial carcinoma	19 (33,9%)	37 (66 %)	56	0.010
Heart attack	34 (39,1%)	53 (60,9%)	87	0.022
Stroke	15 (41,7%)	21 (58,3%)	36	Not significant
Other causes of death	53 (43,8%)	68 (56,2%)	121	Not significant
Lives chronically ill	28 (66,7%)	14 (33,3%)	42	0.023
Live healthy and active	63 (93,6%)	5 (7,4%)	68	
Lives in total	91 (82,7%)	19 (17,3%)	110	

Significance of the summarized variables:

- Died of CA (pancreatic CA + bronchial CA): 0.0001
- Deaths from cardiovascular diseases (heart attack + stroke): 0.008
- Total deaths: 10 high -14
- Lives in total: 10 high -14

Description of the intervention measures implemented here:
91 people received 'pure autonomy training' as a method for actively stimulating pleasure, well-being and security in various areas of life.
24 people were given a combination of autonomy training and antidepressants (the people were sent to the treating doctor or psychiatrist with the aim of receiving an antidepressant that they could optimally adjust to).
41 people received smoking cessation training in combination with autonomy training, usually using hypnosis.

130

In combination with the autonomy training, 20 people received advice on changing their diet through practical nutritional advice (e.g. home visits, joint shopping).
17 people received exercise training in combination with autonomy training (e.g. joint walks in the forest).
21 people received antidepressants in combination with smoking cessation training (11 people) or in combination with nutritional counseling (10 people).
The autonomy training, which was applied to all 214 people, consisted of three 90-minute sessions at one-week intervals. The one-off smoking cessation training usually comprised one hour, the nutrition and exercise counseling two hours/week over three months.

To summarize, the relatively low-impact interventions helped 27% of high-risk individuals stay relatively healthy and active.

Interpretation of the results

Of 214 people undergoing autonomy training, 63 people are still *relatively healthy over an observation period of 20 years, compared to 5 people (2.3%) in the control group, i.e. 29.4% of the total trained population.*
Of the total population living a healthy life in the control group and the trained group, the figure is as high as 93.6%.
With regard to the prevention of chronic diseases, there was a reduction in all causes of death in the preventive training group. *The best result relates to the prevention of pancreatic cancer.*
With regard to the prevention of heart attack, stroke and bronchial carcinoma, the success relates to the reduction of the clinical outbreak to approx. 1/3 of the population.
Other causes of death were reduced by around 20% during the observation period.

The question arises: Which effective principles lead to such massive preventive-therapeutic success?

People often carry suffering with them that is localized in different areas of life and can no longer be resolved in social communication. We are talking here about encapsulated suffering combined with a blockage in the ability to correct behavior, which leads to negatively experienced consequences. At the same time, the person is unable to achieve their visions and desires in the direction of pleasure, well-being and security. This condition leads to a steady increase in physical risk factors such as malnutrition, lack of exercise, addiction problems, etc.

If autonomy training succeeds in dissolving the sources of emotional distress by redesigning communication and achieving activities in the direction of needs- and ability-appropriate stimulation, then a complex system of risk and positive factors changes.
Our results suggest the following: The human brain appears to motivate slavishly dependent stereotypical behaviors in a certain form of communication. It can be assumed that a certain activation of genes also takes place. If the alternative behavior now reaches new forms of communication, the brain is able to establish other neuronal connections and new genetic activations.

5.4.13 Descriptive results of the *written* autonomy training

randomized experiment

Data acquisition
In 1977 and 1978, people with multiple risks (dysstress, malnutrition, cigarette smoking, lack of exercise) were randomly divided into two groups of 272 people each (142 men 130 women).
In the group for which the autonomy training was intended by the submission of a written text, 21 persons refused to participate, 18 persons could no longer be found in the 1998 follow-up examination. Thus, 233 persons were evaluated in 1998 with regard to their health status (deceased, causes of death, living chronically ill, living relatively healthy).
In the non-treated control group, 28 people refused to participate, while 8 people could no longer be found in 1998. 236 persons could be evaluated for health status.

After both groups had been interviewed using the "RGM Self-Regulation and Health Questionnaire", the group selected for the autonomy training was read the written "Training Text for Stimulating Self-Regulation", available in the appendix, by the interviewers and explained in detail, e.g. about the method for resolving ambivalence. This took place twice at intervals of one month.

The results show,
that twice as many people in written autonomy training remained relatively healthy despite dysstress and physical risk factors over an observation period of 20 years, i.e. were fit for work and employment (without serious chronic illnesses).
Different chronic diseases also occurred to a lesser extent than in the non-trained control group.
The explanation is as follows: If a person experiences alternative forms of communication for their problematic behavior, even in theory, then an information processing begins that is partly conscious and partly unconscious, namely in the direction of self-regulation and conflict processing that generates well-being (e.g. elimination of ambivalence).

Control group N = 236					Written autonomy training N = 233				
CA	HH	Other Todurs	Lives sick	Lives g	CA	HH	Other Todurs	Lives sick	Live healthy
32	41	55	68	40	22	31	49	40	91
13,5%	17,4%	23,3%	28,8%	16,9%	9,4%	13,3	21%	17,2%	39%

CA: cancer - HH: heart attack/stroke

With all the chi-square tests, the result is as follows:
The reduction in the individual causes of death is not significant.
The reduction in all-cause mortality is significant, $p < 0.05$.
The reduction in sick is significant, $p < 0.01$.
The increase in healthy is highly significant, $p < 0.000\,001$.

5.5 Psychosocial variables - health status, ability to work, early retirement and accident risk - Study A

A representative prospective study

~~5.2.1~~ 5.5.1 Summary

The correlations between a number of workplace conditions and personality traits of the respondents on the one hand and their reactions in the form of health status, ability to work, early retirement and various types of accident, as well as exhaustion, motivation, sense of belonging to the company and negative pleasure balance on the other were investigated in 936 people.
For all variables, a hypothetical direction was defined as a risk or health factor or as an undesired (pathological) or desired reaction. For the most part, highly significant and consistently hypothesis-compliant correlations were found between all reactions and the entire work and personality sphere.
This also applies to the multivariate use of factor-analytical reduction of the two spheres and implies that unfavorable conditions in one area can be compensated for by favorable conditions in the other. Quantitative data are provided for this.
Work motivation occupies a special position insofar as it has a health-promoting effect under favorable working conditions (rewarded motivation), but promotes morbidity and mortality under unfavorable conditions (negative motivation).

The dependent variables: Health status, sustainable ability to work, early retirement and accidents (in this evaluation, accidents at work and private accidents are combined) relate to topics that are of great importance in professional and working life. Particularly for a society with increasing demographic problems, sustainable employability and health into old age is not only of personal importance, but also of economic and social importance. Early retirement (on average around the age of 58 in Germany) is also an economic problem that can hardly be overestimated. Our empirical studies show that variables that measure dysstress/eustress and self-regulation are not only related to health status, but can also make a significant contribution to the prediction of early retirement and long-term employability.

~~5.2.2~~ 5.5.2 Explicit hypotheses

1. the answer to each question in the questionnaire "RGM Work Life, Family Personality", depending on the direction and intensity, is a predictor in the direction of health or illness, early retirement, long-term employability or accident frequency. (The hypotheses of the direction were determined for each question before the start of the empirical study and after completion of the questionnaire; for example, recognition and reward at work, depending on the intensity, is increasingly health-promoting or social and economic insecurity, depending on the intensity, is increasingly detrimental to health). This hypothesis was confirmed, see section 5.5.8 (Table 1).
2. unfavorable conditions in professional life can be compensated for by favorable conditions in the family and personality area in their harmful effects on health.
This hypothesis was confirmed, see section 5.5.9, in particular the table.
3. unfavorable conditions in the area of family and personality can be compensated by favorable conditions in professional life in their harmful effects on health.
This hypothesis was confirmed, see section 5.5.9, in particular the table.

4. the health-promoting or health-damaging effects of a pronounced work motivation in professional life depend on other factors, such as a sense of belonging in the workplace, need blockage in professional life, available/absent reward.
This hypothesis was confirmed, see section 5.5.11.

5. work-related variables show synergistic (interactive) effects with the personality/family-related variables in the direction of disease development or health maintenance.
This hypothesis was confirmed, see section 5.5.9.
6. individual risk and health factors that are relevant for the development of illness are also relevant for early retirement, accidents and long-term work ability.
This hypothesis was confirmed, see section 5.5.8 Table 1.

5.2.3.5.5.3   Obtaining the sample Study A

In 1973, the city administration of Heidelberg provided around 64,000 representative addresses of people aged between 32 and 68 for the large-scale Heidelberg Prospective Intervention Study. The addresses were determined using a special key, so that the majority of people in 1973 were between 46 and 59 years old.

From this original population, a total of 1,830 people (half men and half women) aged between 40 and 71 in 1977 were randomly selected for the present study A (data collection in 1977 to early 1978).

520 people refused to participate in the study so that 1,310 people could be examined. 299 people answered a very detailed "RGM Dysstress, Eustress Questionnaire" (which plays no further role in this study).

The other 1,011 people answered the questionnaire "RGM professional life, family, personality". In the follow-up study, 75 people could not be researched for their health status (e.g. because they could no longer be found). This means that 936 people (final evaluation 2004) were evaluated here.

From the total population of 1,310, 289 people also answered the "RGM Self-Regulation and Health Questionnaire" (from which 78 people were isolated for the randomized experiment).

With regard to the *causes of death, the* following should be noted:

All causes of death were recorded up to the cut-off date of April 1998, because the study participants were assured that their data would only be registered for the following 20 years after the end of the study (1978), i.e. up to 1998, whereby a research option up to the end of 2003 was provided from the outset for those who were still alive and healthy (this also applies to the other studies).

By the end of 2004, the entire population of study A had been researched according to the following criteria:
1. cause of death / year of death
2. lives healthy or chronically ill (three levels: seriously ill, moderately ill, mildly ill)
3. early retirement
4. sustainable employability (physically and mentally active at work)
5. accidents (occupational accidents, car accidents, other traffic accidents, private accidents)

Composition of the sample

There were 518 = 55.3 % men and 416 = 44.4 % women as well as 2 = 0.2 % unexplained cases. The age at interview was between 36 and 72 years with a mean of 54.0 years and a standard deviation of 7.8 years. *School education, occupation and religious denomination were* distributed as follows:

School education

Number of elementary schools	573	61,2%
Secondary school	199	21,3%
A-levels	77	8,2%
University degree	83	8,9%
Unexplained	4	0,4%

Profession

Housewife, pensioner	194	20,7%
Workers	181	19,3%
small employee	97	10,4%
medium employee, small own business	233	24,9%
manager. Employee, large own business, freelancer, civil servant	227	24,3%
unexplained	4	0,4%

Religion

cath.	357	38,1%
ev.	502	53,6%
Jewish.	1	0,1%
Christian sect	11	1,2%
orthod.	1	0,1%
other	10	1,1%
non-denominational	43	4,6%
unexplained	11	1,2%

Correlations of the variables to be named below with gender and age are so minor that they are not worth mentioning and there are no significant correlations with the latter 3 variables.

5.2.4.5.5.4 Dependent variables

The most important dependent variable is health status in 1999:

Lives relatively healthy	208	22,2 %
Chronic or serious illness	404	43,2 %
Deceased	324	34,6 %
Total	936	100 %

This is the number of people from Study A for whom the independent variables listed in the following section are available.

In addition to health status, further dependent variables (indicator variables) are available for the following facts:

Car accidents	6,5 %
other. Traffic accidents	5,2 %
other private accidents	4,7 %
Occupational accidents	5,2 %
all accidents	16,8 %

Professional ability	24,1 %
Early retirement	10,6 %

at least one accident

5.5.5 Independent variables

There are 25 questions available, which are listed below. See below for the "categories".

	Working life	Categories	
1	Loads	A	B-
2	Recognition, reward	A	B+
3	injurious treatment	A	B-
4	Disability, Criticism	A	B-
5	Social and economic insecurity	A	B-
6	Bullying	A	B-
7	Promotion	A	B+
8	Exhaustion	A	R-
9	Skills can be used	A	B+
10	Work motivation	A +	R
11	Sense of belonging	A +	R
20	Needs blockage in working life	A	B-
	Family and personality		
12	pleasant memories	non A B	+
13	Reward, recognition in the family of origin	non A B	+
14	dto. in school and training	non A B	+
15	Shocking experiences	non A B	-
16	Lack of stimulation	non A B	-
17	negative pleasure balance	non A	R-
18	Corrective capacity	non A B	+
19	Needs blockage in the family of origin	non A B	-
21	dto. in the partner relationship	non A B	-
	Physical risk factors		
22	chron. Inflammation, number		P-
23	dto. Duration		P-
24	dto. severity		P-
25	Fever, frequency		P+

All variables with the exception of the physical variables were recorded on a response scale from 1 ("strongly disagree") to 7 ("strongly agree").

Categories
Fr. 1-7, 9, 20 can be regarded as workplace conditions to which the individual is exposed (category B).
Fr. 8 (exhaustion), 10 (motivation) and 11 (sense of belonging to the company) refer to the individual's reactions within the work sphere (category R).
Questions 1-11, 20 together relate to working life (category A). Questions 12-19,21 on family and personality can be categorized as nonA, since after excluding question 20 (→ category A) there are no work-related characteristics. With the exception of the response variable question 17, these are condition variables (category B).
The physical risk factors (Fr. 22-25) are referred to as category P.

Some of the R variables are also used as dependent variables. We refer to the variables from Section 5.5.5 (see above) as "*dependent variables in the narrower sense*"; they are of course also response variables.

5.5.6 Formulation of the hypotheses

For the condition variables, it is clearly recognizable whether they describe a desirable (e.g. recognition) or undesirable (e.g. hurtful treatment) fact.

The same applies to the response variables (exhaustion, motivation, sense of belonging, negative pleasure balance) as well as to the dependent variables in the narrower sense (health, ability to work, early retirement, accidents).

For the P variables, chronic inflammation is to be regarded as pathological and fever as a physiological reaction of the immune system. This hypothetical direction is noted with + or - for each independent variable in the above overview; the reader should check it in each individual case.

For the relationship between B and R variables, we assume that positive/negative B are positively related to positive/negative R in the case of "sameness" and negatively related in the case of "unlikeness". Furthermore, we assume that the B variables are positively related to each other and the R variables are negatively related to each other in the case of "sameness" and in the case of "unlikeness".

In principle, each variable can also be defined conceptually and numerically in the opposite direction. Instead of stress, for example, we would speak of freedom from stress, and the values of the variables would be given a negative sign. We have recoded all variables in this way that are hypothetically categorized with a negative sign in the overview. (All positive variables could just as easily have been redefined as risk factors or mortality/morbidity). The measure is a mere externality and serves to ensure that, in an overview of correlations or differences, those that are contrary to the hypothesis immediately stand out with a negative sign.

5.2.7. 5.5.7 Link to the terms strain, resource, stress

Stress can occur in working life as well as in the family and personality sphere. This is therefore our negative hypothetical direction for A or nonA variables. The opposite would be described as freedom from or poverty of stress and can of course also occur in the A or nonA sphere (e.g. as a reward).

Resources are to be understood as supporting factors in coping with stress. Our category nonA describes (after the exclusion of Fr.20→ category A) personal prerequisites with which the individual enters working life. We would therefore like to identify "resource" with regard to the A-sphere with condition within the category nonA. Of course, resources within the A-sphere are also conceivable (for example, if personal characteristics such as flexibility, mobility, creativity, permanent learning, distancing ability occur in study B), but our A-variables describe either conditions at the workplace or reactions of the individual, but not coping potentials within the individual.

Stress is a reaction of the individual and is represented here by the R variables Fr. 8 (exhaustion in working life: dysstress), Fr. 10 (work motivation: eustress) and Fr. 17 (negative pleasure balance: dysstress), whereby eustress and dysstress are taken as positive and negative manifestations of the same basic dimension.

The "dependent variables in the narrower sense" (above all health status) are to be understood as final effects, with the R variables being regarded as intermediate between these and the conditions or resources.

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5.5.8 Empirical relevance of the hypothetical classification

This hypothetical direction of correlation was empirically tested in the following approaches:
all variables with the dependent variables in the narrower sense (Table 1);
B and P variables with the remaining R variables (Table 2);
all variables except the dependent variables in the narrower sense:

Table 1: all variables with the dependent variables in the narrower sense

	Health status	Sustainable employability	Early retirement	all accidents
1	Shock experiences with a lasting effect15/0.53	Shock experiences with a lasting effect15/0.36	Mental and physical exhaustion in BL 8 / 0.23	Sense of belonging in the BL 11 / 0.19
2	negative pleasure difference 17 / 0.50	negative pleasure difference 17 / 0.35	Shock experiences with a lasting effect15/0.21	Shock experiences with a lasting effect15/0.18
3	Mental and physical exhaustion in BL 8 / 0.46	Ability to correct behavior that leads to negative consequences 18 / 0.35	Positive transfer of experiences in the family of origin to the present 12/ 0.20	Ability to correct behavior that leads to negative consequences 18 / 0.18
4	Ability to correct behavior that leads to negative consequences 18 / 0.45	Needs blockade in relation to the family of origin 19 / 0.33	Destructive personality in BL 6 / 0.20	Lack of excitation 16 / 0.17
5	Blocking of central needs in partner relationship/family 21 / 0.45	Blocking of central needs in partner relationship / family 21 / 0.32	Reward through recognition of achievement in the family of origin 13 / 0.19	Integration of skills in BL 9 / 0.17
6	Lack of excitation 16 / 0.44	Duration of inflammation 23 / 0.31	Blocking of central needs i Partner / family 21 / 0.18	negative pleasure difference 17 / 0.14
7	Sense of belonging in the BL 11 / 0. 43	Lack of excitation 16 / 0.31	Needs blockage in relation to the original family. 19/0,18	Blocking of central needs i BL 20 / 0.13
8	Reward through recognition of achievement in the family of origin 13 / 0.42	Mental and physical exhaustion in BL / 8 / 0.31	Reward / Recognition in BL / 2 / 0.18	Reward through recognition of achievement in the family of origin 13 / 0.13
9	Needs blockade in relation to the family of origin 19 / 0.41	Pos. transfer of experiences in the original family to the present / 12 / 0.30	Ability to correct behavior that leads to negative consequences / 18 / 0.17	Mental and physical exhaustion in BL 8 / 0.12 #
10	Positive transfer of experiences from the family of origin to the present 12/ 0.39	Blockade of central needs in BL 20 / 0.26	Constructive/supportive personality i BL 7 / 0.17	Mental stress i BL / excessive demands 1 / 0, 12 #
11	Blocking of central needs i BL 20 / 0.38	Sense of belonging in the BL 11 / 0.25	negative/obstructive commun. i BL 4 / 0.17	Constructive/supportive personality i BL 7 / 0.11 #
12	Reward / Recognition in BL 2 / 0.36	Reward / Recognition in BL 2 / 0.24	Sense of belonging in the BL 11 / 0.16	Negative/obstructive commun. i BL 4 / 0.11 #
13	Integration of skills and requirements in BL 9 / 0.35	Constructive/supportive personalities i BL 7 / 0.24	Lack of excitation 16 / 0.16	Pos. transfer of experience in the original family to the present 12 / 0, 11 #
14	Constructive/supportive personality i BL 7 / 0.35	Integration of skills and requirements in BL 9 /0.22	personally injurious treatment in BL 3 / 0.16	Reward / Recognition in BL 2 / 0.10 #
15	Negative/obstructive commun. i BL 4 / 0.35	personally injurious treatment in BL 3 / 0.21	negative pleasure difference 17 / 0.15	Blocking of central needs Partner reference/family 21/0.10 #
16	Destructive personality in the BL (diminish performance, emphasize mistakes 6 / 0.34	Reward for performance recognition in school/training 14 / 0.19	Blocking of central needs in the BL 20 / 0.15	personally injurious treatment in BL 3 / 0.10 #
17	personally injurious treatment in BL 3 / 0.33	Destructive personality in BL 6 / 0.19	Mental stress in the BL / excessive demands 1 / 0.13	Needs block related to the family of origin 19 / 0.10#
18	Mental stress in the BL / excessive demands 1 / 0.30	Mental stress i BL / excessive demands 1 / 0.19	Integration of skills and requirements i BL 9/0.12 #	destructive personality in BL- 6 / 0.10 #
19	Social and economic insecurity in BL 5 / 0.27	Fever above 38.5 degrees 25/ 0,16	Fever over 38.5 degrees 25 / 0.12 #	Social and economic uncertainty in BL /0.09 #
20	Reward for performance recognition in school/training 14 / 0.25	Negative / hindering communication in the BL 4 / 0.16	Reward through performance recognition in school/training 14/0.11 #	Fever over 38.5 degrees - 25 / 0,08 #
				→

	Health status	Sustainable employability	Early retirement	all accidents
21	Fever over 38.5 degrees 25 / 0.20	Social and economic insecurity in BL 5 /0.13	Social and economic insecurity in BL 5 / 0,11 #	Reward d. Recognition of performance in school/training14/0.08 #
22	Severity of inflammation 24 / 0.16	Chronic inflammation 22 / 0.12 #	Work motivation 10 / 0.08 #	Duration of inflammation 23 / 0.08#
23	Chronic inflammation 22 / 0.14	Severity of inflammation 24 / 0.10 #	Severity of inflammation 24 / 0.08 #	Severity of inflammation 24 / 0.07
24	Work motivation 10 / 0.08 #	Work motivation 10 / 0.07 #	Chronic inflammation 22 / 0.06 #	Chronic inflammation 22 / 0.05 #
25	Duration of inflammation 23 / -0.05 #	Duration of inflammation 23 / 0.03 #	Duration of inflammation 23 / - 0.01 #	Work motivation 10 / 0.02 #

The first number refers to the number in the questionnaire "RGM work life, family, personality", the second number indicates the bivariate correlation with the dependent variable.
to be considered insignificant (see below)

(criterion: $p < 0.05/4/25$). If $p < 0.05/m$ is required for m null hypothesis tests, then the expected value of the number of tests that become significant with a consistently valid null hypothesis ("error of the first kind") is equal to 0.05, as with a single test.

It can be seen that all significant correlations (and even all insignificant correlations except for two, which both relate to Fr. 23 (duration of inflammation)) are positive.

There is therefore complete hypothesis conformity for the observed correlations between all independent and dependent variables in the narrower sense.

We also look at the correlations of the B and P variables with the response variables Fr.8, 10, 11 (work sphere) and Fr. 17 (general sphere), again sorted according to the value of the correlation:

Table 2: Correlations of the B and P variables with the response variables

No. No.	FR8		FR10		FR11		FR17	
1	FR 15	0.53	FR 9	0.32	FR 7	0.56	FR 16	0.76
2	FR 20	0.52	FR 14	0.23	FR 2	0.54	FR 19	0.63
3	FR 6	0.52	FR 18	0.22	FR 20	0.51	FR 18	0.63
4	FR 3	0.49	FR 7	0.22	FR 9	0.51	FR 21	0.62
5	FR 21	0.47	FR 12	0.16	FR 6	0.47	FR 15	0.57
6	FR 2	0.45	FR 16	0.15	FR 4	0.46	FR 12	0.54
7	FR 4	0.45	FR 13	0.14	FR 3	0.44	FR 13	0.51
8	FR 18	0.44	FR 2	0.13	FR 15	0.43	FR 20	0.39
9	FR 9	0.43	FR 25	0.10#	FR 18	0.40	FR 2	0.30
10	FR 7	0.41	FR 6	0.08#	FR 21	0.37	FR 25	0.29
11	FR 16	0.40	FR 5	0.08#	FR 12	0.35	FR 14	0.29
12	FR 19	0.38	FR 4	0.06#	FR 5	0.34	FR 6	0.28
13	FR 5	0.38	FR 19	0.05#	FR 13	0.32	FR 3	0.27
14	FR 1	0.35	FR 3	0.04#	FR 16	0.32	FR 7	0.27
15	FR 12	0.33	FR 21	0.04#	FR 19	0.27	FR 9	0.27
16	FR 13	0.33	FR 15	0.04#	FR 1	0.26	FR 4	0.26
17	FR 25	0.20	FR 20	0.03#	FR 14	0.25	FR 1	0.21
18	FR 24	0.17	FR 23	-.01#	FR 25	0.24	FR 24	0.20
19	FR 22	0.17	FR 24	-.06#	FR 24	0.14	FR 22	0.18
20	FR 14	0.16	FR 22	-.08#	FR 22	0.14	FR 5	0.16
21	FR 23	-.02#	FR 1	-.15	FR 23	-.04#	FR 23	-.03#

must be regarded as insignificant (criterion: $p < 0.05/4/21$).

Here, too, all significant correlations are positive with the exception of Fr.10/Fr.1, and the insignificant ones either have to do with Fr.23 again, or they concern Fr.10 (work motivation), which we will discuss separately.
The relevance of the independent variables is therefore again fully consistent with the hypothesis.

Even the intercorrelations of the independent variables (including the response variables) are extremely clear. The 25*24/2=300 correlations are, as far as significant, positive except for Fr.10/Fr.1 (we will come back to this).
Here too, therefore, the empirical results conform almost without exception to the hypothesis.

For significance, $p < 0.05/300$ was required here. This is particularly important, because if you were to work with $p < 0.05$, around 300*0.05=15 tests would be significant even if the null hypothesis were to remain valid! However, it is impossible to afford such a "ground set" of errors of the 1st kind.

5.2.9.5.5.9 Multivariate results: Weighting of the work sphere

If the direction of the intercorrelations of the independent variables is almost completely determined by their character as health or risk factors, it makes sense to summarize the Arb variables (Fr. 1-11,20) and the Ress variables (Fr. 12-19,21) in the form of their 1st unrotated factor-analytical dimension.
In fact, a multiple correlation with the health status of R=0.63 is achieved with these two variables, while hardly more (R = 0.65) is achieved with the 21 individual variables. It can therefore be seen that the relationships between the independent variables alone lead to a weighting on their 1st common dimension, the success of which is hardly inferior to that of the optimal regression weighting with regard to health status.

The basic principle of the multiple regression approach is that unfavorable conditions in one area can be compensated for by favorable conditions in another.
The effects and compensations depend on the multivariate regression coefficients. We therefore state the standardized regression coefficients ß (for health status also the simple correlations r) and the multiple correlation R for the two dimensions "Arb" and "Ress":

	Health status		Profession.	Early retirement	all accidents
	r	ß	ß	ß	ß
Work	0,51	0,30	0,14	0,16	0,11
Ress	0,57	0,41	0,34	0,17	0,12
R	0,63		0,43	0,26	0,20

Except for early retirement, resources therefore carry more weight than the work sphere. The difference is greatest for "work ability"; here, a person who is 1 standard deviation below the mean for "Ress" must be 2.5 standard deviations above the mean for "Arb" in order to compensate for the disadvantage. - Incidentally, the simple correlations of Arb and Ress with health status (0.51 and 0.57 respectively) differ even less than the ß (0.30 and 0.41 respectively).

Non-linear effects
A non-linear effect of an independent variable is that the slope of the dose-response relationship is not the same everywhere.
Here we ask whether the quadratic regression element is significant, which means that the slope increases or decreases continuously (whereby a maximum or minimum can also be passed through).
For pairs of independent variables, we ask whether their product link is significant, which means that there is an interaction in the sense that the effectiveness of one variable depends on the level of the other, and vice versa.
For example, one could imagine that a favourable level of resources not only counteracts unfavourable conditions at the workplace (additively) and more or less compensates or overcompensates for them, but that favourable resources even ensure a flatter impact curve of the work conditions, i.e. to a certain extent immunize against unfavourable work conditions.

We asked these questions for the two factor dimensions introduced in Section 5.5.9. and obtained the following results:

For both the Arb and Ress dimensions, the square term with a positive sign is significant, i.e. the effect curve becomes steeper. The product term is not significant, i.e. no interaction between the two spheres can be detected.

The steepening of the effect curve does not apply per se, of course, but the following must not be overlooked: If the dependent and independent variables are all reversed (given a negative sign), i.e. if we are talking about mortality/morbidity and risk factors, then their effect curve will necessarily - as is easy to realize - become FLATTER with increasing severity.

5.2.10.5.5.10 The motivation to work

Work motivation (Fr.10) shows (see Table 1/5.5.8) no significant correlations with the dependent variables in the narrower sense, and when taken as a dependent variable (see Table 2/5.5.8), it shows significantly lower correlations with the condition variables than the other response variables (freedom from exhaustion, sense of belonging, lack of pleasure, and of the dependent variables in the narrower sense: health status and ability to work). Finally, work motivation provides the only significant correlation with a condition variable (Fr.1: see Table 2/5.5.8), which - since it is negative - does not emerge from the hypothetical classification.

We therefore first examined which variables can explain motivation - albeit relatively poorly. There are the following significant bivariate correlations:

As we know, the only significant negative correlation is with Fr.1: freedom from stress leads to lower motivation, while stress leads to higher motivation. This does not seem unreasonable; we will refine this result in the next section.

All other correlations are positive and correspond to the classification of work motivation as a health factor; the correlations with questions 2, 7, 9, 11-14, 16-18, 20 are significant (they all appear to be meaningful in terms of content, which will not be explained in detail).

5.5.11 Interactive relevance of work motivation

As mentioned, work motivation shows no significant relationships with the dependent variables in the narrower sense, and with the other response variables only one with Fr. 11 (sense of belonging: $r = 0.25$). It was therefore logical to ask whether work motivation has different effects under different conditions, so that its overall effect appears to be weak.

For this purpose, the work condition variables Fr. 1-7, 9, 20 were used in the form of their 1st unrotated factor dimension and dichotomized, and the motivation variable was also dichotomized.

This resulted in 4 groups of approximately equal size, in which the mean value of the response variables can be observed.

The *interaction hypothesis* was then that someone who is highly motivated to work under unfavorable conditions such as non-recognition, disability, hurtful treatment, etc. suffers frustration and health problems, while high motivation under recognition, constructive conditions, etc. leads to the opposite.

This interaction hypothesis was confirmed for the response variables health status, freedom from accidents, freedom from exhaustion and sense of belonging, in some cases at a very high level of significance. The relationships with health status are presented here as an example:

Mean values of the health status

Conditions	Motivation low	high
unfavorable	0,67 N = 355	0,50 N = 202
favorable	1,12 N = 137	1,36 N = 242

It can be seen that higher motivation under less favorable conditions leads to poorer health outcomes, while more favorable conditions lead to better health outcomes.

5.2.12. 5.5.12 Results based on the variable categories

We had introduced the following variable categories:

A	Work sphere
nonA	Personal and family sphere
B	Conditions (in nonA: resources regarding A)
R	Reactions of the individual - This also includes the "dependent variables in the narrower sense": health status, ability to work, early retirement, accidents. Eu- and dysstress were assigned to the R-variables
P	Physical risk or health factors

Each of these categories defines a subset of the variables used. In section 5.5.6 "Formulation of the hypotheses", the expectation was derived that (after the uniform recoding of the variables) positive correlations exist between certain groups of variables or their members, since it is a cause-effect relationship as between conditions and reactions, or between the groups mentioned and the dependent variables in the narrower sense.
Only between the conditions in the family and personality sphere (such as reward and recognition in the family of origin) and in working life is there no such relationship (although positive correlations are also found here).
Furthermore, we expect positive correlations between the variables within a category due to their similarity, which justifies their subsumption under a category.

The result is that - apart from the minimal exceptions mentioned - no significant negative correlations were found.
The assumed causal links are therefore confirmed: Conditions affect reactions and these ultimately affect the dependent variables in the narrower sense, above all health status. The similarity of the variables belonging to a category is also confirmed (the categorization was only carried out in terms of content and not on the basis of special features of the correlation pattern).

The work sphere is involved in the results (reactions, health status, etc.) with a weight that is comparable to that of the personality sphere. This means that if someone enters working life with poor personality prerequisites, a satisfactory result can still be achieved if the conditions in the work sphere are favorable enough. Similarly, if someone enters working life with particularly favorable personality requirements, they can also "cope" with quite unfavorable conditions there.

Formatiert: Nummerierung und Aufzählungszeichen

5.6 Life extension in people with high risk constellations - randomized experiment - Study A

5.6.1 Summary

In one intervention group, numerous and almost all therapeutically desirable changes between the initial and final state were achieved and mortality was significantly reduced.
The risk and health factors were assigned to the dimensions "psychosocial", "work-related" and "physical-medical" and their differential relevance for health status was determined. Personality typology proved to be a highly effective predictor of mortality and cause of death. With regard to the occupational dimension in particular, it was significantly changed by the treatment in a therapeutically favorable direction and was in turn of considerable relevance for health/survival status.
This experiment can be seen as a replication of the experiment from study B (see section 5.4).

5.3.2 5.6.2 Explicit hypotheses

In this randomized experiment in people with high physical and psychosocial risk (unfavorable conditions at work and in the personal/family sphere), it can be shown that ...
1. autonomy training can reduce mortality from various chronic diseases, at least over an observation period of approx. 20 years.
2. ... the effects of autonomy training can be attributed to the reduction of health-damaging variables from all three areas (physical risk factors, family/personality, professional life).
3. ... The stronger the manifestation of psychophysical risk factors before autonomy training, the more effective the training.

5.3.3 5.6.3 Obtaining the sample

Two times 39 people with a pronounced psychophysical risk were identified from study A and randomized. The selection was made from 289 (211 plus 78) people who answered the "RGM self-regulation and health" questionnaire. The one randomly selected group for the autonomy training was then asked whether they would be available for a further clarifying interview. Five people refused to participate. In the follow-up examination to record the health status, three people could no longer be identified. The comparison persons in the control group were removed from the statistical analysis, both with regard to persons who were no longer found in the follow-up examination and with regard to the original refusers (five persons). This left 31 pairs for the statistical analysis of the experiment. (The study can be regarded as a replication of the experiment from Study B, as both studies used largely similar measurement instruments and autonomy training was used in both studies).

5.6.4 Designations

General information

Some of the variables used here correspond to the "RGM Self-Regulation and Health Questionnaire" (Z):

The following designations are selected here:

V1 - V28 - "XIV Behavior, stress, personality", questions 1-28, Z

T1 - T6 - "XV Typology", types 1-6, Z

B1 - B12 - "XVIII" (professional life), questions 1-12 (plus one question B13 not listed in Z), Z

S1 - S16 - "XIX" (social relationships), questions 1-16, Z

All of these questions were answered on a scale from 0 ("not at all") to 7 ("extremely strongly").

Other variables, for which no abbreviations are used here, correspond to Z "I" (personal data) and Z "I-XIII" (medical risk factors).

Larger groups include 13 variables relating to the respondent's previous organic damage (Z X) and 16 variables relating to the incidence of cancer and cardiovascular diseases in the family (Z XI and XII).

Resolution of the abbreviations

B	Occupational dimension (see section 5.6.8.2)
B1-B12	(see section 5.6.4.1)
Ges.status	(see section 5.6.6f)
KG	Control group
PH	physical-medical dimension
PS	psychosocial dimension (see section 5.6.8.2)
S1-S16	(see section 5.6.4.1)
T1-T6	(see section 5.6.4.1)
V1-V28	(see section 5.6.4.1)
VG	Experimental group
Z	s. Appendix Measuring instrument: "RGM self-regulation and health questionnaire"

5.3.5.5.6.5 Composition of the ontrol and experimental groups

Formatiert: Nummerierung und Aufzählungszeichen

Gender

KG and VG each consist of 18 men and 13 women.

Age in 1979

	KG	VG	Total
45-49	4	2	6
50-54	4	6	10
55-59	14	11	25
60-64	3	4	7
65-69	2	2	4
n.a.	4	6	10
Total	31	31	62

School education

	KG	VG	Total
Main sh.	9	10	19
Realsch.	5	5	10
A-levels	3	2	5
High.	2	2	4
unknown.	12	12	24
Total	31	31	62

Profession

	KG	VG	Total
Workers	6	7	13
Employee I	6	6	12
Employee II	3	2	5
Employee III	1	1	2
Civil servant	2	2	4
Freelancer	1	1	2
Unknown	12	12	24
Total	31	31	62

Denomination

	KG	VG	Total
cath.	6	7	13
Protestant	6	6	12
Israelite	3	2	5
chr. sect	1	1	2
Islam	2	2	4
none	1	1	2
Unknown	12	12	24
Total	31	31	62

Year of first interview

	KG	VG	Total
1977	25	25	50
1978	5	31	8
1979	1	1	2
unknown.	0	2	2
Total	31	31	62

Mortality

	KG	VG	Total
deceased	26 / 83,87 %	17 / 54,84 %	43
lives	5 / 16,13 %	14 / 45,16 %	19
Total	31 = 100 %	31 = 100 %	62

Mortality rates

Since a treatment effect is reflected in the difference between VG and KG, reference is made to "Mortality rates" in Section 5.6.6.

5.6.6 Investigation of the treatment effects

Introductory

For all variables, there is one measurement before treatment and one measurement after treatment in the VG, as well as two measurements in the KG.

In order to determine the effects of the treatment, the differences between the 2nd and 1st measurement can be considered within the VG, and they can be compared with the corresponding differences in the KG, which, if significant, would be based on spontaneous systematic changes.

However, no significant changes were found in the KG - except in trivial cases such as differences in interview date or age at interview. (It should be noted that with a sample size of 31, only relatively strong changes have a chance of becoming significant).

In the following, we will therefore look at the changes in the VG without comparing them with the KG. This also has the advantage that the test strength is greater: Within each group, we have a mean change with an estimated variance. If the difference between the group means is formed, the variances add up. If, on the other hand, a mean change is tested against 0, only its variance comes into play.

Equivalence of VG and KG

Since the analysis of treatment effects, as explained above, is not carried out on the basis of comparisons between VG and KG, the question of equivalence of VG and KG is not of decisive importance.

Nevertheless, we tested them and found that there were virtually no significant differences between VG and KG in the before measurements.

Pair formation

A pair formation has taken place between VG and KG, which can be clearly seen in the variables gender and age. If comparisons are made between VG and KG, it is advisable to look at the differences within the pairs, as this can help to reduce the sample variance and thus increase the test power.

Health status

A highlighted individual variable is likely to be the health status G determined during the follow-up examination (living relatively healthy - living with chronic illness or significant disability - deceased). Since there is no before and after measurement for this, it can only be compared with the KG. While 16% of people were still alive at the follow-up examination, the figure for the VG was 45%. The difference is statistically confirmed ($p < 0.03$).

Mortality rates

Unidentified cases are not included here.

Control group

	N#	Deaths##	middle age#
1983 - 1986	31	4,0	60,7
1987 - 1990	26	4,8	64,7
1991 - 1994	21	10,7	67,9
1995 - 1999	12	14,6	72,6

\# Living at the beginning of the time interval
\## in % of the living at the beginning of the time interval

Experimental group

	N#	Deaths##	middle age#
1983 - 1986	31	0,0	61,1
1987 - 1990	31	0,8	65,1
1991 - 1994	30	1,7	69,0
1995 - 1999	28	12,5	72,9

\# Living at the beginning of the time interval
\#\# in % of the living at the beginning of the time interval

A treatment effect is expressed in different mortality rates in KG and VG: in all time intervals - especially in the first three - mortality is lower in VG than in KG. The difference is statistically confirmed ($p < 0.05$).

Therapeutic desirability

For 76 variables with before and after measures (V, T, B, S and 13 other variables in the areas of medical risk factors, smoking, alcohol, diet and exercise), the therapeutic desirability of a high value or a positive change was intuitively categorized as +1, 0 or -1. For example, question V1 was categorized as +1 because a high value of well-being can be considered therapeutically desirable; V11 was categorized as -1 because a high value of splitting between personal problems and behavior can be considered therapeutically undesirable.
In cases of doubt and obvious irrelevance, categorization was with 0, which was the result for only 5 of the 76 variables.

5.6.7 Methodology for checking for changes

For the 76 variables, the change in the VG was exploratory tested using the t-test. A distribution-free method can be used in each case in order to optimally validate individual changes.

The significance level of a test is the probability of rejecting the null hypothesis (H0, here: mean change = 0) if it is true ("error of the first kind"). This applies to a single test.
However, let us consider the situation where, for example, 100 tests are carried out. H0 is true in 95 cases and not true in 5 cases, and let the test strength be so great that a significant result actually occurs in the 5 cases of H0 and H0 is rejected. However, for the 95 cases in which H0 applies, the expected value for the results that are significant only by chance (as an error of the first kind) is $95 \times 0.05 = 4.75$.
So you get a mixture of roughly the same number of rightly and wrongly significant results that cannot be separated from each other.
To avoid this situation, the significance level p must be tightened, obviously so that the expected value for the number of errors of the first kind in the test series is as large as in a single test, namely 0.05. This is achieved by using $p=0.05/n$ for n tests. Then any test that has become significant (apart from the planned probability of error) can be regarded as justifiably significant, just as is the case with a single test.

Treatment effects

Accordingly, $p < 0.05/76 = 0.00066$ was required for the 76 tests mentioned. This condition was met for 31 of the 76 variables; desirability was categorized as +1 or -1 for 30. In 29 of the 30 cases, the empirical direction of change corresponds to the therapeutic desirability. (The one exception is the degree of type 3 (variable T3 according to 5.2.4.1), which was classified as therapeutically undesirable by the statistical evaluator - not by the psychosomatic author). Again, it should be remembered that with a sample size of 31, only relatively large changes have a chance of becoming significant.

The 31 significant variables are distributed across all the variable groups introduced above in Section 5.6.4.1 (General):

V (Personality)	11 (from 28)
T (typology)	4 (out of 6)
B (professional life)	3 (out of 12)
S (social relations)	8 (out of 16)
Medical and other risk factors	5 (out of 13)

Even if one also considers those variables that only achieved a significance of $0.00066 < p < 0.01$, the agreement between intuitive categorization and empirical result is remarkable: of these 18 variables, not a single one did not change in the intuitively defined sense. And even among the 27 variables that did not even achieve $p < 0.01$ (i.e. where a relatively large amount of random variation is involved), there are only 4 with the opposite direction of change.

The 3 most changed variables from each of the 5 areas are:

Personality:
V2 Religiosity
V4 Self-regulation
V9 Inner autonomy

Typology:
Type 4 - Type 3 - Type 1 (expression reduced)

Social relationships:
S1 Self-esteem
S5 Love for God
S14 Recoverability

Professional life:
B1 Well-being
B13 Mental and physical exhaustion (reduced)
B11 Perceived excessive demands (reduced)

Physical and medical risk and health factors:
Well-being due to nutrition (Z IV.10-12)
diastolic blood pressure (reduced)
Well-being due to physical activity (Z IX.6-8)

Empirical examination of therapeutic desirability

The correctness of the intuitive assessment of therapeutic desirability can be checked using the correlation of the relevant variable with the health status G, whereby not the change but the value of the variable at the 2nd measurement is to be used (which describes the conditions for further development after the 2nd measurement).

The correlation with G reached $p < 0.00066$ in 9 cases and $0.00066 < p < 0.01$ in 14 cases.

In all of these 23 cases, the direction of the correlation matches the therapeutic desirability.

And even among the 53 variables that did not even achieve $p < 0.01$ (i.e. where a relatively large amount of random variation is involved), there are only 5 with the opposite direction of health relevance.

In conjunction with section "Treatment effects" (5.6.7.1), it can be seen that the treatment effects in all cases that are even somewhat significant are almost exclusively in the desired direction in terms of health status.

A direct confrontation of the change in the 76 variables in the VG and the relevance of the 2nd measurement for the health status indeed shows that for both $pp < 0.00066$ (22 cases) and for $0.00066 < pp < 0.01$ (17 cases) the two directions agree without exception (where pp is the geometric mean of the significance of the change and health relevance test).

And even among the 37 variables that did not even reach $pp < 0.01$ (i.e. where a relatively large amount of random variation is involved), there are only 6 with opposite directions of change and health relevance.

The 3 variables most closely related to health status from each of the 5 areas are:

Personality:
V10 Integration of reason, emotion and intuition
V9 Inner autonomy
V16 Behavioral correction blockade (negative relevance)

Typology:
Type 4
Type 5 (negative relevance)
No other type fulfilled $p < 0.01$
Social relationships:
S14 Recoverability
S10 Coping ability
S6 Being loved

Professional life (all significant variables):
B1 Well-being
B13 Mental and physical exhaustion Exhaustion (negative relevance)
B11 Excessive demands experienced (negative relevance)
B4 Possibility of shaping through influence
B9 Self-active career design
B8 Recognition/appreciation
B3 Recognition/reward

Physical and medical risk and health factors:
Increasing cigarette consumption (Z III 3) (negative relevance)
diastolic blood pressure (negative relevance)
Well-being due to nutrition (Z IV 10-12)

5.6.8 Factor structure of the most changed variables

(and the most health-relevant variables)

An unrotated principal axis solution with iteration was calculated to adjust the commonalities for the 12 variables that changed the most in VG and for the 10 variables in VG+KG that correlated the most with health status in the second measurement:

12 changed variables

	1. intrinsic value	2. intrinsic value	Ratio	Medium communality #
1. measurement	3.463	1.127	3.9 : 1	0,29
2. measurement	6.760	0.573	11.8 : 1	0,56
Changes	7.286	0.357	20.4 : 1	0,61

1-factorial solution

10 health-related variables

	1. intrinsic value	2. intrinsic value	Ratio	Medium communality #
1. measurement	2.060	0.889	2.3 : 1	0,21
2. measurement	5.671	0.382	14.8 : 1	0,57
Changes	6.001	0.370	16.2 : 1	0,60

1-factorial solution

The variables involved therefore exhibit a high degree of unidimensionality in the 2nd measurement and even more so in the form of their changes, although the only thing that links them is the strong relationship to treatment or health status.

Relationship between initial value and change

For many of the 76 variables, there is a remarkably strong negative correlation between the initial value and its change. The most obvious explanation would of course be that this is due to a measurement-related ceiling effect, namely that higher values on the scale from 0 to 7 necessarily do not rise as sharply and can fall more sharply than lower values.
We investigated this question and came to the conclusion that this explanation can only be used to a limited extent. There therefore appears to be a substantive effect, such that people with less favorable initial values (in terms of therapeutic desirability) benefit more from the treatment.

General psychosocial, work-related and physical risk and health factors

We adopt this classification a priori from the structure given by the questionnaires (5.2.4.1). Using the values of the respective variables at the 2nd measurement (VG: after treatment), a stepwise regression was carried out for the dependent variable G to select the 6 best predictors.
The resulting linear combinations of the independent variables are labeled PS (psychosocial), B (work-related) and PH (physical-medical). They correlate with each other between 0.46 (B-PH) and 0.73 (B-PS), i.e. they form a complex of interrelated health and risk factors.
They show highly significant correlations with the health status G of between 0.60 (PH) and 0.76 (PS). If they are used together, this results in a multiple correlation with G of 0.80. PS, B and PH are all significant, and the relevance of PS is greatest.

If the first measurement is considered instead of the second, the multiple correlation decreases to 0.71. This is plausible: the slightly later state, and in particular the state established by the treatment, is more relevant for the further course up to the G determined in the follow-up examination than the initial state.

If the analysis is carried out separately with the 2nd measurement in KG and VG, the result is a multiple correlation of 0.93 and 0.90. This means that G is highly predictable with the available measuring instruments, regardless of whether the measured conditions were experimentally influenced or naturally grown.

Typology and causes of death

Based on the type variables (see Section 5.6.4.1), each person was assigned the most pronounced type and related to mortality and cause of death.

	lives %	Quantity	Cause of death Cardiovascular system	Cause of death Cancer	Cause of death Other	Total
Type 1	28,6	6	0	13	2	21
Type 2	6,7	1	14	0	0	15
Type 3	0	0	1	0	0	1
Type 4	70,0	7	1	1	1	10
Type 5	27,6	4	1	9	1	15
Total		18	17	23	4	62

The expression of type 3 was only once and that of type 6 was never stronger than that of another type.
The relationship with the cause of death is highly significant (p = 0.000 000 04) and is as follows:
The cause of death for type 1 deceased was predominantly cancer, for type 2 deceased it was always cardiovascular disease. With regard to the causes of death from cancer and cardiovascular disease, the "misclassification rate" is 0% for both type 1 and type 2.
Type 5 behaves similarly to type 1, while type 4 has by far the highest survival rate.

Interaction between physical and psychosocial risk and health factors

By an interaction between independent variables x and y we mean that the effect of x depends on the level of y, and vice versa.
The relationships for dichotomous variables are particularly clear: there are 4 groups, which are characterized by $(x,y)=(0,0)$, $(0,1)$, $(1,0)$ and $(1,1)$. If you denote the level of the dependent variable z in the groups by $z(0,0)=a$, $z(0,1)=b$, $z(1,0)=c$, $z(1,1)=d$, you only have to ask whether $b-a=d-c$ or (which, as you can easily calculate, is equivalent to this) whether $c-a=d-b$.
However, information is lost when dichotomizing quantitative variables, and the significance is generally weaker. Therefore, in addition to the illustrative result with the dichotomized variables, we also report the significance of the original quantitative variables below.

Interactions of the regression functions from section "General psychosocial, occupational and physical risk and health factors" (5.6.8.2)

Mean values of the health status
PS with PH

	PH = 0	PH = 1	Difference	Significance
PS = 0	00,0	0,15	0,15	dichot. 0.026
PS = 1	0,43	1,31	0,88	quant. 0.00070

The effect of the physical health factors is therefore stronger at a higher level of the psychosocial health factors: the effects of the two sets of variables reinforce each other. However, the following should be noted: If instead of the variable G (health status) we consider its inverse 2-G (mortality/morbidity status) and also the inverses of the independent variables to PS_=1-PS and PH_=1-PH, the table looks as follows:

Mean values of mortality/morbidity status
PS_with PH_

	PH_ = 1	PH_ = 0	Difference (PH_= 1 against 0)
PS_ = 1	2,00	1,85	0,15
PS_ = 0	1,57	0,69	0,88

The effect of the physical risk factors is therefore weaker at a HIGHER level of psychosocial risk factors: the effects of the two sets of variables weaken each other. And this is not a specific characteristic of the data available, but applies generally for mathematical reasons. It is therefore not possible to speak of a strengthening or weakening (positive or negative) interaction per se.

It is also worth noting that when dichotomous or polytomous DEPENDENT variables are used, capping effects come into play, as can be seen in the last table above:
Mortality/morbidity is already so high at a higher level of the risk factor PS_ that it cannot get much higher with PH_. (Of course, this also means that the survival status is so low that it cannot get much lower). These capping effects are avoided by a logistic transformation (p→ log(p/(1-p))). However, it should not be overlooked that a model log(p/(1-p))=ax+by for p/(1-p) already implies an effectiveness of product xy, i.e. makes it impossible to examine the interaction in the above sense in addition to linear effects.

Having looked at the general psychosocial variables, we now turn to the work-related ones. The evaluation analogous to the above results in the following:

Mean values of the health status
B with PH

	PH = 0	PH = 1	Difference	Significance
B = 0	00,0	0,17	0,17	dichot. 0.018
B = 1	0,30	1,25	0,95	quant. 0.00069

The work-related psychosocial variable complex thus behaves in a very similar way to the general psychosocial variable complex with regard to the physical health factors.

But even within the psychosocial sphere, there is an interaction between the general and job-related variables:

Mean values of the health status
PS with B

	B = 0	B = 1	Difference	Significance
PS = 0	00,6	0,00	- 0,06	dichot. 0.0052
PS = 1	0,00	1,27	1,27	quant. 0.011

Structurally, the relationships are the same as before, and the significance is stronger in the dichotomized data.
The interaction of favorable personal and family conditions on the one hand and favorable conditions in professional life on the other is virtually necessary to achieve a favorable effect in terms of health status.

5.7 Psychophysical interactions for health - Study A/B

The mutual influence of family, personality, work-related factors and physical risk factors

Combined evaluation of studies A and B in people who answered the "RGM Self-Regulation and Health Questionnaire"

5.4.1 5.7.1 Summary

The relationships between a number of workplace conditions, personality traits of the respondents and physical risk factors on the one hand and health status and other response variables on the other were investigated in 794 people - mainly those who had died from certain illnesses. For all variables, a hypothetical direction was defined as a risk or health factor or as an undesirable (pathological) or desirable reaction. Predominantly highly significant and almost without exception hypothesis-compliant correlations were found between all reactions and virtually all independent variables from the work and personality spheres. The correlations between the independent variables were also almost without exception hypothesis-compliant.

The overall relevance of the work, personal and physical spheres was also determined, which do not differ significantly. Disadvantages in one sphere can be more or less compensated for by advantages in another. There are also statistically well-established interactions between the spheres.

5.4.2 5.7.2 Explicit hypotheses

1. the answer to each question in the "RGM Self-Regulation and Health Questionnaire", depending on its direction and intensity, is a predictor of health or illness.
2. both variables relating to professional life and variables relating to personality/family all have a high relevance for health and the development of chronic illness and are roughly equally pronounced in their impact.
This hypothesis was confirmed, see section 5.7.6, in particular table "multivariate correlations".
3. health-damaging effects in the professional sphere (e.g. negative stress, lack of resources, negative reactions) can be partially compensated for by health-promoting effects in the family/personal sphere and physical health factors.
This hypothesis was confirmed, see section 5.7.6, in particular table "multivariate correlations".
4. health-damaging effects in personality/family and in the area of physical risk factors can be partly compensated for by good conditions in professional life.
This hypothesis was confirmed, see section 5.7.6, in particular table "multivariate correlations".
5. pronounced physical risk factors can also be partially compensated for by favorable personality/family factors (and vice versa: unfavorable personality/family factors can be mitigated in their harmful effects on health by the absence of risk factors).
This hypothesis was confirmed, see section 5.7.6, table "Multivariate correlations".

6. occupational variables and personality/family variables exhibit synergistic effects (interactions), i.e. favorable occupational factors stimulate each other with favorable personality/family factors and require each other (the positive expression in one area requires the positive expression in the other area).
This hypothesis was confirmed, see section 5.7.5.
7. unfavorable occupational variables show synergistic (interactive) effects with unfavorable personality/family factors in the direction of disease development.

This hypothesis was confirmed, see section 5.4.8.

8. occupational variables show synergistic (interactive) effects with physical risk factors, i.e. negative occupational conditions with pronounced physical risk factors move synergistically in the direction of disease development, while favorable occupational variables with weakly pronounced risk factors show superadditive effects in the direction of health maintenance. This hypothesis was confirmed, see section 5.7.5.

5.4.4. Dependent variable

The most important dependent variable is health status in 2003:

Lives relatively healthy	217	27,3 %
Chronic or serious illness	66	8,3 %
Deceased	511	64,4 %
Total	794	100 %

In addition, there are a number of reactions of the individual such as general or work-related well-being, general or work-related exhaustion or overwork, etc., which can be used as dependent variables, but also as predictors of health status alongside the other independent variables.

5.4.5. Independent variables

The variable complexes I-XX from the questionnaire are available for all persons. Complexes XXI and XXII are also available for 232 people. All variables with the exception of the physical variables were recorded on an answer scale from 1 ("does not apply at all") to 7 ("applies to the greatest extent").

Complexes XVIII and XXI relate to working life. A distinction can be made here between conditions at the workplace and the individual's reactions to them. In addition to the conditions, we also think of these - the last of which includes health status - as being dependent on the individual's resources. The latter lie partly in the general personality sphere (e.g. autonomy, self-regulation, ability to recover), partly they are related to the work sphere (e.g. XXI 2-5,7-13: flexibility, creativity, etc.).

We therefore distinguish between the following *categories of* independent variables:

A   Work sphere
P   Personality sphere
Ph   phys. Risk factor
F   Within P, a distinction can be made between questions relating to the family of origin (XIV 22-24, XXII 6, 12, 13)

Within A (and less emphatically within P) we distinguish:

B   Condition
Rs Resource
R Reaction

The reactions consist of pleasure and well-being (or the opposite), pleasure balance, excessive demands, exhaustion, motivation, a sense of belonging to the company. They are all either explicitly or implicitly pleasure-related.

In the following, we therefore refer to the category of *pleasure reactions*.

5.4.6. 5.7.3   Formulation of the hypotheses

With the B, R and R variables, it is usually clearly recognizable whether they describe a desirable or undesirable state of affairs. E.G:

Conditions: XVIII 3 (recognition) - XVIII 7 (deferral);
Resources: XIV 4 (self-regulation) - XIV 11 (splitting of problems and behavior);
Reactions: XIV 1 (general well-being) - XVIII13 (exhaustion in working life).

For the health status (due to the coding 0 = deceased, 1 = ill,
2 = healthy) higher values represent a more desirable state.

We have hypothetically classified all variables as positive or negative in this sense. A complete list for the A and P variables, which the reader may wish to check on a case-by-case basis, is as follows:

XIV	+	1	2	4	9	10	21	24	26-28
	-	3	5-8	11-20	22	23	25		
XV-XVII	+	4							
	-	1-3	5	6					
XVIII	+	1	3-5	8	9				
	-	2	6	7	10-13				
XIX	+	1-6	10	11	13	14	16		
	-	7-9	12	15					
XXI	+	1-13	16	18	19				
	-	14	15	17	20				
XXII	+	2-7	12						
	-	1	8-11	13					

For the relationship between conditions and resources on the one hand and reactions on the other, we expect positive/negative B or Rs variables to be positively related to positive/negative R variables in the case of "sameness" and negatively related in the case of "dissimilarity" due to the cause-effect relationship.

Furthermore, we expect the B, R and R variables to be positively related to each other for "sameness" and negatively related for "dissimilarity" due to their categorical similarity.

In principle, each variable can now also be defined conceptually and numerically in the opposite direction. Instead of autonomy, for example, one would speak of a lack of autonomy and the values of the variables would be given a negative sign.

We have recoded all variables in this way that are hypothetically classified as negative in the overview. (All positive variables could just as easily have been redefined as risk factors or mortality/morbidity).

The measure is a mere externality and serves to ensure that, in an overview of correlations or differences, those contrary to the hypothesis immediately stand out due to a negative sign.

5.7.4 Empirical relevance of the hypothetical classification: psychosocial variables

This hypothetical direction of the relationship was first empirically tested in the form of the correlations of the psychosocial independent variables (without the unusable question XVIII 12) with health status.
Out of 96 correlations, there was only one significant negative one (significance criterion: $p < 0.05/96$), the sign of which is therefore not apparent from the plus-minus classification of the variables: XV 3 (type3), which had been classified as negative, proved to be a health factor (its inverse correlates significantly negatively with health status).

For the analysis of the correlations between the independent variables, the following were omitted in addition to type 3: XIV 5-8, which is only relevant for women, and XV 5.6 (type 5.6), which is somewhat difficult to grasp theoretically.
There are $89*88/2 = 3916$ correlations between these 89 independent variables, and these are, as far as significant ($p < 0.05/3916$), all positive (i.e. follow the plus-minus scheme) with a single exception: XVIII 10 with XIX 2 (extra workload and love for parents). The former was classified as negative and the latter as positive, so that a negative correlation (or a positive one after reversing the negative variables) was expected. However, the reverse is the case, and it appears to make perfect sense: love for parents can obviously be imagined as being associated with increased stress. The only significant directional exception among almost 4000 correlations thus proves to be quite reasonable in terms of the content of the variables.

The 89 independent variables include 16 response variables (well-being, exhaustion, excessive demands, etc.), which, like health status, can be treated as dependent variables. Their correlations with the other independent variables are included in the 3916 correlations discussed, so that in addition to health status, all correlations with their conditions for 16 response variables also have the hypothesized direction (the above-mentioned exception does not apply to any response variable).

The health relevance of all individual variables is shown at the end of this chapter. In the case of the physical risk/health factors, they apply to the original version, meaning that there are numerous significant negative relationships.

In summary, it can therefore be stated that the direction of the empirical correlation for all possible variable pairings is almost without exception the result of a directional determination of the variables on the health dimension. This leads to the following conclusion:
1. every summarized variable that is formed from a subset of the independent variables with positive weights is positively relevant to health.
2. positive intercorrelations prevail in each subset of variables, so that a summarized variable can be formed with positive weights.

5.7.5 Interactions

In an interaction-free regression model, the effectiveness of an independent variable (its regression coefficient ß) is the same under all conditions, and the estimate of the dependent variable is obtained by adding the regressors weighted by the ßs. By an interaction between two risk or health factors, we mean that the effectiveness of one depends on the level of the other, and vice versa.
They can be examined using a bilinear regression model that includes the product xy in addition to x and y. If xy has a positive coefficient, this means that the effectiveness of x increases with increasing values of y, and vice versa.

For A and P, as well as for A and Ph, there are some highly significant positive coefficients for the interaction link. The effect of A is therefore stronger when more favorable conditions prevail in the personality sphere or the physical sphere, and vice versa.

However, the mutual amplification of effects does not apply per se. If all variables are reversed, i.e. if we are talking about risk factors and mortality/morbidity, then under the given circumstances the effectiveness of one risk dimension becomes WEAKER as the level of the other increases, as can easily be seen.

~~5.4.9.~~5.7.6 Overview of results based on the variable categories

We had introduced the following main variable categories:

A = Work sphere
P = Personality and family sphere (F)
Ph = physical risk or health factors
B = external conditions
Rs = Resources of the individual
R = Pleasure reactions of the individual

Each of these categories defines a subset of the variables used.
In the section "Formulation of the hypotheses" (5.7.3), the expectation was derived that (after the uniform recoding of the variables) positive correlations exist between certain groups of variables or their members, as it is a cause-effect relationship, such as between conditions and resources on the one hand and pleasure reactions on the other, or between the groups mentioned and health status. However, there is no such relationship between conditions and resources (although positive correlations are also found here).
Furthermore, we expect positive correlations between the variables within a category due to their similarity, which justifies their subsumption under a category.
The *result* is that - apart from the minimal exceptions mentioned - no significant negative correlations were found.
The assumed causal links are therefore confirmed: Conditions and resources have an effect on pleasure reactions and these ultimately have an effect on health status. The similarity of the variables belonging to a category is also confirmed (the categorization was only carried out in terms of content and not due to special features of the correlation pattern).

Formatiert: Nummerierung und Aufzählungszeichen

5.4.10 Multivariate results: Relevance of the work sphere

Numerous questions in the questionnaire lend themselves to being subsumed under generic terms. We have used the categories already introduced:

Definitions of the variable categories:

	all persons	232 persons Additional variables
Work sphere (A)	XVIII	XXI
Conditions (B)	XVIII 2-10	XXI 1, 6, 14-17
Resources (Rs)		XXI 2-13
Reactions (R)	XVIII 1, 11, 13	XXI 18-20
Personality sphere (P):	XIV-XVIII, XIX	XXII
Conditions:		XXII 6, 12, 13
Family of origin	XIV 22-24	
Resources:		
Typology	XV - XVII 1-6	
Self-regulation etc.	XIV 4, 9-11, 13, 16, 21 / XIX 1	
Religiosity	XIV 2 / XIX 5	XXI 7
Reactions (pleasure/displeasure, well-being)	XIV 1, 12, 14, 15, 17, 18, 25 XIX 11,12	XXII 1-3, 10, 11
Physical sphere (Ph)		
Own previous illnesses	X, XII	
Diseases in the Relationship	XI, XII	
Lifestyle (diet, exercise, smoking, alcohol ...)	III, IV, V, VI, IX	

The variable categories defined in the table above were used in the form of their multivariate regression function for health status.

We now indicate their health relevance in the form of multiple correlations with health status:

Multivariate correlations of the variable categories with health status:

	all persons	232 persons all variables
Work sphere (A)	0,59	0,73
Conditions (B)	0,47	0,57
Resources (Rs)		0,67
Reactions (R)	0,58	0,64
Personality sphere (P):	0,80	0,82
Conditions:		
Family of origin	0,63	0,74
Resources:		
Typology	0,73	
Self-regulation etc.	0,67	
Religiosity	0,55	0,59
Reactions (pleasure/displeasure, well-being)	0,72	0,70
Physical sphere (Ph)	0,80	0,81
Own previous illnesses	0,70	0,78
Diseases in the family	0,49	
Lifestyle (diet, exercise, smoking, alcohol ...)	0,67	

All summarized variables show highly significant correlations with health status. (The direction is necessarily the correct one due to the definition of the summarized variables as regression functions).

The health relevance of the P and Ph spheres is 0.80-0.82 each, that of the A sphere 0.59 and 0.73 respectively, and is therefore only slightly inferior to the health relevance of the other two spheres, at least when the additional variables are utilized.

The "own previous illnesses" should rather be considered as dependent variables (parallel to the health status), and the health relevance of the A-sphere should then only be compared in the Ph-sphere with that of lifestyle and diseases in the relatives.

At the level of the summarized variables, the results obtained at the level of the individual variables can therefore be consistently confirmed.

The work sphere is involved in the results (pleasure reactions, health status) with a weight that is comparable to that of the personality sphere. *This means that if someone enters working life with poor personality prerequisites, a satisfactory result can still be achieved if the conditions in the work sphere are favorable enough. Similarly, if someone enters working life with particularly favorable personality requirements, they can also "cope" with quite unfavorable conditions there.*

5.7.7 Relativizing the relevance of rewards and smoking

For a physical risk or health factor belonging to the work sphere, it will be shown here that its relevance to health can not only be completely canceled out by the degree of type 4 (XV-XVII 4) alone, but can even be overcompensated several times over.

We show this using the standardized partial regression coefficients ß for health status.

The rewards in working life are represented by a combination of VXIII 3, 7, 8. (For "x times ten to the power of y" we write x{y}.)

	ß	Significance
Rewards alone	0,45	7 {-36}
Rewards	0,16	1 {-5}
Type 4	0,52	4 {-41}
Cigarettes per day alone	-0,45	1 {-37}
Cigarettes per day	-0,26	8 {-18}
Type 4	0,56	9 {-65}

Rewards or cigarette smoking alone are relevant for the health status with |ß|=0.45 (this is also the simple correlation).

If the degree of type 4 is taken into account at the same time, ß is reduced to about 1/3 or 1/2 of the original value, and ß for type 4 is about 3 or 2 times as high. This means that if one person is 1 standard unit less favorable than another in terms of rewards or cigarette smoking, they can completely compensate for the negative health effect if they are only 1/3 or 1/2 standard unit more favorable in type 4. If it is 1 standard unit cheaper for type 4, it can overcompensate the negative health effect by a factor of 2 or 1.

The second case is an example of how even the effectiveness of a chemically defined noxious agent can be massively modified by psychosomatically relevant conditions.

The relationship between lack of reward with high expenditure and lack of realistic assessment of reward opportunities and the tendency to maintain unfavorable situations corresponds in part to Siegrist's model of gratification crises. Our instruments were used to record the variables "lack of reward", "inability to separate (perseveration in unfavorable situations)" and "excessive demands". They roughly represent the model of gratification crises.

Expenditure in working life, for example, is represented by question XVIII.11 and others, rewards by XVIII.3, and the ability to distance oneself (the opposite of compulsive commitment) is the subject of question XXI.11.

Using the standardized regression coefficients ß for health status, we first consider how these three dimensions interact multivariately, and then how the model reacts to the inclusion of highly relevant general psychosocial variables.

N=200		ß	Significance
Model 1:	Expenses	-0,27	0,078
	Rewards	0,27	0,005
	Ability to distance oneself	0,28	0,00047
Model 2:	Expenses	-0,13	n.s.
	Rewards	0,08	n.s.
	Ability to distance oneself	0,18	0,019
	Type 4	0,49	3×10^{-8}
Model 3:	Expenses	+0,23	0,084
	Rewards	-0,08	n.s.
	Ability to distance oneself	0,05	n.s.
	Overall personality dimension	1,01	4×10^{-2}

In model 1, the three work dimensions play a balanced role. When type 4 is included, all ß are significantly reduced in amount.

If a much stronger personality dimension is included, the sign of "expenditure" is even reversed (such phenomena are known in regression theory as the "suppressor effect", for example), while the relevance of the ability to distance oneself is now also reduced to the point of insignificance.

The independent variables are quite closely related (Model 2: r=0.45...0.62, Model 3: 0.53...0.77), and under such circumstances variables that are only slightly less relevant are very strongly affected.

Let us illustrate this using a 3-variable model with z as the dependent variable. We look at the standardized regression coefficients for the two independent variables x and y:

$ß_{zx.y} = (r_{zx} - r_{zy} \cdot r_{xy}) / (1 - r_{xy} \cdot r_{xy})$
$ß_{zy.x} = (r_{zy} - r_{zx} \cdot r_{xy}) / (1 - r_{xy} \cdot r_{xy})$

Let $r_{zx} = 0.6$, $r_{zy} = 0.7$, i.e. x is slightly less relevant for z than y. As r_{xy} increases, the discrepancy between the ß's becomes greater and greater:

rxy	ßzx.y	ßzy.x
0,0	0,60	0,70
0,4	0,38	0,55
0,8	0,11	0,61
0,9	-0,16	0.84 Suppressor effect

The fact that x can become irrelevant is made clear as follows: It occurs when x correlates with z only as highly as it must due to its correlation with y, without having its own direct relationship to z.

The *results show* that medical sociological concepts can be scientifically replicated, provided that they are considered relatively monocausally, i.e. without taking into account competing variables from other psychosocial areas.

Appendix Chapter 5.7

Correlations of the 96 psychosocial variables with health status, ordered by absolute value.
Each variable has its own categories:
A= Work sphere
P = personality sphere, family = family of origin;
B = condition
Rs = Resource
R = Reaction

No. No.	Question	R	A	B	RS	R	P	R	F
1	SELBSTRG #	0.75					P		
2	XXII_9	0.68					P		
3	XXII_7	0.68					P		
4	XV_4	0.65					P		
5	XXII_8	0.64					P		
6	XXII_3	0.64					P		
7	XXII_12	0.62					P		F
8	XIX_10	0.59					P	R	
9	XIX_11	0.59					P	R	
10	XIV_9	0.59					P		
11	XIX_12	0.59					P	R	
12	XIX_14	0.58					P		
13	XIV_25	0.58					P	R	
14	XIV_10	0.58					P		
15	XV_1	0.58					P		
16	XIV_4	0.56					P		
17	XXII_2	0.56					P		
18	XXII_6	0.56					P		F
19	XV_2	0.55					P		
20	XIV_1	0.55					P	R	
21	XIV_18	0.55					P		
22	XXII_4	0.55					P		
23	XXII_1	0.55					P		
24	XIV_20	0.55					P		
25	XIV_5	0.55					P		
26	XIV_12	0.54					P		
27	XIX_5	0.54					P		
28	XVIII_13	0.54	A					R	
29	XXI_19	0.54	A					R	
30	XIV_23	0.54					P		F
31	XIV_13	0.53					P		
32	XXI_20	0.53	A					R	
33	XIV_11	0.52					P		
34	XIV_21	0.52					P		
35	XXI_11	0.52	A		RS				
36	XIV_17	0.51					P		

37	XIX_8	0.51					P		
38	XXII_13	0.51					P		F
39	XIV_15	0.50					P		
40	XIV_16	0.50					P		
41	XIV_24	0.50					P		F
42	XXI_18	0.50	A					R	
43	XVIII_11	0.49	A					R	
44	XXII_11	0.48					P	R	
45	XXI_16	0.48	A	B					
46	XXI_17	0.47	A	B					→
47	XIV_2	0.47					P		
48	XIV_7	0.47					P		
49	XIX_7	0.46					P		
50	XIV_6	0.46					P		
51	XIV_22	0.46					P		F
52	XXI_10	0.45	A			RS			
53	XIX_6	0.44					P		
54	XXII_10	0.44					P	R	
55	XIX_1	0.44					P		
56	XXII_5	0.43					P		
57	XIX_16	0.42					P		
58	XXI_7	0.42	A			RS			
59	XIV_8	0.42					P		
60	XVIII_3	0.41	A	B					
61	XIV_3	0.40					P		
62	XXI_1	0.39	A	B					
63	XVIII_8	0.39	A	B					
64	XIX_9	0.38					P	R	
65	XXI_6	0.37	A	B					
66	XIV_19	0.37					P		
67	XXI_2	0.36	A			RS			
68	XXI_9	0.36	A			RS			
69	XXI_15	0.35	A	B					
70	XVIII_7	0.34	A	B					
71	XVIII_5	0.32	A	B	RS				
72	XIV_27	0.32					P		
73	XVIII_1	0.32	A					R	
74	XVIII_4	0.32	A	B					
75	XXI_5	0.31	A			RS			
76	XXI_8	0.31	A			RS			
77	XIV_28	0.30					P		
78	XVIII_6	0.28	A	B					

79	XXI_4	0.27	A		RS				
80	XXI_14	0.27	A	B					
81	XIV_26	0.26					P		
82	XVIII_9	0.25	A	B	RS				
83	XXI_12	0.25	A		RS				
84	XIX_13	0.25					P	R	
85	XIX_15	0.25					P		
86	XIX_3	0.24					P		
87	XXI_13	0.23	A		RS				
88	XIX_4	0.21					P		
89	XVIII_10	0.21	A	B					
90	XV_5	0.20					P		
91	XVIII_2	0.17	A	B					
92	XV_6	0.14					P		
93	XIV_14	0.09%					P		
94	XIX_2	0.01%					P		
95	XXI_3	-.08%	A		RS				
96	XV_3	-.36					P		

#: This variable is a mean value from the 16 questions. A repeat measurement was carried out on 44-46 people. The mean test-retest correlation of the 16 variables is 0.79. (see list of the 16 questions following "RGM Self-Regulation and Health Questionnaire")
%: not significantly different from 0

We also show the correlations of the more important physical risk or health factors with health status, ordered by their absolute amount:

```
   r
 -0.45 Cigarettes per day
+0.44 Well-being due to physical activity
 -0.44 Blood cholesterol, fluctuation
+0.43 Well-being due to diet
+0.35 Quality of nutrition
 -0.34 Organic pre-damage
 -0.33 Cancer in relatives
 -0.32 Increasing trend in cigarette consumption
 -0.31 Alcohol (pure, g per day)
 -0.31 diastolic blood pressure
 -0.30 Forced physical activity
+0.27 Quantity of physical activity
 -0.27 Heart attack or stroke in relatives
 -0.26 Coffee enjoyment, quantity
 -0.24 Blood cholesterol, level
+0.23 Autoimmune diseases
```

5.8 Relevance of rewards in family and work

for health status - evaluation of study A

5.8.1 Introduction

Multidisciplinary intervention epidemiology attempts to explore the interaction between different relevant areas and concentrates less on replication of important studies within individual disciplines, e.g. medical sociology. In view of the particular importance of Johannes Siegrist's work, a small replication experiment of his gratification model is carried out here as an exception.
The results show that the gratification model in the area of occupational rewards and rewards in the family of origin, which Siegrist researched with great care, also showed significant results in our studies.

5.8.2 Material and results

In Study A with 1310 people, there is one question for each of these three terms in the "RGM questionnaire on professional life, family and personality": questions 13 (family of origin), 14 (education) and 2 (professional life).
The correlations between these questions and with the health status GS (3 levels: healthy, chronically or seriously ill, deceased) are all highly significant and have the following values:

	Fri.14	Fri.2	GS
Fri.13	0,42	0,29	0,42
Fri.14		0,21	0,25
Fri.2			0,36

A multivariate regression model for GS provides the following results:

	ß	Variance contribution	log10(p), rounded
Fri.13	>0	35,7	-17
Fri.14	>0	1,7	n.sign.
Fri.2	>0	27,4	-13

For the significance p, we use the logarithm of ten, $\log_{10}(p) = -17$, i.e. "p = 10 to the power of minus 17". It can be seen that the rewards in education are no longer relevant for the health status multivariate, while those in the family of origin and in professional life play an almost equally important role.

The content of questions 3-7 also relates in a certain sense to rewards in professional life or their opposite.
If they are all included alongside questions 13 and 14, only questions 2 and 5 (social uncertainty) make significant contributions, and the overall result is as follows:

	ß	Variance contribution	log10(p), rounded
Fri.13	>0	30,5	-16
Fri.14	>0	1,6	n.sign.
Fri.2	>0	4,1	p=0,002
Fr.5	<0	4,0	p=0,002

A multivariate cut-throat competition has thus broken out between the questions on rewards in professional life (or their opposite),

which is the variance contribution of question 2 (which is now also taken into account by

5 other job-related questions) is reduced from 27.4 to 4.0, while that of Fr. 13 is only slightly affected. In fact, questions 2-7 are more similar to each other than to question 13: the mean value of the intercorrelations of questions 2-7 is equal to 0.42, while it is equal to 0.31 for their correlations with question 13.

The health relevance of reward systems changes drastically when several psychosocial variables are taken into account, i.e. included in the multivariate analysis. The results could also be replicated in study A/B (see section 5.4.11).

5.8.3 Relativizing the relevance of rewards in working life

Rewards in working life are addressed in question 2.

We now want to show that the health effect of these variables can not only be completely canceled out, but even overcompensated several times over, if the entire family and personality dimension is taken into account at the same time.

We show this using the standardized partial regression coefficients ß for the health status. (For "x times ten to the power of y" we write x{y}.)

	ß	Significance
Rewards alone	0,28	6{-25}
Rewards	0,14	5{-8}
Fam-Pers dimension	0,40	4{-48}

Rewards alone are relevant for the health status with ß=0.28 (this is also the simple correlation).

If the Fam-Pers dimension is taken into account at the same time, ß is reduced to 1/2 of the original value, while ß for the Fam-Pers dimension is almost 3 times as high. This means that if a person is 1 standard unit less favorable than another in terms of rewards, they can completely offset the negative health effect if they are only 1/3 standard unit more favorable on the Fam-Pers dimension. If it is 1 standard unit more favorable on the Fam-Pers dimension, it can overcompensate the negative health effect 2-fold.

5.9 Influence of the family of origin on working life

5.9.1 Summary

In this interim report, the hypothesis is tested that the conditions in the family from which the interviewee comes have an influence not only on analogous conditions in his working life, but also on its 6 main aspects: Burdens, personal resources, relevance of own skills, own design possibilities, rewards, global reaction to working conditions.
The influence of the family situation was very well confirmed even when strong control variables were used.
The 6 main aspects of working life are highly relevant to health status.

ROMAN NUMBERS indicate the sections of the questionnaire

5.9.2 Group of people

This analysis is based on 794 persons born between 1901 and 1941 (mean=1919.5), 510 of whom died in the years 1973-2002 (mean=1988.2). These are 691 men (=87.0%) and 103 women (=13.0%).

Description of the variables
Summarized work variables
The 33 Arb variables from XVIII and XXI were assigned to the following dimensions, where appropriate, on the basis of content-related aspects:
Loads
personal resources
Relevance of own skills
Own design options
Rewards
Global response to working conditions

Instead of "stress", the inverse variable "freedom from stress" was created, meaning that all dimensions are "positive variables" (i.e. correlate positively with each other and with health status).
A positive or negative sign was assigned to the individual questions on the basis of content-related aspects, thus providing a calculation rule for the formation of the summarized variables:
Questions from XVIII (or XIV):

Freedom from stress	-02-06-10-11
Resources	+XIV.14
Skills	+05
Design options	+04+09
Rewards	+03+08-07
Global response	+01-13

Questions from XXI

Freedom from stress	+01+16-15-17
Resources	+02+03+04+05+07+08+09+11+12+13
Skills	+06
Design options	.
Rewards	+10-14
Global response	+18+19-20

The signs of all questions for the formation of the summarized variables were empirically tested using the intercorrelations of the questions belonging to each dimension. It was found that all pairs of variables with the same/unequal sign showed a positive/negative correlation. This means that the assignment of the sign to the content is fully empirically justified.

The intention was to report here the results of a canonical correlation analysis between the 6 dimensions formed on the one hand and the 33 questions on the other, which would have provided information on the extent to which all the information contained in the 33 variables is captured in the 6 dimensions. Unfortunately, there were insurmountable difficulties with the program.

A further refinement could be the use of quantitative weights for the individual questions, as can be obtained from factor analyses of the variables belonging to each dimension.

The "axes" emanating from the family situation
Questions XIV.22-24 address the circumstances in the respondent's family of origin, i.e. the family relationships in his childhood and youth, in the sense of rejection, excessive attachment or autonomy with loving acceptance. Here, the "types" (XV-XVII) stand in an obvious analogy: type 1 (unattainable closeness), type 2 (unattainable distance), type 4 (autonomy and self-regulation). Other relevant questions are XIV.15 (suffering from isolation), XIV.17 (being helplessly disturbed) and XIV.04 and XIV.09 (self-regulation and autonomy). The work variables are XVIII.06 (disorders) and XVIII.07 (rejection, isolation).

We are talking about 3 "axes"

Axis	Variables				Key terms
	Family	Personality	Work		
1	XIV.22	Type 1	XIV.15	XVIII.07	unattainable proximity
2	23	2	17	06	unattainable distance
3	24	4	-	-	Autonomy, self-regulation

Instead of "unattainable closeness" you could also say "undesirable distance" and instead of "unattainable distance" you could say "undesirable closeness".

In the case of axis 3, one could think of a connection with the dimension "creative possibilities" in the area of working life, but these are more likely to be determined by the work situation than by the personality of the respondent (although it should also be borne in mind that certain personalities are more likely to get into certain work situations).

5.9.3 Hypotheses

The relationships in the family of origin are temporally and therefore causally prior to the other axis variables. We expect that there is a correlative relationship between the family situation, the personality variables and the work variables on each of the three axes.
Since the development of personality traits or behaviors cannot be clearly determined by the family situation, we expect that the intermediate variables summarized under "personality" are also relevant to explain the endpoint of axes 1 and 2 (the two Arb variables from XVIII).
In addition, we expect that the aspects of the work situation (defined in Section 5.9.2) are also influenced by the family situation and the intermediate variables downstream of it.

5.9.4 Testing the hypotheses

The 3 axes

The relationships within the axes are as follows:

Simple or multiple correlations

ZI	Indep. Variable	Axis:	Intermediate variables							Arb variables	
			Type1	Type 2	Type 4	XIV. 15	XIV. 17	XIV.04	XIV.09	XVIII.07	.06
			1	2	3	1	2	3	3	1	2
1	XIV.22	1	.70	.40	-.45	.72	.40	-.46	-.48	.58	.27
2	XIV.23	2	.49	.68	-.55	.48	.68	-.52	-.54	.35	.50
3	XIV.24	3	-.51	-.52	.63	-.50	-.54	.65	.67	-.46	-.41
4	22-24	-	.75	.71	.69	.76	.71	.69	.72	.61	.52
5	22-24	and 2 work factors								.67	.59

Discussion

It can be seen from lines 1-2 that the correlation on a family axis with a corresponding axis variable is always considerably stronger than that with the other axis variable. The family situation therefore has a specific effect in the analog type etc.

Line 3: The family axis 3 always correlates negatively with axes 1 and 2 and (somewhat more strongly) positively with axis 3, thus demonstrating its overarching character compared with the specific risk axes 1 and 2.

Figure 4: Multiple correlations. Of primary interest are those with the two Arb variables.

Item 5: The work variables will of course also be influenced by the various conditions at the workplace. If an influence of the family variables 22-24 and the intermediate variables is to be established, the influences of the other work variables should be eliminated. We did this in the following way: The factor scores of the first two unrotated orthogonal factors were calculated from all Arb variables except XVIII.07,06 (which cover 75% and 13% of the variance - after adjustment of the commonalities - respectively: a strong dominance of the 1st dimension can be seen). These two factor dimensions were added to the family variables 22-24 for the results in line 5 (which increases the multiple correlations for the two Arb variables compared to line 4). The question of whether the family variables still make a significant contribution can now be investigated. The result (for x{y} read "x times 10 to the power of y"):

	XVIII.07		XVIII.06	
	Significance of ß	Sign	Significance of ß	Sign
XIV.22	1{-19}	+	.95	#
.23	.28	#	3{-8 }	+
.24	.049	- &	.42	#
Factor1	3{-11}	- $	3{-10}	- $
Factor2	4{-9 }	#	2{-7 }	#

irrelevant

& the negative sign makes sense, as XIV.24 is a "positive variable" (see section 5.9.2.2).
and XVIII.07 is a negative variable in this sense

$ the negative sign corresponds to the fact that factor 1 with the "positive variables"
(see section 5.9.2) are positively correlated and the dependent variables XVIII.07,06 in this sense
Negative variables are

We find that the family situation has a highly specific and statistically well-established influence on perceived work setback or disruption, even when controlling for summaries of all other variables related to work-life circumstances.

The 6 main dimensions of the Arb variables

These were introduced in section 2.1. Similar to the two axis-related Arb variables in 4.1, we tested whether the family variables XIV.22-24 make a significant contribution to each of the 6 Arb dimensions when controlling for all others. We now list those models in which this is the case for at least one of the family variables. The multiple correlations are between .70 and .90. For x{y} read again "x times 10 to the power of y":

Significance and sign of ß / ns = not significant

Dependent variable		Independent variables in addition to 5 work dimensions					
		XIV.22		XIV.23		XIV.24	
Axis:		1		2		3	
Freedom from stress	#	ns		2{-9}	-	ns	
	##	ns		.0083	-	ns	
Personal resources	#	ns		.0055	-	.00005	+
	##	ns		ns		.0093	+
Capabilities. relev.	##	ns		.013	+	.019	+
Shape.possible.	#	.0048	+	ns		ns	
Rewards	#	7{-7}	-	ns		.00005	+
	##	.0050	-	ns		ns	
Global response	#	.015	-	.049	-	.0056	+
	##	ns		ns		.00021	+

Variables only from XVIII - ## Variables also from XXI (number of persons reduced to 232)

Discussion

Freedom from stress: clearly negatively related to family axis 2 (unattainable distance, feeling disturbed): plausible.

Resources: clearly positively related to family axis 3 (autonomy, self-regulation): plausible. Axis 2 predisposes to the perception of lower own resources - this result occurs only once and with moderate significance (i.e. also, roughly speaking, moderate strength).

Skills: tend to come into play with unwanted closeness (axis 2) and with autonomy and self-regulation (axis 3) - the latter is probably obvious.

Design options: are perceived more strongly from axis 1 (undesirable distance) - this result only occurs once and with moderate significance (i.e. also, roughly speaking, moderate strength).

Rewards: are clearly perceived less from axis 1 (unwanted distance) and more from axis 3 (autonomy, self-regulation).

(Positive) *global reaction* (well-being, no exhaustion, sense of belonging, motivation): is negatively related to the two risk axes and clearly positively related to axis 3 (autonomy, self-regulation): plausible.

The *overall result is* that an influence of family background was clearly demonstrated in several cases when controlling for all other work dimensions.

5.9.5 Relationships to health status

The health status was used in the form of the indicator variables for "lives without chron. The health status was used in the form of indicator variables for "lives without chronic illnesses or major disabilities" vs. "deceased" and related to the 6 work dimensions (see above) in a

multivariate manner, separately with the variables from XVIII and XIX (only 232 persons there).
The multiple correlation is .65 and .61 respectively, meaning that the working life-related conditions are highly relevant to health status. If the 13 or 20 individual variables are used instead of the 6 work dimensions, the multiple correlation is .67 or .72.
In particular, the comparison within XVIII between .65 and .67 is an excellent testimony to the formation of the 6 variables: for the individual variables, the multiple correlation is only .02 higher, whereby a larger positive bias of the multiple correlation coefficient is given anyway due to the larger number of regressors.
As far as the relevance of the individual variables is concerned, the picture is unfortunately quite varied:
XVIII: The variable "Resources" is far in the foreground; "Rewards" and "Reaction" only just make significant contributions. ß is, as expected, always positive. The expectation that "Reaction" balances the effects of the other work variables and that these only make minor contributions is not fulfilled.
If "reaction" is removed from the model, nothing significant changes, except that "rewards" and the previously insignificant "freedom from stress" are upgraded somewhat.
XIX ("Gestaltungsmöglichkeiten" is not represented here):
Here, only "reaction" is significant and thus fulfills the expectation of a balance variable. If it is omitted, the only one to benefit massively is "freedom from stress" (which was only just significant in XVIII, far behind "resources"). Here, too, the ß's are positive.

5.9.6 The impact of early childhood and current parent/child relationships on health status into adulthood

5.9.6.1 Introduction:

Early childhood parent/child relationships and the relationships between children and parents up to the present day have a major influence on health into adulthood.

For example, negative childhood experiences influence the manifestation of physical risk factors (e.g. cigarette smoking or alcohol consumption) and even the number and intensity of chronic inflammations. The effect of negative childhood experiences and the negative relationships between children and parents up to the present day even correlate with specific chronic diseases that were only diagnosed many years after the survey. Breast cancer is a particularly striking example of this:

Traumatic separation and rejection experiences and an interrupted loving relationship with the mother up to the present in combination with maternal fixation without detachment combined with difficulties in accepting one's own role as a woman obviously have an effect as risk factors. (see statistical results)

The overall results of the study are extremely differentiated and in many respects allow for a strategic approach in practice of the utmost preventive medical relevance. They even have an impact on the current debate about the emergence of new crèches and the effects of mothers working.

5.9.6.2 Data collection:

In 1977 and 1978, a prospective, representative study was carried out on 1310 people. Data on early childhood and parent/child relationships was available for 1284 people (see questionnaire in the appendix).

1830 people were contacted. 520 people refused to participate, meaning that 1310 people were surveyed.

41 psychological and physical risk factors were recorded. (Two questionnaires and three physical risk factors are considered in this article: 1. cigarette smoking, 2. alcohol consumption, 3. chronic inflammation)

The age of the people at the time of the initial survey was between 36 and 77 years, with a mean of 52 years and a standard deviation of 7.6 years.

Originally, 678 men (51.8 %) and 629 women (48 %) were examined. No gender information is available for three people.

In 1999, the first research on health status was undertaken (causes of death, incidences, healthy living, i.e. without diagnosed chronic illness and mentally and physically active).

The second search was carried out at the end of 2003.

5.9.6.3 Results:

1. dependent variables
=====================
The health status at the 1st follow-up examination in 1999 and at the 2nd follow-up examination in 2003 are available as criterion variables

```
        1999 2003 Coding
-----------------------------
healthy 319 219 2
ill 580 617 1
died
 1999-2003 0 63 0
 before 1999 385 385 0
-----------------------------
Total 1284 1284
```

Of the 385 people who died up to 1999, 132 died from cancer, 80 from heart attacks or strokes and 130 from other causes. The death but not the cause of death was determined for 43 people. Among the deceased women, the cause of death was "breast cancer with distant metastases" 13 times. Ten people from the total population died of pancreatic cancer. (These two types of cancer will be analyzed as examples of early childhood risk factors in this article).

We refer to the health status at the 1st follow-up examination as GS1 and that at the 2nd follow-up examination - which is only defined for persons still alive at the 1st follow-up examination - as GS2.

We divided the deaths into 5-year periods and determined the correlation between health status and the childhood variables in each case.

From
the earliest period (up to 1985) to the last (1999-2003), there is a
uniform weakening of the correlation.
The last period is only
special in that the correlation is no longer significant.
We are therefore completely satisfied, and the last period can now indeed be
summarized with the previous ones in the final report (in preparation).

2. independent variables
=======================
2.1 Health relevance of the questions: simple correlations
===
Questions 1-3, 7-10 and 14 were hypothetically classified as risk factors, the others
(except 16, which concerns all other questions) as health factors, with the exception of
question 13 (guidance for learning, discipline, behavior). The simple correlations with
the GS1 variables are as follows:
Bivariate results for GS1:

Corr. with

Fr. GS1

1: Shock-inducing spatial separation from the mother (1st-4th year) -0.51

2: traumatizing behaviour of the mother towards the child (1st - 4th year) -0.34

3: Shock-inducing paternal behavior -0.39

4: continuous affectionate relationship between mother/child until present 0.34

5: continuous presence of a supported father father 0.43

6: continuous presence of motivating reference persons 0.36

7. mother fixation without internal detachment -0.25

8. father fixation without internal detachment -0.11

9: Mother's occupation from the first to the fourth year -0.26

10: Giving the child to unfamiliar, alternating persons (1st - 4th year) -0.48

11: Giving the child to trusted persons (1st - 4th year) 0.26

12: continuous presence of the child with the mother (1st - 4th year) 0.45

13: intensive learning training, e.g. discipline, behavior (1st - 4th year) -0.02

14: Learning problems at school, training or work -0.49

15: Person was breastfed 0.43

The signs of the correlations correspond to the hypothetical classification (with the exception of Fr.13, which is not significantly different from zero). The highest (negative) relevance is assigned to Fr.1 (traumatic separation from the mother).

Question 10 (leaving the child from the age of one to four to unfamiliar and alternating caregivers, e.g. educators, unfamiliar relatives, etc.) is also highly relevant. Questions 12 and 15 (continuous interaction with the mother and breastfeeding) also have a very high relevance in terms of simple correlations.

The correlations with GS2 are consistently so low and not significantly different from zero that there is no need to look at the signs. It should be noted that GS2 only includes people who did not die early, but it still includes 899 people, i.e. 70% of the original sample.

2.2 Health relevance of the questions: multivariate relationships
==
The multivariate health relevance was determined using a stepwise regression analysis. It starts with the variable with the highest simple correlation (Fr.1) and only adds variables that make a significant contribution of their own to the prediction of health status. The following questions qualify for this procedure:

1st follow-up (GS1)
    Variance pre
    share character

Fr.1 0.2948 - traumatizing separation from the mother (Fr. 1)
  5 0.0560 + supporting father
 14 0.0329 - Learning problems
  3 0.0109 - Trauma by father

Question 1 is therefore by far the most relevant. The signs of the 4 questions are hypothesized. Although, as we have seen, other questions have considerable simple correlations with health status, what they capture is obviously already implicitly contained in the most relevant questions listed here. With these 4 questions, a multiple correlation of R=0.63 with GS1 is obtained.

3. factor analysis
==================
An unrotated principal axis factor analysis with iterative adjustment of the commonalities was calculated with Fr. 1-15. This resulted in the following factor structure:

```
  Fr. loads Factor 1-3
        F1    F2    F3
---------------------------
  1   0.77 -0.07  0.21
  2   0.65 -0.14 -0.01
  3   0.58  0.45 -0.15
  4  -0.66 -0.05 -0.05
  5  -0.67 -0.27  0.37
  6  -0.59 -0.04  0.20
  7   0.43 -0.36 -0.26
  8   0.06  0.57  0.20
  9   0.47 -0.04  0.28
 10   0.80 -0.05  0.18
 11  -0.39  0.16  0.01
 12  -0.83  0.03 -0.07
 13  -0.07  0.05  0.18
 14   0.76 -0.09  0.11
 15  -0.72 -0.00  0.06
---------------------------
Variance 5.67  0.83  0.54
```

The 1st factor has a dominant variance component. The signs of the loadings - with the exception of the two lowest (Fr. 8 and 13) - are exactly the inverse of the signs of the correlations with GS1. It is therefore a risk factor (which, however, could just as well be defined as a health factor with the opposite sign).

On the 2nd factor, questions 8 and 3 have the highest loadings; these are traumas caused by the father and father fixation. Next in line (with a negative sign) are question 7 (mother fixation) and question 5 (supportive father). There are no other questions in which the father is explicitly mentioned. The factor therefore works out very well the content-related aspect of "father" - regardless of the positive or negative role of the father - as well as its counterpart "mother fixation".

We have already seen that a multivariate multiple correlation of R=0.63 with GS1 is achieved (or R=0.64 if all questions 1-15 are used). Interestingly, the 1st factor performs almost the same: the correlation of its factor scores with GS1 is r=0.62. This means that from the mere relationships between the independent variables without knowledge of the dependent variables, their optimal linear combination for predicting the dependent variable almost emerges. We defer an interpretation of this fact for the time being.

4. special questions
==================
4.1 Related questions
==============================
For control purposes, it seems interesting to consider questions together that have more or less the same subject matter (whether positive or negative). These are suitable:

Fr. 1 (traumatic separation from the mother), Fr. 2 (traumatizing behaviour of the mother)
- Fr. 4 (continuous positive relationship with the mother), Fr. 12 (continuous togetherness with the mother)

Fr. 3 (traumatizing behaviour of the father)
- Fr. 5 (continuous positive relationship with the father)

We first examine the correlations:

```
     Fr.12  Fr.4
-------------------
Fr.1  -0.58  -0.46
Fr.2  -0.50  -0.53
-------------------
```

The correlations are all significant and in line with the hypothesis. Remarkably, they are slightly higher between the two questions relating to the external (Fr. 1, 12) and internal (Fr. 2, 4) relationships. This is a good testimony to the accuracy of the answers obtained.

The correlation between questions 3 and 5 is -0.57, which is similarly high and in line with the hypothesis.

We now place two opposing questions in the prediction of GS1 in multivariate competition with each other:

Fr. 1, 12
Fr. 2, 4
Fr. 3, 5

In all 3 cases, both questions remain highly significant (despite their similar content in opposite directions) and even have approximately equal variance components. The reverse versions of the questions therefore also contribute significantly to the prediction of health status.

5. correlations between childhood variables on smoking, alcohol and the combination of both (RA)

Correlations with

FR.	SMOKING	ALCOHOL	SMOKING + ALCOHOL
1	0.19	0.18	0.24
2	0.05	0.03	0.05
3	0.21	0.16	0.24
4	-0.15	-0.11	-0.17
5	-0.17	-0.18	-0.23
6	-0.17	-0.14	-0.20
7	-0.01	0.01	-0.00
8	0.12	0.05	0.11
9	0.11	0.11	0.14
10	0.17	0.14	0.20
11	-0.11	-0.08	-0.12
12	-0.14	-0.15	-0.19
13	0.03	-0.01	0.01
14	0.19	0.16	0.23
15	-0.17	-0.15	-0.21

Multiple correlations between childhood variables and smoking, alcohol and smoking + alcohol:

(the strongest variable is question 1 "Separation of the child")

Smoking	Alcohol	Smoking + alcohol
0.27	0.29	0.35

all correlations greater than about 0.10 are significant. the signs of the significant correlations are the opposite of the signs for health status: variables that lead to less smoking and alcohol promote health status.

6. correlation between chronic inflammation and childhood variables:

Chronic inflammation (number, duration and severity) is a significant predictor of various cancers and just significant for heart attacks and strokes.

Significant simple correlations (bivariate) with chronic inflammation are questions 1 (traumatic separation), 4 (continuous relationship with the mother up to the present), 12 (continuous relationship with the mother from the first to the fourth year of life) and 15 (breastfeeding).

Breastfeeding remains significant in multivariate terms. This means that the less breastfeeding, the more chronic inflammation.

7. aversive learning - learning under good and bad family relationships:

The conditions for learning difficulties (Fr. 14) show highly significant interactions:

Discipline (Fr. 13) is linked to learning difficulties in the absence of positive relationships (Fr. 4-6), but positive relationships mitigate this link. If they are strong, more discipline may even be linked to fewer learning difficulties. Again, very reasonable.

8. multivariate relationships of all childhood variables:

(1) The list of simple correlations with health status is now accompanied by a list of multivariate relationships of all variables together. Only the following variables are significant:

```
    explained variance
----------------------
fr 1 8.8 traumatic separation from mother (fr 1)
fr 14 4.3 learning problems
fr 5 2.5 neg or
fr 3 2.3 pos role of father
----------------------
```

(2) If one limits oneself to the variables "continuous presence of the child with the mother from the first to the fourth year of life" (question 12), "uninterrupted, continuous, loving relationship between mother and child up to the present" (question 4) and "breastfeeding" (question 15), the multivariate health relevance looks like this:

```
    explained variance
--------------------
continuous mother/child relationship ( 1st - 4th year) 34.2 (highly significant)
uninterrupted mother/child relationship up to the present 1.6 (just significant)
breastfeeding 2.5 (significant)
--------------------
```

The "continuous togetherness of the child with the mother from the first to the fourth year of life" (loving relationship without painful-traumatic interruptions, mother responds to the needs of the child) is therefore dominant by far.

An uninterrupted mother/child relationship right up to the present day has a significant health-promoting effect. Breastfeeding is also relevant for health until old age.

9. employment of the mother from the first to the fourth year of life:

Correlations with question 9 (mother's occupation from the first to the fourth year of life) with other variables:

Correlation of question 9 with health status: -0.26

```
 fr. corr m fr 9
--------------

1      0.47 traumatizing separation from the mother
2      0.22 traumatizing behaviour of the mother
3      0.21 traumatizing behaviour of the father
4     -0.27 continuous relationship mother/child up to the present
5     -0.22 continuous relationship father/child up to the present
6     -0.19 continuous presence of motivating persons
7      0.18 mother fixation
8      0.04 father fixation
10     0.51 abandonment to unfamiliar caregivers
11    -0.08 abandonment to familiar caregivers
12    -0.46 continuous being with mother (1st-4th year)
13    -0.01 intensive stopping to learn
14     0.35 learning problems
15    -0.28 breastfeeding
--------------
```

 i.e. pretty much everything negative is positively and everything positive is negatively associated with employment.

The following correlations with the mother's occupation are particularly strong:

- traumatic separation from the mother (question 1)
- Traumatizing behaviour of the mother towards the child (question 2)
- Interruption of child/mother continuity in the first four years of life (Question 12)

10. some more concrete consequences of health relevance in relation to the mother's occupation

In order to illustrate the effects of the childhood variables on the child's later health status more clearly with the help of percentages, questions 1-15, which are all provided with a quantitative response scale (0-7 or open-ended (x15 breastfeeding)), were dichotomized at the mean value to create two groups of approximately equal size: Trait below average or Trait above average. We start from the mother's occupation (Fr. 9) and look at risk factors that are more strongly associated with it, namely: Fr. 1 (traumatic separation from mother), Fr. 10 (giving to unfamiliar people) and Fr. 11 (to familiar people), Fr. 14 (learning difficulties) and Fr. 15 (breastfeeding). We look at the mean health status in each of the resulting 4 groups:

(**-** means:: Variable is below average, **+** means: Variable is above average)

```
Fr.9 Fr.1   N    medium GS
------------------------
-       -    421   1.23
-       +    121   0.62
+       -    202   1.25
+       +    312   0.46
------------------------
```

It can be seen that occupation and traumatic separation are associated: It is rather rare in the case of below-average employment, but predominant in the case of above-average employment. Traumatic separation always has a negative effect, and even more so in the case of professional activity (but the difference can only be considered significant if the requirements are somewhat generous). If there is no traumatic separation, the occupation makes virtually no difference. If there is, it cannot be fully compensated for even by not working.

```
Fr.9 Fr.10  N   medium GS
------------------------
-       -    359   1.25
-       +    183   0.79
+       -    150   1.34
+       +    365   0.53
------------------------
```

This table is structurally completely the same as the previous one; you can simply replace "traumatic separation" with "abandonment to unfamiliar people" in the description. Only the difference in the effect is significant for "abandonment": it has a more negative effect with above-average employment than with below-average employment.

Let us now look at the transfer to trusted persons:

```
Fr.9 Fr.11 N    medium GS
------------------------
-       -    281   1.00
-       +    260   1.18
+       -    340   0.61
+       +    375   1.07
------------------------
```

Here, the GS is pretty much the same in 3 of the 4 groups; it is only considerably worse in the case of professional activity without being handed over to trusted persons.

Fr.9 Fr.14 N   medium GS

-       -   348   1.31
-       +   160   0.65
+   -   198   1.15
+   +   289   0.49

Learning difficulties are clearly associated with maternal employment and always have a strong negative effect on GS. Employment itself has a slightly negative effect regardless of this.

Finally, breastfeeding:

Fr.9 Fr.15 N   medium GS

-       -   181   0.81
-       +   163   1.43
+   -   304   0.64
+   +   82   1.37

Breastfeeding is considerably less common when working. It always has a strong positive effect. Employment itself has a slightly negative effect regardless of this.

11. multivariate correlations with the introduction of 21 variables in relation to:
(see questionnaire "RGM Professional life, family and personality)

A) 11 work variables
F) 3 family variables
P) 7 personality variables

The multiple correlation with health status is R=0.72 for the childhood variable alone and the AFP variable alone, and R=0.81 for both complex variables together.

If a discriminant analysis for health status (deceased, ill, healthy) is carried out on this basis, the results for the extreme categories are as follows:

A regression of the AFP variables on the childhood variables works very well, best for P1 (shock experience), multiple correlation R=0.62, and P3 (reluctance), R=0.59. Most Rs are greater than 0.45 (for example, breastfeeding).

Especially for the family variables (F1-3):

F1 is traceable with R=0.52 insbes to fr.1-4
F2   0.47   12,3,4(12 is the inverse of 1)
F3   0.30   14,6=pos pers, e.g.teacher

The   latter   two   relationships   (with   F3)   are   very   useful   and   speak

for   the   reliability   of   the   data.

12. effects of breastfeeding in the context of other childhood conditions:

Q.15 (breastfeeding), for which (realistically) 43% of the subjects did not provide any information, was reduced to yes-no by neglecting the duration of breastfeeding. This variable was related to the health status at the follow-up examination together with one of the other childhood questions in order to answer the question of the extent to which breastfeeding can compensate for other negative childhood conditions. The breastfeeding variable was coded to have approximately the same standard deviation as the other variables so that the regression coefficients could be directly compared. The results:

Fr. no. ß(breastfeeding) ß(other fr.) Rat.

Fr. no.	ß(breastfeeding)	ß(other fr.)	Rat.
1	0.10	-0.16	0.62
2	0.15	-0.11	1.36
3	0.14	-0.12	1.17
4	0.15	0.10	1.50
5	0.13	0.13	1.00
6	0.15	0.11	1.36
7	0.18	-0.05	3.60
8	0.20	-0.04	5.00
9	0.18	-0.05	3.60
10	0.10	-0.12	0.83
11	0.17	0.09	1.89
12	0.11	0.12	0.92
13	0.20	n.sig.	-
14	0.10	-0.13	0.77

It can be seen from the column "Ratio (of amounts)" that in only 4 cases (Fr.1,10,12,14) is breastfeeding not readily able to compensate for significant deficiencies in other areas. Of course, many deficiency variables (such as traumatic separation from the mother, maternal occupation, etc.) are negatively associated with breastfeeding, but in the (relatively few) cases in which breastfeeding did occur, the compensation or overcompensation shown in the table occurred.

12.1 Relationship between breastfeeding time and effects on health status:

For breastfeeding (Fr.15), the duration in months was also recorded. For the cases in which breastfeeding was used, the dependence of the health effect on duration was examined, with the following result:

```
Breastfeeding
Duration(Mon.) N Regr.coeff Significance
-------------------------------------
>0          315  0.017    p<0.00001
>=12        218  0.012    p<0.05
>=18        154  0.005    n.s.
-------------------------------------
```

In all cases of breastfeeding (duration > 0), it is therefore very certain that a longer duration has positive long-term health consequences. This is also confirmed for durations from 12 months, but not for durations from 18 months upwards. The regression coefficient has become considerably lower here, so that the lack of significance is not only due to the smaller number of cases.

13. health effects of childhood variables into old age:

13.1 Prediction of breast cancer and pancreatic cancer based on family of origin variables:

In the representative sample, there are 13 people who have breast cancer and 10 people who have pancreatic cancer. In both cases, we suspect a connection with the childhood variables.

For breast cancer, we hypothesized that (1) maternal fixation (Fr. 7) and (2) the mother's relationship with the child (Fr. 1= traumatizing, shock-inducing spatial separation from the mother, Fr. 2= shock-inducing rejection of the child by the mother, Fr. 4= uninterrupted, continuous loving relationship with the mother, Fr. 12= continuous togetherness of the child with the mother from the first to the fourth year of life) are relevant, as follows:

a) A shock-inducing relationship in the first four years of life (through physical separation or experiences of rejection by the mother) in combination with a mother fixation (usually in response to traumatic separation experiences) are predictors for the later development of breast cancer. The pronounced maternal fixation without inner detachment also implies that the woman remains in the child role and is unable to identify with her female role.

b) Another condition is the absence of an uninterrupted mutually loving mother/child relationship in the first four years of life (question 12), which extends to the present (question 4).

These hypotheses were confirmed. In a logistic regression model, question 7 and one of the other 4 questions were also found to be positively or negatively relevant (question 4.12) when used simultaneously

(always   p<0.05).

For pancreatic cancer, question 2 (traumatizing behaviour of the mother) and question 8 (father fixation) also proved to be positively relevant when used simultaneously (p<0.001 and p<0.0001 respectively).

13.2 Childhood conditions for health and old age:

In the Heidelberg sample of 1310 people, those were selected who had reached the age of at least 80 years at the time of the 1999 follow-up examination and were not suffering from any serious or chronic illness. This applies to 58 people. This characteristic was related multivariate to the questions on childhood conditions (K1-15), 3 further questions on the family of origin (F1-3) and 7 questions on personality (P1-7). In a stepwise regression, the following qualified:

1st K15 (breastfeeding)
2. k4 (positive mother relationship)

With these two variables, the property can be predicted with R=0.43.

Regardless of their state of health, 135 people had reached an age of at least 80 years. The stepwise regression then adds:

3. k3 (negative father relationship)
4. F2 (recognition)
5 K6 (other positive caregivers)
and the multiple correlation increases to R=0.48.

13.3 Early childhood and early retirement from work

Of the total population, 114 people (9.1 percent) were granted early retirement. The age of 55 was used as the criterion for early retirement.

Here, in multivariate competition with three family and 7 personality variables as well as with the remaining variables from the mother/child relationship, two criteria emerge as highly significant. Although the correlations are not particularly high, the result is extremely significant due to the size of the sample. These are question 1 (traumatizing, shock-inducing spatial separation of the child from the mother in the first 4 years of life) and question 2 (handing the child over to unknown, unfamiliar and alternating caregivers from the first to the fourth year of life).

```
          r significance
-------------------------------------------
kindh. fr.1 0.26 p<0.000 000 000 000 000 000 1
10 0.26 p<0.000 000 000 000 000 000 1 -------------------------------------------
```

Due to the extremely high significance, this is an absolutely reliable statement.

5.9.6.4 Summary of the results:

A) Evaluation of the 15 family-related questions

  1) Shock-inducing physical separation from the mother from the first to the fourth year of life is an extremely pronounced risk factor that has a detrimental effect on health into old age.

  2) The remaining 14 factors have a detrimental effect on health when they occur as symptoms of disturbed family relationships, for example "traumatizing behaviour of the mother", "shock-inducing behaviour of the father", "giving the child to unfamiliar and alternating persons", etc.

  3) the health-relevant factors in the family of origin all correlate with factors that make up a healthy family life, for example "continuous and mutually loving interaction between the child and the mother", "continuous, loving relationship with mother and father up to the present", "as well as the continuous presence of motivating and positively experienced persons in school and education".

  4) If the child is handed over to unfamiliar and alternating persons at an early age, who in turn formulate and demand learning goals, then aversive learning occurs with possible consequences of concentration difficulties into adulthood.

  5) A multivariate analysis of the 15 questions shows that traumatic separation from the mother in the first years of life still plays the central role. Here, the supportive role of the father has a significantly positive function in maintaining health, while traumatizing paternal behaviour is significantly detrimental to health. Learning problems caused by aversive learning have a negative impact on health. The 4 questions have a very high significance for the maintenance of health (multiple correlation R=0.63).

  6) The results of the factor analysis are also very impressive. The loadings on the first factor confirm the health relevance of the 15 questions with the exception of questions 8 and 13. Factor 2 shows the highest loading on questions 3 and 8, i.e. on the questions "father fixation" and "permanently experienced traumatization by the father". People who are traumatized by their father on the one hand and are extremely oriented towards him on the other also have a disease-inducing dysstress.

The factor analysis initially shows the general correlation between the individual questions. With regard to our results, however, it also shows that one factor is a highly significant predictor of health status. (multiple correlation of R=0.62)

  7) The largest number of questions (with the exception of questions 7 and 13) show a positive bivariate and multivariate correlation with smoking, alcohol consumption, and smoking and alcohol consumption. Here, the health-maintaining and disease-causing factors from the family of origin are positively correlated with addiction. There is also a positive correlation between factors from the family of origin and chronic inflammation in adulthood. Breastfeeding is particularly relevant with regard to these correlations.

The relationship between physical risk factors and childhood variables explains the connection between chronic diseases and experiences from the family of origin. (There is also a connection between childhood variables, heart attacks and other cancers, which are not mentioned in this report).

8) In various multivariate evaluations, the most important disease factor repeatedly emerges as the traumatic separation of the child from the mother in the first four years of life, while the two most important health-relevant factors are "continuous, loving togetherness between mother and child in the first four years of life" and "breastfeeding".

9) The mother's occupation in the first four years of life shows a negative simple correlation with health status, i.e. in the group of working mothers (the time intensity of the occupation (never, rarely, always, etc.) was taken into account) significantly more children died or became chronically ill in adulthood up to old age and fewer people remained healthy. The children of working mothers, for example, experienced a traumatizing separation from their mother significantly more often, were breastfed less often and had less continuous, loving contact with their mother.

There are also compensatory factors that offset the negative effects of the mother's occupation on health status: For example, "giving the child to trusted persons from the first to the fourth year of life" (question 11), "breastfeeding" (question 15), etc.
10 The results of the mother's employment under different conditions are detailed in Section 10. Breastfeeding is also described in detail in section 12. This shows that breastfeeding is able to compensate for various deficiencies. In four cases, however, it is shown that breastfeeding is no longer able to compensate for the negative health effects. These are the following four factors:

1) traumatizing spatial separation of the child from the mother (question 1)
2) Giving the child from the age of one to four to unfamiliar persons (question 10)
3) Lack of continuous interaction between mother and child from the first to the fourth year of life (question 12)
4) massive learning problems in education and employment (question 14)

With regard to the duration of breastfeeding, it has been shown that the length of breastfeeding has positive effects on health. This can be proven up to a breastfeeding period of 18 months. (see 12.1) Breastfeeding for longer than 18 months no longer has any significant health effects.

11 Specific childhood variables even appear to be predictors of breast cancer, pancreatic cancer and health into old age. This shows how useful it is to expand the reference systems to be researched in cancer research or gerontology and to span an arc into early childhood.

Two childhood variables (questions 1 and 10) are even extremely significant predictors of early retirement.

B) If other variables from the current family's working life and personality variables are included (see questionnaire under 15.2), it can be seen that the multiple correlation with health status is just as pronounced when the childhood variables are taken into

account as when the work, family and personality variables are taken into account. (R=0.72)

A regression of the current dysstress variables (work, family and person) is very successful (R=0.62). This result underlines the effects of the circumstances from early childhood on behavior in adult life.

Multivariate correlations with a further 21 variables from the questionnaire "RGM - professional life, family of origin and personality":

  1) The first 11 questions relate to professional life, the next 3 to family variables and the last 7 to personality variables.

All variables from the two questionnaires (RGM questionnaire on the "mother/child relationship" and RGM questionnaire on "professional life, family of origin and personality") were then analyzed multivariate with regard to their relevance to health. This resulted in six most important variables: Two of them from the area of personality, one from working life and three variables from the family of origin.
In the area of personality: traumatic shock experiences with a lasting effect and negative pleasure difference in the present (feelings of displeasure and discomfort are more pronounced than well-being and pleasure).

In professional life: the strongest variable is contact with constructive personalities in working life who make an effort to recognize and promote achievements and not to emphasize weaknesses and compensate for them as much as possible (i.e. the direct opposite of the usual bullying and emphasis on weaknesses, which begins systematically at school).

In relation to the family of origin (early mother-child relationship): Three variables prevail here. Firstly, the traumatic separation of the child from the mother in the first four years of life and the lack of a positively supportive father. Learning difficulties also play a role. This is a particularly dramatic social situation. On the one hand, children are forced to learn in aversive, i.e. emotionally unpleasant family relationships, and on the other hand, their difficulties are pointed out to them in school and education rather than helping them to overcome them (for example, by recognizing their individual strengths and ignoring their weaknesses). We have also shown in empirical studies that particularly gifted children often have extreme difficulties with elementary learning in the first years of school. We were also able to show that 88% of children who experienced traumatic separation from their mother in the first four years of life and were also rejected by their mother and who were then not accepted by their teachers due to learning difficulties in the first four years of school were unable to learn a profession or pursue a job. (Both will be published in the book "Lustvoll gesund").

To summarize:

The results are complex, extremely differentiated and relevant to many practical issues. For example, the following conclusions can be drawn with regard to the current discussion about crèches:

1) If it can be ensured that the children can be handed over to familiar and not alternating educators, that the children are sufficiently breastfed if necessary (up to 18 months), that a continuous mother/child relationship is guaranteed in the first four years and that no aversive learning takes place (learning under emotional dysstress), then a stay in the crèche can possibly take place without negative long-term health effects and learning difficulties, even if the mother is working.

However, such a variation is relatively rare in practice and extremely difficult to realize.

2) If, for whatever reason, the child shows traumatic reactions in its relationship with the mother (spatial separation, experiences of rejection), then it needs a special closeness to the mother (continuous loving relationship, breastfeeding, etc.). If the child is then handed over to relatively unfamiliar and alternating caregivers and the mother is unavailable due to work, especially in situations in which the child expresses an extreme emotional need for the mother, then serious and lasting consequences can occur, which manifest themselves in learning difficulties on the one hand and in health effects into old age on the other.

3) Based on our results, an optimal relationship between the child and the family of origin can be described as follows:

a) uninterrupted presence of the child with the mother during the first four years of life
b) if possible, breastfeeding until 18 months
c) if the children are given up in the first four years of life, then only to trusted persons
d) Strict avoidance of any shock-inducing spatial separation of the child from the mother, especially in the first four years of life (e.g. hospitalization of child or mother, possible shock-inducing handover to unfamiliar and alternating persons, etc.).
e) high level of attention from parents (father and mother) to avoid repeated rejection and emotional injury to the child
f) Avoid making learning demands on the child when they are under negative emotions and have low motivation (avoid aversive learning)
g) the development of an uninterrupted, mutually loving relationship with mother and father up to the present depends largely on a continuous relationship in the first four years of life

If the opposite of the factors indicated above occurs, namely interrupted continuity in the mother/child relationship, traumatically experienced separation from the mother, aversive learning, etc., then the following can be expected:

a) damage to health into adulthood
b) Learning difficulties that both reduce innovative strength and are a health risk
c) increased risk of addiction (e.g. alcohol, smoking, drugs, malnutrition)
d) Risk of early retirement

If the public health and innovative capacity of a nation are threatened, then it can no longer be a question of private opinions and political disputes, but of scientific issues of the highest socio-political relevance.

In a study of right-wing and left-wing radicalism in comparison to different democratic-political attitudes (the results are published in our book "Mentalität und Gesellschaft"),

it was shown that the left-wing radical-collectivist motivation is based, among other things, on an extreme aversion in the association with one's own family and early childhood. This characteristic correlates with support for collectivist child-rearing. Conservatives tend to have very positive associations with their own childhood within the bourgeois family. They tend to favor a close and uninterrupted mother/child relationship in the early years. Right-wing radicals have an extremely high ideal of motherhood, but also the inner conviction that they cannot achieve the desired closeness with their mother. The current motivations in the discussion about day nurseries are certainly also related to our own family experiences. Our studies on left-wing and right-wing radicalism were completed 10 years ago. Today, in times of globalization, new fronts are forming across all parties. For example, it is possible for collectivist family images to emerge in democratic parties and sympathies for bourgeois family structures in left-wing groups.

5.9.6.5 Questionnaire:

RGM questionnaire on the mother-child relationship

1. traumatizing, shock-inducing, spatial separation of the child from the mother in the period from the first to the fourth year of life. The child was torn out of a loving, secure relationship with the mother unprepared, involuntarily, shockingly and placed in a foreign, non-confidential situation (environment) that was experienced as extremely threatening (e.g. due to the mother's job, hospitalization of the child or mother, etc.).
0 = not at all 1 = very weak 2 = weak 3 = average, rather weak
4 = moderate, rather strong 5 = strong 6 = very strong 7 = extremely strong

2. traumatic, shock-inducing isolation from the mother through her behavior towards the child, i.e. a systematic disregard of the child's need for love towards the mother. (e.g. rejection, rejection, non-recognition, negation of the child's right to exist)
0 = not at all 1 = very weak 2 = weak 3 = average, rather weak
4 = moderate, rather strong 5 = strong 6 = very strong 7 = extremely strong

3. traumatic shock-inducing damage, injury to the child through the father's behaviour (e.g. rejection, beatings, brutal training, non-recognition, non-appreciation) but also traumatizing loss of the father through death or separation.
0 = not at all 1 = very weak 2 = weak 3 = average, rather weak
4 = moderate, rather strong 5 = strong 6 = very strong 7 = extremely strong

4. uninterrupted, continuous, mutually loving and appreciative relationship between mother and child up to the present. (in case of death of the mother in thoughts)
0 = not at all 1 = very weak 2 = weak 3 = average, rather weak
4 = moderate, rather strong 5 = strong 6 = very strong 7 = extremely strong

5. continuous presence of a supportive, appreciative, loving father up to the present. (in case of death of the father in thoughts)
0 = not at all 1 = very weak 2 = weak 3 = average, rather weak
4 = moderate, rather strong 5 = strong 6 = very strong 7 = extremely strong

6. continuous presence of soothing, motivating caregivers who provide security, e.g. caregivers, teachers, grandparents, educators, neighbors; friends.
0 = not at all 1 = very weak 2 = weak 3 = average, rather weak
4 = moderate, rather strong 5 = strong 6 = very strong 7 = extremely strong

7. maternal fixation up to the present - extremely close attachment and dependency without an inner detachment into autonomy. (This is less about a constantly loving relationship with the mother, but rather about an inner dependency that has arisen more as a result of rejection, deferral and emotionally unresolved relationships or even unintentionally traumatizing events. The pronounced dependence on the mother also implies that the person is more in the child role and is less able to accept their gender role (female role or male role).
0 = not at all 1 = very weak 2 = weak 3 = average, rather weak
4 = moderate, rather strong 5 = strong 6 = very strong 7 = extremely strong

8. father fixation to the present day - extremely close attachment and dependency without inner detachment into autonomy. (This is less about a constantly loving relationship with the father and more about an inner dependency that has arisen more as a result of rejection, deferral and emotionally unresolved relationships or even unintentionally traumatizing events. The pronounced dependence on the father also implies that the person is more in the role of a child and is less able to accept their gender role (female role or male role).
)
0 = not at all 1 = very weak 2 = weak 3 = average, rather weak
4 = moderate, rather strong 5 = strong 6 = very strong 7 = extremely strong

9. mother employed during the first to fourth year of the child's life.

0 = never (the mother was at home without interruption, i.e. immediately available for the child)
1 = very rare (the mother was almost always at home, there were only a few rare work-related activities)
2 = rarely (mother was at home most of the time, if working then within the home)
3 = rarely rather than frequently (the mother rarely worked, and when she did, she tended to work within the home)
4 = rather frequently than rarely (the mother was rather frequently employed outside the home)
5 = frequently (the mother was working outside the home most of the time)
6 = very often (the mother worked continuously outside the home)
7 = almost always (the mother worked continuously, even with frequent stays away from home for long periods (e.g. business trips, frequent night shifts or working at a distant location))

10. leaving the child from the age of one to four to relatively unknown, unfamiliar, alternating caregivers (e.g. educators, crèche or even unfamiliar relatives)
0 = never 1 = very rarely 2 = rarely 3 = more rarely than often 4 = more often than rarely 5 = often 6 = very often 7 = almost always

11. handing over the child from the age of one to four to trusted persons (e.g. grandparents, caregivers, educators, etc.)

0 = never 1 = very rarely 2 = rarely 3 = more rarely than often 4 = more often than rarely 5 = often 6 = very often 7 = almost always

12. continuous presence of the child with the mother from the first to the fourth year of life. (for example, a loving relationship without painful traumatic interruptions, the mother was always there and responded to the child's needs)
0 = never 1 = very rarely 2 = rarely 3 = more rarely than often 4 = more often than rarely 5 = often 6 = very often 7 = almost always

13th child was encouraged to learn intensively from the age of one to four, for example discipline, good behavior, knowledge transfer.
0 = never 1 = very rarely 2 = rarely 3 = more rarely than often 4 = more often than rarely 5 = often 6 = very often 7 = almost always

14. the person had learning problems at school, in training and at work. (e.g. difficulty concentrating, unwillingness to learn, negative feelings when learning, little enjoyable creativity and independence in processing learning material)
0 = not at all 1 = very weak 2 = weak 3 = average, rather weak
4 = moderate, rather strong 5 = strong 6 = very strong 7 = extremely strong

15. were you breastfed? If yes, how many months?:_____
 0= not breastfed - don't know

16 On the basis of what information did you answer the questions from early childhood?
1 = from memory 2 = based on stories from family members
3 = on the basis of assumptions

6 Health relevance of individual factors in a multifactorial context

6.1 Health relevance of physical activity

within the framework of multidisciplinary preventive medicine

Summary
The relevance of 70 physical and 94 psychosocial risk factors for the causes of death from pancreatic and bronchial carcinoma, heart attack/brain stroke and Alzheimer's disease was investigated in 659 male persons from the Heidelberg area. This report focuses on the relevance of physical activity for health status.

1 Groups of people, dependent variable
This study is based on 6 exclusively male groups of people:

Size 0	170 people who were 83.4 years old on average in 1998 and did not suffer from any chronic illness or significant disability;
Size 1	76 people who had died of various diseases by 2002 at an average age of 63.9 years;
Size 2	138 people who had died of pancreatic cancer by 1998 at an average age of 67.6 years;
Size 3	128 people who had died of bronchial carcinoma by 1998 at an average age of 67.7 years;
Size 4	17 people who had died of Alzheimer's disease by 1998 at an average age of 78.9 years;
Size 5	130 people who had died of a heart attack or stroke by 1998 at an average age of 72.5 years.

In the following, the dependent variable L "long-lived and healthy" is used; it distinguishes between Gr.0 and the summary of mortality groups 1-5.

Independent variables
Physical activity was recorded by asking the test subject the following questions:
Physical activity: in which group of physical activity habits would you classify yourself, taking into account the last 5 years? 1. regular and moderate - 2. regular and forced - 3. moderate and irregular - 4. forced and irregular - 5. lack of physical activity

How do you generally experience your physical activity over the last 5 years?
6. soothing - 7. neutral - 8. causing discomfort

The following variables were formed from this:
1. frequency of exercise (3 levels: inadequate - irregular - regular).
2. type of movement (2 levels: moderate - forced). As can be seen from the questionnaire, this information was only possible if "lacking" was not specified for the frequency.
3. experiential value of the movement (3 levels: discomfort-inducing-neutral-beneficial).

Results

Simple relationships

The frequency and type of exercise are related to the experience value and health status as follows:

Movement	N (Medium)	Experience value %	healthy
lacking	169	1.65	8
irregular and moderate	73	2.23	33
irregular and forced	34	2.24	15
Regular and moderate	176	2.83	49
Regular and forced	147	2.65	20

The quality of the experience increases significantly with increasing frequency of exercise. Forced exercise has practically no effect with irregular exercise, but has a significant, slightly negative effect with regular exercise.

The health status increases considerably with the frequency of exercise, whereby the difference between irregular and regular exercise is at the limit of significance. Forced exercise always has a clear and significant negative effect.

Interactions with physical risk factors

From the available 70 physical risk and health factors, a regression function PH was formed for the dependent variable L ("long-lived and healthy") and dichotomized as PH0. The relevance of this variable is very high:

	N	L (%)
PH less favorable	363	1
more favorable	238	65

It was investigated how the three movement variables affect L under favorable and unfavorable physical conditions.
1. the frequency of exercise makes no significant difference for L in unfavorable PH0, while in favorable PH0, irregular and regular exercise leads to a more favorable L than lack of exercise.
2. the forced nature of the movement makes no significant difference under the two PH0 conditions. However, it is associated with less favorable PH0, and thus the negative effect on L occurs when forcedness alone is considered.
3. the well-being due to exercise makes no significant difference with unfavorable PH0, but a considerable difference with favorable PH0.

For comparison, we place the effect of the three levels of frequency of movement next to it:

PH0 cheaper					
Movement:	N	L (%)		N	L (%)
Discomfort	2	(50)	lacking	27	41
Neutral	39	33	irregular	37	73
beneficial	193	71	regularly	174	67

The effect of the frequency of exercise on health status is therefore weaker than that of the quality of the experience.

Interactions with psychosocial risk factors

From the 94 available psychosocial risk and health factors, a regression function PS was formed for the dependent variable L ("long-lived and healthy") and dichotomized as PS0. The relevance of these variables is very high:

	N	L (%)
PS less favorable	380	1
more favorable	221	70

It was investigated how the three movement variables affect L under favorable and unfavorable psychosocial conditions.

1. the frequency of exercise makes no significant difference for L in unfavorable PS0, whereas in favorable PS0, irregular and regular exercise leads to a more favorable L than lack of exercise.

2. the forced nature of the movement makes no significant difference under unfavorable PS0 conditions and a significant negative difference under favorable conditions. However, it is associated with less favorable PS0, and thus the negative effect on L occurs when forcedness alone is considered.

3. the well-being due to exercise makes no significant difference with unfavorable PS0, but a considerable difference with favorable PS0:

PS0 cheaper		
Movement:	N	L (%)
Discomfort	7	14
Neutral	36	42
beneficial	174	78

The effect of the frequency of exercise on health status is therefore weaker than that of the quality of the experience.

In summary, it can be stated that the conditions are very similar when considering the relevant psychosocial background conditions and when considering the relevant physical background conditions.

6.2 Health relevance of religious attitudes

Summary
The relevance of 70 physical and 94 psychosocial risk factors for the causes of death from pancreatic and bronchial carcinoma, heart attack/brain stroke and Alzheimer's disease was investigated in 659 male persons from the Heidelberg area. This report focuses on the relevance of religious variables for health status. There were strong links with other psychosocial variables as well as a strong relevance for "hard" variables such as mortality or longevity and health.

Groups of people, dependent variable
This study is based on 6 exclusively male groups of people:

Gr.0: 170 people who were on average 83.4 years old in 1998 and did not suffer from any chronic illness or significant disability;
Gr.1: 76 persons who had died of various diseases by 2002 at an average age of 63.9 years;
Gr.2: 138 people who had died of pancreatic cancer by 1998 at an average age of 67.6 years;
Gr.3: 128 persons who had died of bronchial carcinoma by 1998 at an average age of 67.7 years;
Gr.4: 17 people who had died of Alzheimer's disease by 1998 at an average age of 78.9 years;
Gr.5: 130 people who had died of a heart attack or stroke by 1998 at an average age of 72.5 years.

In the following, the dependent variable L "long-lived and healthy" is used; it distinguishes between Gr.0 and the summary of mortality groups 1-5.

Independent variables
Religious attitudes were assessed by asking the test subjects the following questions:
(1) In which type of religiosity described here would you categorize yourself?
1 atheist with anger at God and the church
2 atheist for rational reasons
3 Churchgoers and supporters of church norms and customs
4 markedly God-centered, e.g. strong love for God, do you feel loved by God, do you feel the beneficial effects of the Holy Spirit?
(2) How strong is your love for God?
0 = not at all, 1 = very weak, 2 = weak, 3 = moderate, rather weak, 4 moderate, rather strong, 5 = strong, 6 = very strong, 7 = extremely strong.
(3) My professional life and my motivation to work are largely determined by my relationship with God. To what extent does this statement apply to you?
0 = not at all, 1 = very weak, 2 = weak, 3 = moderate, tending towards weak,
4 = moderate, tending towards strong, 5 = strong, 6 = very strong, 7= absolute.

Results

Correlations with other psychosocial variables

For the 4 groups according to question 1, we provide a profile of the 89 psychosocial questions, the first of which are listed that are most closely correlated with the group characteristic.

Gr.1 (emotional atheism)
1. less integration of reason, emotion and intuition (XIV.10)
2. less sense of belonging in working life (XXII.18)
3. more inhibition of the desire to live and destruction of the will to live (XXI.1)
4. less type 4 (see below)
5. more chronic anxiety (XXI.11)
6. less ability to transform negative feelings into positive ones (XIV.21)
7. More demotivation in working life (XXII.20)

Gr. 2 (rational atheism)
1. more antagonistic activation of emotional and rational impulses (XXI.9)
2. more inhibition in the regulation of proximity and distance (XXI.8)
3. more unstressed connection between childhood and the present (XXI.13)
4. less positive communication (XXI.4)
5. more demotivation in working life (XXII.20)
6. less pleasure-oriented connection between childhood and the present (XXI.12)
7. less synergy between pleasure and renunciation (XXI.3)

Gr. 3 (religiousness loyal to the church)
1. Less transparency experienced in the world of work (XXII.17)
2. less chronic anxiety (XXI.11)
3. less uncertainty experienced in the world of work (XXII.15)
4. less unenthusiastic connection between childhood and the present (XXI.13)
5. More recognition in working life (XXII.14)
6. less inhibition of the desire to live and destruction of the will to live (XXI.1)
7. Less demotivation in working life (XXII.20)

Gr. 4 (spontaneous religiosity)
1. more integration of reason, feeling and intuition (XIV.10)
2. more constructive physical contact in the partner relationship (XXI.7)
3. less antagonistic activation of emotional and rational impulses (XXI.9)
4. more pleasure-oriented connection between childhood and the present (XXI.12)
5. more ability to transform negative feelings into positive ones (XIV.21)
6. More importance of own skills in working life (XXII.6)

To explain type 4: In their everyday behavior, the person is repeatedly able to achieve pleasure, well-being, security, development and fulfillment of meaning, both by renouncing unattainable or harmful objects and by redesigning and actively creating longed-for states and relationships that lead to well-being.

Question 2: A higher value is associated with the following characteristics:
1. more synergy effects between enjoyment and renunciation (XXI.3)
2. less antagonistic activation of emotional and rational impulses (XXI.9)
3. More positive communication (XXI.4)
4. Feeling more loved (XIX.6)
5. more ability to establish positive communication in working life (XXII.10)
6. more constructive physical contact in the partner relationship (XXI.7)

Question 3: A higher value is associated with the following characteristics:
1. more love for family members (XIX.3)
2. More recognition in working life (XVIII.3)
3. more love for important fellow human beings (XIX.4)
4. Feeling more loved (XIX.6)
5. less helpless overexcitation (XIV.17)
6. less antagonistic activation of emotional and rational impulses (XXI.9)

Relevance for the health status

Survival and health status L is related to the three religious variables as follows:

Question 1	N	Healthy (%)
1	130	5
2	164	16
3	226	30
4	77	82
	Total	597

There is a very strong correlation with L=health into old age; mortality is the complement of this, varying accordingly between 18% and 95%.

Question 2	N	Healthy (%)
1	23	0
2	37	5
3	93	10
4	83	20
5	97	24
6	106	31
7	105	31
	Total	544

Here there is an even but less pronounced increase in L with the degree of love of God compared to question 1.

Question 3	N	Healthy (%)
1	51	24
2	24	21
3	20	25
4	18	22
5	16	62
6	35	46
7	35	86
	Total	200

Here the number of people is lower and the relationship is not completely uniform, but as with question 1, it is very strong; mortality varies between 14% and 76%.

In order to put the specific relevance of the religious variables to the test, a predictor was formed from all other relevant psychosocial variables, which proved to be highly potent even in a coarsened (dichotomized) form:

Psychosocial Conditions	N	L (%)
more unfavorable	435	1
more favorable	256	70

In addition to this predictor, we used the three religious variables to clarify whether they make their own contributions to L that cannot be attributed to the many other psychosocial factors included in the predictor. The three religious variables did indeed prove to be statistically significantly (2 even highly significantly) linked to L independently. It can therefore be assumed that their specific contents are indeed relevant as such for L.

The formation of another highly potent predictor, which summarizes all relevant physical risk factors, led to similar results. The three religious variables also remained relevant for L alongside it, so that it can be ruled out that their linkage with L is merely due to the fact that certain physical conditions would be present at the same time for certain religious attitudes.

6.3 Relevance of Grossarth's typology for various mortalities

Simple and multivariate relevance

Summary
Grossarth's typology (see 3.2.5) shows strong correlations with various mortalities.
However, this is by no means to be understood as evidence for a primarily psychosomatic
theory of the mortalities in question (e.g. in the sense of a primarily decisive "cancer
personality"). When physical risk factors such as blood pressure, blood cholesterol, smoking,
alcohol consumption, diet or exercise are introduced into a multivariate model, the relevance
of the typology decreases dramatically.
When other - namely psychosocial - "competitors" are added to the typology, this is no longer
even statistically significant in some cases. Obviously, this is a system with strong
interdependencies that cannot be analyzed by individual factors, but only by taking a
synergistic approach.

1 Sample of persons
The following groups of people are considered:
1. 283 people who were 78.2 years old on average in 1998;
2. 266 people who had died of pancreatic or bronchial cancer by 1998 at an average age of
67.6 years;
3. 130 people who had died of a heart attack or stroke by 1998 at an average age of 72.5
years.
Together, this means 679 people.

The following mortality rates are calculated:
1. cancer mortality (CA): relative frequency of Gr.2 within Gr.1+2
2. myocardial infarction/stroke mortality (HH): relative frequency of Gr.3 within Gr.1+3
3. overall mortality: relative frequency of Gr.2+3 within Gr.1+2+3.

2 Independent variables
The degree of type 1-6 was measured in the form of a self-assessment, an interviewer
assessment and a relative assessment on a scale of 1-7. The 3 judgments correlate very
highly with each other, and their mean value was used as the degree of type 1-6. For each
person, the type with the highest degree of expression was determined and the person was
assigned the corresponding value of the qualitative variable "type class".

A physical risk dimension was formed by averaging the standardized values of blood
pressure, blood cholesterol, smoking, alcohol consumption, diet, exercise and others. It is
available in 2 forms, one of which is available for 547 of the 566 people and the other for only
370 people.

3 Simple mortality relevance of the type class
Mortality type class

	N#	Total	CA	HH
1	143	0.92	0.91	0.56
2	106	0.89	0.65	0.86
3	79	0.27	0.22	0.08
4	208	0.19	0.13	0.08
5	133	0.78	0.74	0.41
6	10	0.60	0.43	0.43
Total 679				

N for all-cause mortality
For overall mortality, types 1,2,5 are highly relevant compared to 3,4. For CA and HH
mortality, there is a clear differential relevance of types 1 (for CA) and 2 (for HH). Type 5 is
also more strongly associated with CA than with HH.

4 Multivariate mortality relevance of the type class

If the physical dimension is now introduced into the model, the variance contribution of the type class drops dramatically, by a factor of 9-12. The mortalities shown in the table above level off considerably after removing the physical effect. However, due to the size of the samples, the type class still remains significant. However, if other - namely psychosocial - competitors are added to the type class, it is generally no longer significant.

The reason for the large modifying effect of the physical dimension is to be found in its own strong relevance in conjunction with its strong association with the type class (multiple correlation 0.58-0.61): physical and psychosocial risk factors are interdependent.

6.4 Relevance of interview conditions

for the performance of risk variables

Introduction

In various studies, Grossarth-Maticek et al. were able to show that the research results in the context of psychosocial epidemiology are significantly influenced by the type of communication during data collection.

(when questionnaires are presented for written responses only, a completely different and attenuated prediction result is determined compared to a data collection in which a personal interview took place before the written responses to the questionnaires, in which the persons were asked to report on positive and negative experiences and on their typical behavior in both situations). This report presents a new replication of Study B, which confirms the results from earlier publications. (Grossarath-Maticek, R. et al 1993).

Groups studied

The following groups of people are examined:

Gr.0: 217 people who were on average 83.4 years old in 1998 and did not suffer from any chronic illness or significant disability;

Gr.3: 128 persons who had died of bronchial carcinoma by 1998 at an average age of 67.7 years;

Gr.5: 130 people who had died of a heart attack or stroke by 1998 at an average age of 72.5 years.

Total number: 475 people.

2. interviewer/interview conditions

In Gr. 3 and 5 two I-conditions were given:

Condition 1: Normal condition (trained interviewers, appropriate sequence of questions), N=214;

Condition 2: less favorable condition (untrained interviewers, less suitable sequence of questions), N=44.

Comparison groups were formed:

Gr.1 = Gr.0 and Gr.3 and 5 with Bed. 1, N=431;

Gr.2 = Gr.0 and Gr.3 and 5 with Bed. 2, N=261.

3. investigation of the effects of the I-conditions

In these two groups, the multiple correlation of several variable complexes with the indicator variable for Gr.0, i.e. survival status, was determined:

Indep. variables	R^2: Bed.1	Bed.2	Diff
24 psychosocial variables	0,672	0,340	0,332
16 psychosocial variables	0,712	0,425	0.287
13 psychosocial variables	0,764	0,327	0,337
13 psychosocial variables relating to working life	0,541	0,169	0,472
20 psychosocial variables relating to working life	0,686	0,372	0,314
6 Psychosocial type variables, self-assessment	0,570	0,151	0,419
6 Psychosocial type variables, interviewer assessment	0,606	0,328	0,278
6 Psychosocial type variables, assessment of relatives	0,639	0,619	0,020
7 subjective physical risk factors (e.g. self-reported smoking, alcohol, diet, exercise)	0,450	0,106	0,344
5 objective physical risk factors (various parameters of blood pressure and blood cholesterol measurements)	0,410	0,311	0,099

Results

1. psychosocial variables

For 5 psychosocial variable complexes, the less favorable I-condition leads to a reduction in multivariate relevance of between 0.287 and 0.472.

The 6 psychosocial type variables are available (as the only psychosocial variables) as self-assessment, interviewer assessment and relative assessment. For the self- and interviewer assessment, the reduction due to the I-condition is in the same range as for the other psychosocial variable complexes (0.278-0.419); for the relatives' assessment, on the other hand, it is negligible (0.020).

The explanation is probably obvious: The self-assessment and interviewer assessment took place during the interview with the interviewee, whereas the relatives' assessment was obtained on another occasion.

2. physical variables

The reduction in relevance for the variables that can encounter subjective inhibitions in the respondent (such as information on smoking, alcohol consumption, diet or exercise) is 0.344; it is therefore in the same range as for the psychosocial variables without the relatives' assessment.

With the laboratory values, the reduction effect is considerably lower at 0.099.

3. overall result

It can be seen that the predictive power of the same variables for mortality can be considerably improved or worsened by the interviewer and interview conditions.

6.5 Causal analyses based on historical data

From Study B, 352 randomly selected people were asked whether they would make themselves available for a multiple measurement over several years, in which both physical and psychosocial factors were recorded. 212 people agreed to participate. A small subgroup of 36 of these people was analyzed here. The remaining results will be analyzed with other follow-up data in a separate article.

Repeat measurements of the variables of the "RGM Self-Regulation and Health Questionnaire" (see appendix) are available for 36 people at 1-year intervals.

Number of Measurements	People
3	6
4	5
5	11
6	5
7	6
11	1
12	1
14	1
	36

First the more detailed information about the deaths:
Of the 36 people, 22 died between 1979 and 1997 at an average age of 54.0 years. the 14 who did not die were born on average in 1930.7. from this it can be seen, for example, that in 1998 they were on average 1998-1930.7=67.3 years old.

From a correlation or association between x and y, it cannot be inferred whether x is the direct cause of y or y is the direct cause of x or neither. In the present repeated measurements, we assume that the level of x,y,z... can cause subsequent changes in x,y z... can cause subsequent changes. Then the two questions of whether x caused (the change in) y or y caused (the change in) x can be asked and answered independently of each other. The temporal order is then a specification for the causal order. The question of whether there is direct causation can also be answered unambiguously within the framework of the variables contained in the model.

A model concept can assume that the cause immediately establishes the level of the effect variable, or that it causes changes in the effect variable and only gradually establishes a corresponding level there. For example, pressure on the brake pedal of a car immediately leads to a deceleration, while the speed is only gradually reduced. We will not attempt to speculate in individual cases, but will apply both models.

We created the following *summarized variables* from the sections of the questionnaire:
PSS: Psychosocial stress in general (XIV-XVII, XIX, XXII);
PSA: Psychosocial stress in relation to working life (XVIII, XXI);
VH: Behavior of the individual (smoking III 2,3; alcohol V 2; diet IV, coffee VI 2; exercise IX; blood pressure VIII; medication XIII 1-5)
FG: health consequences (blood cholesterol II; nutrition IV well-being, digestion IV 13-15; diabetes VII; blood pressure VIII; exercise (IX well-being); weight IX 9; chronic inflammation XX (fever treated as a positive factor)

 The following

significant correlations (across all measurements) between the level of these variables and (a) their changes and (b) their subsequent level were found (all models were calculated multivariate with the four composite variables mentioned):

Output level	Change				Consequence level			
	PSS	PSA	VH	FG	PSS	PSA	VH	FG
PSS	(-)#	+++		++	####	+++		+++
PSA		---#			+++	####	+	
VH			---#	+		(+)	####	+++
FG	-	-		---#		-	++	####

#	Self-dependence
#####	not in the model
+ -	is the sign of the partial regression coefficient

Significance:	
(+) (-)	.05>p>.01
+ -	.01>p>.001
++ --	.001>p>.0001
+++ ---	.0001>p

The best way to say something about the relative strength of the influences is within a model (the self-dependence of the changes is not taken into account). We therefore go down the table in the report column by column:

Change:
PSA column: the influence of PSS (+++) is significantly stronger than that of FG (-).
Column FG: the influence of PSS (++) is stronger than that of VH (+).

Consequence level:
PSA column: the influence of PSS (+++) is significantly stronger than that of VH [(+)].
column VH: the influence of FG (++) is stronger than that of PSA (+).
column FG: the influence of PSS and VH is approximately equal.
(if you look at the exact values, VH's is slightly stronger).

<u>Discussion</u>
(A) Change
(1) Self-dependence is almost always markedly negative, i.e. people with high/low scores tend to have a lower/higher score at the next measurement. The extent to which this effect is due to the limitations of scales (e.g. 1-7 points for PSS and PSA) must remain open here.
(2) PSS is slightly negatively affected by the consequences.
(3) PSA is positively influenced by PSS and slightly negatively influenced by the consequences.
(4) Behavior: no significant external dependencies.
(5) **The consequences are positively (i.e. equally) influenced by PSS and behavior.** This result is very plausible, at least with regard to behavior, and it also shows that PSS also has a direct influence on health outcomes.

(B) Consequence level

(1) Self-dependence was not included in the models because the similarity between successive levels of a variable is trivially high.

(2) PSS is strongly positively influenced by PSA.

(3) PSA is strongly positively influenced by PSS. This was also evident in the change (see A3). PSA is also weakly positively influenced by behavior and weakly negatively influenced by consequences. No explanatory hypothesis for the latter.

(4) The behavior is weakly positively influenced by PSA and positively influenced by the consequences. The latter could be interpreted as a plausible feedback loop.

(5) **The health consequences are strongly positively (equally) influenced by PSS and behavior**. Both results were also found for the changes (see A5). The connection between behavior and consequences is again plausible and that between PSS and consequences is remarkable.

With regard to the criteria "remained healthy into old age" or "died relatively early of a chronic illness", the only significant result is: there is a positive (i.e. equal) correlation with the accumulation of general psychosocial stress (PSS), i.e. the sum of all psychosocial values (PSS values).

This result proves that general psychosocial stress plays a central role in early mortality and health into old age, although it relates to data that was already current before the survey.

7 Smoking - disease and preventive strategies

7.1 Effects of smoking in the context of psychophysical factors

Summary
The health effects of cigarette smoking in the context of other risk and health factors were examined in 344 selected people with above-average and below-average mortality. The fear of the health consequences of smoking proved to be much more relevant than the objective dose of smoking. Passive smoking is slightly more relevant to health than self-smoking. Moreover, it is even a precondition for the effectiveness of smoking, while passive smoking itself is also effective in non-smokers. When other risk factors, in particular psychosocial risk factors, were taken into account, no significant contribution of cigarette smoking (both active and passive smoking) could be detected. In a multivariate analysis, the health relevance of cigarette smoking thus dissolves into a series of indirect influences that run via associated risk factors, some of which are considerably more relevant.

Contents

1 Sample of persons
The following groups of people are exclusively female:
146 people who have remained healthy into old age (GES),
84 of bronchial carcinoma (CA) and
114 deaths from heart attack or stroke (HH):

	N	People without specification	middle Year of birth	Year of death	average achieved Age
GES	146	0	1912,9	--	85,1#
CA	84	2	1924,2	1987,9	63,7
HH	114	6	1922,0	1988,1	66,1
Total	344				

#at present 1998.0

2 Data collection

For the Heidelberg Prospective Intervention Studies, 29,938 people were representatively identified from the residents' registration office and contacted by our research group between 1973 and 1978 (50% men/women, age 1973: 38-68 years).[2] From this total population, various studies were carried out with- subgroups, based on different questions and with different amounts of data.

Among other things, people were asked before the start of the interviews whether they would take part in an extensive survey (i.e. multiple measurements over several years) or a reduced survey. A total of 3221 men and 2786 women agreed to take part in the extensive survey, while 3402 men and 3530 women were recruited for the reduced survey, which also took passive smoking into account.

These 3530 women form the data basis for this study. The data collected can be found in the questionnaire in the appendix. In addition, 423 women refused to be interviewed and 396 women could no longer be found in 1988, so that the initial population consisted of 4349 women.

The data collection was carried out from 1973 to 1978. Persons who had died by 1978 were not included in the study. The health status of women who were still alive in 1979 was researched for the period from January 1979 to the end of 1998. At this time, 3115 women (out of 3530) could still be analyzed. The persons belonged to the birth cohorts from 1908 to 1923.

In this group, 146 women remained healthy into old age (between 80 and 90 years, mean age 85.1 years), 114 women developed heart attacks and 84 women developed lung cancer and died relatively early (between the ages of 55 and 63 for lung cancer and between the ages of 55 and 66 for heart attacks).

The health status was researched between 1998 and the beginning of 1999. The mortality and incidence of various chronic diseases were recorded, and research was also carried out to confirm the status of "healthy into old age", i.e. healthy without a diagnosed chronic disease in the entire life history with mental and physical activity and a high level of performance.

The evaluation refers to the comparison of two contrast groups: a) EXTREMELY healthy (see above) and b) those who died relatively early (up to 63 years for lung cancer and up to 66 years for heart attack).

The questionnaire is reproduced at the end of this chapter. Individual questions are occasionally referred to in the form of a self-explanatory abbreviation of the section name and question number, e.g. PS.1.

3 Variables
3.1 Cigarette smoking and related variables
This is used in the form of the number of cigarettes per day (ZT). We also use the following additional variables from the "Smoking behavior" section:
ZBSCHW: Fr.5
ANGST: Fr.6
Passive smoking:
PASSE: in the parental home (Fr.7)
PASSA: at the workplace (Fr.8)
PASSW: in the apartment (Fr. 9)
PASSBS: Complaints due to passive smoking (FR.11).

3.2 Other risk and health factors

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[2] We are only talking about the numbers of people examined (refusals and drop-outs are not listed separately here).

Other physical risk variables are included in the questionnaire in the sections "Alcohol consumption", "Diet", "Physical activity", psychosocial risk factors in the section so named. We use them in the following form:
ALK: the daily amount of pure alcohol in the form of wine or spirits. Beer was excluded because it has a non-linear relationship with health.
ERN: a regression-analytical summary of the dietary data
BEW: a regression-analytical summary of the data on physical activity
PSS: a regression analytic summary of psychosocial variables.

4 Analysis
The dependent variable is mortality, the relative frequency of deaths.

4.1 Simple health relevance of cigarette smoking

Zig/day	N	% deceased
0	190	39
1-15	21	62
16-25	44	73
26-35	51	80
36-50	38	100
Total	344	

The fact that the mortality rate rises to 100% is of course due to the fact that there is only one group that dies early and one that is particularly long-lived, and in the latter no one smokes more than 35 cigarettes a day.
Based on the above table, the correlation of ZT with mortality is r=0.46; restricted to smokers, r=0.35 applies for the dose dependency.

4.2 Fear of damage to health

ANGST shows a mortality correlation of r=0.76 within smokers, i.e. it is considerably more relevant bivariate than the objective dose ZT. If both variables are used in a multiple regression model, the objective dose even becomes completely irrelevant and the subjective fear alone is decisive. This is made possible by the following relationships:

Smokers who have provided information on ANGST						
Zig/day	N	% deceased.		Fear*	N	% deceased.
1-15	16	75		1-2	30	23
16-25	42	76		3-6	50	98
26-35	50	80		7	65	100
36-50	37	100		Total	145	
Total	145					

*Specification of the scale values (see questionnaire at the end of this chapter)
ANGST therefore makes a much greater difference to mortality than ZT. The fact that the latter variable even becomes completely irrelevant in the multivariate model cannot be seen from the above data; it is based on a fine analysis of the value combinations.

4.3 Complaints due to cigarette smoking

This variable has a highly significant (p=0.000 000 000 08) relationship to mortality. If it is used simultaneously with the number of cigarettes, it clearly outweighs the objective dose in the form of the variance contribution. And an interaction model provides a significant (p=0.02) interaction, which can be described as follows:

If no symptoms are reported, the objective dose is completely irrelevant. Only when symptoms are reported to an increasing extent does the dose become relevant. However, it should be borne in mind here that the complaints can be precursors of serious and life-shortening illnesses, so that the correlation described cannot be explained exclusively in psychosomatic terms.

4.4 Passive smoking

4.4.1 Parental home, workplace and apartment

These individual variables are highly significantly related to mortality:
PE (parental home): p=0.000 0008
PA (workplace): p=0.000 000 0006
PW (apartment): p=0.0... (probability of error vanishingly small).
If these three variables are used in a multiple logistic regression model, PASSW gains the upper hand completely.

4.4.2 Complaints due to passive smoking

This variable has a highly significant (p=0.000 000 000 02) relationship with mortality. If it is used simultaneously with PASSW, it still makes a significant (p=0.01) contribution. There is no significant interaction (as in section 4.3).

For their part, the complaints are related to the three areas of passive smoking in a similar way to mortality. Individually, each area is highly significantly associated with the complaints, but when used together, the home again dominates.

4.4.3 Interaction with self-smoking

A logistic regression model with interaction for the interaction of self-smoking (ZT) and passive smoking (in the form of the most relevant variable PASSW) provides a clear significance for the interaction. A detailed evaluation of the consequences of this model shows, among other things, the following: If there is no co-smoking, self-smoking has only a minimal effect. Only at a certain level of co-smoking does the effectiveness of self-smoking reach higher values. Co-smoking, on the other hand, is effective even among non-smokers.

4.5 Other health and risk factors

The simple mortality correlations are:

ALK: r=0.42
ERN: r=0.60
BEW: r=0.54
PSS: r=0.83

Except for PSS, the mortality correlations therefore have similar values to ZT and PASSW. We now include all the variables discussed so far in a logistic regression model for mortality. Since information on ANGST is essentially limited to smokers, we calculate a model without this variable (N=266) and a model with this variable (N=148). Furthermore, since PSS exerts an overwhelming influence, we also calculate both models without this variable.

Indep. variab.	Regression coefficient p	significant?
(1)		
ZT	0,015	Yes
FEAR	-	
PASSW	0,0015	Yes
ALK	0,011	Yes
ERN	<0,0001	Yes
BEW	0,0002	Yes
PSS	-	
(2)		
ZT	0,08	no
FEAR	0,0007	Yes
PASSW	0,44	no
ALK	0,63	no
ERN	0,08	no
BEW	0,09	no
PSS	-	
(3)		
ZT	0,045	Yes
FEAR	-	
PASSW	0,13	no
ALK	0,42	no
ERN	0,04	Yes
BEW	0,59	no
PSS	0,000 000 0014	Yes
(4)		
ZT	0,29	no
FEAR	0,054	no
PASSW	0,17	no
ALK	0,92	no
ERN	0,50	no
BEW	0,90	no
PSS	0,0046	Yes

In model (1), ZT is still significant, but is less important than the other risk factors (the variance contribution is directly related to the significance). In (2), ANGST is added (and the model essentially only covers smokers). Here ANGST takes the leading role and displaces ZT as well as PASSW and all other risk factors into insignificance. Now the extraordinarily strong variable PSS is added, and in model (3) (without ANGST, non-smokers included) ZT is still just significant, while PASSW has lost the clear significance still present in (1). In (4), ANGST is added again (and the model again essentially only covers smokers). Here PSS

209

completely dominates the field, ZT is clearly insignificant, as are PASSW and the other risk factors including ANGST, which, however, only just misses significance.

In summary, it can be stated that behind the simple bivariate relevance of cigarette smoking there are obviously indirect causal pathways via associated risk factors. This result must be discussed critically in order to do justice to the harmful effects of cigarette smoking and passive smoking and at the same time to recognize the importance of additional psychosocial factors. This appreciation has not only a scientific but also a practical significance because it can identify active and passive smokers who are at additional risk and could benefit from a multidimensional preventive intervention strategy: *Smokers who have massive complaints caused by cigarette smoking and at the same time fear of smoking-related diseases as well as suffer from pronounced dysstress and are also unable to give up smoking belong to a high-risk group.*

4.6 Discussion
From these results we would like to draw the following more general conclusion: The consequences of cigarette smoking are in a complex interactive effect with smoking-related complaints, fear of smoking-related diseases in combination with the inability to quit smoking and general psycho-social stress. It cannot be concluded from the statistical results that smoking loses its harmful effect on health and that stress becomes the main disease factor. On the one hand, the complaints caused by cigarette smoking are the direct consequence of the harmful effects of smoking (e.g. shortness of breath, symptoms of chronic obstructive bronchitis, pain in the legs as a result of vasoconstriction caused by smoking, etc.). On the other hand, the fear of becoming ill, which is reinforced by health education, correlates positively with the complaints. Both also correlate positively with the number of cigarettes smoked.
Cigarette smoking therefore increases the dysstress through anxiety and the discomfort experienced and, conversely, the dysstress has an effect on the harmful effects of cigarette smoking. (for example by increasing daily consumption)

The following is the justification based on further statistical evaluations:

1) The complaints due to cigarette smoking, the fear of falling ill due to cigarette smoking and the general psychosocial stress correlate significantly positively with the number of cigarettes smoked.

2) All four variables (number of cigarettes, smoking-related symptoms, fear of getting sick and psychosocial stress) are significant risk factors for mortality (early death from heart attack or lung cancer compared to people of high and healthy age).

3) In multivariate consideration of psychosocial stress, the number of cigarettes smoked is significant for mortality.

4) The multivariate explanation for mortality is as follows: when smoking-related complaints are taken into account, the number of cigarettes smoked becomes insignificant.
If smoking is no longer significant (which always depends on the sample size), this means that there is no direct causal path from the number of cigarettes smoked past smoking-related complaints to mortality, but that the entire effect of the number of cigarettes smoked is captured by the complaints due to cigarette smoking. The following **causal model** should apply here: Number **of cigarettes smoked → complaints due to cigarette smoking → mortality from lung cancer and myocardial infarction**

The causal model for fear of falling ill from smoking is likely to be: **Number of cigarettes→ Fear of getting sick from smoking cigarettes → Mortality from lung cancer and heart attack**

Anxiety and mortality are therefore purely dependent variables. Therefore, the relevance of the number of cigarettes smoked for mortality when controlling for anxiety should not be calculated analogously to the previous model.

4.7 Application examples for the regression relationships
The specific relationship between cigarette smoking, psychosocial risk factors (PSS) and mortality is shown in the following table:

Zig/day	N	Total. Mortality	Mortality (N, %)					
			PSS					
			low		medium		high	
0	190	39	86	12%	68	41%	36	100%
1-15	21	62	5	0%	10	70%	6	100%
16-25	44	73	14	21%	10	90%	20	100%
26-35	51	80	6	33%	15	60%	20	100%
36-50	38	100	3	100%	12	100%	23	100%
Total	344		114		115		105	

Cigarette smoking is therefore associated with a mortality risk that is strongly dependent on the psychosocial risk level. If this is low, it increases only to a very limited extent for all cigarette numbers except the highest (which, of course, is only very occasionally represented here). With medium PSS, the mortality risk increases fairly evenly with the number of cigarettes and reaches 100% at the highest dose (admittedly represented by only 12 cases). The highest PSS level is associated with the maximum mortality risk for all cigarette numbers (including 0).

Further information on nutrition and physical activity:

The following variables were created from the questions in these sections of the questionnaire:

Nutrition Quantity	EM
Quality	EQ
Well-being	EW
Movement quantity	BM
Forced nature	BF
Well-being	BW

With the indicator variable for mortality, these variables have the following simple correlations and significances. (The notation 10{-20} is to be read as "ten to the power of minus twenty").

	r	p
EM	0,21	0,0001
EQ	-0,48	10{-20}
EW	-0,59	10{-32}
BM	-0,28	0,000 0004
BF	0,45	10{-13}
BW	-0,53	10{-25}

The amount of food and the intensity of exercise are therefore risk factors, while the other variables are health factors. The strongest relationships are found for well-being due to diet and well-being due to exercise.

When these variables are used simultaneously in a multiple logistic regression, the coefficients are as follows:

	Sign	p
EM	n.sig	
EQ	n.sig	
EW	-	0,000 001
BM	n.sig	
BF	+	0,000 006
BW	-	0,000 000 02

This means that only the well-being variables and the forcedness variable remain relevant.

Now we add the regression-analytical summary of the 9 psychosocial variables:

	Sign	p
EM	-	0,04
EQ	n.sig.	
EW	n.sig.	
BM	n.sig.	
BF	+	0,02
BW	-	0,03
PSS	-	0,000 000 000 007

The strong preponderance of the psychosocial dimension can be recognized by the particularly low probability of error (with which the variance contribution of a variable is directly related here). Well-being due to nutrition has now just lost its significance, while the amount of nutrition has regained the weakest possible significance, admittedly with a negative sign for mortality. However, it is known that in a complex system of regressors, the individual variable can easily change its sign, depending on which others are used alongside it. We will not attempt a substantive interpretation here, as we do not want to develop a new perspective on overeating and obesity.

Information on the psychosocial dimension

The correlations of the 9 questions from the "Psychosocial data" section with the indicator variable for mortality are between 0.60 and 0.75 (with hypothesis-appropriate signs) with the

exception of the variables "religiosity" and "lack of stimulation", which are between 0.40 and 0.45, but are still different with an extraordinarily low probability of error of 0. If they are used together in a multiple logistic regression, the regression coefficients are as follows:

No.	Sign	p
1	-	0,02
2	n.sig	
3	+	0,04
4	+	0,02
5	+	0,0002
6	n.sig	
7	n.sig	
8	n.sig	
9	+	0,05

With multivariate competition, only about half of the variables involved remain in the field (and usually with a weak significance level), only no. 5 (type 2) has a clear advantage. There is a sign that does not conform to the hypothesis: No.4 (sense of belonging) is positively mortality-relevant in this context. We postpone the question of a substantive interpretation here and refer to the generally known variability of the partial regression coefficients depending on the context.

The question of what is significant and what is not also deserves an explanation. To exaggerate somewhat, one could say that the difference that the mortality relevance of variable X is significantly different from 0 and that of variable Y is not, need not itself be significant. X may have become significant by just falling below the specified error probability of p=0.05, and Y may have become insignificant by just exceeding it. The deviation of the correlation, the regression coefficient or the variance contribution from 0 was then only slightly greater for X than for Y, and this difference may well be due to random fluctuations (be insignificant). If one is interested in whether the difference between X and Y can be statistically secured against random fluctuations, then one must carry out a test other than the test against the null hypothesis, which states that the relevance (the correlation, the regression coefficient, the variance contribution) of one or the other variable is 0.

The mortality relevance of the predictor PSS obtained from the logistic regression is shown in the following table:

PSS	N	% died
1	28	0
2	94	5
3	67	58
4	28	96
5	127	100
	344	

However, the strongest variable involved (no. 5: type 2) already shows a similar relationship:

PSS1	N	% died
1	94	6
2	45	29
3	39	49
4-6	120	95
7	38	100
-	8	(100)
	344	

Perhaps the following detail deserves to be noted. There is a correlation of 0.96 between the predictor just discussed (i.e. the best linear combination of the 9 psychosocial variables based on mortality) and the values on the first unrotated factor-analytical dimension (i.e. the best linear combination based only on the mutual relationships of the 9 variables), i.e. they

are almost linearly identical. While the predictor achieves a correlation of 0.85 with the indicator variable for mortality, the correlation for the first factor dimension is 0.82, which is only slightly lower than the best achievable value, although it was obtained completely independently of the mortality criterion. It can also be stated that mortality is just as predictable on the basis of the 9 variables as the answer to the most predictable question on the basis of the answers to the others.

The study addresses the following questions:

Smoking behavior - Questionnaire

2.7. 1 Cigarette smoking: Years

3.8. 2 Cigarette smoking: Number of cigarettes per day

4.9.3 Cigarette consumption over the years
   1 = increasing, 2 = constant, 3 = decreasing

5.10. 4 Ex-smoker, years

6.11.5 Subjective discomfort experienced due to cigarette smoking
   0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong

7.12. 6 Fear of becoming ill due to information about the harmful effects of cigarette smoking
   I am convinced by public information that cigarette smoking leads to serious illnesses and I am still not able to give up smoking cigarettes, even though I am afraid of becoming ill! How strongly does this statement apply to you?
   0 not at all, 1 very slightly, 2 slightly, 3 moderately, rather slightly, 4 moderately, rather strongly, 5 strongly, 6 very strongly, 7 extremely strongly

8.13.7 Did you smoke in your parents' home in their presence? If yes, how heavily?
   1 = rather little, 2 = moderate (normal smokers, approx. 15-20/day, 3 = very heavy (chain smokers)

9.14. 8 Have you been exposed to cigarette smoke at your workplace or in public places (e.g. pubs)? If yes, how much?
   1 = rather little, 2 = moderate, 3 = very strong (several hours in a very smoky environment)

10.15. 9 Have you been permanently exposed to cigarette smoke in your home (e.g. by your smoking spouse/boyfriend) for at least 5 years? If yes, how much?
   1 = rather little (the partner usually smokes outside the home), 2 = moderate (the partner smokes in the home but not in the bedroom), 3 = very heavy (the partner smokes both in the home and in the shared bedroom)

11.16. 10 How many years have you been exposed to passive smoking in total?

12.17. 11 Do you feel your health is affected by other people's cigarette smoking (e.g. coughing, sleep disturbances, odor)? If yes, how severely?
   0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong.

13.18.

Demographic data: Age, gender, year of interview
Alcohol consumption s. RGM self-regulation and health questionnaire (V)
Nutrition see RGM questionnaire self-regulation and health (IV)
Physical exercise see RGM questionnaire self-regulation and health (IX)
Psychosocial data: interactive self-regulation (summarized variable from 16 questions, see RGM questionnaire self-regulation and health at the end, the "summarized variables" (p. 229)
Grossarth typology (see RGM self-regulation and health questionnaire) Type I, II, IV

The following variables were also taken into account for this study:

Autonomy

The person is internally independent of people, substances and behaviors that lead to negative consequences, mistakenly expecting positive consequences (e.g., from alcohol, medication, malnutrition, a rejecting parent, supervisor, etc.) 0 = not at all, 1 = very weak, 2 = weak, 3 = moderate, tending toward weak, 4 = moderate, tending toward strong, 5 = strong, 6 = very strong, 7= absolute

Sense of belonging

(the following 16 questions were recorded as a summarized variable (unless otherwise stated, the questions were answered according to the scale as in question 1)

1 How strongly do you feel that you belong to the family of origin in which you grew up?
0 = not at all, 1 = very weak, 2 = weak, 3 = moderate, more towards weak, 4 = moderate, more towards strong, 5 = strong, 6 = very strong, 7= absolute

2. *how pleasant and well-being-generating* is the feeling of belonging to your family of origin for you? 3.

how strongly do you feel a sense of belonging to your partner/spouse/family/children?

4. *how pleasant and well-being-generating* is the feeling of belonging to your partner/spouse/family/children for you?

5 How strongly do you feel you belong at work/ in your professional life?

6. *how pleasant and well-being-generating* is the feeling of belonging to the workplace for you?

7 How strongly do you feel you belong to the society/culture in which you live?

8. *how pleasant and well-being-generating* is the feeling of belonging to society for you?

9. how strongly do you feel you belong to your religion/how strongly do you feel you belong to God?

10. *how pleasant and well-being-generating* is the feeling of belonging to your religion/God for you?

11. how strongly do you feel you belong to personal friends/ a leisure group etc.?

12. *how pleasant and well-being-generating* is the feeling of belonging to friends/ a leisure group for you?

13. to what extent are you able (capable) to influence your sense of belonging and your need to belong through your active behavior in such a way that an optimal feeling of well-being and security is created?

14 Is there a person or group with whom you had an extremely strong emotional need to belong that you were unable to satisfy over a long period of time? 7 = not at all, 6 = very weak, 5 = weak, 4 = moderate, tending towards weak, 3 = moderate, tending towards strong, 2 = strong, 1 = very strong, 0= absolute

15 Do you feel prevented (internally or externally) from achieving a desired sense of belonging?
7 = not at all, 6 = very weak, 5 = weak, 4 = moderate, tending towards weak, 3 = moderate, tending towards strong, 2 = strong, 1 = very strong, 0= absolute

16. in most situations, are you able to use your active behavior to achieve communications that give you a sense of belonging?

Religiosity
Which type of religiosity described here would you classify yourself as?
1 atheist with anger at God and the church - 2 atheist for rational reasons - 3 churchgoer and supporter of church norms and customs - 4 markedly God-centered, e.g. strong love for God, feels loved by God, feels the beneficial effect of the Holy Spirit.

Monotony - lack of stimulation
~~14.~~19. By lack of stimulation, we mean a state *in which there is no external stimulation* (e.g. in interpersonal relationships) that meets your emotional, physical, social and mental needs.
To what extent do you feel lacking stimulation (i.e. to what extent do you lack the stimulation you are looking for to meet your wishes and needs)? 0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong

Shocking experiences
~~15.~~20. By shock experiences we mean specific events that *had* an unexpected, unprepared, *traumatizing*, damaging *effect* on the person and *led* to *lasting impairments* (e.g. uncontrollable feelings of anxiety, inhibition in the self-active production of desired states, sleep disorders)
Have you experienced
traumatizing conditions in
your life (e.g. early childhood or adulthood) that have had a lasting negative impact on your feelings and behaviour? To what extent? 0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong
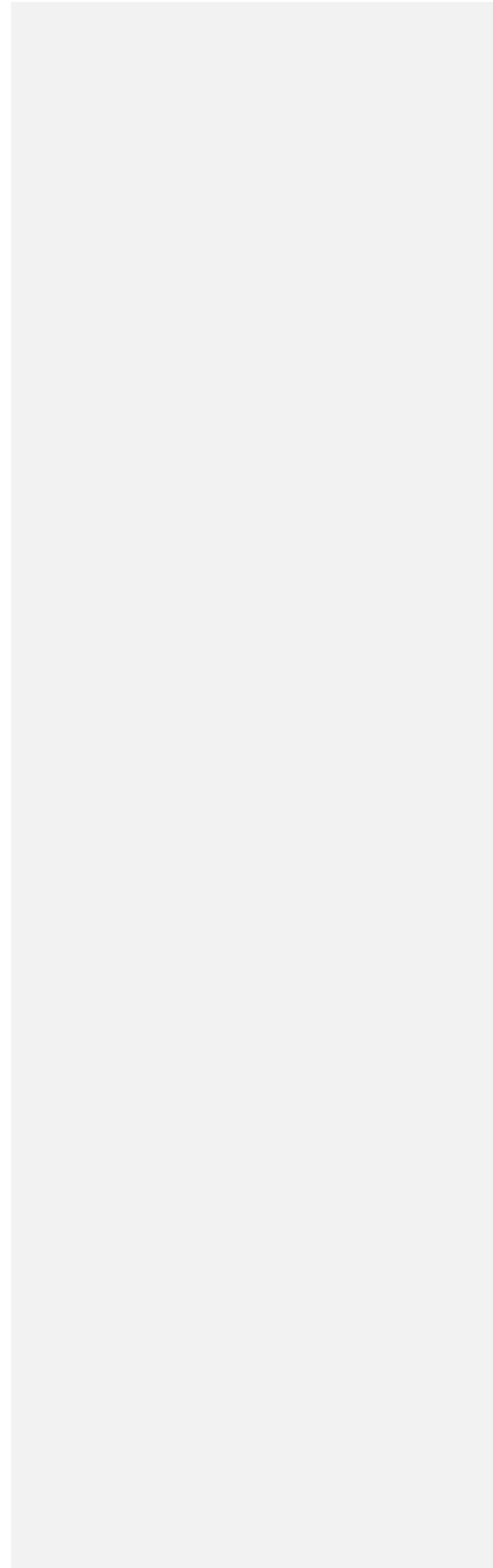
7.2 Randomized smoking experiment for primary prevention

Start of the experiment: 1977/1978 Determination of health status at the beginning of 1988
Gender: Men (born in 1930) Classification into the intervention and control group
was carried out by randomization. A control of alcohol consumption, diet, exercise and psychosocial stress showed that both groups were exactly comparable.

	N	smoke		lives		died of			deceased in total.
		given up	reduced#	healthy	chr. ill	Bronchial CA	Heart attack	other death.ursa.	
Autonomy training For highly dependent Smokers	95	21 22,1	30 31,6	39 41,0	13 13,7	10 10,5	12 12,6	21 22,1	43 45,3
Randomized Control group	95	3 3,1	3 3,1	8 8,4	20 21,0	18 18,9	24 25,3	25 26,3	67 70,5

In this experiment, heavy smokers (between 25 and 30 cigarettes per day and continuous consumption from the age of 15 at the latest) were examined. All subjects were also exposed to passive smoking in childhood (from the age of one to ten) through parental smoking. Although the subjects experienced physical symptoms from cigarette smoking, the addiction was so pronounced that they were unable to give it up. All individuals also suffered from severe chronic dysstress.

Randomization also made the above-mentioned variables in the experimental and control groups strictly comparable.

Autonomy training achieved highly significant results, both in terms of reducing mortality and in terms of the number of people who remained healthy and active until 1998, i.e. until the age of 68.
In autonomy training, the motivation to smoke cigarettes is first recorded.
Positive ideas about not smoking are then identified. The motivation
to smoking is analyzed in depth and attributed to specific disstress experiences in the person's biography (e.g. learned inhibition in self-expansion)
Alternative behaviors are developed that help the person to maintain their basic
conflicts, as well as developing alternatives to cigarette smoking that are more
pleasure, safety and well-being than smoking itself.
If required, the training can be followed by an exercise with light or deepened hypnosis, which allows you to experience the developed alternatives once again.
consolidate.
The exercise took place in 3 groups of 30 people twice and 35 people once,
The original group sizes were 32, 33 and 37 people. As there were 2 in the first group and
In the second group 3 and in the third group 2 persons in which the control persons from the comparison group and also in the control group 7 persons could no longer be identified, the number of persons evaluated was reduced to two times 95 persons.
Cigarette smoking is an extremely strong risk factor for various chronic diseases and there seems to be an urgent need to develop adequate methods to help the person to stop smoking cigarettes and at the same time reduce psychosocial stress.
which motivates cigarette smoking.
In comparison to the table above, 95 comparison persons who have never smoked
Have a mortality rate from bronchial carcinoma of 1%, heart attack of 4% and an overall mortality rate up to 1998 of around 19%.
Cigarette smoking doubles the overall mortality rate compared to non-smokers.
The percentage of healthy non-smokers also reaches 48% (compared to 8% of smokers)
Although passive smoking, as mentioned above, is an extreme risk factor, policy-makers should by no means be satisfied with simply achieving smoke-free zones and reducing the extreme risk of smoking.

The health-damaging effects of active and passive smoking are no longer sufficiently addressed. This is precisely the aim of the powerful cigarette lobby in Germany. Active and passive cigarette smoking is and remains the number one psychological risk factor. The mere suggestive techniques against cigarette smoking

help just as little in the long term as medication.

For this reason, our research team has decided to systematically

To conduct anti-smoking courses with the help of autonomy training and train trainers at the same time.

7.3 Passive smoking from the age of 1-10

in connection with mortality and incidence of bronchial cancer and myocardial infarction
The data was collected as part of the Heidelberg Prospective Intervention Study.

Prospective study
Data collection 1973-77, mortality 1998 - all men, not significantly different in age - refusers: 3.9%,
Drop-outs: 4.8%

	N [2]	Mother smokes[1]	Father smokes	Father and mother smoke	Chron. bronchitis	Other lung diseases.	Bronchial CA	Heart attack/ Stroke	And.To durs	Lives chr. ill	Live healthy	Alk/ gr. [3]	Error sewing[4]	Move ment [5]
Smoking parents	816	262	361	196	306 37.5%	181 22,1%	99 12%	90 10,9%	193 23,5%	329 40%	107 13%	13	137 16,7%	150 18,.1%
Non-smoking parents	2366	0	0	0	102 4,3%	101 4,3%	16 0,7%	149 6,3%	468 19,8%	889 37,6%	744 31,4%	17	918 38,8%	612 25,9%

1 The child was a heavy smoker from birth until the age of 10.
2 all non-smokers
3 Alcohol consumption before the illness (grams/day)
4 Malnutrition before the disease
5 Lack of exercise before the disease

All categories of the dependent variables are highly significant in the right direction except:
heart/brain: p=0.00001
and.todesurs: p=0.02
chron.ill: n.sig.

The results show that intensive smoking in the presence of a child (up to the age of 10) is a key risk factor for the later development of lung cancer, heart attacks, chronic bronchitis and other lung diseases. It also has a significant influence on the maintenance of health. Based on the results, it seems urgently necessary that intensive and direct smoking in the presence of infants and young children should not only be recognized as harmful, but should also be prosecuted with adequate criminal measures (as serious bodily injury).

Our multidisciplinary *intervention epidemiology* studies show relevant results, but these are not yet in the field of attention of public institutions and their representatives:
1. the main risk of developing lung cancer or a heart attack as a result of smoking is among people who also have multiple risks in other areas (e.g. chronic obstructive bronchitis, high blood pressure, diabetes mellitus, high cholesterol levels, significant chronic dysstress). This group of people urgently needs preventive measures, for which no institution is specialized to date. Our experiments to date show that we can use preventive measures very successfully with this group in particular, which essentially focus on teaching people to develop more pleasure in giving up cigarette smoking than in smoking itself.
2. passive smoking in children up to the age of 10 is such an overwhelming risk factor that it has a highly significant and causal effect on lung cancer even in people who have no other risks (e.g. malnutrition, lack of exercise, alcohol consumption).

7.4 Health relevance of cigarettes, alcohol and nutrition in a psychosocial context - Study B

Variables
<u>Physical:</u>
Z = number of cigarettes per day
AL = grams of pure alcohol per day
EM = nutrition, quantity (3 categories)
EQ = nutrition, quality (3 categories)
<u>Psychosocial:</u>
EW = nutrition, well-being (3 categories)
AU = Degree of autonomy (question XIV.9, 7 levels)

Dependent variable: Mortality
First, the three physical risk factors Z, AL, EM are considered alone. Then they are each used together with the psychosocial variable AU in a multivariate approach. Finally, these models are extended to include the interaction.

Results:

	N	VZ#	CHQ##	Significance
Z	664	+	110.23	###
	542			
Z		+	51.28	###
AU		-	101.46	###
Interaction				n. sig.
AL	607	+	48.74	###
	494			
AL		+	21.30	0.000004
AU		-	112.41	###
Interaction				n. sig.
EM	642	+	15.06	0.0001
	537			
EM		+	5.88	0.015
AU		-	126.65	###
Interaction				n. sig.
	635			
EM	irre-lev.		1.82	n. sig.
EQ		-	11.19	0.0008
EW		-	59.35	###

\# Sign of the partial regression coefficient
\#\# Chiquadrat (always 1 degree of freedom), can be taken as a measure of the explained variance of the dependent variable
\#\#\# high negative power of ten, effect therefore optimally secured

Discussion

1. the three physical risk factors Z, AL, EM show very well established mortality effects in the expected direction.

2. when the psychosocial variable AU is added, its partial variance contributions decrease considerably, but they remain significant (just barely) for EM. However, even the effect of the strongest physical variable (Z) is only half as high as that of the psychosocial variable (AU). The decrease in the variance contributions can be explained by the fact that the physical risk factors are associated with the psychosocial variables. This results in (a) a partial variance contribution (with the other independent variables held constant) and (b) a joint variance contribution that is not attributable to either of the two independent variables and does not occur as a partial and significance-tested variance contribution.

3. the interactions were incorporated into the regression model in the form of a product term. A non-zero coefficient of this term would mean that the effectiveness (the partial regression coefficient) of one variable depends on the level of the other. (The relationship is symmetric.) In particular, it would mean that the effectiveness of a physical risk factor would depend on the psychosocial conditions. However, no coefficient was found that was even close to being significantly different from zero.

4 When the three dietary variables are multivariated, quantity no longer has a significant effect, quality has a clear effect, and the subjective factor, well-being due to diet, plays by far the strongest role.

5 The results point in the following direction for the development of optimal prevention strategies:

Strengthening autonomy (the individual's ability to distance themselves from effects that generate displeasure and negative emotions) and encouraging alternative paths towards greater well-being/pleasure by redesigning communication. Simultaneous activation of a diet that is both qualitatively healthy and subjectively leads to well-being, combined with a reduction in alcohol and cigarette consumption. Here, too, there are indications that the reduction of dysstress, e.g. by stimulating autonomy, is even more relevant than cigarette smoking, alcohol consumption and malnutrition, although the effect of these physical risk factors must also be taken into account.

8 Prediction based on emotional-cognitive behavior patterns

Chronic illnesses and emotional-cognitive behavioral patterns

Heidelberg Prospective Intervention Study - the samples of men 4030 and women 5181 were randomly selected from the total pool of 16 523 men and 13 4015 women (see graphic illustration of how the samples were obtained).
S. 68)
Data collection 1976-78 - Age 1976: 50-60 years
Health status determined in 1998

This chapter demonstrates a very close link between specific behavioral factors and the development of certain chronic diseases or the maintenance of health into old age.
This is a contribution to the so-called **specificity problem** in psychosomatic medicine. For decades, it has been debated whether certain chronic illnesses are linked to specific psychosocial factors or whether there are only general stress factors that cause illness. Although we can demonstrate specific psychosocial factors for certain diseases, it must be emphasized here that further analyses have shown that when a large number of physical and psychosocial risk factors are statistically taken into account, the significance of the factors described here is greatly reduced or eliminated.

The questionnaire for recording the data shown in the tables was drawn up on the basis of hypotheses regarding the causal origin of the various diseases. (i.e. this questionnaire was preceded by years of systematic observations).
The hypotheses are listed at the end of the questionnaire.

<u>Obtaining the results:</u>
After answering the questionnaire (see below), we looked for the question that each person had answered with the highest number of points, or for the first two hypotheses, where two or 5 questions are relevant, the mean value was taken into account. Since specific hypotheses were formulated for all questions, the disease for which each person had the highest score was predicted.

8.1 Results based on prediction of psychosocial variables

a) women only
Refusers: 391 - Drop outs: 305 - Total population: 4030 - N total: 3334

Diseases - for all diagnoses: mortality and incidence determined	Appearance Number (diagnosis)	Old slide gno-se	Age of occupancy fra-	Pre-said	Forecast arrived		Forecast not entered or**		Arrived from total forecast	from N insges. (3334)		Diagnos v. N total
					Frequency	*PZ HS	Frequency	*PZ HS		richt. vor-herge sag	Not predicted	
M- Parkinson	67	62,5	53,6	174	46 68,5%	5,5	21 31,3%	3,6	26,4%	1,4%	0,6%	2%
M-Alzheimer's	39	63,8	54,4	128	25 64,1%	5,6	14 35,9%	3,7	19,5%	0,7%	0,4%	1,2%
Glioblastoma (brain tumor)	22	65,1	53,8	117	15 68,2%	5,3	7 31,8%	3,9	12,8%	0,4%	0,2%	0,6%
Other CA	502	67,2	54,6	512	294 58,6%	5,8	208 41,4%	3,7	57,4%	8,8%	6,1%	15%
Heart attack Stroke	352	64,8	56,1	581	201 57,1%	5,9	151 42,9%	3,6	34,6%	6%	4,5%	10,6%
Mom-CA	204	61,8	56,3	394	127 62,2%	6,0	77 37,7%	3,5	32,2%	3,8%	2,3%	6,1%
Ovarian CA	40	61,2	53,8	132	20 50%	5,7	20 50%%	3,3	15,1%	0,7%	0,5%	1,2%
Cervix Uteri-CA	51	62,1	54,1	162	20 39,3%	4,9	31 60,7%	3,8	12,3%	0,7%	0,8%	1,5%
Corpus Uteri-CA	69	67,2	56,2	178	43 62,3%	5,2	26 37,7%	3,6	24,1%	1,3%	0,7%	2%
Live healthy	401	77,5	56,0	422	302 75,3%	5,9	99 24,7%	3,9	71,6%	9%	3%	12%
Lives chronically ill	696	68,1	55,1									20,9%
Other death causes	891	74,1	55,6									24,5%
total	3334			2803								

* PZ HS: Average score on the response scale of the questionnaire with regard to the specific hypothesis
** not predicted, but arrived

All diagnoses are highly significantly related to the predictions. The number of false-negative predictions (i.e. that a diagnosis was not predicted) is generally very small; the number of false-positive predictions (i.e. that a diagnosis was not predicted) is usually larger (usually significantly larger) than the number of true-positive predictions.

b) only men

Deniers: 597

Drop outs: 402 - Total population: 5181 - N total: 4182

Diseases - for all diagnoses Mortality and incidence	Appearance Number (diagnosis)	Old slide gno-se	Age of occupancy fra-	Predicted	Forecast arrived		Forecast not realized or **		Included in total forecast	from N insges. (4182)		Diagnos v. N total
					Frequency	*PZ HS	Frequency	*PZ HS		Direction predicted	Not predicted	
M- Parkinson	98	61,2	55,8	286	65 66,3%	5,6	33 34,3%	4,1	65 22,7%	1,5 %	0,8%	2,3 %
M-Alzheimer's	47	63,4	54,3	296	29 61,7%	4,9	18 38,3%	3,9	29 97,9%	0,7 %	0,4%	1,1 %
Glioblastoma (brain tumor)	36	62,5	53,9	180	26 72,2%	5,7	10 27,8%	3,2	26 14,4%	0,6 %	0,2%	0,9 %
Other CA	702	64,1	55,8	898	356 50,7%	5,5	346 87,4%	4,1	356 39,6%	8,5 %	8,3%	16,8 %
Heart attack Stroke	484	65,4	55,7	788	291 40,9%	5,5	193 24,5%	3,3	391 49,6%	9,3 %	7,0%	11,6 %
Testicular CA	30	63,8	54,3	167	21 70%	6,0	9 30%	3,9	21 12,6%	0,5 %	0,2%	0,7 %
Live healthy	415	76,2	56,2	515	293 70,6%	6,1	122 29,4%	4,2	153 49,5%	7,0 %	2,9%	9,9 %
Lives chronically ill	1090											26 %
Other death causes	1280											30,6 %
total	4182			3130								

* PZ HS: Average score on the answer scale of the questionnaire, with regard to the specific hypothesis

** not predicted, but arrived

All diagnoses are highly significantly related to the predictions. The number of false-negative predictions is generally very small; the number of false-positive predictions is usually larger (and often significantly larger) than the number of true-positive predictions.

8.2 Randomized intervention experiment in women at high psychosocial risk of cancer

Heidelberg Prospective Intervention Study
Data collection 1976-78 - Age 1976: 50-60 years
Health status determined 1998

Deniers: 3
Drop-out: 1 pair

	N	Breast CA	Corpus-CA	Cervical CA	Ovarian CAs	Other CAs	Heart attack Stroke	Lives chr. ill	Live healthy
Autonomy training	59	3 5%	2 3,4%	1 1,7%	0 0%	6 10,1%	8 13,6%	17 28,8%	22 37,3%
Control group	59	14 21,5%	7 11,9%	2 3,4%	1 1,7%	12 20,3%	3 5,1%	14 23,7%	6 10,2%

Only the reduction in breast cancer is significant (p<0.01).

8.3 RGM questionnaire differential dysstress - eustress

1st V.: **Unpleasant (listless) information intake and processing**
E.: There are people who, due to their life situation, show a less pronounced and less pleasurable tendency to constantly absorb and process new information (e.g. in their private or professional life). They prefer to think in the same way over and over again, for example because they are convinced that new information can be more harmful than useful for them.
Q.: To what extent do you personally feel unmotivated by external or internal circumstances and unwilling to take in and process new information
with enthusiasm and interest (e.g. because you are convinced that it can be harmful and have negative consequences for you, so that it seems advantageous to "bury your head in the sand" and live a more adapted life?
0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

2. V.: **Experienced lack of opportunity to improve their personal situation by absorbing information**
E.: There are people who are deeply convinced that they cannot improve their chances, e.g. in a marriage or in their professional life, by constantly absorbing new information and prefer to adapt to the current situation (instead of always looking for new ways through new information).
Q.: To what extent are you convinced that it makes little sense for you to look for new information because you cannot change the current situation with it anyway and therefore prefer to remain adapted to the current situation, which is neither particularly good nor particularly bad for you?
0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

3. v.: **intense chronic uncontrollable anxiety**
E.: There are people who, for example, due to traumatic experiences or fear of a parent in childhood or due to a certain relationship with a partner, have severe anxiety on an almost daily basis that they cannot reduce or eliminate over long periods of time.
Q.: To what extent do you suffer from chronic anxiety that cannot be reduced over long periods of time, e.g. many years?
0 not at all, 1 very mild, 2 mild, 3 moderate, rather mild, 4 moderate, rather severe,
5 severe, 6 very severe, 7 extremely severe

4th V.: **pessimistic, fatalistic attitude**
E.: There are people who are deeply convinced that man is too weak to stand up to certain developments or forces. For example, a person may be convinced that if the unconscious forces want to kill you, there is nothing you can do about it.
Q.: To what extent do you personally display a pessimistic/fatalistic attitude, e.g. by believing that you are almost 100% determined by external forces and are therefore powerless in the face of circumstances?
0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

5. v.: **extreme asceticism**
E.: There are people who behave
very ascetically (e.g. simple, frugal, indulging themselves little)
for various reasons, e.g. by attaching little importance to their own person.
Q.: To what extent do you behave ascetically?
0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

6. v.: extreme inhibition to resolve anxiety-producing conflict situations in a way that creates well-being

E.: There are people who are not able to transform situations and conflicts that lead to anxiety into situations that lead

to anxiety-free well-being through their own active behavior.

Q.: To what extent do you feel inhibited or unable to overcome feelings of anxiety through self-activity in such a way that well-being arises instead of anxiety?

0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

7. v.: general blockage of the interactive pleasure system

E.: There are people who are unable to find pleasure and well-being over long periods of time and tend to live in a chronic state of inner listlessness, which is characterized, for example, by anxiety and inner insecurity.

Q.: To what extent do you live permanently in a state in which there is little pleasure and well-being, so that life tends to be dominated

by negative feelings such as anxiety?

0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

8. V.: extreme antagonistic activation between emotional and rational impulses E

.: There are people in whom strongly stimulated feelings strive in one direction, while their reason is activated in exactly the opposite direction, e.g. a partner relationship is sought with intense emotionality, while an equally strong rational activity is extremely opposed to the relationship.

Q.: If you look at your life over the last few years, could you identify

a permanent conflict between strong emotional impulses and opposing rational impulses?

0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

9th V.: chronic experiences of rejection and isolation by the mother

E.: There are people who suffer for a lifetime because they believe they did not receive the affection they longed for and emotionally needed from their mother. Such experiences can become lifelong traumas for certain people, affecting their feelings and thinking on a daily basis, often to the point of inner despair (which persists even when attempts are made to deny and cover it up through daily adjustment).

Q.: Looking at your whole life, how much do you suffer from experiences of rejection and isolation by your mother?

0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

10th V.: chronic experiences of rejection and isolation by the father

E.: There are people who suffer for a lifetime because they believe they did not receive the affection they longed for and emotionally needed from their father. Such experiences can become lifelong traumas for certain people (e.g. the father behaving brutally and/or without understanding and/or excessively jealously), which affect feelings and ways of thinking on a daily basis, often to the point of inner despair (which persists even when attempts are made to deny and cover it up through daily adjustment).

Q.: Looking at your whole life, how much do you suffer from experiences of rejection and isolation by your mother?

0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

11 V.: **Chronic emotional distress due to isolation from a child lost through death or separation**

E.: There are life situations in which a mother loses
an extremely emotionally loved child through death or separation (e.g. the child turns to a partner in such a way that it no longer wants to know anything about the mother, or is experienced as unreachable for the mother for some other reason) and thereby falls into chronic and irreversible inner despair, apathy, depression and other negative feelings.

Q.: When you look at your life, do you experience any lasting (and irreversible) emotional distress due to the loss of a beloved child through death or separation?

0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

V. 12: **Chronic emotional suffering due to a miscarriage or unwanted abortion**

E.: There are women who suffer for years after a miscarriage or unwanted abortion (e.g. forced by their partner or social situation) to such an extent that they are extremely dominated by negative feelings such as depression, self-reproach, inner despair, e.g. because they keep imagining the child and the need to be with the child is not lifted.

Q.: When you look at your life, did you suffer emotionally for many years after an abortion or miscarriage, so that you were strongly dominated by negative feelings such as depression or apathy?

0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

13 V.: **Chronic blockage of a previously achieved or longed-for sexual satisfaction**

E.: There are people for whom a sexual relationship with different partners had an important need-satisfying function in the interpersonal sphere. The blockage of previously achieved or longed-for sexuality can occur for various reasons, e.g. after separation from an emotionally extremely important partner and a subsequent new partner with whom life is not experienced as stimulating and/or after severe traumatic experiences due to the death of parents. If sexuality used to play a major role, losing it can lead to chronic unhappiness and inner despair.

Q.: Have you been markedly unhappy in recent years because you were no longer able to achieve a fulfilling or desired (fantasized) sexuality (e.g. due to a less stimulating partner)?

0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

14 V.: **Strong** ability **to transform**

E.: There are people who are able to repeatedly transform different situations, conditions and experiences with a distinctly negative content (e.g. existential threat due to material loss, separation from an emotionally important partner) into emotionally pleasant experiences and also to maintain experiences that generate well-being for a long time (e.g. by taking advantage of important learning effects and new opportunities from negative experiences or by leading to alternative and pleasurable behavior). People with a strong ability to transform do not remain in negative feelings for long; they always find new ways to turn displeasure into pleasure, discomfort into well-being and insecurity into security.

Q.: To what extent are you able to achieve well-being, pleasure and security
in many life situations and at the same time to transform events and situations that lead to negative feelings (e.g. exhaustion, anxiety, suffering in isolation, excitement) into pleasant feelings and security by reorganizing your activities?

0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

15 V.: **Chronic suffering in isolation from longed-for but unattainable objects of the greatest emotional significance**

E.: There are people who find themselves in situations in their lives in which they cannot (or can no longer) achieve certain people and/or goals that are of the greatest emotional importance to them (e.g. emotional pain due to rejection by a parent, experiences of rejection in professional life). If such a state develops over a long period of time, the person can react with negative feelings such as inner despair and mental and physical exhaustion.

Q.: When you look at your life, can you recognize any long-lasting suffering due to isolation from a person/goal that you strive for but cannot achieve?

0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extremely strong

16. V.: **Helpless excitement caused by disturbing objects**

E.: There are people who, over long periods of their lives, repeatedly experience being upset and annoyed by certain people or circumstances without being able to quickly and successfully reduce the upset and annoyance, so that they feel helplessly at the mercy of the source of the upset and its negatively experienced effect (e.g. in relation to a quarrelsome partner, authoritarian/domineering boss, unfavorable social situations, injustices experienced at work).

Q.: When you look at your life, can you identify

recurring upsets in which you feel helplessly at the mercy of the negative effects of the person causing them (e.g. by not finding a way to successfully escape the source of helpless upset)?

0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong,
5 strong, 6 very strong, 7 extreme

Test-retest reliability: .74
Internal consistency of the scale (Cronbach's alpha): .79

Hypotheses

The predictions were made on the basis of the question with the highest score, or the mean values were calculated for the first two clinical pictures.
Alzheimer's: Questions 1 and 2
Parkinson's: Questions 3, 4, 5, 6, 7
Brain tumors (glioblastomas): Question 8
Mamma-Ca (breast cancer): Question 9
Testicular cancer (theratoma and seminoma): Question 10
Corpus-CA: Question 11
Ovarian cancer (ovary) Question 12
Cervical CA: Question 13
Healthy and active: Question 14
Cancer in general: Question **15**
Heart attack/stroke: Question 16

8.4 Examples and theoretical explanations:
Emotional-cognitive components **of chronic diseases**

Introduction

The results of our multidisciplinary studies on the development of disease show that physical risk factors interact closely with emotional-cognitive factors (feeling, experiencing, thinking) and influence each other. In this chapter, we will not consider the relevant physical factors and will take a closer look at the psychological factors. (And always in the knowledge that they also interact with physical factors. We will remind you of this with a few examples).

We will focus here on some chronic diseases and ask whether we can use certain behavioral characteristics and particular dysstress factors not only to identify factors that predict specific diseases, but also whether we can use the factors to distinguish different diseases from one another. It is important to emphasize that the behaviors described here were recorded before the individuals were diagnosed with the specific chronic diseases.

We consider the following diseases:
1. M. Alzheimer's disease
2. M. Parkinson
3. Brain tumors (glioblastomas)
4. Breast cancer
5. Testicular cancer (theratomas and seminomas)
6. Uterine cancer (Corpus CA)
7. Ovarian cancer (Ovarian CA)
8. Cervical cancer
9. Health
10. Cancers (using the example of pancreatic and bronchial CA)
1. 11. Heart attack/stroke

This chapter describes the psychodynamics and behavioral characteristics that play a role in the co-development of the various chronic diseases. The statistical results are presented at the beginning of this chapter.

1 Alzheimer's disease :

Questions one and two in the questionnaire relate to the co-development of Alzheimer's disease. Two factors are important here:
- 1st : The unenthusiastic and listless absorption and processing of information
- 2: The lack of opportunity to improve one's own situation by absorbing information
There are people who always absorb new information with great interest, both in their professional and private lives. They often experience that if the information is pleasant for them (for example, if it points towards satisfying a need or achieving a goal), it can trigger pleasure, well-being, joy and hope for the future.
In certain communications, however, people can also find themselves in a situation where they no longer believe that information of any kind can improve their situation. (e.g. by eliminating a negative feeling or alleviating social isolation that is difficult to bear). The usual intake of information in everyday life is rather unconvincing, but is routinely taken note of, as it were out of necessity.
A permanent state prevails in which routine information does not raise any hopes of an imminent need satisfaction or development opportunity.
The person has resigned themselves to their situation. On the one hand, they are not suffering too much, but on the other hand, they lack the stimulation that would be necessary to satisfy emotional-centered needs, for example.

Examples:

A

Mr. E dies of Alzheimer's disease at the age of 78, having been diagnosed at 68. Despite symptomatic treatment, his condition worsened from year to year, making him a serious care case in recent years. Mr. E married his wife a few years after the end of the war. He was a short man, about 1.63 m tall, his wife about 1.76. She told him and the whole family and circle of friends the same story over and over again. During the war, she had lost a tall blonde boyfriend to whom she was also engaged. She only married her husband due to a "lack of men" in the post-war period. Otherwise she would certainly have married a man as tall and blond as her fiancé. (Mr. E was short and dark-haired.) In addition, her husband is not very successful professionally and has a less prestigious job than she does. The husband always listened to the stories calmly and smilingly, always making the same jokes about them, e.g.: "If I didn't have any experience with my wife in bed, I'd believe her stories." Nevertheless, it became apparent that the husband had major problems with his wife's constant rejection. He reported that a family friend admonished the wife not to talk about her husband in this way, because it was often the experience that women suffer when the husbands they "negated" die. She then said in the presence of her husband: "It certainly couldn't happen to me." When the suffering was unbearable, Mr. E turned to alcohol, he was a so-called quarter drinker. Over time, he developed high blood pressure and very high cholesterol levels. When asked what his motto in life was, he replied: simply ignore the negative aspects of life, i.e. all negative information doesn't interest him at all, he prefers to tell the same stories over and over again (e.g. how he behaved as a child when two boys wanted to beat him up), he just wants to be left alone. When he had to give up his small corner store because of financial problems, he simply didn't want to accept any information. He said: "I am a person who prefers to bury my head in the sand and seek well-being, because anything too negative could destroy you. Mr. E and his wife were practicing Catholics and went to church regularly: it made you feel good and got rid of all the worries caused by a sometimes bad-tempered wife and bad business, even if only for a short time.

B

Mrs. Y: Death at 71 years, diagnosis at 55 years, interview: 48 years

Mrs. Y is the youngest sister. The eldest sister was married to a wealthy civil engineer. The second sister had no profession and was allowed to help with cleaning work, for example, in her older sister's large house. Mrs. Y lived separately and worked in her brother-in-law's construction company. The brother-in-law's wife, her eldest sister, was always very sickly and needed the affection of her sisters. The husband cared for her even with the slightest symptoms and complaints, as if she were seriously ill. Apparently, there was an intimate relationship between the husband and the youngest sister, Mrs. Y. This relationship lasted for several years. A firm agreement was made: the eldest sister must never be allowed to find out about the relationship because otherwise her fragile health would break down. Ms Y: "I should never tell my sister, if only because it would make our mother turn in her grave." For years, Mrs. Y was in a state of inner stress between her affection for her brother-in-law and the compulsion to keep the appointment. She smoked over 40 cigarettes a day, her blood pressure reached very high levels and she was not averse to alcohol from time to time. Ms. Y: "For years I felt like I was in a corset in which my free thoughts and feelings were locked up and I was not allowed to tell my two sisters that I had been in a relationship with my brother-in-law for years. This relationship only ever took place when my brother-in-law was free. I wasted the best years of my life on this relationship and simply got into the habit of shutting down my thoughts, not taking in information and not passing on information to others. This obviously had a negative impact on my brain, instead of using it, it lay dormant. These are the events that have shaped my life."

2. parkinson's disease

Questions three to seven of the questionnaire cover the factors involved in the development of Parkinson's disease. The following factors are important :

- Intense chronic uncontrollable anxiety
- pessimistic, fatalistic attitude
- extreme asceticism
- Extreme inhibition to resolve anxiety-inducing conflict situations in a way that creates well-being
- General blockage of the interactive pleasure system

Anxiety always arises when people anticipate a catastrophic development that threatens them. On the one hand, anxiety is an emotional threat experienced in response to certain thoughts or situations and, on the other hand, it is further intensified by anticipating threatening developments. There are people who experience feelings of anxiety again and again during the course of a day, but who are able to overcome them through different behavioral strategies. (So that feelings of security and well-being arise) However, there are also people who claim that they hardly ever experience anxiety. However, this state is not necessarily healthy because anxiety is an important subjective signal that an emotional or physical balance is threatened, at least in the short term, and there is no such thing as an absolutely healthy person who never loses their balance for decades.

Intense, chronic and uncontrollable anxiety usually arises either after traumatic shock experiences that were so unexpected and intense that the brain is no longer able to "functionally recover", or through the repetition of threatening and hurtful situations in which the person had no coping resources and was therefore helplessly at the mercy of others. Chronic, intense and uncontrollable anxiety blocks the entire pleasure system, meaning that the person is no longer able to experience pleasure, well-being and security in the anxiety that spreads to different life situations. The person shows extreme inhibition, e.g. the inability to reduce anxiety-inducing situations through their own behavior by engaging in activities that lead to well-being and pleasure. They are ascetic and abstain from sources of pleasure, e.g. in the conviction that these are unattainable for them in anxiety. A fatalistic, pessimistic attitude develops from the overall situation, combined with the feeling that anxiety can no longer be reduced and sources of pleasure can no longer be achieved.

Examples:

A

Mr. S., 56 years old at the time of the interview, in his 64th year: Diagnosis: Parkinson's disease

Mr. S.'s father was an industrialist with a medium-sized company.

HE placed extremely high demands on his son and punished non-fulfilment with severe emotional withdrawal.

The father was a role model for the son and he was determined to fulfill his demands. When he experienced not being able to fulfill his father's demands in all areas, he developed strong and recurring feelings of anxiety, which were treated with medication for many years. His father lived a very ascetic life and also demanded that his son live frugally and modestly. This was the only area in which the son was able to fulfill his father's expectations. Nevertheless, the uncontrollable fear was Mr. S.'s constant companion. Mr. S. completed his studies in mathematics and trained to become a Jungian psychotherapist. As a therapist, he exhibits extremely fatalistic behavior. He believes in the superiority of the unconscious, according to the motto: if the unconscious has decided to kill you, then you have no chance of surviving. (Possibly the unconscious, as experienced by Mr. S., represented the experienced superiority of the father, against which one cannot defend oneself). Over the years up to the age of 56, the subliminal, recurring fear intensified, so that he was blocked from experiencing pleasure, well-being and security in all areas of life. From the age of 40, Mr. S. withdrew more and more into his private life with his wife. For him, she represented, as he put it, the "reasonably kind mother", who sometimes gives him a sense of security, but sometimes also triggers fear, whenever he thinks she might have similarities with his own

mother. He can bear many things, but not competition with his father. This would have too brutal consequences for him. Mr. S. dies of Parkinson's disease at the age of 73. All attempts to help him with medication or surgery were of modest success.

B

Mrs. F. developed Parkinson's disease at the age of 49. The interview was conducted when she was 45, at which time she had no symptoms. She reported the following:
I lived very happily with my husband from the age of 25. We have two children and the youngest child came very late, I was 43. It was one year when a catastrophe happened: my husband suddenly told me that he was separating from me because he was with a younger woman. He didn't tell me this in our apartment, but on a high mountain of all places, where we were taking a chairlift together. I was shocked and paralyzed, I began to tremble with fear. I didn't want to talk to him anymore and went down the chairlift alone with the child. Suddenly I thought of taking revenge on my husband by pushing the child, to whom he was very attached, off the chairlift. As I loved the child very much myself, I hugged him very tightly. I really didn't know if I was going to throw him out, so I hugged him all the tighter. When we reached the valley station, I was in a panic. The only bad thing is that this fear hasn't stopped to this day, I have a recurring, generalized (as my psychologist explained to me) fear that I can't control. At night, I often dream that I am strangling/crushing my child or that he is dying in various accidents, mostly caused by cars. Then I panic again that my child will get a fatal illness and die from it. The fear dominates me so strongly that I can't achieve a sense of well-being or security in any area of my life. I was made redundant as a secretary because I could no longer concentrate. All I'm looking for is peace, peace, peace.

3. brain tumors (glioblastomas)

The following psycho-neurobiological factor plays a role in the multidimensional development of glioblasotomas: extreme antagonistic activation between emotional and rational impulses. In Grossarth's behavioral typology, we have described two behavioral patterns: rational/anti-emotional and emotional/anti-rational behavior. The rational/anti-emotional person bases his or her behavior as far as possible on rationally justified arguments and shows weaknesses in emotional expression (e.g. inhibitions to express feelings of love). Conversely, the emotional/anti-rational person shows intense positive and negative feelings at every opportunity, but often comes into conflict with the rationality of his arguments. For example, he has problems explaining certain emotional outbursts rationally.
The activation of both rational and emotional impulses is linked to specific regions in the central nervous system. While activations related to reason, e.g. differentiated thinking through associations, tend to be linked to the cerebral cortex, emotional impulses are dependent on the limbic system, among others.
A healthy interplay of rational and emotional impulses means an emotional tolerance of rational processes and a rational tolerance of emotional impulses. However, there can also be massive antagonistic impulses between emotional and rational activations. It can be assumed that contradictory, opposing electromagnetic currents develop in the brain activities. Thus, intense rational and emotional impulses can influence each other functionally. Theoretically, it can also be assumed that the nerve cells are affected physiologically and structurally (if only emotional or only rational impulses dominate, then one impulse will prevail. However, this does not lead to conflict-generating antagonisms).
When it comes to the development of brain tumors (glioblastomas), science is still completely in the dark. This means that no causes have been identified (although there are indications, e.g. in relation to electromagnetic radiation from cell phones, transmission masts, radar equipment, etc.). We also assume that electromagnetic brain currents can be a contributory factor through antagonistic activation of brain regions that stimulate emotions and reason. On the behavioral and statistical level, it can be impressively demonstrated that antagonistic emotional/rational activation is a significant predictor. On the neurobiological level, a discussion and additional data collection should follow with regard to the statistical result.

A

Mr. E dies at the age of 70 from a glioblastoma that was operated on. The diagnosis was made when he was 69, the interview was conducted when he was 66.

Trainer: Mr. E, can you tell me something about your life? Am I particularly interested in positive or negative experiences?

Mr. E.: My life has been very complex and rich in experience. As a professor, I am a very successful and internationally renowned scientist. I have always been less opportunistic and willing to support talented young scientists. As a child, I loved my father and mother very much and spent a very happy time until the age of 16. Shortly before the end of the war, when I was 16, my mother suddenly told my father that she had fallen in love with a famous industrialist.

After that, my father idiotically volunteered for a voluntary action, which we knew would be impossible to return from. My father fell as a Wehrmacht officer on the last day of the war, of all days.

I very much regretted the death of my father, but didn't find it particularly painful. My mother then led a happy life for herself in her second marriage and she took her educational duties towards me seriously and managed them well. During my studies, it quickly became apparent that I was particularly gifted, and I won various math competitions and was also very successful in sports. In terms of my structure, I am a very rational person, I can only accept what is reasonable and scientifically based. At first I was surprised that I wasn't very interested in women. I had no contact with women until I was 25. For me, they were rather cold rational beings, like myself or my mother. When I was about 25, I had a "big dream", as the Jungian psychoanalysts would call it. I dreamt of a beautiful blonde woman who looked more and more like my mother. She first had obscene sex with my stepfather, then with a lot of young men, until I was finally asked if I wanted it too. I thanked them and said bashfully: that's my mom. When I woke up, I thought I had to go to a brothel to look specifically for women with a certain look, e.g. blonde and tall, with a cold aura. Today I am married and have 6 children. My wife is also a scientist with whom I am very rational, not only discussing but also solving problems. I don't know how we managed to have 6 children. I have earned a lot of money and regularly go to brothels in every city in the world on business trips, where I have many friends who I know very well and who also like me.

Eight months ago a tragedy happened: I met a whore in a hotel who reminded me in a frightening way of the dream with my mother, let's say she was a copy of the wonderful mother I had experienced in my childhood. I fell in love with her immediately and I believed that she was also very much in love with me. I had never experienced feelings like that before. We had sex for hours with many orgasms. Now she started asking me for more and more money. She lied so much that it was unbearable: she said, for example, that she would marry me if I divorced her, but first she needed several million marks to buy her own child from her pimp, who was also the father. I gave her the money and it turned out that she didn't have a child. When the pimp finally turned up and told me that they were both planning to get married soon and that they were demanding a larger sum of money and blackmailing me into giving sex photos to the tabloids, I realized that I had to get out of the relationship as quickly as possible. A psychologist friend of mine told me that I was particularly suffering now because I had lost my mother to my stepfather for the second time.

I have to tell you that I've been totally agitated inside for 7 months, the sex fantasies and the extreme feelings of love for this woman (whore) don't stop, at the same time my rational mind is so activated that I constantly feel and hear: You have to break up, a relationship with this whore makes no sense at all. The more I rationally forbade myself, the more unbearable feelings came up, such as the idea of her sleeping with the other man, i.e. her pimp, having children and leaving me.

Similar to the way my mother left my father, perhaps. Perhaps my father also chose suicide on the last day of the war and felt the same despair then as I do today. Mr. E belongs to the type I behavior we have defined.

(Type I behavior: A permanent and unfulfilled longing for the mother - extremely pronounced longing for the woman who so betrayed him - possibly longing for the lost father i.e. a multiple suffering in isolation from a desired but unattainable object, a tendency that has been covered up for years by rational behavior). In the intensification of the conflict between longing for a desired person (e.g. mother) and the fear of intimacy with this person, massive conflicts between emotional and rational activations arise in relation to the relationship with the prostitute.

4. breast cancer

One of the relevant factors in the multi-causal development model of breast cancer is the chronic rejection and isolation experienced by the mother.

In the context of Grossarth's behavioral typology, so-called Type I behavior was described as persistent suffering in isolation from a longed-for, desired, but unattained object (e.g. person, state, goal). Now there are different reasons and missing objects, e.g. a child after an abortion or miscarriage, a person lost through death or separation, a dismissal experienced as unfair, etc. We were able to show that suffering in isolation from longed-for but unattained objects in the multifactorial process is a contributory cause of various cancers (but by no means the sole cause, e.g. when a large number of physical risk factors and causes of dysstress from other areas are statistically taken into account, suffering in isolation loses its significant effect). Suffering in isolation is only a significant contributory cause in combination with other risk factors.

In relation to breast cancer, it is often the case that women suffer from a dismissive, devaluing mother for many years before the disease, from whom they did not feel lovingly accepted in accordance with their own needs. The disappointment caused by the mother's lack of affection often carried over into the father or partner relationship and even into professional life. Here we speak of the so-called double rejection. The experiences of rejection by the mother are a cause of the intense experience of rejection in the present and, conversely, the experiences of rejection in the present are a reminder of the experiences of rejection by the mother. This can exhaust the emotional and physical powers. New sources of pleasure are not activated because, for example, emotions of the greatest importance are concentrated on the mother and the experiences of rejection.

We were actually able to prove that intense experiences of rejection by the mother, especially if they are traumatic in nature, and determine the thoughts and feelings right up to the present, and ultimately lead to inner despair, is a significant predictor of breast cancer (here too, of course, interactions with other factors acting in the system).

Mrs. H, age at interview: 43 years, diagnosed at 46 years, died at 50 years of breast cancer with distant metastases.

Ms. H repeatedly gave detailed accounts of her extraordinarily strong but also unhappy relationship with her mother. She has an adult child and is a very successful politician. In her appearance she appears modest and charismatic, the impression could arise that she is also happy inside and is absorbed in her political commitment. Shortly after another political success, she dies of breast cancer.

Ms. H: "As a child, I already had a very strong bond with my mother and wanted to keep her to myself. My mother suffered from schizophrenia. Her illness had terrible consequences for me. When she was on an emotional high, I was everything to her, but as soon as she was feeling bad, she rejected me with a hateful look. Sometimes it took days for her to accept me again. I remember waiting for this moment again and again as a small child. My father was usually away and didn't look after us. I don't have a special emotional relationship with men. I was married and had a son, but got divorced again without it bothering me much. I mostly concentrated on my political work. I'm very successful at it, but I can't say why. Of course, I know which people and circumstances I have to thank for my success. Strangely enough, my highest feelings are still tied to my mother. Other activities and relationships don't get under my skin. I like to paint, but I can't say that I get any special feelings from it.

Trainer: Under what conditions could you imagine living a happy life in the present?
Ms. H: It's funny that I've always asked myself this question, at least for the last 20 years. I always came back to the same answer, which is almost impossible to say: If I could come to the conclusion today that my mother loved me deeply and intimately and that it was only because of her illness, which completely overwhelmed her, that she rejected me and was unable to take my feelings into account, then I could imagine that I would like to continue living, even in contentment. But if my mother didn't just dislike me because of her illness, but didn't like me at all and didn't want to accept it and perhaps even fell ill because of it, then I don't feel any particular desire to go on living. Once, when I was 6 or 7 years old, my mother even told me that I was like a little tick sucking her blood and that she was sick because of it. It's quite funny that I simply lead a double life: successful on the outside, desperate on the inside. Feelings like that exist, even if the events happened so long ago.
(Type I behavior: activated and unsatisfied needs, extreme longing for a desired but unattainable person - in this case the mother).

5. testicular cancer (theratomas and seminomas)
Interestingly, a significant predictor in the multifactorial events in the development of testicular cancer (see here: *Systemic Epidemiology and Preventive Behavioral Medicine of Chronic Diseases.* De Gruyter, 2000) exactly the opposite of breast cancer a chronic conflict structure with the father. In a healthy father-son communication, a mutual, loving and accepting relationship develops. The son feels recognized and protected by his father and identifies with him at certain stages of his life in relation to certain activities. The father also plays a role in the development of male identity.
There are also various sources of interference that affect communication between father and son in the long term. For example, a son who is extremely attached to his mother may initially develop feelings of resentment towards his father in an attempt to keep him out of family communication. At the same time, a father with little emotional competence, who may have been rejected or extremely attached by his mother, may develop feelings of jealousy and competition with his son in relation to his mother. If the father develops traumatizing behaviours in his communication with his child, this can lead to long-lasting activation of shock experiences in relation to paternal behaviour. For example, a father can be experienced as shouting, hitting and extremely oppressive. If the father then succeeds in partially taking the child away from the mother, this can lead to massive experiences of suffering in isolation. However, a father can also try to exert extreme control over the child, for example by identifying with his son and projecting his own negative characteristics onto him. In doing so, the father appears to be overpowering in his own consciousness and the son's consciousness. In the later partner relationship, the person again fails to achieve happy and relaxed partner communication due to the paternal traumatization. This leads to extreme blockages in the identification with the male role and a kind of chronically experienced "castration" (similar to the experiences of rejection of the woman by the mother, the identification with one's own female role is rather non-existent and self-destructively blocked).

Mr. L: Interview 45 years old, diagnosed three years later, still alive at last contact in 1985
Trainer: Can you tell me something about your family of origin and then something about your current life situation and your profession?
Mr. L: I'm a doctor by profession, like my father. My mother is quite a famous artist. I have a sister who was always very jealous of me, she believed that our mother favored me. She was 47 when she died of breast cancer. Before that, she was an extremely successful scientist. She completed her habilitation in biochemistry and was about to become a professor. But I don't think my mother particularly favored me. Our father was very jealous of me and totally authoritarian. I had the impression that he couldn't tell the difference between his person and my person, e.g. whenever I did something that didn't suit him, he said: WE don't do that. When I once asked him if he could tell the difference between the image he had of himself and me, he jokingly said that it would be very difficult for him to do so and that he would

prefer to kill me in order to regain his own identity. I have to admit that I love my mother much more than my father and maybe my sister is right that I was favored, but I just couldn't get enough of my mother. When we dance together, for example, everyone says it looks like a couple in love. When we still travel together today, we naturally sleep in the same room, even in a French bed. I simply feel wonderful when I'm with my mother, although she plays the distant one, I notice that she also enjoys my presence. My father was completely different: as soon as he noticed that I was on good terms with my mother, he launched into the most brutal attacks and negations. He always prefaced his attacks with the sentence: WE don't do that. I was a spoiled mama's boy who should finally find a wife instead of ruining the marriage. I've had several girlfriends and am now married, but I'm always afraid of doing something wrong, such as hurting someone or taking someone's wife away. On the other hand, I also have a character flaw: Whenever I see a happily married couple, I try to go behind my partner's back to blacken him to the wife and make him out to be impossible. Usually in the hope that she will then turn to me. I've been severely beaten up for this before. That's why the behavior stuck in my mind. I went to see a psychologist who explained the following to me: I always wanted to take my mother away from my father, blackened my father, but didn't get my mother because she still stuck by my father and at the same time my father reacted extremely aggressively towards me.

That made sense to me because I actually always told my father off to my mother and my father became extremely aggressive as a result. It was as if I really wanted to have my mother behind my father's back and out of fear of my brutal father, I couldn't reach my mother in the end. When I realized that I develop the same fears with all European women, I now fantasize about African women who are completely different from my mother and don't attract my father's jealousy. But I fear that these are only temporary fantasies and that my fear of being castrated by my father if I look for my mother is already a central point in my life. Incidentally, I have major conflicts with all male authorities in my professional life and I behave in a very anti-authoritarian way towards them. Women who are available don't interest me at all, only women who are in committed relationships attract me. But I still can't reach them because I'm always afraid of my partner and do everything I can to make them realize that I'm always blackening my partner's name. When one of them beat me up once, I didn't see it as a punishment, but as a release.

(Type I behaviour: the permanently existing, but unrealized love relationship with the mother due to the fear of the father. This is always emotionally stimulated anew, but regularly ends in disaster, namely in the confrontation with the experienced image of the father).

6. cancer of the uterus (corpus uteri CA)

Two life events in connection with a certain emotional disposition play an important role in the multifactorial development of uterine cancer:

- Chronic emotional suffering due to isolation from a child lost through death or separation

Mothers' love for their children is just as understandable and real as the extreme suffering that follows the loss of children. There are mothers who can overcome an unexpected and unwanted separation from a child, or a difficult to bear and recurring rejection through available resources. On the other hand, there are women who have such a deep emotional attachment to a child that they cannot overcome a separation in adulthood and react to it with persistent inner despair and symptoms such as depression, hopelessness, inner paralysis, etc. On the one hand, they keep thinking about the child. On the one hand, they keep thinking about the child and want to be close to them. On the other hand, they suffer in isolation. This condition usually leads to severe and persistent mental/physical exhaustion.

The typical life events are:

-Death of a beloved child (both as a child and as an adult)

- Separation from a child in adulthood (e.g. after the child marries)

- Permanent negation of the child in relation to the mother (the mother finds no way to achieve the desired harmonious relationship and closeness to the child)

Interestingly, the mothers' sons play a particularly strong role. In our empirical studies, sons are represented by 90% compared to 10% of daughters. This result indicates that the sons have taken on the role of father or husband.

A

Mrs. B. contracted uterine cancer at the age of 58 and died of it at 65.
Her relationship with her mother was ambivalent: on the one hand, Mrs. B loved her mother and sought her closeness, on the other hand, she believed that her brother was preferred and felt repeatedly disappointed by her mother. At the age of 20, she married her husband, with whom she had 3 children (1 son, two daughters). The husband was very dismissive and constantly insulted her, although she was a very good-looking woman, he kept saying to her: "I can't tell whether you are a human being or an exotic animal on the outside." Her son, whom Mrs. B. loved very much, died in a car accident at the age of 22. At that time, she was already divorced. The death of her son hit her extremely hard; she reported weeks of emotional apathy, which she covered up with outwardly conformist behavior and friendliness.

B

Mrs. X: Age at interview: 53 years, diagnosed with corpus uteri carcinoma 57, died at 63 years.
Ms. X had a 26-year-old son with whom she lived alone. He was, as she says, very well-behaved and solid and focused exclusively on his biology studies. He wasn't interested in women because he wanted to finish his studies first. He then met a female colleague, also a biology student, who suddenly moved into the family home. The father had died at an early age (the son was 7 years old). For Mrs. x, the son had an enormous emotional significance, he was almost exclusively her only communication partner, a substitute for her husband, he was very idealized by her. The son also fulfilled this function until he became a partner and was prepared to continue to accept the mother. When the mother appeared in the couple's bedroom several times at night, always with a different reason, e.g. to check whether the son was well covered, the girlfriend gave him the choice: your mother or me. As a result, the son moved out of the house and the mother fought for him for several months in vain. When she was finally convinced that she could no longer reach her longed-for son, she completely broke down inside.
Outwardly, she was not prepared to complain about her suffering to her sister or a distant friend, for example. There is a complete disconnect between her inner despair and the external social ability to reduce her suffering through any kind of behavior. This state did not change for many years.

7. ovarian cancer (ovarian CA)

Question 12 relates to an important emotional-cognitive factor which, in interaction with certain physical risk factors, may be linked to the development of ovarian cancer. Women who have a pronounced desire to have children and who are unwillingly induced to terminate a pregnancy against their will (e.g. due to pressure from a partner or worrying financial difficulties) or who experience a shock-induced miscarriage appear to develop ovarian cancer more frequently (especially if the reactive depression combined with inner despair persists over a longer period of time and the woman does not develop a perspective that is pleasurable for herself). In our prospective studies in Heidelberg, we also had a group of 31 women who fell into the most severe hopelessness, despair and apathy for about two to three years after a termination of pregnancy or after a miscarriage, but who then entered into a happy partnership and had children. Hope, well-being and desire developed again. Nevertheless, they were still pained by the thought of having lost a child, but this was not coupled with emotional hopelessness with regard to future prospects. None of the 31 women developed ovarian cancer during an observation period of 25 years. However, 11 women developed a benign ovarian tumor (a so-called teratoma). This gives the impression that

emotional-cognitive control mechanisms have chosen a compromise by possibly transforming a deadly program into a relatively harmless one.

Ms. E (student of philosophy)
Falls in love with her professor shortly before finishing her master's thesis. She becomes pregnant by him. As she loves children more than anything and sees herself more as a mother than a scientist, the pregnancy is extremely important to her. The professor implores her to abort the child, tells her that he doesn't love her at all and that having sex with her was an "unintentional coincidence". Furthermore, he could not imagine marrying her as she was from a lower class background. If she were to have an abortion, he would be inclined to see whether it would be possible to maintain the relationship after all.
Ms. E was so shocked by the professor's behaviour that she became completely estranged from him and spontaneously decided to have an abortion after all. After the abortion, she fell into a severe depression that lasted more than two years and left her completely unable to study and finish her master's thesis. After these two years, she started her master's thesis again with great difficulty and handed it in after a year. She then worked for three years and lived a very socially isolated life. Although she wanted a child, she was unable to enter into a relationship, mainly out of fear that a man might react like the professor again. She regularly complained of mental and physical exhaustion and developed an infection that affected her entire abdomen and could only be treated with large doses of antibiotics.
6 years after the abortion, she was diagnosed with metastatic ovarian cancer and died three months later.
When the diagnosis was made, she was not at all surprised and said to her doctor: "I knew exactly that this would happen.

8. cervical cancer (cervical CA)

Based on the analysis of a large number of people with cervical carcinoma, the following psycho-dynamic interpretation and description of women who tend to develop cervical carcinoma in the multidisciplinary-factorial field of action was drawn up: a close, pleasant and positively experienced maternal relationship, which was, however, traumatically interrupted in various childhood experiences (e.g. by sudden hospitalization in isolation from the mother). On the one hand, the woman longs for the caring and comforting closeness of her parents, and on the other hand, she is relatively unable to tolerate loneliness in adulthood. She develops a great need for communication and transfers this into the field of sexual relationships (whether same-sex or heterosexual). The majority of relationships are relatively superficial with frequent changes of partner. As a rule, the relationship dynamics come to a head in an extremely intense emotional-sexual relationship, usually with a partner who promises loving affection on the one hand, but repeatedly withdraws abruptly on the other (possibly in memory of maternal or paternal behavior).
After a severe and long-lasting disappointment due to a break-up experience, either isolation and renunciation of further partner relationships occurs, or a long-lasting relationship with a partner who stimulates the person far less emotionally and sexually (we call such a state negative pleasure difference - where the pleasure experienced and longed for in the past was more intense than in the present). Women who have desired or longed for a very intense emotional relationship with a person for years, until the final realization that the relationship is not feasible, and who have subsequently experienced unsatisfying relationships, usually with several sexual partners, also show a similar behavioral structure.
Further analyses showed that various physical risk factors are also involved in the development of cervical cancer, in particular chronic and generally untreated or unsuccessfully treated infections of the reproductive organs. However, people with chronic infections of the genitals without traumatic separations from their partner in connection with extreme emotional fixations developed significantly less cervical cancer. This shows a highly significant interaction (synergy effect) between the behavioral pattern and chronic infections (e.g. caused by viruses, but also fungi and bacterial infections).

Mrs. Z. dies of cervical cancer at the age of 52.
The interview was conducted when she was 41. The diagnosis was made when she was 48. At that time, one lymph node was affected. Mrs. Z. had a very close relationship with her mother, she always sought her presence to feel safe and secure. As she was studying in Heidelberg and her mother lived in Berlin, they often spoke on the phone, but her mother also often came to visit her in Heidelberg. The father was experienced as a positive person in the background. Ms. Z. describes shock experiences in early childhood as the main stress: she had three operations between the ages of 2 and 6 and was hospitalized several times. Her mother was not always allowed/able to be present, if only because she was working. As a result of these experiences, Ms. Z. believes that she always has feelings of insecurity and constantly needs to be close to emotionally familiar people, both men and women. Her sex life was very free, she basically had sex with any male person if she even remotely liked them so as not to be alone, as she said. This balance lasted for several years, meaning good contact with her mother, successful studies and several sexual partners. When she was 28 years old, she met a man 20 years her senior, married with 3 children. Physically, he looked very similar to her mother. He could only visit her when his wife had appointments, i.e. very rarely, about 3-4 times a month. Mrs. Z. developed intense feelings of abandonment and a great longing to see this man more often, which he strictly refused. As a psychology student, she herself recognized that it was obviously a recurrence of the fears of abandonment from her childhood (in relation to the hospital stays), but was completely powerless in the face of these feelings. The despair dragged on for months, and she experienced this despair again and again as a shock. When she finally became certain that her husband would not separate from his wife and would even go abroad, the situation became so unbearable for Mrs. Z. that she suddenly married an equally old university friend out of desperation, although she knew after a short time in the marriage that he would not be able to satisfy her emotional needs in any way. Her husband also registered the rejection, so that a "hostile" life together developed. They still had sex from time to time and three sons were even born. In the meantime, her mother died and shortly afterwards her father. The beloved family home was sold. These events led to a total emotional breakdown, in the form of a reactive depression on the inside, while on the outside she showed toughness and strength against herself and was still able to work part-time with difficult-to-raise children. When asked what she missed most, she replied: a pleasurable sexuality with pleasant people and I would like to have my parents back. It's my husband's fault that I had to sell my parents' house, so I'm all the more disappointed in him. Although we have sex very rarely, or rather extremely rarely, he infected me 5 years ago with a chronic fungal infection that I can't get rid of. My doctor says I have a weak immune system due to constant stress. The events dominate me to such an extent that I am increasingly powerless, I only suffer in isolation from previously positive experiences that I now experience but cannot achieve. Question: Were the experiences with the married man also positive? Answer: Not at all, on the contrary, that was the point at which I broke down.
Mrs. Z. died in great agony (e.g. multiple operations on her spine due to recurring bone metastases), with great rejection from her husband, although he took touching care of her until her death (but this was associated with subliminal aggression).

8. health

This book has shown that the maintenance of health is the result of an extremely complex interplay between a large number of physical and psychosocial factors. Nevertheless, an extremely important behavioral factor has been identified that is obviously able to influence a large number of factors in a positive direction. This is a pronounced ability to transform. This refers to the ability to transform situations and conditions experienced in different negative ways (regardless of whether they are psychosocial factors or physical influences) into positive experiences through changes in communication with oneself and the environment. People who are able to permanently correct their behavior and use their creativity have the

ability to repeatedly transform dysstress into eustress (e.g. by activating new coping strategies to overcome stress).

A pronounced ability to transform in different areas of life is the opposite of a rigid fixation on an unresolvable problem that leads to lasting negative consequences.

A

Mr. J, 93 years old, physically and mentally healthy, no diagnosed chronic illness throughout his life, highly productive, interview at 68 years old

Trainer: Can you tell me about your life, about positive and negative events and how you behaved?

Mr. J: When I look back on my life, there were always considerable burdens. As a child, I missed my father, who left my mother when I was 2 years old. My mother had to work very hard as a cleaner to somehow get me through. I spent more time with my grandmother than my mother. She was also a very hard-working woman, but very taciturn. There was also Grandpa, who always liked to sit outside the front door. He was an honest person and played with me from time to time. I wasn't the best at school either, but somehow I managed to get my A-levels. Things weren't totally brilliant at work either. I was a low-level civil servant for a long time, then a mid-level civil servant. I got married at the age of 28, we had a child and my wife left me when I was 34. She went to work for a florist. These are the external circumstances. If you ask me how I feel, then I have to tell you: sometimes high, sometimes low, but ultimately always high, i.e. whenever things went badly for me, I found ways to learn from it and ultimately I managed to avoid being a loser in all situations. My most important philosophy of life, which I not only upheld but also lived by intensively, was that after every life event, even if it wasn't pleasant, new situations and new relationships arose that you should definitely live by and make the most of everything life has to offer. I never clung to one person or one career goal, I was always inwardly independent, e.g. when my wife told me overnight that she had fallen in love and wanted to leave me, I first asked for a day to think about it before I "answered". At the time, I was about 8 kg overweight and my life was becoming somewhat monotonous. I thought that if my wife left me, I would visit more friends and get more stimulation. At the same time, however, I would also suffer a lot. But this suffering can also be turned into pleasure, for example by reducing my appetite and allowing me to lose weight again. The next day I said to my wife: "I totally agree, it was wonderful with you. She said, "Although I admire your inner independence, I'm still amazed at how easily you're taking the separation." I'm not a particularly smart person, but I've always had the ability to organize my skills in stressful situations in an intuitively healthy way to create an optimal response. I remember once a supervisor tried to bully me a lot and even belittled me in front of other colleagues. I was terribly upset for several days and even had nightmares. Then I suddenly thought: I can't keep losing my good mood because of this idiot. Then I thought about how I could deal with my boss differently. This was very successful. I kept telling him: boss, I think your criticism of me is wonderful, when will there be a sequel? At the same time, I was able to calmly work through all the points where the man was right and developed skills that had to convince him otherwise. When the boss praised me, I told him: "Thank you, you've really helped me to develop." This ensured a harmonious relationship with him for the next few years.

Until I was 30 years old, I smoked a little too much, drank at least ½ liter of beer a day and liked to eat so much that I was always struggling with being overweight. When I felt the first negative consequences, e.g. mild bronchitis and difficulty exercising, I decided to stop overeating and smoking. I knew I had to come up with something, anything, that would have a positive impact on me. I went into the woods and started jogging. After a few weeks I just couldn't stop, the exercise was good for my brain and my body. With the idea of how nice it is to run in the forest, the cigarette became less and less attractive. Unfortunately, my appetite increased, but I didn't put on any more weight by jogging. Nevertheless, I had trouble sleeping at night for a while and even got indigestion in the form of diarrhea because I ate so much late at night. Again, I wanted to find some kind of activity that would help me eat less. However, this was not successful over a longer period of about 2-3 years. With my desire to

lose weight, I finally came across garlic. I already ate a lot of garlic at breakfast in the morning, which gave me a wonderful feeling. This pleasant feeling helped me to eat relatively little again in the evening and, above all, not to eat anything at all after 18:00. I ate raw vegetables in the morning, some fruit in the afternoon, very little fat and no more sweets. As a result, I not only lost weight, but also achieved an incredible sense of pleasure and well-being over the years.

I was always latently, but not actively religious, until this event when I was about 35 years old: I had intense religious feelings while jogging in nature and feeling incredibly well physically. I prayed to God and felt closely united with him. Since that moment, everything in my life has simply worked out, I have good friends and feel I belong to important people. I don't have excessive expectations of anyone and friends like to come to me of their own accord. I may not have married, but I always have friends with whom I feel deeply connected. At the same time, I occasionally have very beautiful and pleasant, I would say fascinating, sexual relationships, but I can live just as well without sex as with sex. I think my most important advantage is that I have learned to find happiness in modesty and freedom from addiction. However, it is by no means the case that I am always happy, I always find myself in situations and behaviors that are not good for me, but through a lot of imagination, modesty and relationship with God, I always come out of these situations into phases of well-being. In doing so, I can show humility before life. I respect every person and look for what is valuable in them. I know that every person has a valuable core.

Many injustices in society upset me in the short term, but I am convinced that people learn and have an interest in developing society fairly. If this does not happen, as in the last world war, then humanity, and often the innocent, will pay a high price.

Trainer: If you were to describe the most important thing for maintaining health, what would you say?

Mr. J: Inner independence, changing oneself flexibly again and again, combined with exercise, good nutrition, whereby one should not do without garlic, and all this embedded in an intimate relationship with God.

(Type IV - flexible ability to transform towards recurring well-being)

B

Mrs. C, 95 years old, physically and mentally healthy, no diagnosed chronic illness throughout her life, highly productive, interview at 67 years old

In her childhood, Ms. C was emotionally strongly oriented towards her father and was always afraid that her mother was jealous of her or that she could hurt her mother because she (Ms. C) was so sympathetic towards her father. Between the ages of 12 and 16, she developed symptoms of anorexia, but never really became anorexic. At that time she had experienced a phase of listlessness and believed that life was too difficult for her to cope with. It was then that she met her first boyfriend, who she claims changed her entire life, right up to the present day. She was 16 when she went for a walk with her boyfriend in an idyllic place on a summer night. She liked him very much, but when he tried to hug and kiss her, she was frightened and wanted to turn away from him in horror. Her boyfriend of 20 years then offered to talk to her. He told her: "Many life situations can take place under the aspect of 'pleasure and well-being' or under the aspect of 'displeasure, fear, struggle'. It is important that you never pretend, but always live out what you feel at the moment.

So if I'm against sexuality at the moment, then I shouldn't get upset about it and think it's terrible, but tell myself: it's good that I don't want to have sex now. If I do want to have sex tomorrow, then I can also say: it's good that I want to have sex now. If I like my father, I can also say: How nice that I like my father and if my mother scares me, then I go up to my mother and tell her that. And to myself I say: How good that I'm talking to my mother. - This is not positive thinking, where I would approve of everything, even if it is bad, but simply describes the fact that I can stand by myself and my actions at any moment. This philosophy of life has served me very well to this day. To this day, I am very slim, almost on the verge of anorexia, but I live freely and intensely inside, quite the opposite of my two friends, who are also almost anorexic. But they don't let me influence them either, they both take everything

too seriously and almost always live in unwillingness and a thousand worries. After a long period of reluctance, they both committed themselves intensively to a partner at some point - one to a man, the other to a woman - and were terribly disappointed. Both got cancer after a few years. Something like that simply can't happen to me because I take a pleasant encounter just as much with pleasure and joy as a regrettable break-up, because new perspectives open up afterwards. Although I can be enthusiastic about many people and cultural events, I always enjoy achieving a goal and doing without in equal measure. I believe that modesty in all areas is the true source of happiness.
(Type IV - flexible ability to transform towards recurring well-being)

9. cancers

This book has shown that the spread of cancer up to clinical diagnosis is a very complex interactive phenomenon in which physical and psychosocial factors interact. Psychosocial indicators of high predictive value have also been found with regard to cancer. If this makes a significant, even differential prediction possible, this does not mean that we can speak of a cancer cause or cancer personality. We are only talking about an interactive predictive factor, i.e. one that acts synergistically with other factors.
There are 1000s of ways of describing certain psychosocial factors and assuming that they are related to certain diseases. Our very difficult task was to discover specific behavioral dimensions that actually interact in relevant ways (e.g. with physical factors).
The so-called Type I pattern of Grossarth's behavioral typology is described as follows:
A person strives with great emotional intensity for an object (e.g. the closeness and recognition of a person, a certain goal realization in professional life), but repeatedly experiences that the object is ultimately no longer attainable. Nevertheless, the person is unable to distance themselves from the object, resulting in inner despair, mental and physical exhaustion, negative experiences, inner hopelessness, etc. This condition is usually masked externally through adaptation and altruism.
The result is an inwardly encapsulated suffering in isolation, which can no longer be reduced or transformed into pleasure through behavior.

Bronchial CA

Mr. F, died of bronchial CA at the age of 58, diagnosed at the age of 56, interview at the age of 51.
First of all, Mr. F reported a central problem that was very stressful for him. He has lived in the same house with his mother and wife for 15 years. The two women do not get along at all, each wants the son for herself and they badmouth each other to him. In his childhood, when his father was still alive (he died when Mr. F was 17 years old), there were always arguments between his father and mother. Here too, the father tried to turn the son against the mother and vice versa. The only peace the son experienced was when the parents made up for a short time and then even beamed at each other. It became increasingly difficult for Mr. F to bear when people who were arguing approached him with the desire to take a stand, if only because both people were usually important to him. Although he repeatedly tried to mediate by striving for harmony between the quarrelling parties, he was generally unsuccessful. Due to the longstanding dispute between his wife and mother, the situation from his childhood repeated itself. As Mr. F was convinced that he could only be happy if the parties did not argue and there was harmony between them, he tried to put forward every conceivable argument to his mother and his wife, which ultimately always came down to the fact that the other party did not mean so badly and even made some justified demands that both sides should be able to meet. Despite this, he was constantly failing. He tried unsuccessfully to compensate for his inner insecurity with an increasing number of cigarettes.
"I smoke more out of nervousness because of the argument, but I can't overcome the inner restlessness and despair with it."

(Type I behavior: chronic longing for harmony and the alleviation of conflict between people who are of high emotional importance)

Pancreatic CA

A

Mrs. L. died of pancreatic head cancer when she was 61 years old. The diagnosis was made when she was 59, the interview took place when she was 55.

Trainer: Mrs. L. can you tell me something about your life? I am particularly interested in whether you experienced stress in certain areas and well-being in others.

Ms L: As a child, I was rejected a lot, not recognized by my mother or father, and my older brother and younger sister were constantly favored. I felt unhappy and didn't belong. I met my current husband during my studies. We are both teachers. He was always very attentive and loving towards me. It always did me good that he always responded to me so well. I thought that the pain caused by my unloving parents had gone for good. A year ago, however, I had a terrible shock experience that I still can't get over, and I don't think I ever will. As I said, my husband was always there for me, but I noticed that he disappeared almost regularly twice a week in the evenings without being able to give me any plausible explanations as to what he was doing. When I finally caught him lying several times, he told me the truth. He had been going to a brothel regularly for about 10 years. This had nothing to do with his love for me, he simply needed it. I really tried to understand, but the emotional pain was too great. My whole illusion collapsed, namely that someone would really take loving care of me. The pain from my parental home resurfaced, I remembered how my father kept reassuring me that I was also his dear girl, but emotionally nothing came across from my father. Similarly, my husband told me that I was a lovely person, but that he also needed other women (from the brothel). My husband asked me not to leave him. I don't think I can do that either, but I'm just a wreck inside.

(I spoke to Mrs. L. again a few months after the diagnosis, she stayed together with her husband, who took very good care of her. She was very grateful to him, but she emphasized that she had by no means overcome the shock experience. She died shortly afterwards).

B

Mr. V. died of pancreatic head cancer at the age of 62, the diagnosis was made a year earlier, the interview took place at the age of 56.

Trainer: Mr. V, can you tell me something about your life? Am I particularly interested in positive or negative experiences?

Mr. V.: My father died on the Russian front during the war, I was 3 years old at the time. My mother married a war invalid within a year. I would say he was also a mental invalid.

Trainer: Can you tell me something about your mother?

Mr. V.: My mother is a wonderful, very strong and impressive person. She is now 85 years old and completely healthy.

Trainer: How did she behave towards you?

Mr. V.: I'll have to think about that, it's not that simple - maybe both my parents stressed me out a bit. My stepfather was always against me, hated me even as a child, he told my mother that I would never amount to anything, that I was good for nothing. If I was even a little restless, he would beat me until he died. We simply didn't have a relationship, or rather: a very negative one.

Training: How did the mother 'behave towards you?

Mr V.: Yes, as I said, the answer is not easy for me because I still try to love her today and I idealize her a lot. I have suppressed what really happened for years. But well, I'll start now: Shortly after the death of my biological father until at least puberty, my mother used to say the same sentence whenever I disturbed/upset her in the slightest: 'Giving birth to you was the greatest misfortune of my life! I heard this sentence about 1000 times, often in the presence of my stepfather, who always agreed with her. To be honest, I've come a long way

in my career, I'm an authorized signatory in a company and get a lot of recognition there, but I still suffer from very strong feelings of inferiority to this day. I often believe myself that I'm no good for anything, possibly because I want to confirm my mother's judgment and, as I said, I'm still fighting for her love today. She regularly forgets my birthday, for example, although I always remind her the day before, and if she forgets, the day after. I think that when they ask me so directly, I'm forced to answer straight away that these repetitive phrases from my mother were key events for me that shaped my life. But who likes to admit something like that, especially when your mother is such an admirable woman like mine.

Trainer: Did you have feelings of happiness, pleasure or lasting well-being in later life?

Mr. V.: I really can't say that, I have four children with my wonderful wife and I believe that the birth of at least two of the children has given me a sense of well-being or short-term inner happiness. I do a lot of sport, which is good for me, but if I'm honest, it's more of an effort to maintain my health. I do believe that the experiences of rejection by my mother combined with the aggressive and possibly jealous behavior of my stepfather have become deeply encapsulated in me, whereby I have never found a way to invalidate them and have been more willing to repress them.

After the diagnosis was made, a discussion took place with Mr. V's wife.

When asked about the central dysstress (mother: giving birth to you was my greatest misfortune), she said that her husband had not even spoken to her about it during all those years, he had always praised his mother and her very highly and presented them in the best colors. Even after the conversation with me, Mr. V. did not talk to his wife about the experiences, i.e. he continued to suppress them. His mother didn't come to his son's funeral, saying that she had back pain.

C

Mr. I, died at 58, diagnosed at 57, the interview took place when he was 55.

Mr. I is a heavy smoker, drinks a lot of alcohol (approx. 60 g/day, which corresponds to approx. one liter of wine), eats an unhealthy diet and has had digestive problems for years. He regularly takes aspirin due to chronic muscle pain. He describes the death of his father when he was 31 years old as his greatest dysstress. He still hasn't got over it. "I loved my father more than anything, he was my role model, but also my deepest emotional connection since early childhood." When he died, my world collapsed and I felt like I was under a glass bell for months. To this day, I keep dreaming that my father is still alive and wake up drenched in sweat and deeply saddened that it was only a dream. My mother still takes care of me to this day, but she is simply not the central figure for me. Since my father died, I can no longer express my feelings to other people. At work, I function like a machine and am very successful as an electrical engineer. But the inner pain of having to live without my father and never being able to reach him again is still unbearable for me today and even now, when I talk about it, it brings tears to my eyes." After the operation, I visited Mr. I. in the clinic and spoke briefly with his daughter and wife. Both were very shocked by Mr. I.'s condition. The daughter said that she loved her father more than anything and that it was terrible for her to have to lose him soon. She believes that he became ill through smoking and drinking and says that she asked him again and again, unfortunately unsuccessfully to the point of despair, to stop both. The wife says that during the entire marriage her husband never once said that he loved her or made any other emotional declaration of love to her. As the wife recounts this, Mr. I's mother sits at the bedside holding her son's hand.

Neither the family nor the attending physician believe that there are possible psychoneurobiological causes. The wife found it strange that the diagnosis was made on the same day that Mr. I's father died suddenly of a heart attack years ago.

(The type I behavior here is given in the longing for the father who is loved above all else and can no longer be reached).

10 Heart attack

The so-called Type II behavior from Grossarth's behavioral typology has already been described in this book. It always involves the feeling of being helplessly at the mercy of a negatively experienced object and the person is no longer able to distance themselves from the object (although it is experienced as disturbing, threatening, disgusting, characterless, unjust, etc.). Many situations and conditions fit this description.

Of course, heart attacks are not caused by a single psychosocial factor. This book has shown that a large number of physical and psychosocial risk factors are involved. This is only one prominent behavioral indicator, but it has a high predictive value because it is linked to various other risk factors that are not presented here. (e.g. a person who is permanently helplessly agitated tends to smoke more, drink more alcohol and eat less).

Mr. Ü, died at the age of 61 (death from his second heart attack, the first he had at the age of 59), interview at the age of 55.

Mr. Ü lived in a close and dependent relationship with his mother until he was 31. At the same time, he had to fulfill the role of son and husband. "I am everything to my mother, but only as long as I fulfill all her expectations. If there is the slightest deviation, if I don't agree with her, she threatens to radically reject me. Although I recognize that she is quite hysterical, I sometimes get a huge rage at her, which never led to me turning my back on her. I still don't know if my mother separated from my father or if my father left. This separation happened when I was 7 years old. Since then, my mother regularly sent me to my father to collect money, for at least 10 years. I always had to say how bad things were for us. If the father didn't want to pay, and that was the rule, he scolded the mother and said she was a bitch. When I came to my mother, she said that my father was an evil egotist who would prefer to starve us to death. And that it was best to kill men like that if at all possible. I developed a huge hatred for my father, but I was very helpless because I liked him a lot. To this day, I still experience hatred towards men who separate from their wives, even though the same thing happened to me. I was a rather good pupil at school, but when my mother got upset about a teacher or a neighbor who didn't treat me well, she sometimes threw a tantrum. But I always had the impression that she loved me incredibly. When I was 31, I met a woman who was 8 years older than me, fell in love with her and married her. From the very first day I met my wife, her mother began to plot against her and didn't leave a single good thing about her. I became increasingly angry with my mother and broke off the relationship for several years. Strangely enough, I also began to constantly find fault with my wife, often the same faults that my mother had also pointed out to her. I became more and more angry with my wife and at the same time more and more helpless. I began to seek comfort from my mother, but she usually rejected me or just said, 'It's your own fault.'

I had several bosses at work who rejected me and ignored my justified demands for a pay rise. My mother got into financial difficulties and I would have liked to help her and my wife more, but unfortunately that wasn't possible (because of the bosses' stinginess.) I started drinking alcohol, smoked more and more and ate every bit of "dirt". I wanted to change my behavior but couldn't and became more and more physically and mentally exhausted. I believe that my addiction was directly related to my stress. I was always a bundle of excitement, always at the mercy of other people's will. When my wife left me, I had severe bouts of anger and anxiety. Inwardly, I kept screaming at my wife, "You whore, how my mother was right when she called you an unfaithful person." I moved back in with my mother, where I still live today.

(Type II behavior: Tendency to helpless excitement in several areas of life)

9   Application of the research approach in practice

9.1.1   The company model

to prevent stress by stimulating self-regulation

Introduction

The question arises as to whether the results from the two randomized intervention experiments (see Chapters 5.4 and 5.6) can be replicated and whether the training methods can be applied in a work organization with employees suffering from considerable dysstress. The randomized experiments showed that significant physical and psychosocial risk factors were changed by the intervention and that the changes achieved were relevant for the subsequent health status (e.g. reduction in mortality, higher number of people who remained healthy compared to the non-trained control group).

A project was carried out with the employees of a company with the aim of using the research and intervention results as part of an anti-stress program and to stimulate problem solving through creative self-activation and redesigning communication at work.

The company sees this project as an offer within the scope of its health care/duty of care. It offers an instrument for individual prevention, with which it counteracts a possible risk of staff absence by enabling its employees to deal with the issue of stress in a solution-oriented manner in an anonymous form. Naturally, this is done in consultation with the staff council, which was involved from the outset, and the company doctor (external service provider) and the safety officer have also been informed. The staff council is regularly informed about new findings and the use of the offer.

Course of the project

As part of a presentation by Grossarth-Maticek, the company's managers were given detailed information on the subject of stress and stress management. Managers then completed an RGM questionnaire, which contained a large number of work-related questions as well as questions on individual dys- and eustress. It was then decided that an intervention package would be made available to all company members on a permanent basis.

The members were informed that material was available on the intranet. They could voluntarily read texts on the subject of "Well-being, health, problem solving through self-regulation" (see appendix), answer the "RGM self-regulation and dysstress questionnaire" (99 questions) in writing and were also offered free personal autonomy training by Grossarth-Maticek.

As this was a research project, the people who registered anonymously for the autonomy training were asked to answer the "RGM Self-Regulation and Health" questionnaire verbally (and recorded by the interviewer) once before the training and twice afterwards, at intervals of one and a half to two months.

The insights gained through the evaluation of the data are communicated with managers and, if necessary, the company doctor is involved with the aim of optimizing prevention, but also to deal effectively with acute incidents (if, for example, it turns out that employees are suffering greatly from a non-transparent flow of information).

32 people registered anonymously for autonomy training, whereby

24 people were trained in approx. 90-minute individual meetings.

The remaining 8 people completed the "RGM Self-Regulation and Health Questionnaire" three times without receiving autonomy training.

All 32 people first answered the "Self-regulation and dysstress" questionnaire for themselves and carefully read the training text on stimulating self-regulation. The 8 people without autonomy training received detailed, general explanations, e.g. about healthy and unhealthy behaviors, each time they answered the "RGM self-regulation and health" questionnaire, without addressing the individual problem analytically and interventively.

The aim of this procedure (people with autonomy training and multiple responses to the questionnaires with training text compared to the same procedure without autonomy training) was to find out whether there is a difference between the two interventions, combined with the hypothesis that the group with autonomy training is more effective.

We can speak of a control group of 8 people insofar as every 4th person was included in the group without autonomy training. These people were also able to take advantage of personal autonomy training after the data had been evaluated.

In this section, we focus on the effects of autonomy training; the comparison with people without autonomy training will be made at a later stage.

In the interviews, 13 people primarily addressed problems at work (e.g. organizational issues, fear of losing their job), while the remaining 11 people were directly or indirectly burdened by conflicts in connection with their family of origin/partner relationship. The remaining 6 people had problems with their own behavior and the negative consequences that could not be corrected (e.g. malnutrition).

To date, in addition to the 32 people, 29 people have completed and returned the standardized questionnaires (see appendix "RGM self-regulation and dysstress"), whereby this group was also partially evaluated statistically.

9.1.2 Results of the autonomy training in the company model

Hypotheses

The "RGM Self-Regulation and Health Questionnaire" contains behavior-relevant variables that appear to be modifiable through behavioral training. Here we speak of behavioral change. There are also variables that relate to circumstances (conditions) in the workplace. In this case, changes in relationships are more likely to be necessary, e.g. improving communication within a work organization.

1. the changed risk factors due to the intervention correspond to the changes in risk factors in the randomized intervention experiment of study B.
This hypothesis was impressively confirmed.

2. the changes in the second measurement are significantly better than after the first measurement.
This hypothesis could not be confirmed, although the results of the second measurement after the autonomy training still correlate very well with the relevant changes from the experiment in study B.

3. the intervention in autonomy training significantly changes variables that are dependent on individual behavior and less strongly variables that relate to conditions in the workplace.
These hypotheses are confirmed by the bivariate correlations.

4. based on the comparison between the results (changes in the before and after measurements) in the randomized intervention experiment/study B with the changes in the risk factors due to the interventions in the company model, a long-term health effect of the intervention can be hypothesized.
This hypothesis was confirmed.

5. the changes achieved in the company model correspond to the positive factors in prospective study B, i.e. the changes in the company model correlate with the factors in study B that maintain health into old age.
This hypothesis was confirmed.

6. in the company model, significant changes in a high number of psychosocial and medical risk factors in the direction of positive factors are achieved in the comparison of measurements before and after the autonomy training (the changes in the individual variables also go in the same direction as the changes in the randomized experiment of study B).
This hypothesis was confirmed.

Statistical results

The statistical analysis (T-test) shows that a large number of relevant risk factors were reduced after the intervention, with the second measurement showing even greater changes than the first.

The results show that far more significant changes can be seen in the 24 people who received the autonomy training than in the control group of 8 people who only answered the questionnaire three times. However, even if only questionnaires are answered several times with the simultaneous analysis of corresponding texts and general explanations, a certain learning effect occurs. For example, multiple answers to the questions showed significant changes in some work-related areas, but also in areas relating to personal behavioral skills in general: For example, a block in work motivation was significantly reduced. For example, the integration of self-identified skills with professional demands, flexibility at work and the feeling of personal competence improved significantly. There was also a feeling of pleasure and well-being and a reduction in displeasure. The respondents obviously made a connection between their own behavior and the answers to the questionnaire and achieved a learning effect through self-activation.

The significant changes in the 24 people with autonomy training relate to many more areas than in the 8 people without autonomy training: for example, the perceived integration of skills and professional requirements, self-active career design, needs-oriented flexible working and the sense of belonging at work changed significantly. Various factors from the area of personal behavior also changed in such a way that, for example, the inhibition of the regulation of closeness and distance to emotionally important people and the antagonistic activation of emotional and rational impulses were reduced (i.e. a better integration of reason and emotions was achieved).

Several significant changes were observed in the area of personality/behavior: e.g. self-love, love of God and the feeling of being loved by others increased. There was a significant reduction in polarizing and harmonizing loyalty conflict, dysstress and experiences of unpleasantness were significantly reduced, the ability to cope with stress, the ability to self-regulate, the feeling of inner autonomy, private well-being, the negative pleasure difference and feelings of pleasure improved significantly. Type I and type II behavior also decreased significantly, while type III and type IV behavior improved significantly. This example shows that Type I and Type II are not constant personality variables, but rather influenceable, learned and context-dependent behavior patterns.

The effects of autonomy training compared to answering the questions multiple times (8 people) can be illustrated by the changes in the variables that measure elements of burn-out syndrome: If the following variables are taken into account (mental and physical exhaustion, inability to recover, inability to separate from factors in professional life with negative consequences, experienced excessive demands in professional life, low well-being in professional life, pleasure, displeasure), 6 of the 7 factors were significantly changed in the autonomy training in the direction of reducing burn-out syndrome. In the group of 8 people, only three factors changed significantly (pleasure, displeasure, ability to separate), but there were no significant changes in factors such as mental and physical exhaustion or well-being at work (in the randomized experiment of study B, all 8 factors of burn-out syndrome changed significantly).

The analysis of the results in terms of significant and non-significant changes shows that the significant changes tend to be in the area of individual behavioral competence (behavioral change), while factors relating to conditions in professional life or other areas of life have changed less. For example, factors such as transparent or non-transparent information flow in the company, social insecurity (e.g. fear of losing one's job), expectations and work pressure, opportunities to shape the workplace, sources of disruption experienced, additional workload outside of work, type of communication) did not experience any significant change. Factors that lie in the past, such as the physical contact experienced with parents or changes that require longer developmental periods, could not be significantly changed either, e.g. reduction of chronic emotional pain or pleasure-related change from negative childhood experiences in the present.

The following tables show some exemplary results with regard to significant or non-significant changes in the variables from the "RGM Self-Regulation and Health Questionnaire".

The variable "uncontrollable anxiety" increased significantly in the opposite direction. This phenomenon was already evident in earlier experiments in relation to autonomy training. One possible explanation for this could be that People develop problem-solving and stress-management activities in different areas. Feelings of anxiety are evoked where old, 'familiar' behavioural patterns are abandoned and new desired behaviours have not yet stabilized sufficiently.

Some job-related variables are presented below in relation to their change before and after the autonomy training. As the structural conditions at the workplace and the emotional-cognitive perception are closely interrelated, it can also be seen here that areas that at first glance appear to be of a more structural nature (e.g. reward experiences at the workplace) also improved. Of the 12 variables shown, 11 changed significantly in the desired direction. Only the sources of disruption experienced in the workplace cannot be influenced by the improved self-regulation. Therefore, if structural changes/improvements are sought, then one would have to focus on the sources of interference experienced in order to identify and change these (ratio change).

Tab 1: Changes in the variables from the 1st and 2nd measurement in relation to job-related variables.

Statistics for paired samples		Mean value	Standard error of the mean
Pair 1	Well-being XVIII 1 1. measurement	3,29	,371
	2. measurement	4,94	,290
Pair 2	Working pressure XVIII 2	6,00	,309
	2. measurement	5,53	,298
Pair 3	Reward XVIII 3	3,06	,277
	2. measurement	3,65	,226
Pair 4	Design option XVIII 4	3,24	,338
	2. measurement	4,06	,234
Pair 5	Integration Capable/Required. XVIII 5	3,53	,311
	2. measurement	5,41	,374
Pair 6	Sources of interference XVIII 6	4,06	,369
	2. measurement	3,88	,308
Pair 7	Suffering from isolation at work XVIII 7	4,53	,375
	2. measurement	3,88	,342
Pair 8	Recognition in professional life XVIII 8	3,41	,285
	2. measurement	4,00	,257
Pair 9	Self-active career design XVIII 9	3,35	,411
	2. measurement	4,35	,353
Pair 10	Non-occupational stress XVIII 10	5,12	,461
	2. measurement	4,00	,343
Pair 11	Occupation overload XVIII 11	5,06	,441
	2. measurement	3,06	,441
Pair 12	Mental and physical exhaustion XVIII 13	5,88	,283
	2. measurement	3,35	,363

<u>Tab 2:</u> Significance of the differences between the first and second measurement in relation to job-related variables

Test with paired samples				
		T	df	Sig. (2-sided)
Pair 1	Well-being XVIII 1	-4,969	16	,000
Pair 2	Working pressure XVIII 2	1,926	16	,072
Pair 3	Reward XVIII 3	-2,582	16	,020
Pair 4	Design option XVIII 4	-4,197	16	,001
Pair 5	Integration Capable/Required. XVIII 5	-4,492	16	,000
Pair 6	Sources of interference XVIII 6	,418	16	,681
Pair 7	Insulation suffering	2,281	16	,037
Pair 8	Recognition in professional life XVIII 8	-2,416	16	,028
Pair 9	Self-active career design XVIII 9	-4,761	16	,000
Pair 10	Non-occupational stress XVIII 10	1,845	16	,084
Pair 11	Occupation overload XVIII 11	3,516	16	,003
Pair 12	Mental and physical exhaustion XVIII 13	5,563	16	,000

The following table shows examples of some of the changes achieved after autonomy training in the personal sphere:

<u>Tab 3</u>: Significance of the differences between the first and second measurement in relation to personal variables

	Test with paired samples								
	First and second measurement of each variable with the number on the "RGM self-regulation and health" questionnaire	Mean value	Stan-dard deviation	Stan-dard Error of the mean value	95% confidence interval of the difference		T	df	Sig. (2-side)
					Lower	Upper			
Pair 1	Private well-being XIV 1	-,800	1,656	,428	-1,717	,117	-1,871	14	,082
Pair 2	Religiosity XIV 2	-,533	,915	,236	-1,040	-,026	-2,256	14	,041
Pair 3	Social isolation XIV 3	-,533	1,506	,389	-1,367	,300	-1,372	14	,192
Pair 4	Self-regulation XIV 4	-1,933	1,668	,431	-2,857	-1,010	-4,490	14	,001
Pair 5	Internal autonomy XIV 9	-1,200	1,424	,368	-1,989	-,411	-3,263	14	,006
Pair 6	Integration v Ratio/Emotion XIV 10	-1,800	1,474	,380	-2,616	-,984	-4,731	14	,000 →

Pair 7	Division v Behavior and problem solving XIV 11	1,133	1,187	,307	,476	1,791	3,697	14	,002
Pair 8	Blockade of emotio.perception. XIV 13	1,333	1,543	,398	,479	2,188	3,347	14	,005
Pair 9	Splitting feelings and communication - XIV 12	1,267	1,486	,384	,443	2,090	3,300	14	,005
Pair 10	Existential fear XIV 14	,667	1,988	,513	-,434	1,768	1,299	14	,215
Pair 11	Isolation suffering XIV 15	,867	1,356	,350	,116	1,617	2,476	14	,027
Pair 12	Corrective blockage XIV 16	1,467	1,060	,274	,880	2,054	5,358	14	,000
Pair 13	Disruptive factors XIV 17	-,200	1,740	,449	-1,164	,764	-,445	14	,663
Pair 14	Shocking experiences XIV 18	-,200	2,210	,571	-1,424	1,024	-,350	14	,731
Pair 15	Distorted image XIV 19	,533	2,200	,568	-,685	1,751	,939	14	,364
Pair 16	Suggestion XIV 20	,800	2,426	,626	-,544	2,144	1,277	14	,222
Pair 17	Transforming negative feelings into positive ones XIV 21	-,467	,834	,215	-,928	-,005	-2,168	14	,048
Pair 18	Isolation in the family XIV 15	,600	1,765	,456	-,377	1,577	1,317	14	,209
Pair 19	Excessive family ties - XIV 23	,200	1,373	,355	-,560	,960	,564	14	,582
Pair 20	Loving autonomy in the family XIV 24	-,400	1,298	,335	-1,119	,319	-1,193	14	,253
Pair 21	Negative pleasure difference XIV 25	1,867	1,922	,496	,802	2,931	3,761	14	,002
Pair 22	Pleasant environment XIV 26	,067	,884	,228	-,423	,556	,292	14	,774
Pair 23	Quick reconciliation Family XIV 27	-,400	1,352	,349	-1,149	,349	-1,146	14	,271
Pair 24	Quick reconciliation Partner XIV 28	-,800	1,859	,480	-1,830	,230	-1,666	14	,118

9.1.3 Correlation between different characteristics of 108 psychosocial and physical risk variables in the various studies

(for variables see "RGM questionnaire on self-regulation and health" section 12.1)

The results of the prospective investigation in Study B show that certain medical and psychosocial variables are highly relevant for health status (causes of death, chronic diseases, health into old age). The randomized experiment from Study B also shows that psychosocial variables are relevant and that the changes in the trained group (comparison of the first measurement before autonomy training with the second measurement after autonomy training) are also significant for the health status. The changes achieved in autonomy training have a health-maintaining effect and correlate with the factors that are also health-maintaining in prospective study B. The first measurement in the randomized experiment largely reveals more risk factors and correlates more frequently with a negative health status than the second measurement after the autonomy training. This means that health-relevant changes occurred during autonomy training.

The question now arises as to whether the changes from the first to the second measurement or also the change between the second and third measurement in the company experiment correlate with the changes in the randomized experiment in study B and whether changes have occurred in the subsequent measurements in the company experiment that correlate with the health-relevant changes in the randomized experiment. If this were the case, then the assumption can be supported that a higher health status can also be predicted in the company model (although no prospective evaluation can yet take place here).

Data evaluation

In the company model, the change between the three measurements was evaluated for the 23 people who had undergone autonomy training.

Names of the different experiments and studies:
SEV21: Company, experiment, standardis. Change 2.-1. Measurement
SEV32: Company, experiment, standardis. Change 3.-2. Measurement
BEV21: Study B, experiment, standardis. Change 2.-1. measurement
BEG2: Study B, experiment, health relevance of the 2nd measurement
BPG: Study B, prospective study, health relevance

Numbering of the measurements:
1 = before the experiment
2 = after the experiment, 1st measurement
3 = after the experiment, 2nd measurement (only for SEV)

Health relevance = correlation with health status (for BEG: 2nd measurement = after the experiment)

Results

Correlations between the properties:

NAME	SEV21	SEV32	BEV21	BEG2	BPG
SEV21	1.00	0.79	0.89	0.87	0.88
SEV32	0.79	1.00	0.79	0.78	0.80
BEV21	0.89	0.79	1.00	0.95	0.93
BEG2	0.87	0.78	0.95	1.00	0.89
BPG	0.88	0.80	0.93	0.89	1.00

The upper right and lower left quarters are mirror images of each other and are only shown together for the sake of clarity.

<u>Health relevance of the changes</u>

Company experiment
r(SEV21,BEG2)=0.87 r(SEV21,BPG)=0.88

r(SEV32,BEG2)=0.78 r(SEV32,BPG)=0.80

The similarities of the two changes in the company experiment with the health relevance from study B, experiment and prospective investigation have almost the same numerical values as the similarities with the changes in the two studies B. This therefore means: In the company experiment (for which no health relevance can be specified due to the lack of a much later follow-up), the risk factors were changed quite similarly (r=0.87, 0.88) to their health relevance known from Study B, i.e. largely in the right direction and also pronouncedly stronger for the stronger risk factors.

Experiment Study B

r(BEV21,BEG2)=0.95 r(BEV21,BPG)=0.93

The result from "Experiment Company" (see above) applies to an even greater extent to the changes achieved in Experiment Study B: these are almost identical (r=0.95, 0.93) to the health relevance determined in Experiment B or Prospective Study B.

<u>The health relevance of burnout in the company model, compared with the results of the study B</u>

The following variables were constructed for the burn-out symptom:

1. Well-being at work (low well-being) (XVIII,1)
2. Experienced excessive demands in professional life (XVIII, 11)
3. Mental and physical exhaustion (XVIII, 13)
4. Ability to recover (minor inability to recover) (XIX, 14)
5. Ability to separate factors in professional life with negative consequences (XXI, 11)
6. Inhibition of lust for life (XXII, 1)
7. Stimulation of lust for life (low stimulation) (XXII, 2)
8. Chronic uncontrolled anxiety (XXII, 11)

The 8 variables all correlate very satisfactorily with each other, so the formation of the summarized variable "BU" is empirically justified according to conventional standards.
It was also asked which other variables would be suitable according to the same criterion.
The following variables also correlate highly with the burn-out variables:
Antagonistic activation of rational and emotional impulses (XXII, 9)
Lack of physical contact with the partner (XXII, 7)
Inhibition in the regulation of proximity and distance to emotionally significant objects (XXII, 8)
Inadequate regulation of pleasure and renunciation (XXII, 3)
Experienced demotivating criticism in the workplace (XXI, 14)

Burn-out syndrome is obviously a very complex, interactive phenomenon in which various regulatory disorders interact in the behavioral system.

Effects of burnout on mortality and health in study B (in the experiment of study B) and in the company model

	Connection with mortality and health status	Change after experimental intervention
Study B	r=0.65 RH Significance p<10{-79} (read "10 to the power of minus 79")	--
Company model	--	p<10{-16} RH
Experimental group in the experiment	r=0.64 RH p<10{-9}	p<10{-10} RH
Control group in the experiment	r=0.47 RH p=0.00005	Not significant

RH = direction according to hypothesis

The results show:
1. burn-out was significantly reduced in both experiments (experiment study B and company).
 2. burn-out significantly increases mortality and reduces health.
This is also the case in the control group of the experiment (with p=0.00005).
3. while burn-out was significantly reduced
in the company model and in the experimental group, the change in burn-out in the non-trained control group was not significant.
4 With regard to the significant reduction of burn-out in the company model and in comparison to the health impact of the significant reduction of burn-out symptoms in the experiment and study B, there is an indication that the burn-out reduction in the company model is of high health relevance.

Summary ~~und Ausblick~~
After the autonomy training and even after the repeated submission of the "RGM Self-Regulation and Dysstress Questionnaire" in combination with the training texts, positive changes are evident in a large number of areas relating to family/personality, work, as well as changes in some physical factors (e.g. reduction in cigarette smoking, change in diet).
This raises the critical question of how it is possible for so many areas to change significantly after just 90 minutes of autonomy training.
The answer is: If there is a change that generates well-being in a relevant area that is of the greatest emotional importance to the person, then the person also tends to approach certain problems and conflict situations differently and assess them more positively in other areas. Here, the subjective misreporting of changes (between the first and second measurement) could be difficult to distinguish from the objective situation in relation to areas where real changes have occurred.
What ultimately matters is the health impact of the stated changes. For this reason, prospective intervention studies were carried out. The evaluation of these studies shows that the subjective statements about changes (e.g. in relation to stress reduction) have a very high health relevance.
Once the study has been completed, the best questions from the two questionnaires will be presented to all company employees in the appendix. In addition, further cooperation is planned in that all company employees will receive a newsletter every two months in which new results from the stress research and autonomy training will be presented.
Other people can also register for autonomy training, and scientific lectures and possible seminar courses for company employees are also being considered.
The results can be used to further develop the cooperation, e.g. by developing and applying a "stress and stress management" expert system or by training company doctors in autonomy training (to reduce employee dysstress).

Discussion

Similarity of the changes in the two experiments

The changes in the company experiment (1st after-measurement) and the changes in the randomized experiment in study B are very similar: $r(SEV21,BEV21)=0.89$

The changes from the third to the second measurement in the company are somewhat less similar to those in the randomized experiment in study B than the changes immediately following the first measurement after the autonomy training, but still to a very high degree: $r(SEV32,BEV21)=0.79$.

10 Summary and discussion of the results

The most important results of this multidisciplinary prospective intervention study are as follows:

Different areas, e.g. career, family/personality and physical factors
1. interact in relation to health and illness,
2. can compensate for each other and
3. are dependent in their effect on the level of other factors (context dependency). Highly significant synergistic effects can be seen here (5.7.5).

If the various relevant factors from different areas of life are taken into account, then it seems possible,
4. predict different chronic diseases.
5 In addition, differential prediction of these different diseases is even possible (see 5.1).
6. certain control mechanisms regarding individual behavioral dispositions could be identified, e.g. as emotional-cognitive assumptions.
7. by knowing these, it is possible to influence an interactive system of dysstress and physical risk factors in the direction of maintaining health.
8 Our results on the health relevance of smoking are very differentiated: It could be shown that people with considerable physical and psychosocial risks are particularly at risk, as well as that passive smoking in childhood is an extreme risk for later illness. A further result shows that smokers who are at risk and whose conviction that they will fall ill as a result of smoking is reinforced by public education are significantly more likely to actually fall ill than smokers who do not see illness as an inevitable consequence of smoking. With regard to the interventions, it can be seen that autonomy training helps high-risk smokers in particular to reduce their smoking. (see chapter 7)
9 The results in Chapter 8 show that very precisely formulated psychosocial variables not only have a high predictive power, but that they also enable differential predictions, i.e. different clinical pictures and health can be significantly separated from each other. This work is a contribution to the specificity discussion in psychosomatic medicine.

Overall, the results show that successful prevention is only possible if an entire interactive psychosocial and physical system is changed (and not just individual factors).

► Interventions aimed at self-activation, self-awareness and self-regulation are able to change entire interactive systems and thus show considerable preventive effects. In two randomized experiments and in the intervention in the company model, changes have been documented in different areas as a result of autonomy training (see 5.4, 5.6, 9).
► The recording of a large number of risk and positive factors enables a differential prediction of different chronic diseases and maintenance of health into old age with a very low misclassification (see 5.1). Here, the results show that specific factor constellations enable a differential prediction of heart attack, bronchial and pancreatic cancer, Alzheimer's disease and health into old age.
► Our results show that the expression of pleasure and displeasure is strictly dependent on different risk factors and negative states (see 5.7.6).
► The specific research method is also part of an interactive communication process in which findings about the interrelationships between individual factors emerge. Thus, the relevance of the interviewer conditions in data collection (see 6.4) is not only an interesting research result, but also a necessary condition for collecting relevant data in the context of multidisciplinary research.

► With regard to Grossarth's typology, it can be seen that this is a very strong differential predictor, whereby not only chronic illnesses appear to be predictive of health, but cancer can also be differentially predicted from heart attacks. Nevertheless, even this extremely strong psychosocial variable loses its significance when other psychophysical variables are multivariately controlled. This result impressively shows that research into interactions is more important than concentrating on individual risk factors. (see Chapter 6.3)

► 5.7 ("Psychophysical interactions for health") shows that both variables relating to professional life and variables relating to personality and family are highly relevant for maintaining health into old age and the development of chronic diseases. *Thus, unfavorable occupational variables show synergistic effects with unfavorable personality and family factors in the direction of disease development.*

► Occupational variables show synergistic effects with physical risk factors, i.e., for example, *negative occupational conditions with pronounced physical risk factors develop synergistically in the direction of disease development,* while favorable occupational factors with weakly pronounced risk factors have an effect in the direction of maintaining health (see 5.7.5).

► There is a close correlation between *the influence of the family of origin and the circumstances in working life*. Here it becomes clear that aspects of working life that are highly relevant to the state of health are strongly influenced in their health effects by experiences in the family of origin (e.g. experienced rejection, excessive attachment, experienced autonomy with loving acceptance). (s. 5.9).

► Chapter 5.5 shows the interdependence of conditions in professional life and conditions in the area of personality and family. It is shown that the areas mentioned can compensate for each other in terms of their impact on health.
The table of multivariate correlations in 5.7.6 shows that adverse health effects due to personality and family, but also due to positive physical factors, can be compensated for by good working conditions. (see also 5.7)

► The results show that conditions in the workplace and certain behavioral characteristics related to working life have an important interaction. (s. 5.7.6)

► It can be statistically proven that *behavioral interventions* are more likely to change the behavioral variables, while the *relationship factors, such as* insufficient information flow in the workplace or inadequate reward systems, *tend to remain unaffected*. (s. 5.6)

► Certain risk factors lose their function when a large number of other factors are controlled. Different factors can *even have opposite effects in different contexts with other factors*: The example of strong work motivation shows that if it occurs in the context of a strong sense of belonging at work and experienced rewards in working life, it has a markedly health-promoting effect, whereas it has a detrimental effect on health if there is no sense of belonging at work in conjunction with unexperienced rewards at work and inhibitions in satisfying work-related needs (see 5.5.10).

► With regard to active and passive *cigarette smoking* (see Chapter 7), there is a highly significant bivariate correlation with regard to the development of heart attacks and lung cancer compared to people who remain healthy into old age. Although smoking contains a large number of disease-causing substances and is certainly extremely harmful, it is also evident here that a significant disease-causing effect is no longer detectable when other highly relevant disease factors are taken into multivariate consideration, especially chronic dysstress. In this context, the conviction of smokers that smoking causes serious illness (in conjunction with other pronounced risk factors) is particularly effective. This is where an emotional-cognitive, neurobiologically effective factor interacts with the objective damage to health caused by smoking. Smoking is obviously many times more effective in causing illness when the subjective factor of fear and the conviction of becoming ill is added.

► It is shown that cigarette smokers who are burdened with significant physical and psychosocial risk factors find it more difficult to give up smoking and become significantly more ill as a result of smoking than smokers who are less burdened with other risks. *With regard to successful interventions,* it is evident that the usual aversive techniques are

contraindicated and that a combination therapy of smoking cessation through suggestion of pleasant content in combination with autonomy training is the most successful. This demonstrates the need for intensive and multifactorial prevention that focuses on high-risk groups on the one hand and determines its strategies in intelligent prospective studies on the other.

► Chapter 6.5 (Causal analyses based on *historical data*) presents an initial analysis based on multiple measurements at annual intervals. Cause and effect over time can only be analyzed using historical data. These evaluations are interesting because people can test themselves from year to year and are thus able to record their risk. The initial results clearly show that general psychosocial stress is at the beginning of the chain of different risk factors.

► Chapter 5.9.6 (Effects of early childhood parent/child relationships) describes the connection between influences from early childhood and physical risk factors through to the development of chronic diseases or the maintenance of health into old age.

The results therefore show that the occupational variables are highly relevant to health status and that they interact closely with family influences, personality and physical risk factors. Statistical results can still be substantiated with further evaluations, but there is no reason to assume that the basic tendency of the results will be changed.

The results also show that successful interventions can be demonstrated in experiments and that similar changes can be achieved in operational practice.

Especially with regard to work variables, whose high interactive relevance is not sufficiently recognized either in psychosomatic medicine or in psychotherapy research, let alone in scientific epidemiology, this study underscores the need to address health-relevant occupational variables.

10.1 Outlook - scientific and social consequences

multidisciplinary research

The central concern of this work was research into the development and prevention of chronic diseases in the multidisciplinary field of action, with special consideration of psychosocial and work-related variables. The topic of dys- and eustress, also from the field of work, came to the fore.

The very large number of variables recorded, almost all of which proved to be statistically significant in their health relevance in bivariate terms, enables the analysis of mutual context-dependent interactions and dependencies like no other study in the world. The effect of individual relevant areas, such as dysstress at work or physical risk factors, is shown to be so context-dependent on other factors that it no longer appears possible to "objectively" present their effect in isolation from other factors.

The monocausal and monodisciplinary research disciplines in almost all areas of scientific, medical and psychosocial causal research have certainly intuitively suspected such connections (complex interaction systems cannot function in any other way than in multiple dependencies) and have nevertheless (in addition to modern technical development, which provides ever better research methods for different monodisciplines) increasingly restricted themselves to limited, mostly individual effective factors and narrowly defined processes. This results in interesting and very valuable findings which, however - detached from the complex interactive system of effects and from the context-dependent effect of the factor they capture - are neither able to achieve a prediction nor a preventive influence on the object they are researching (e.g. prevention of certain cancers by analyzing and influencing a molecular genetic factor).

Multidisciplinary interactive research offers integration approaches based on the principle of including as many relevant impact factors from different disciplines as possible until effective predictions and preventive interventions are possible. Such multidisciplinary integration and intervention will require interactive networks of specialists in the future. It is possible that multidisciplinary integration will refute some of the theoretical concepts from monodisciplinary research, taking into account interactive dependencies, and bring completely new effective factors to the fore, for example by taking into account the developmental history of the phenomena, including the interactive areas, when making a diagnosis. For example, the finding that conditions at work are influenced by conditions in the family of origin suggests that a family therapy intervention can be just as relevant as a work-related intervention in cases of work-related stress.

Monodisciplinary and multidisciplinary research are not mutually exclusive; on the contrary, both approaches fertilize each other and depend on each other. Multidisciplinary research requires monodisciplinary research results and stimuli, while monodisciplinary research requires an integration of the individual approaches in order to be able to come one step closer to the interactive complexity in the development of different phenomena, such as cancer or stress prevention.

If it is the case that complex systems can only be predicted and influenced if interacting factors from different areas of life are taken into account and influenced, then such a state of affairs implies that various problems that are of the utmost importance to society, e.g. the prevention and intervention of chronic diseases/cancer (including Alzheimer's disease), cannot be solved in a monocausal and monodisciplinary manner and urgently require a multidisciplinary approach. For this reason, Grossarth-Maticek's research may be more far-reaching than just in the field of multidisciplinary preventive medicine.

Preventive interventions can only be effective if they are implemented in multidisciplinary networks or if they are at least able to influence an interactive system of factors from different areas.

Finally, the *question is justified* as to whether the increasing scientific knowledge of mechanisms and limited impact factors, despite the hopes associated with it, repeatedly leads to knowledge traps from which no or only very limited solutions to problems can be expected.

In order to answer such questions and at the same time give multidisciplinary research and intervention a social opportunity, interactive systemic studies urgently need to be further developed so that the opportunity for integrative work with the aim of supplementing monocausality can arise.

Health and economic problems usually arise from the interaction of structural factors (e.g. physical risk factors), mental factors (e.g. emotional-cognitive perception) and the active behavior of individuals and groups.

While modern science places an extreme emphasis on structural analysis, the individual and social mentality and the impact of emotionally-cognitively driven behaviors on health and the economy have been neglected.

Our research findings suggest that structure, mentality and behavior are mutually influencing systems that are of paramount importance for both predictions and successful interventions. If the mentality and specific behavioral systems are not analyzed and taken into account, then any intervention loses tremendously in effectiveness.

In order to include the emotional-cognitive motivations and their behavioral relevance in the interaction system with structural influences, we have designed concrete intervention goals for the future based on the consequences of our research results in order to make a contribution to solving social problems that are of great urgency.

In monodisciplinary research and the resulting interventions, specific, isolated aspects are researched which are assumed to be causally linked to health, the onset of illness or the development of a problem. For example, family psychosomatics researches family interactions, personality psychology establishes a connection between certain behavioral dispositions and the development of certain illnesses, lifestyle research focuses on cigarette and alcohol addictions, malnutrition, etc., while medical sociology focuses on the connection between certain conditions in working life and certain personality dispositions.

Multidisciplinary research covers all of the above aspects, among others, but shows that the areas mentioned are closely interrelated, are influenced and modified by other factors and themselves have an impact on them. For this reason, it is legitimate to ask which interactions of individual areas are relevant for optimal preventive medicine and corporate culture and whether it is possible to speak of an optimization of individual social problem-solving skills when the multidisciplinary research results are reflected.

When negative communication is coupled with a blocked orientation towards one's own abilities, this leads to certain reactions, such as blocked work motivation and a lack of a sense of belonging. Another axis of interactive relationships that also influence professional life is the interaction between family experiences and personal behavior.

For example, they can activate the ability to separate from negative conditions in professional life.

In summary, it can be said that multidisciplinary research and intervention have the following consequences for health, problem-solving, social and private communication:

1. Integrating personal skills with professional requirements while stimulating positive communication in the process of problem-solving skills in the workplace and society is of central importance.

2. Without a family-dynamic and resulting interactive personality analysis, the motivational and conflict structures of work-related behaviour can only be insufficiently recognized. The prerequisite for effective intervention is an analysis that is able to recognize relevant motivations that have arisen interactively.

3. Religiosity also plays a role in the interactive system of a pronounced or inhibited problem-solving ability and should therefore be taken into account and stimulated.

4. Since working life (e.g. unfavorable conditions at the workplace, social isolation, fear of losing one's job) directly interacts with personality, family and physical factors, company and social representatives must demand not only the right to work, but also the right to humane conditions at the workplace.

5. The phenomenon of dysstress plays a social and health-related role in modern civilization. There is an increasing incidence of emotional distress that can no longer be resolved through personal resources and operational and social conditions. For this reason, stress research should be intensified and dysstress should possibly be seen as the number one cause of illness in Western civilization, but of course not in isolation, but in the interactive socio-psycho-biological system.

6. both the individual and group-specific social analyses of chronic dysstress and the tendency to transform into pleasure-oriented eustress cannot be dogmatically oriented towards specific research results (e.g. by activating reward systems), but must be oriented towards the unique representation of the different combinations of dysstress in specific systems. This involves identifying specific and often unique causes of dysstress and eliminating them by creatively redesigning forms of communication.

7. if the goal is to research complex interrelationships and then recognize them in the unique individual and social system in order to be able to carry out successful interventions to achieve changes and objectives of the greatest social importance (e.g. reduction of unemployment, interactive prevention of cancer), then the promotion and social recognition of ingenious scientific and social achievements is necessary.

8 Within the framework of monodisciplinary and monocausal interventions and routine behaviors, top performance has repeatedly developed on the one hand, but also an often counterproductive mediocrity on the other, which must lose importance in today's economic conditions if truly creative and positive social developments are expected. Of course, it is more convenient to cultivate monocausal thinking, possibly at a low intellectual level, than to approach the real complexity of phenomena with a great deal of effort and ingenious energy. However, this is precisely the crossroads between a self-imposed social resignation or an emotional and intellectual *spirit of optimism*, which only emerges when people and society get the feeling that they can tackle upcoming problems in a fun, creative and proactive way. Particularly in our society, in which economization is advancing in all areas and individual self-activation and creativity, i.e. human potential, are not recognized as independent values but only as functional, multidisciplinary research can represent a new motivational potential that counteracts the alienation of people from their social nature. People and society will not only be able to better recognize themselves in their complexity, in their sources of pleasure and displeasure, in their creativity, their health and illness factors, but also to strengthen their own problem-solving potential through creative self-activation. This does not weaken the economy, society, innovation or work effectiveness, but stimulates them. Multidisciplinary research therefore not only has a scientific significance, e.g. in stress prevention, but also plays a very important role in stimulating an innovative economy, politics and culture.

7. 11 Bibliography

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12 Appendix

~~8.1.4.~~12.1 RGM Self-Regulation and Health Questionnaire

Overview
  I Medical data, risk factors
  II Total cholesterol
III Cigarette smoking
  IV Nutrition
Alcohol consumption
  VI Coffee consumption
VII Diabetes Mellitus
  VIII Blood pressure
IX Physical movement
  X Pre-damage to organs
XI cancer : family history in a straight line
XII family history of heart attack, stroke
  XIII Medication intake
XIV Behavior, stress, personality
XV Self classification (1-7) in Grossarth's typology
XVI Interview classification (1-7) in Grossarth's typology
XVIII Classification by relatives/acquaintances (1-7) in Grossarth's typology
XVIII Work , family and environment
XIX Love of self and love of others - conflicts
  XX Inflammations/allergies
XXI Enactive career design and motivation
  XXII Dysstress/Eustress

Questions from XIV onwards are answered according to the following categories: 0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong

General data

Ia. Symptoms and chronic illnesses that serve to exclude the patient from the prospective intervention study and to immediately refer the patient to a doctor:

Do you suffer or have you suffered from any of the following diseases?
Heart attack
Cancer
A mood disorder (endogenous psychosis, e.g. schizophrenia or manic-depressive illness)
Another serious chronic illness (e.g. multiple sclerosis, if yes: which one?

Have you been feeling very ill recently?
yes - no

Have you recently experienced the following health problems?
Long-lasting digestive disorders
Difficulty swallowing
Hoarseness with cough
Disorders in the bowel and bladder
Wounds that do not heal
Lumps or thickenings on a part of the body
Unusual bleeding or other secretions
Pain in the back radiating into the abdomen
Large weight loss
Chest pain with radiation to the left arm
Stomach ache
Dizziness with general weakness
Any other complaints that worry you, if so, what are they?

Medical data, risk factors

I General data

1. consecutive survey sheet number
2. how *old* are you?
3. *gender* 1 male 2 female
4. what *school-leaving qualification do* you have?
Elementary school - middle school or intermediate school - high school diploma - university degree
5 Which *professional group* do you or did you belong to?
Workers
Small employee
Intermediate employee
Senior employee
Civil servant
Farmer or self-employed trader with a small business
Farmer or self-employed trader with a larger business
Liberal professions
Housewife
Pensioner
6. which *denomination do* they belong to?
The Catholic
The Protestant
A Jewish
A small active Christian community, e.g. Jehovah's Witnesses
Islam
Orthodox (Greek or Russian)
Another religion (which one?)
None
Have you been in direct contact with the following on a regular basis for more than 10 years?
7. asbestos? yes/no
8. different chemicals (e.g. as a laboratory technician, work in the chemical industry, cleaning)? yes/no
9. different solvents? yes/no
10. with different pesticides (e.g. as an agricultural worker)? yes/no
11. intensive car emissions (e.g. driving, living, moving near heavy traffic) - how many hours a day? (Questions 7-11 not evaluated in these studies)
12th interviewer Year

II Total cholesterol

(at an average interval of 1 to 2 months (1- 6-fold measurement))

III Cigarette smoking

1. years
2. number per day
3. consumption increasing from year to year (+), decreasing (-), constant (0)
4. ex-smoker, years

IV Nutrition

What does your average diet look like if you consider the last 3 years?
1. little and healthy (e.g. mainly fruit, fresh vegetables, low fat and carbohydrates)
2. medium and healthy (as above, only slightly more)
3. plenty and healthy (as above but in large quantities)
4. little and unhealthy (very rarely fresh fruit and vegetables (e.g. once a month), regularly little sausage, meat, fat, carbohydrates)
5. medium and unhealthy (as in 4., only slightly more)
6. a lot and unhealthy (as above but in large quantities)
7. little, sometimes healthy, sometimes unhealthy
8. medium, sometimes healthy, sometimes unhealthy
9. a lot, sometimes healthy, sometimes unhealthy

How does your diet affect you in general?
10. beneficial
11. neutral (sometimes pleasant, sometimes not pleasant, mostly neutral)
12. mostly discomfort-inducing
13. Chronic digestive disorders
14. Chronic diarrhea
15. Chronic constipation

V Alcohol consumption

1. years of consumption
2. gram of alcohol per day
(Determination: what types of alcohol do you drink and in what quantities on average per week? The amount is divided by 7 and converted into g alcohol according to a standardized table)
3. has your consumption in the last 5 years been
increasing (+), decreasing (-), constant (0)?
4. are you an ex-alcoholic? If so, for how many years?
5. do you consume Klosterfrau Melissa Spirit?
6 If yes, how many years?
7. how many times a month?
8. in which daily dose: 1 = recommended dose, 2 = less than recommended, 3 = more than recommended
9 If you consider the last three years: How satisfied are you with the effect you have experienced with Klosterfrau Melissengeist?
0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong
10. do you consume Klosterfrau Melissa Spirit
a) to increase your general well-being Yes/No
and/or

Consume Klosterfrau Melissa Spirit
b) to reduce certain symptoms (e.g. nervousness, difficulty falling asleep, sleep problems, cold symptoms, digestive problems, muscle pain)? Yes/No

VI Coffee consumption

1. how many years have you been drinking coffee?
2. how many cups per day in the last 5 years?
3. are you an ex-coffee drinker?
4. how many years have you stopped drinking coffee?

VII Do you suffer from diabetes mellitus?

If yes:
1. how many years of insulin treatment?
2. how many years of oral treatment?

VIII Blood pressure

(6 systolic and diastolic measurements on the left arm simultaneously with cholesterol measurement)

IX Physical exercise

In which group of exercise habits would you place yourself, taking into account the last 5 years?
1. regularly and moderately
2. regularly and forcefully
3. moderate and irregular
4. forced and irregular
5. Lack of physical exercise

How do you generally experience your physical activity over the last 5 years?
6. beneficial
7. neutral
8. causing discomfort
9. body weight (RR)

X Organ damage

Have you been diagnosed with one of the following organic diseases by a doctor?
1st type of *sclerosis at the back of the eye*; 4 types:
    1 non-pronounced sclerosis
    2 Pronounced due to age
    3 pronounced
    4 extremely pronounced
The people were sent to cooperating ophthalmologists to diagnose sclerosis at the back of the eye.
2. chronic pancreatitis
(chronic inflammation of the pancreas), years
3. angina pectoris
(chest pain radiating to the left arm) , years
4. chronic obstructive bronchitis
(bronchitis, inflammation of the bronchi with massive purulent sputum) , years
5. pulmonary tuberculosis, years
6. gastric ulcer with partial or total resection
(part or all of the stomach was removed) , years   →

7. Chronic atrophic gastritis
(chronic gastritis), years
8. familial poliposis

(intestinal polyps that have been surgically removed, years
were not operated on, years
9. ulcerative colitis, years
10. gallstones, years
11. liver cirrhosis, years
12. hepatitis B, years
13. hypoacidity of the stomach (too little acid), years

XI Cancer:

Family burden in direct line (6 persons, number) - If yes, how many persons?
Did one or more people in your family (father, mother or grandparents) suffer from cancer? If yes, what type of cancer:
 1. pancreatic cancer (pancreas)
 2. colon carcinoma
 3. rectal cancer
 4. breast carcinoma (breast cancer)
 5. corpus uteri carcinoma (cancer of the uterus)
 6. cervical carcinoma (cancer of the cervix)
 7. ovarian carcinoma (ovarian cancer)
 8. kidney carcinoma
 9. testicular carcinoma
10. lung carcinoma or cancer of the bronchi (bronchial carcinoma)
11. stomach carcinoma
12. liver carcinoma
13. malignant melanoma (black skin cancer)
14 other type of cancer

XII Heart attack, stroke

1. myocardial infarction (family history in a straight line, number if yes, how many people)
2nd stroke
3. m-Alzheimer's disease
4. parkinson's disease

XIII Taking medication

1. do you permanently take medication that has a *dampening, inhibiting, calming effect* (e.g. anti-anxiety medication)? (if yes, for how many years?)
2 Are you permanently taking a medication that has a *stimulating effect, e.g.* for depression?
3. do you take *acetylsalicylic acid* regularly, e.g. several times a week or daily (e.g. aspirin)?
4. take *another medication* regularly
5. another NSAID

XIV Behavior, stress, personality

1. degree of well-being: If you consider the last 3 years of your life, how pronounced was your *well-being*?
0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong

275

2. *religiosity*: In which type of religiosity described here would you categorize yourself?
1 atheist with anger at God and the church
2 atheist for rational reasons
3 Churchgoers and supporters of church norms and customs
4 markedly God-centered, e.g. strong love for God, feels loved by God, feels the beneficial effect of the Holy Spirit.

3. *Social isolation*: Have you lived alone in the last 3 years, i.e. isolated from other people, e.g. from relatives, in your home, due to a lack of human contact, etc. If so, to what extent?

4. *self-regulation*: the mean value of a summarized variable from 16 questions listed at the end of this questionnaire (see p. 229)

5. gynecological stress 1 (for women only): unfulfilled longing for maternal closeness:
Do you still suffer from a lack of closeness, love and recognition from your mother (i.e. do you have an unfulfilled longing for more loving closeness to your mother)?
6. gynecological stress 2:
Are you still suffering today because of a painful separation from a child and/or unrealized, longed-for closeness (e.g. death, separation after an argument, insufficient recognition, etc.)?
7. gynecological stress 3:
Are you still suffering to this day because of an abortion or stillbirth that caused you to lose a longed-for and desired child?
 8. gynecological stress 4:
Do you try to achieve human closeness and security through sexuality with quick and frequent partner changes without success (e.g. by regularly turning hopes before the encounter into depression after the encounter)?

9. *inner autonomy*: I am inwardly independent of people, substances and behaviors that lead to negative consequences in the mistaken expectation of positive consequences (e.g. from alcohol, medication, malnutrition, a parent, a dismissive supervisor, etc.)

10. *integration of reason, feeling and intuition*: I am usually able to experience my feelings in such a way that they are understood and supported by reason and to use my reason in such a way that they lead to positive feelings. The good interplay of reason and emotion also gives me good intuition, e.g. by recognizing things correctly at an early stage.

11. *splitting of problems and behavior*: I am often completely incapable of solving my accumulated problems through my behavior and have the feeling that my behavior is split off from the problems that are troubling me.

12. i often have the feeling that *negative feelings dominate* me and that i am unable to transform them into positive feelings in my interpersonal communications (in my interpersonal relationships), so that a feeling of hopelessness sets in.

13. *blockage of emotional perception*: I am usually unable to perceive and recognize my feelings and to behave in an emotionally controlled manner (e.g. I tend to behave rationally in line with external demands and expectations).

14. *existential anxiety*: I feel insecure, threatened and restricted in my existence

15. *suffering from isolation*: I suffer from isolation from an important person (e.g. because I cannot achieve the recognition or closeness I long for)

16. *behavioral correction blockade*: I have great difficulty in certain areas of my life in changing behaviors that continue to have negative consequences for me (e.g. in the physical or emotional area)

17. *Experienced disruptive factors with helpless overexcitement*: I always feel helpless in the face of negative experiences with people or situations that repeatedly cause me to become agitated and which I am unable to control internally.

18. *shock experiences*: I still suffer to this day due to certain experiences that have caused me to feel completely overwhelmed (e.g. hospitalization in early childhood, bombings, unfair treatment by a parent, etc.).

19. *experienced denunciation of my image*: I suffer to the present day due to the attempt of certain persons or organizations to defame my person against any truthfulness with the ultimate intention of destroying me as far as possible.

20. *lack of stimulation*, *monotony*: I have been living for years in a state of lack of stimulation, characterized by boredom.

21. *ability to transform emotional qualities*: I am regularly able to transform negative feelings into positive ones through my behavior (e.g. by entering into new communications, talking to people, etc.).

22. *isolation, rejection in the family of origin*: As a child, I was rather rejected in my family, loved little and given little emotional recognition.

23. *excessive attachment to my family of origin*: My family members tied me strongly to them with great emotional expectations that still bind me to this day.

24. *autonomy with loving acceptance* in the family of origin: My family members lovingly recognized me and gave me all the inner freedom I needed to make my emotional decisions.

25. *negative pleasure difference*: The intensity of my positive feelings was stronger in the past than in the present.

26. *Pleasant environment*: I can enjoy my physical environment, e.g. nature, residential area, home, on a daily basis.

27. *ability to reconcile in the family of origin*: when conflicts arise with my parents (e.g. arguments, experiences of rejection, anger, etc.), I am regularly able to reconcile with them very quickly in a fun way.

28. *ability to reconcile with my partner/spouse*: when conflicts arise with my partner/spouse (e.g. arguments, experiences of rejection, anger, etc.), I am regularly able to reconcile with them very quickly and with pleasure.

Grossarth's typology

XV Self-assessment (1 - 7)
XVI Interviewer classification (1 - 7)
XVII Classification by relatives/acquaintances (1 - 7)

1. *type I: traumatically experienced separation with persistent suffering* in isolation from emotionally important people and / or unrealized, longed-for states and goals
By isolation suffering we mean a state in which the person cannot reach a highly valued, longed-for, emotionally needed person and/or a desired state (e.g. in professional life) in such a way that emotionally intense suffering sets in (e.g. inner hopelessness, despair, emotional pain). In isolation suffering, a longed-for and desired closeness, e.g. to an emotionally important person or the realization of a desired goal, is usually not achieved, so that long-lasting and uncorrectable suffering occurs in the distance from a longed-for person or a longed-for state. A permanent feeling of hopelessness sets in, in which the suffering of isolation can no longer be alleviated by one's own behavior.
Out of fear of rejection and isolation, the person behaves altruistically, seeks harmony and strains themselves to the point of mental and physical exhaustion.
Do you suffer in isolation from a person who is emotionally important to you and/or through the non-realization of a desired goal or state for a long time without having the feeling of being able to free yourself from suffering in the long term?

2. *type II: persistent suffering from disturbing, threatening, negatively experienced objects*
This describes a state in which the person reacts to negatively experienced people, groups, conditions or their own behavior with agitation, anger, latent aggression and is still unable to distance themselves from the disturbing people or conditions or to change them as desired. They feel helplessly at the mercy of the effects of the disturbing factors, e.g. because they are unable to create emotional distance. This leads to a feeling of persistent hopelessness.
Do you suffer from negatively experienced, disturbing, obstructive persons or conditions from which you are unable to distance yourself emotionally, so that a feeling of being helplessly at the mercy of a negative effect prevails?

3. *type III: narcissistic ambivalence*
The person is extremely focused on their own person, e.g. on their own feelings, on the slightest symptoms of illness, and is extremely ambivalent towards external objects (e.g. other people, groups, social conditions, etc.). As a rule, they have a positive attitude towards objects that completely affirm their own person, while they have an extremely negative attitude towards objects from which they experience even a slight aversion. The person alternates short-term phases of isolation suffering with phases in which the person is upset by disturbing objects and phases of well-being in which they achieve pleasure through non-conformist behavior. A relatively rapid alternation of pleasant, positive and unpleasant, negative feelings over the course of a day is the rule. Neither in a state of isolation nor in a state of excitement is she at the mercy of negative feelings for long periods of time and from these phases she develops competent, but generally inappropriate behavior towards achieving short-term well-being.
How pronounced is the behavior?

4. *type IV: Self-regulation that generates well-being*
In their everyday behavior, the person is always able to achieve pleasure, well-being, security, development and meaningfulness, both by renouncing unattainable or harmful objects and by redesigning and actively creating longed-for states and relationships that lead to well-being.
How pronounced is the behavior?

5. *type V: rational anti-emotional behavior*
The person is oriented towards different norms (legal, scientific, ideological) and is strongly oriented towards rational, reason-based and reason-guided behavior and is only able to align behavior with feelings and emotional impulses with difficulty (i.e. they have difficulty

perceiving feelings, dealing with feelings and using feelings to correct their own behavior if necessary).
How pronounced is the behavior?

6. type VI: emotionally anti-rational behavior
The person is extremely focused on emotional impulses (e.g. emotional outbursts) and is unable to explain their often conspicuous, emotional behavior rationally and in a way that others can understand.
How pronounced is the behavior?

XVIII Work , family and environment
1. how pronounced is your *well-being* at work?
0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong

2. how pronounced is the *work pressure* in your professional life (e.g. expectations from customers and superiors that do not tolerate any delay, high performance requirements, etc.)?

3. to what extent do you experience *recognition and reward* for your work in your professional life (e.g. at work)?

4. how pronounced are your personal opportunities to shape and *influence* your professional life (e.g. at work)?

5. to what extent are your personal *professional skills integrated with the requirements of your professional life* (so that your personal professional skills and interests that you and your superiors pursue interact successfully)?

6. do you feel repeatedly *disturbed and hindered* in your professional life by people and situations that you experience negatively, so that negative feelings arise such as agitation, anger or the feeling of being helplessly at the mercy of negative situations at work?

7. do you repeatedly feel *isolated* in your professional life, e.g. not recognized, outcast, so that considerable suffering arises in the isolation from desired states, behaviors or work colleagues?

8. do you always experience *recognition and appreciation* for your performance and commitment in your professional life?

9. if you look back over your entire professional life, to what extent have you *helped to shape your own professional activity*?

10. how significant is your *extra workload* (e.g. in the household, in the care and nursing of family members, involvement in clubs, etc.)?

11. do you experience *recurring excessive demands* in your professional life, i.e. are the stresses and demands so pronounced that you find them painfully insurmountable?

12. what is the relationship between your professional life and your private life?
   1. my well-being-generating private life is in a pleasant relationship with my well-being-generating professional life.
   2. my private life, which generates well-being, is often in contrast to my often unpleasant professional life.
   3. my often stressful private life stands in contrast to my professional life, which generates well-being.
   4 I have a stressful private life and an unpleasant professional life (whereby both areas often influence each other negatively).

279

13. Mental and physical exhaustion at work
In my professional work activities (e.g. at work) over the last three years, I have repeatedly become mentally and physically exhausted (e.g. tired quickly, lacking stamina, lacking strength and energy, exhausted, etc.).

XIX Self-love and love of others - conflicts

1. how strong is your *capacity for self-esteem* and self-love?
0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong

2. how strong is your clear *love for your parents*?

3. how strong is your clear *love for your other family members* (e.g. children, spouse, etc.)?

4. how strong is your love for people who are important to you?

5 How strong is *your love for God*?

6. to what extent do you generally feel *loved yourself*?

7. do you often try to *create harmony* and a good understanding between two people (e.g. between mother and spouse), but your sympathies are clearly on the side of one person?

8. do you often try to create *harmony* and a good understanding between 2 people you both love, *but who argue among themselves and show no willingness to reconcile*?

9. if you consider all the important areas of your life (e.g. work, family, your own behavior, diet, etc.), to what extent do you feel *overwhelmed overall* and unable to overcome stress and meet demands?

10. if you consider all the important areas of your life (e.g. work, family, your own behavior, diet, etc.), how strongly do you feel that you can *overcome* and deal with your important stresses, *demands and tasks in a way that creates well-being?*

11 If you consider all the important areas of your life (e.g. work, family, your own behavior, diet, etc.), to *what extent do you always feel pleasure* and a pronounced sense of well-being *in different areas?*

12. if you consider all the important areas of your life (e.g. work, family, your own behavior, diet, etc.), to *what extent do you repeatedly experience a lack of pleasure* and a pronounced feeling of discomfort *in different areas?*

13. to what extent do you feel *able to solve your daily problems* and overcome stress?

14. how strong is your *ability to recover regularly* (e.g. through restful sleep, recovery through physical exercise, meditation, hobbies, etc.)?

15. do you often hold on *to your views or behaviors* for a very long time and *with a certain stubbornness,* which usually do you more harm than good?

16. are you generally a very flexible person, i.e. able to creatively change ways of thinking and dependencies as soon as you realize that they are not able to solve your problems?

XX Inflammations/allergies

1. do you suffer from one or more *chronic inflammations*?
if so, how many?

2. how many years have you been suffering from chronic inflammation?

3. have you had a high temperature in the last 10 years? if so, how high?

4. how often have you had a high *temperature in the* last 5 years?

5. do you suffer from one or more *allergic diseases* diagnosed by a doctor*?* yes/no

6. do you suffer from one or more *autoimmune diseases* diagnosed by a doctor? yes/no

XXI Self-active career design and motivation

1. Needs-oriented professional life
To what extent do your work and professional life correspond to your most important needs and feelings?
0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong

2. flexible activation in working life
I am always able to change my professional activities flexibly and adapt them to new requirements.

3. multidimensional mobility in professional life
I am always able to develop professionally in several places (cities, countries) if necessary.

4. professional visions
In my professional life, I always pursue visions, e.g. by finding creative solutions to problems instead of just carrying out predefined work steps.

5. multidimensional flexibility in professional life
I am always able to strive for different career goals and use different activities in the process.

6. professional life based on own abilities
My professional life is largely aligned and organized according to my own abilities.

7. professional life resulting from the relationship with God
My professional life and my motivation to work are largely determined by my relationship with God.

8. permanent learning with high motivation to absorb information
I am highly motivated to constantly absorb and process new professional information and am therefore constantly learning.

9. enthusiasm about the personal contribution
I am always enthusiastic about myself because of my professional performance.

10. positive communication in professional life
I am generally able to establish positive communication in my professional life, i.e. communication in which I am recognized and rewarded for my performance and skills, but can also acknowledge the positive achievements of my colleagues.

11. ability to separate in the event of negative communication in professional life
I am generally able to distance myself in my professional life from people and situations in which I feel inadequately recognized and rewarded.

12. ability to inspire business partners
I am always able to motivate and inspire my employees, business partners and superiors through my own work.

13. ability to establish positive communications in advance
I am always able to establish positive and motivating communication, e.g. with business partners, before important appointments.

14. criticism of work performance experienced as obstructive

Experiencing negative, unfair criticism from superiors and coworkers that is directed at one's own person and performance and strongly hinders work motivation and causes negative feelings (e.g. anger, disappointment, experiencing oneself in a distorted image that has nothing to do with one).

15 Social and economic uncertainty
Social and economic insecurity (e.g. fear of losing one's job, over-indebtedness with negative consequences for the family, prolonged unemployment, fear that one's own company will go bankrupt without financial security, failed businesses, etc.).

16. transparency through information
My superiors regularly inform me and the staff about work goals, tasks of each individual, upcoming organizational changes, performance, opportunities and threats for the future, etc., so that I do not feel left out of decisions without being informed.

17. management decisions perceived as not transparent
I always feel ignored and threatened in my need for security by decisions made by my superiors that I don't understand, so that I often feel helpless and powerless.

18. sense of belonging in the workplace
I feel part of my workplace and the whole company!

19. work and performance motivation in professional life
I am usually highly motivated to perform well in my professional life.

20. blocked work and performance motivation
Due to certain circumstances and influences, I am hindered in my motivation to work, inwardly blocked, so that I only do what is necessary and unavoidable.

XXII Dysstress/Eustress

1. general factor that leads to the inhibition of the desire to live and the destruction of the will to live

Certain conditions, events and personal behaviors can lead to a reduction in the desire to live, to such an extent that the will to live is destroyed internally. This can happen for very different reasons: e.g. after repeated malnutrition with extremely negative consequences, after the loss of an extremely important person through death or separation, etc.

Do you experience certain influences in your life that repeatedly reduce your zest for life and systematically destroy your will to live?

0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong

2. general factor that leads to the stimulation of lust for life

In the course of their lives, people can develop different activities and encounter different people and conditions that stimulate and maintain a general zest for life in them. For one person this may be an intense relationship with God, for another the practice of a particular sporting activity, a professional activity or sexual activation. Another person may experience love for family and children, while another person may feel at ease in seclusion. Of course, several factors can interact to stimulate the general zest for life.

Are there one or more factors in your life that repeatedly stimulate positive feelings in you (e.g. general zest for life, inner security and stability, states of happiness, trust, pleasant feelings of belonging, etc.)?

3. synergy effects between pleasure and renunciation: well-being-generating interaction between the ability to enjoy (e.g. eating, drinking, sexuality, enjoyment of work, etc.) and the ability to renounce (e.g. not eating again when full, etc.)

There are people who strive for pleasure and well-being through a certain activity for so long that they no longer realize that they have long since reached the realm of displeasure and discomfort. On the other hand, there are people who live in such a state of renunciation that they systematically avoid all pleasure. There is also a wellbeing-generating interplay between the controlled ability to enjoy and the wellbeing-generating ability to go without at the right moment.

To what extent is the interplay of pleasure and renunciation optimally developed in you, i.e. your ability to experience pleasurable enjoyment through many activities and then lasting well-being in a state of renunciation?

4. positive communication: appreciative communication that creates a sense of security

Positive communication with fellow human beings in different areas of life exists when people recognize each other's strengths and abilities and their weaknesses are balanced out by the strengths of others.

If you consider all the forms of relationships you have had at home, at work, in your partner relationship, in education, etc., do you have the feeling that you were predominantly recognized and supported in your abilities and strengths by people who were of the greatest importance to you, and that your weaknesses were compensated for by their efforts?

5. mental training through a pronounced need for information and information processing
There are people who have a great need to constantly receive new information and then sort through it, e.g. to form their own opinions or use it for positive experiences or career advancement. However, there are also people who tend to relate to very limited information in everyday life and are less motivated to constantly deal with new topics and problems. (The absorption of information can be rather tiring and stimulate discomfort, but it can also be associated with a pleasurable urge for new knowledge).
How strong is your need for ever new information that you can use to create pleasure and well-being in your private life and at work?

6. reconciling and problem-solving physical contact
Many people have not had beneficial and conflict-resolving physical contact either in their family of origin or in their partner or friend relationships (e.g. that the child is lovingly and reconciliatively embraced after arguments with the parents or that an argument between partners is transformed into reconciliatory physical contact).
To what extent did you have pleasant and always reconciling physical contact with your parents?

7. to what extent do you have pleasant and constantly reconciling physical contact in your partner relationship?

8. inhibition in the regulation of closeness and distance
The person is unable to live happily and contentedly either with or without another person or situation (e.g. at work), i.e. they can neither distance themselves comfortably nor live contentedly in the vicinity of a particular person or situation.
Do you have the feeling that you have not been able to live happily, contentedly and relaxed with a person or in a situation for a long time, nor can you manage without this person or situation?

9. antagonistic activation of emotional and rational impulses
Feelings and reason can interact harmoniously with each other, but they can also inhibit and block each other. If certain emotional impulses with strong intensity are not accepted by certain rational considerations and if certain rational impulses are directed against certain intense feelings, then we speak of an antagonistic activation of feelings and reason, i.e. a mutual blocking, whereby neither side gives way (by weakening itself, for example).
Do you often experience a mutual obstruction between your emotional impulses and rational considerations?

10. chronic, persistent, unresolvable emotional pain
Over the course of a lifetime, from early childhood to adulthood, people repeatedly experience rejection, injuries that are experienced as unjustified, e.g. in the case of break-ups, malicious interpretations, etc. Not every hurt remains persistently unprocessed and with a negative effect, e.g. because it is possible to resolve it by reshaping communication. However, there are also experiences and events that may be of minor importance to an outsider, but which lead to lasting emotional pain and are carried within as a wound that refuses to heal for many years.
Do you carry a recurring emotional pain that you have never been able to resolve (e.g. anger due to unfair treatment, separation, suffering due to rejection by an important parent experienced in early childhood, etc.)?
How pronounced is it?

11 Chronic, intense and uncontrollable anxiety
Feelings of anxiety can occur in the short term, but they can also manifest themselves in the long term and intensely, causing a state in which the person can no longer control, influence or eliminate them.
Do you experience persistent anxiety without being able to eliminate it (so that you feel helplessly at the mercy of anxiety, for example)?

General information on the connection between childhood experience and the present
In childhood (e.g. in the relationship with the mother ...) different needs, conflicts and possibly long-lasting, never resolved traumatic experiences arise (e.g. need for recognition from a parent that was never satisfied ...).
In the present, people can repeatedly align themselves with childhood experiences and even unconsciously manipulate current interpersonal communication in such a way that certain childhood experiences keep resurfacing.
There are people who are able to creatively incorporate both positive and negative childhood experiences in their family of origin into the present in pleasure-oriented behavior and relationships and thus process them positively.
However, there are also people who are unable to do this. Negative childhood experiences (e.g. traumatic rejections) can be experienced repeatedly in the present in such a way that long-lasting inner resignation, despair, hopelessness, apathy etc. can occur. However, such feelings can also arise when a person from an ideal parental home, in which tensions and conflicts were extremely rare, is confronted with rejecting and conflict-generating people and situations in the present and helplessly longs for the ideal family circumstances because they have not learned dysstress resistance.

You can use the next two questions to find out which group of people you belong to.

12. *pleasure-oriented* connection between childhood experience and the present
Do you repeatedly experience pleasant communication in the present with emotionally important objects (e.g. people, relationship with God, food, etc.), through which certain negative childhood experiences and conflicts from childhood are resolved in a pleasurable way (e.g. through a pleasant and appreciative partner, a pleasurable diet, exercise, religious experiences, etc.) or through which positive experiences from childhood are confirmed in the present in a pleasurable way (e.g. by satisfying your parents' expectations with your current performance)?

13. *unpleasant* connection between childhood experience and the present
Do certain experiences from the present (e.g. traumatic rejections, etc.) lead to the revival of certain negative experiences from the family of origin (e.g. rejection by a parent), which are associated with extremely negative and difficult to bear feelings (e.g. hopelessness, resignation, pain of isolation, etc.)?

Summarized variables
on various topics covered in the scientific literature

The questionnaires "RGM self-regulation and health" and "RGM work life, family and personality" contain a large number of variables that appear in modern medical sociology literature and research in different theoretical conceptions. The individual questions and summarized variables are relevant to health status. However, since our aim is neither to develop a new medical sociological concept to prove its effectiveness nor to statistically test existing concepts, but to explore multidimensional and multidisciplinary relationships, the integration of our medical sociological variables into the international medical sociological literature would exceed the scope of this work.

Interactive self-regulation

The following 16 questions were recorded as summarized variables, the mean value of which is documented in XIV 4

1. through my behavior I regularly achieve such states and situations that stimulate me positively and motivate me for life.
0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong

2) I always know how to realize my most important emotional desires and satisfy my most important needs.

3. if I don't feel well, I always know how to use my behavior to create positive situations and conditions that restore my well-being.

4. if a situation, a group of people or a person is not good for me, I develop different activities until I have changed the situation to my satisfaction.

5) I always know how to combine different areas of my life (e.g. work, relaxation, private life, hobbies, nutrition, exercise, partner relationship, etc.) in the best possible way so that this results in long-lasting well-being.

6. if I feel threatened in a situation, I ultimately always behave in such a way that I come out of it in one piece.

7. through my behavior I always achieve my most important goals.

8. through my behavior, I repeatedly achieve situations and states that optimally stimulate and satisfy my very personal wishes and needs, so that satisfaction and well-being arise.

9. if my behavior leads to failure, this is never a reason for resignation, but a reason to change my behavior.

10. i am always able to find new points of view and ways of behaving that enable surprising and pleasant solutions to problems.

11 I am able to change my behavior according to the consequences that have occurred, i.e. I can reduce behavior that has lasting unpleasant consequences and I can build up behavior that has long-term pleasant consequences.

12. if my behavior does not lead to the desired success, I am able to invent and try out new behaviors.

13 Through my behavior, I achieve both the desired closeness and the necessary distance to important caregivers.

14 Through my daily activity, I always trigger inner satisfaction.

15 Through my daily activity, I always achieve mental and physical well-being.

16. through my behavior, I repeatedly create situations that give me pleasurable experiences.   cronbach's alpha for these 16 questions: 0.98

Variable catalog for the "RGM Self-Regulation and Health Questionnaire"

The following data was collected at the beginning of the study in the years 1973 - 1978:

Age, gender

Determination of total cholesterol (6 measurements over the course of a year)

Cigarette smoking (years, number/day, development of consumption, ex-smoker)

Nutrition (healthy, unhealthy, mixed/ little, medium, much/ nutrition beneficial, neutral, discomfort-inducing)

Alcohol consumption (years, grams/day, development of consumption, ex-alcoholics)

Coffee consumption (years, cups/day, ex-coffee drinker since ... years)

Diabetes (insulin treatment, oral treatment)

Blood pressure (6 measurements over the course of a year, syst./diast.)

Physical movement (regular-regular, forced-regular, moderate-irregular, forced-irregular, insufficient movement, movement: beneficial, neutral, discomfort-inducing)

Organ damage (degree of sclerosis in the back of the eye, chronic pancreatitis, angina pectoris, chronic obstructive bronchitis, pulmonary TB, operated gastric ulcer, chronic atrophic gastritis, familial polyposis, ulcerative colitis, gallstones, liver cirrhosis, hepatitis B, hypoacidity of the stomach)

Family history of cancer (number of people in a straight line who have been diagnosed with certain types of cancer)

Heart attack and stroke (number of people in a straight line who have suffered a heart attack and/or stroke)

Taking medication (e.g. inhibiting or stimulating psychotropic drugs, aspirin, hormone replacement therapy, etc.)

Chronic digestive disorders - Chronic constipation

Chronic inflammation - with/without the use of non-steroidal anti-inflammatory drugs (NSRA)

Behavior, stress, personality
Well-being in private life, type of religiosity, social isolation or integration, ability to self-regulate, inner autonomy, integration of rational, emotional and intuitive processes, split between a problem that causes suffering and inadequate problem-solving behaviour, split between negative feelings that are swallowed up inside and outwardly directed, harmonizing, altruistic communication, blockage of emotional perception of psychosocial conflicts and physical processes,
different forms of stress (suffering in isolation from highly valued fellow human beings or goals, inhibitions to correct one's own problem-generating behavior, experienced disruptive factors that cause helpless overexcitement, shock experiences that reduce self-regulation in the long term).
Stress management factors (inner autonomy, ability to reconcile quickly, ability to transform negative feelings into positive states, etc.).

Grossarth's behavioral typology assesses the self-response, the classification by the interviewer and by relatives
Isolation suffering - helpless overexcitement to sources of interference - egocentric fixation on self - autonomous self-regulation - rational-antiemotional behavior - emotional-antirational behavior
(This data was collected both through self-response and through interviewer assessment and assessment by close family members).

Work, family and environment Well-being in professional life, expectations and work pressure, reward and recognition, opportunities to shape and influence, integration of ability, demands and interest in professional life, sources of disruption experienced in professional life, suffering from isolation, self-active career design, excessive demands in professional life, relationship between private and professional success, chronic mental and physical overload in professional life

Self-conflicts and conflicts with others (self-esteem, love for parents, love for family members, love for God, polarizing and harmonizing loyalty conflicts, expression of pleasure and displeasure management, ability to recover and behaviors such as rigidity and flexibility).

Self-active career design and motivation needs-oriented professional life, professional vision, ability orientation, permanent learning, establishment of positive communication, ability to separate, pronounced/blocked work motivation, demotivating criticism, social insecurity

Personality and family-related dysstress and eustress
Inhibition and stimulation of lust for life, pleasant interaction of pleasure and renunciation, physical contact with parents/partner, inhibition in the regulation of closeness and distance, antagonistic activation of rational and emotional impulses, chronic emotional pain, chronic uncontrollable fear, pleasurable realization of childhood experiences in the present ...

Burnout
Mental and physical exhaustion, ability or inability to recover, inability to separate from factors in professional life with negative consequences, excessive demands experienced in professional life, low level of well-being in professional life

Test-retest reliability: .80
Internal consistency of the scale (Cronbach's alpha): .81

8.1.5.12.2 RGM Questionnaire Professional life, family and personality

I. Working and professional life

1. mental stress in working life
By psychological stress in working life, we mean all influences that come from outside and have a negative effect on the person in the sense of excessive demands.
How heavy is the workload in your professional life (e.g. work pressure, time pressure, high performance expectations, etc.)?

All questions are answered according to the following categories: 0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong

2 .reward, recognition in professional life
By reward and recognition in professional life, we mean recurring recognition for the work performed, which is perceived as a reward in the sense of an emotionally experienced confirmation.
To what extent do you feel recognized for your achievements and the work you have done in your professional life, so that you feel internally rewarded?

3. personally injurious treatment in professional life
By personally hurtful treatment at work, we mean behavior by superiors or colleagues that you have experienced painfully, which has particularly affected you and which was directed at your person (e.g. insults, disregard, deferral, aggressive attacks, etc.)
To what extent have you repeatedly experienced personally hurtful treatment in your professional life?

4. negative communication in professional life
By negative communication we mean communication in the workplace and in professional life in which the focus is on mutual obstruction, emphasizing and searching for mistakes while systematically overlooking strengths and abilities.
How pronounced is the negative, mutually inhibiting and strength-concealing communication in the workplace?

5. social and economic uncertainty
By social and economic insecurity, we mean an objective impairment due to economic stress (e.g. impending job loss with no prospect of new work, financial debts that cannot be paid off with work, etc.).
How pronounced is your objective economic and associated social
 Uncertainty?

6. destructive personality in professional life
By destructive personality in working life, we mean people who
are focused on diminishing your work performance and are trying to make you
emotionally, socially (e.g. in your reputation) at every turn.
To what extent (intensively and persistently) do you come into contact with people in your professional life who display destructive behavior towards you?

7. constructive personality in professional life
By constructive personality in working and professional life, we mean people who make an effort to recognize and promote your achievements, support you as a person and compensate for your weaknesses (which everyone has in certain areas) with their own strengths.
To what extent (intensively and consistently) do you come into contact with people in your professional life who display constructive behavior towards you?

8. mental and physical exhaustion at work
By mental and physical exhaustion we mean a recurring state of tiredness, lack of energy, overexcitement, inner imbalance, etc.
To what extent do you experience recurring mental and physical exhaustion at work?

9. integration of skills and requirements in professional life
By integration of skills and requirements in professional life, we mean a state in which the learned, acquired and possibly genetically inherited personal skills are well matched with the professional requirements.
and complement each other positively. However, there are people who are not able to satisfactorily combine their skills with professional requirements, for example because the requirements do not match their actual skills.
To what extent are you able to combine your skills with the requirements of your job?

10. work motivation
By work motivation, we mean the inner willingness to perform the work at hand in professional life beyond the mere fulfillment of duties (e.g. in expectation of professional development)
How internally motivated are you to carry out your upcoming work in your professional life?

11. sense of belonging in working life
By sense of belonging at work, we mean a state in which you feel like an accepted member of your work unit and are able to identify with your workplace. (By workplace we mean any place where you carry out your professional activity).
To what extent do you feel a sense of belonging in your working and professional life?

II Family of origin

12. pleasure-emphasizing, well-being-generating and safety-giving transfer of experiences from the family of origin to the present
Well-being-generating transfer of experiences and attachments from childhood to the present happens when a person is able to enjoy pleasant situations and experiences from childhood in the present (e.g. to keep them in grateful and loving memory). In the process, understanding develops for negative experiences so that there are no lasting negative memories that impair well-being in the present.
To what extent are you able to transfer loving and appreciative memories of the people in your family of origin into the present, creating a sense of well-being and security?
0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong

13. reward through recognition of achievements in the family of origin
By reward through performance recognition, we mean parental behavior that recognizes the child's abilities and achievements in a wide variety of areas (e.g. painting, sports, mental attitude, loving expression of feelings, attention to others, cleanliness, school performance, etc.) and rewards them with recognition (e.g. "You did a wonderful job, I'm proud of you!" etc.).
How much were you rewarded for your achievements in your family of origin?

14. reward through performance recognition in school and training
By reward through performance recognition in school and education, we mean the attitude of teachers (trainers, university lecturers, etc.) to recognize special abilities and achievements and to reward them through recognition.
How much did you feel rewarded in your school and vocational training through recognition of your achievements?

III Personality

15. shock experiences with a lasting effect
By shock experiences we mean specific events that have had an unexpected, unprepared, traumatizing, damaging effect on the person and have led to lasting impairments (e.g. uncontrollable feelings of anxiety, inhibition in the self-active production of desired states, sleep disorders, etc.).
Have you experienced traumatic circumstances in your life (e.g. early childhood or adulthood) that have had a lasting effect on your feelings and behaviour? To what extent?
0 not at all, 1 very weak, 2 weak, 3 moderate, rather weak, 4 moderate, rather strong, 5 strong, 6 very strong, 7 extremely strong

16. lack of stimulation
By lack of stimulation we mean a state in which there is no external stimulation (e.g. in interpersonal relationships) that meets emotional, physical, social and mental needs.
To what extent do you feel unstimulated (i.e. how much stimulation do you lack that corresponds to your wishes and needs)?

17 Negative pleasure difference
By negative pleasure difference we mean that the experienced unpleasure (e.g. different sources of unpleasure and discomfort, intense unpleasure in certain areas of life, etc.) is more pronounced than the experienced well-being and pleasure (by pleasure we mean increased well-being associated with states of happiness).
How pronounced is your negative pleasure difference (i.e. how intense is the displeasure more pronounced than the pleasure)? If this question does not apply at all, then you can of course tick 0, which means that your pleasure is stronger than your displeasure.

18. ability to correct the behavior
By the ability to correct behavior, we mean a person's ability to correct behaviors that were originally expected to have positive consequences, but in reality have negative consequences, and to change them so that the negative consequences do not occur (e.g. giving up excessive and uncomfortable consumption of alcohol, cigarettes, food or changing behaviors that lead to negative experiences in interpersonal contact, etc.).
Corrective capacity is the opposite of corrective blockage, in which the person compulsively repeats behaviors with negative consequences and is unable to change them (e.g. typical of addictive behavior). To what extent do you feel able to change behaviors that lead to negative consequences so that these do not occur and positive consequences arise instead?

19. blockage of central needs related to the family of origin
In relation to the family of origin, e.g. in the relationship with a parent, emotional needs can develop that are of the utmost importance to a person (e.g. the need for loving recognition from a parent). However, such needs can also be experienced as blocked, extremely

hindered (e.g. a parent whose attention would be of the utmost importance to me rejects me and I can never reach them).
Are certain needs that are of the utmost emotional importance to you in relation to the parental home permanently blocked (inhibited/prevented) in their satisfaction? To what extent?

20. blocking of central needs in professional and working life
In professional and working life, desires, needs and goals can develop that are of the utmost emotional importance for a person and that can extend to the formation of identity.
Are certain professional wishes and needs permanently blocked (hindered/prevented) in their realization?

21. blocking of central needs in partner relationship and family
In the partner relationship and family (relationship with children), needs and desires of the utmost emotional importance (e.g. for attention, recognition or detachment and distancing) develop time and again.
Are certain wishes and needs in relation to your partnership or family permanently blocked in their realization (e.g. after
 unbearable experiences of separation, the feeling of not being recognized and appreciated
 or due to monotony and boredom)?

IV. Medical data

22 Chronic inflammation
Chronic inflammations include chronic bronchitis, hepatitis, pancreatitis, bladder and urinary tract inflammation, stomach or intestinal inflammation, sinusitis, myocarditis, arthritis, sore throat and tonsillitis, gingivitis, inflammation of the anus or genitals, etc.
Do you suffer from one or more chronic inflammations?
If so, how many?

23. duration of inflammation
When answering, please focus on the inflammation that has lasted the longest and indicate the years.
How many years have you been suffering from chronic, recurring inflammation?

24. severity of the inflammation
You can indicate the degree of severity with 0 (not present), 1 (minor), 2 (moderate) and 3 (severe). Please focus both on the subjective experiences, such as pain, as well as on the lack of success of the treatment and the impairment of your overall state of health.
How would you classify the severity of a chronic inflammation that is most pronounced in your case?

25. fever over 38.5 degrees
Try to remember approximately how often you have had a high temperature above 38.5 degrees in the last 10 years.
How often have you had a fever above 38.5 degrees in the last 10 years?

Test-retest reliability: .75
Internal consistency of the scale (Cronbach's alpha): .79

12.3 Training text to stimulate self-regulation

"Well-being, health, problem solving through self-regulation"

The human being is a very complex system in which physical, mental, physical and social environmental factors interact. It is therefore no wonder that new, short-term or long-term problems arise time and again, which often cause discomfort and lead to unpleasant consequences. Most people can name such problems in their lives and try to overcome them in different ways. Humans are an active system, which means that they are not only passively at the mercy of influences, but are also able to achieve the states they need for their well-being and to satisfy their needs through their own activity. Needs always arise and express a tension between a desired and an existing state. If important needs are not satisfied (e.g. the achievement of a desired goal), negative and unpleasant feelings can arise. Everyone who has a problem already has a problem-solving alternative within them, i.e. a behavior that is not yet recognizable, lurking in the silence and waiting to be stimulated. However, this can only happen if the person learns to deal with themselves and their environment in a new way, i.e. if they change their communication.

In this text, I would like to give you some suggestions for solving the problems that you have recognized in yourself. The suggestions are not yet a solution, because the solution only lies within you as a unique person. However, I hope that I can give you some new ideas with this text that will stimulate your self-activation.

Learning to feel good and solve problems means successfully overcoming dysstress at the same time. What is stress or eustress and what is dysstress? People are constantly exposed to internal and external stress in everyday life. If we are able to achieve situations and conditions through our behavior that make it possible to overcome these burdens, possibly even with a sense of well-being, then we speak of stress. Dysstress occurs when people are exposed to internal, social or physical pressures that overwhelm their ability to adapt and they are no longer able to cope with or overcome them through their own actions. The person is then helplessly exposed directly to unpleasant feelings and excessive physical and social demands.

To illustrate this, I would like to describe various examples of dysstress so that you can gain a good understanding of the areas in which dysstress can manifest itself. I call coping with stress through self-activity, which generally goes hand in hand with well-being, pleasure and security, self-regulation. At the end, I will also list characteristics that distinguish people who demonstrate good self-regulation. In this way, you can begin to recognize where you may be experiencing dysstress and which characteristics serve to overcome it. Different sources of dysstress can negatively accompany and influence a person over many years. Dysstress influences physical risk factors such as cigarette smoking and alcohol consumption, their disease-causing effects on the one hand and the risk factor itself on the other. It also determines the severity of early retirement, unemployment, the onset of chronic illnesses and, above all, the course of these illnesses (this leads to so-called synergy effects between physical risk factors and psychological stress). Good self-regulation and positive physical factors determine a high and healthy age. It is therefore worth recognizing and reducing dysstress in oneself and promoting self-active self-regulation.

Some examples of dysstress :

- Isolation suffering: The person suffers in isolation from a highly valued, longed-for person, group or through an unattainable, desired goal (for example in professional life).

- Suffering from disturbing, negatively experienced factors: The person suffers from disturbing people, conditions that they evaluate negatively but from which they cannot distance themselves.

- Blockade of behavior correction: The person constantly repeats behaviors that harm them without being able to change their behavior in the desired direction (e.g. refraining from eating too much and causing discomfort, striving to reduce alcohol consumption, etc.).

- Mental and physical perceptual inhibition: The person is severely impaired in recognizing, describing and orienting themselves towards their own emotional impulses. They also have problems sensitively recognizing physical processes, for example sources of discomfort. As a rule, she orients herself towards rationally justified behavior, which she aligns with the function of a machine. The person is directly exposed to mental and physical stress without the emotional system sending warning signs or being aware of them.

- Lasting shock experiences: Due to various shock experiences, in which an absolute mental and physical overload and helpless surrender to the situation was experienced, the entire self-active self-regulation system can break down over many years. This often leads to chronic protective behavior (in which situations reminiscent of the shock experience are avoided) or to attempts to socially cover up the injuries. Nevertheless, the person is in chronic dysstress due to the lasting negative emotions and blockages to self-regulation.

- Emotional flooding of negative feelings with anti-rational behavior: Reason and emotion play a major role in good stress management when both parts work well together. If the person allows emotions to completely dominate them and if the rational parts are neglected, then the negative feelings can harm the person and cause dysstress.

- Blocking of one's own behavior due to ambivalence conflicts: If positive and negative feelings, e.g. towards an important person, occur simultaneously, then clear behavior towards this person can be prevented (e.g. clear expression of love or clear expression of aversion). Persistent ambivalence can lead to mental and physical exhaustion and other symptoms.

- Blockade of self-activity, passive expectations: The person is permanently inhibited from making their own emotional demands and active expectations. They remain stuck in so-called passive expectations along the lines of: the other person will see what my needs and desires are. This usually leads to inner disappointment and despair.

- Dysstress due to inadequate thinking: A person can constantly think in either-or categories, in which the acceptance of one position automatically means the exclusion of the other. However, a more tolerant both/and approach is often more appropriate.

- Blockage of self-active creativity: In the working and professional world, people have a need to develop and expand their own abilities so that they can meet professional and social requirements and provide problem-solving impulses. For various reasons, self-active creativity can be blocked and people try to adapt to external demands to an extreme extent and no longer pay attention to the development of their own abilities.

- Inadequate problem-enlarging behavioral strategy: When people get into social conflicts in which they are negated, devalued or attacked, for example, they have to develop different

behaviors and strategies that are coordinated with each other and ultimately lead to newly created states that eliminate the dysstress and lead to security. If inadequate behavioral strategies are used (e.g. persistence in suffering, unconscious support of the person that leads to injury, etc.), this can lead to prolonged and intense dysstress.

- Rigidity (e.g. behaviour that is extremely oriented towards norms and regulations without the ability to specifically recognize and deal with the individual situation): Rigidity can become a pronounced source of dysstress because it often gets in the way of flexible behaviors and specific need satisfaction.

- Positive, symbiotic object dependency: The person needs the closeness and recognition of a desired person or an important group and without this he or she feels unstimulated and extremely insecure.

- Negative, symbiotic object dependency: Although the person suffers in the vicinity of negatively experienced persons, they cannot distance themselves from them internally because they are internally dependent on them despite the negativity they experience.

- Splitting: Splitting of negative feelings and negative conflicts and one's own behavior: The person is not able to change negative feelings, conflicts and unpleasant situations through their own active behavior in a way that creates a sense of well-being and security.

- Gaps between negative introjection and positive externalization: The person swallows up negative feelings, sources of conflict, fears, sources of insecurity, etc., and hides them, sometimes with extreme effort, from those close to them (e.g. by not talking about them and not expressing problems), while positive adaptation (e.g. through altruism, working to the point of mental and physical exhaustion, etc.) is expressed externally in social communication.

- Harmonizing conflict of loyalties: The person tries to create harmony and good understanding between persons or groups with the greatest possible effort and with complete self-subordination, in areas where this seems objectively impossible (e.g. reconciliation of parents in conflict, reconciliation of nationalistically hostile ethnic groups, etc.).

- Polarizing loyalty conflict: The person constantly rates a state, another person or themselves extremely highly and at the same time finds a disturbing, obstructive factor that they rate extremely low. This results in persistent different neurobiological stimuli: Fascination and aggression.

- Aggressive atheism: The person is permanently in a hateful, negative attitude towards a negated image of God. Behind this, a reproach seems to manifest itself due to an experienced disappointment in various areas. Such a state is extremely severe dysstress.
- Self-centered anxiety: extreme anxiety about oneself. If such a person gets into situations in which the exaggerated need for self-protection is not satisfied, this can lead to extremely pronounced mental and physical overload.

- Self-aggressive perfectionism: The person places such high demands on themselves that they respond to even the slightest failure in performance with extreme hatred and self-loathing.

- External aggressive perfectionism: The person responds to the slightest failure in performance by others with extreme aggression, which manifests itself, for example, in insults and devaluations.

- Altruistic self-deprivation to the point of mental and physical exhaustion: The person is so committed to another person, cause or group that he or she is active to the point of mental and physical overload without the capacity for self-giving and self-protection.

- Negative, all-dominating thoughts, memories & experiences: for example, the person is so dominated by one or more experiences of rejection that they are no longer able to create pleasant feelings and pleasurable situations in the long term.

- Negatively experienced self-image: The person is not able to evaluate themselves positively and experience themselves in a pleasant way. No matter how successful they are, they always express doubts about themselves.

Stress management through successful self-regulation

People who cope well with stress, i.e. who live in a state of pleasure-oriented stress and overcome dysstress through self-regulation, show the following characteristics, among others: problem solving and satisfaction of needs through self-active behavior: The person is repeatedly able in different situations in relation to different stresses and demands to influence the situation (e.g. an interpersonal relationship) through their own active behavior in such a way that stresses and threats and negative feelings are reduced and that pleasant feelings and problem-solving states occur. Behavior is therefore always able to create situations that lead to solutions to problems through new and creative forms of communication with oneself and the environment. This also prevents stress to which the person is helplessly exposed.

Some examples:

- Communicative problem-solving: The person tends to express their problems in permanent social communication and to look for solutions, rather than swallowing them inside and seeking outward conformity and harmony.

- Permanent attempt to integrate individual abilities, interests and needs with social requirements and circumstances, i.e. the person prefers to meet those social requirements for which they have sufficient resources. They try to actively influence social demands and needs in accordance with their individual abilities and needs.

- Spontaneous, emotionally fascinating and meaningful relationship with God: The person shows strong love for the experienced image of God, experiences it as an important controlling authority and at the same time sees themselves as God-centered.

- Pronounced, loving affection for emotionally important people

- Pronounced, loving affection for your own person

- Inner ability to correct behavior in relation to behaviors that lead to negatively experienced consequences.

- Pronounced object autonomy, i.e. no inner dependence on persons or substances that repeatedly lead to emotionally negative consequences in the mistaken expectation of positive consequences (which never or only occur in the short term).

- Good emotional integration between feelings and reason, i.e. the person thinks creatively and rationally on the basis of emotional experiences. Their feelings are rationally accepted and understood by reason.

- Self-regulation that provides well-being, pleasure and security, i.e. the person is always able to create situations that evoke pleasant feelings and situations that reduce or eliminate negative feelings.

Three phases of coping with dysstress through self-regulation:

In the first phase, the person learns to recognize some sources of stress on the basis of this text. They will also get to know some characteristics of people who regulate themselves well and give dysstress little chance of having a permanent destructive effect. Self-observation is useful here in order to recognize certain characteristics of dysstress and successful self-regulation in relation to oneself.

In the second phase, an attempt is made to make certain changes in different areas through self-activity that lead to greater well-being, pleasure and security (e.g. by changing one's diet, striving for beneficial exercise, making the decision to turn more to oneself, to rest more or to have a positive clarifying conversation with an important person, etc.).

In the third phase, a one- to two-hour conversation is held with a stress management coach who is able to identify the individual source of stress and find individual, problem-solving behavioral strategies. These can then lead to the stimulation of self-activity, which can be all the more successful the more the person has experienced that they have been able to find solutions to problems in an area through self-activity.

- Self-observation:
Try to observe yourself as closely as possible (e.g. in your behavior, in your interaction with the environment). Pay particular attention to the following questions: What makes me feel good? What behavior makes me feel good? What behavior leads to discomfort and an increase in my problems? In which area of my behavior do I always expect positive consequences although negative consequences regularly occur? In what way could I change my behavior creatively and creatively? Try out different behaviors using the trial and error method. If a behavior is not good for you, try to change it flexibly. Never blame yourself too much if it doesn't work out and keep looking for sources of well-being, pleasure, security, inner and social development and a sense of purpose. Human beings are constructed in such a way that they are a system that seeks pleasure, well-being and security.

- Check your behavior for well-being and discomfort:
 As stated above, humans are always seeking well-being, but in doing so, they can hit dead ends and develop behaviors that develop the opposite. As a rule,
a very noble goal
is pursued (such as the desire to achieve the love of a parent, the affection of a child or a superior). However, behaviors may be used that are not yet optimal (for example, one may be stuck in unresolved conflicts). The first step towards conflict resolution could be an inner decision:
I always strive for behaviors that enable well-being, problem solving, guilt-free pleasure, security and development in me. In doing so, I am highly motivated to give up behaviors that create discomfort, conflict and insecurity or to correct them until they have positive consequences.

- Some methods in autonomy training
Here I would like to give you just a few possible exercise methods. Check whether you discover any problems that could be solved using these methods.
Eliminating ambivalence: resolving contradictory feelings towards people who are of the utmost importance to you
People often recognize that they have extremely contradictory feelings towards the people who are most important to them emotionally (e.g. mother, father, siblings, partner, etc.). For

example, love, expectation of affection and recognition, but also disappointment of expectations, hatred, etc. Feelings that are mutually exclusive can trigger inner despair in a person and block their unambiguous behavior. In autonomy training, an attempt can be made to stimulate new, creative behavior and communication, which results in both a strengthening of the ego and a resolution of ambivalence (the mutually blocking feelings).

The exercise is as follows: On the one hand (e.g. along the left hand, stretched out towards the person who is of great emotional importance to me) I clearly express and recognize all the positive feelings I have towards a person (e.g. my mother, my father). I can express this in an inner dialog, for example: Dear mother/father, I appreciate you and let you know that I express a lot of love, respect and positive feelings towards you.

On the other hand (e.g. along the right hand, towards myself), I can also perceive and experience the negative experiences (e.g. disappointment, anger due to non-recognition, rejection, excessive attachment, etc.).

I will never again mix the two feelings, the positive and negative emotions and thoughts towards you in such a way that I can no longer cope with myself and you. So when I feel love and appreciation, I will tell you clearly. If I feel hurt, I will bear it, but I will not hold it against you - because I respect you. When I am successful in these exercises, I regularly realize that I am a strong person who can endure both love and disappointment and who does not get confused inside, but on the contrary, goes through life stronger.

If you notice that such exercises do you good and if you become convinced that communicating in this way with your most important people emotionally gives you more well-being and security than previous communication in which positive and negative feelings were mixed, then it is likely that this type of behaviour will stabilize in you and become a part of you and deeply anchored in your brain structures in the future. If you believe that this exercise does not suit your problem, then look for other methods. One of the following exercises may be suitable for you.

a) Stimulating alternative communication: creating need-satisfying situations
Often a need of the utmost emotional importance cannot be satisfied only because the behavior has not yet achieved some necessary and minimal changes. For example, a person may have certain expectations or feelings that they have not expressed to those around them. Another person is not yet able to create a certain conversational situation in which they can realize their needs more easily, etc.

Ask yourself: What is my problem? Where am I in a conflict? What is annoying me? Try to describe and recognize the situation in which the problem arises. Think about what alternative situation you could actively create to satisfy your needs and achieve your problem and goal. Everyone has the ability to create new problem-solving situations - they just have to find them.

For example, if you suffer from not being able to achieve the closeness you long for with your mother, this does not mean that your mother is systematically rejecting you. You may be communicating with your mother in a situation in which she does not understand your feelings and cannot take note of your expectations. You can solve this problem by creating a new communication through your active behavior and thereby finding a different situation.

For example, if you are talking to your mother in a relaxed, pleasant situation and then suddenly give her a kiss on the forehead, a completely new communication can be created. You can develop such activities to create new problem-solving situations in almost all areas of your life.

However, the creation of new forms of communication must be tailored to your unique needs and behaviors and often requires great flexibility and creativity. If you are successful in one area, you will certainly feel a great need to actively seek out new forms of communication in other areas too.

b) Differentiation: separating what does not belong together
People often bring two areas together into one unit that in reality do not belong together at all, creating completely unnecessary but often long-lasting conflicts and problems. If you

observe yourself in this respect and realize that you are combining issues and areas that are causing you unnecessary problems, you can carry out various exercises to regain clarity.
For example, a young man who loves his father above all else assumes that his father expects certain behaviors from him at work that do not suit him (e.g. working to the point of exhaustion and displaying
over-adapted behavior). On closer analysis and subsequent discussions with the father, it can be established that the father does not have such expectations and, on the contrary, would be pleased if the son were to show more flexibility. Since the son also strives for such behavior, he is now in a position to decouple the two areas of love for his father and his own behavior in his professional life. He now realizes that these two areas have nothing to do with each other.

 c) *Activation of new thought programs: Both-and instead of either-or*
Many people are in conflict because they think in an either-or category. In different areas of their lives, however, your needs system would be better suited to both-and thinking and feeling.
Certain people, for example, seek harmony at all costs and suffer terribly in situations in which the harmony they seek is threatened. A person addicted to harmony either thinks: I will achieve the harmony I am striving for and feel happy, or I will not achieve it, which leads to inner turmoil and unhappiness. In this either-or thinking, people can despair in situations in which harmony seems unattainable. If the emotional and thought system changes to the both-and principle, then the person can come to the conclusion: I need both the harmony that is good for me and the disharmony that emphasizes how beautiful harmony is and motivates me to engage in harmony-seeking behaviors.

I hope that the text presented here will provide you with new ideas in different areas so that you can apply it to your own individual problems and to your unique person and your unique way of thinking and feeling. You will only be successful if you discover well-being-generating behaviors that suit your personality.

Yours, Ronald Grossarth-Maticek

R. Grossarth-Maticek

12.4 Case studies from a weekend seminar on autonomy training

1) Mr. F (53 years old, general practitioner)

Trainer: Please tell us about your life and the problems that are currently occupying you the most.

Mr. F: These are problems that have been bothering me for a long time. First of all, I am married to a very loving and understanding woman. She says that she always loves me constantly, regardless of whether I am present or not. I have a problem with her: sometimes my emotions just disappear, as if I enjoy autonomy, and sometimes I get terribly annoyed that she doesn't respond to me as intensely as I would like.

Trainer: Can you tell us something about your childhood, especially about your parents' relationship?

Mr. F: At first I had several different caregivers as a small child and was even in a home. My mother was very strongly rejected by her own mother and when I was 7 years old, my father left my mother. Both of these things hurt my mother very much and she told me a lot about her suffering. I was very happy to have my mother all to myself and we had a wonderful, very intimate relationship based on mutual understanding and empathy. When she told me about her pain, I suffered with her. Once she asked me and my wife if she could live with us in our house, but we refused, but offered her a place to live three houses away from ours. My mother suffered a lot when she felt even the slightest bit rejected and made me feel it, for example when I promised to visit her for three hours but then only had two hours.

Trainer: What feelings do you associate with your mother?

Mr. F: On the one hand, I was isolated from my mother at an early age; these are painful memories that I associate with my mother and that's why I blame her. When I later lived alone with her, I only remember wonderful feelings and an exceptionally good mutual understanding. Nevertheless, the feelings are ambivalent.

Trainer: What is the main problem you would like to solve?

Mr. F: Two things: firstly, I want to come to terms with my mother, because a lot of things are still not right. Secondly, I don't want to feel so disappointed in my wife if she doesn't respond to me as I expect. Both problems weigh heavily on me, even though I enjoy my job as a doctor and find a certain fulfillment here.

Trainer: I am now looking for suitable explanations. These are a prerequisite for a change in behavior and a reorganization of communication that could solve both problems. Please listen and only answer my questions in the affirmative if you have an absolutely coherent feeling about them.

Could it be that the early isolation from their mother made them even more attached to their mother later on when they had the opportunity to be with her?

Is it possible that because of many conversations with their mother, in which she told them of her suffering, they felt such deep empathy that they sometimes believed that they themselves were experiencing their mother's suffering as their own?

Mr. F: Yes, I can answer both questions in the affirmative.

Trainer: is it possible that they react so strongly to the slightest rejection or their wife's failure to respond to their expectations because they identified so strongly with their mother's feelings at that moment that they re-experienced their mother's suffering in themselves/in their own person?

Mr. F: I've never seen it like that, but it seems very understandable to me and I can confirm it from experience.

Trainers: do they also have an autonomous core?

Mr. F: Yes, for sure, that was also shown by the fact that I didn't see my mother's death as traumatic, but rather as redemptive. Nevertheless, the two problems remain, and your analysis has made me even more aware of them.

Trainer: Good, in the first step we have carried out an analysis based on your beautiful descriptions and my questions. Now we'll move on to the topic of integration, i.e. we'll try to find a behavior that will enable them to solve their problems and achieve inner development and well-being by restructuring their communication. I will ask them again about possible

alternative behaviors, with the request that they only accept the solution models that are completely right for them internally. In no way are suggestions given. Basically, we are only looking for the optimal behaviours that they have long had ready in their unconscious or even in parts of their conscious thinking, but cannot yet access because, on the one hand, they have not yet clearly recognized them rationally and, on the other, because they still lack the form of communication to implement their solutions. Since I can only make assumptions, but cannot know what the right solution is for them, I ask them, as I said before, to listen very carefully and to only say yes to what is PERFECTLY right for them.

Mr. F: I am very excited!

Trainer: Could it be that through their extreme empathy with their mother's suffering, they are so empathetically connected with her that they actually express the maternal expectations with which they are identified in their expectations of their wife (i.e. they "slip into" the role of the mother in this context).

Is this assumption correct for you?

Mr. F: Yes, totally, I have already felt such elements in me.

Trainer: Such behaviors can have different causes, e.g. through the assumption that if I suffer like the mother, then I am taking away part of the burden she is suffering from - or: simply because the behavior is simply learned through many empathic conversations?

Can you imagine that the following reorganization of communication between you, your mother and your wife would give you more inner stability and better problem-solving? If, on the one hand, they mentally say to their mother, "Mother, on the one hand, you hurt me a lot by giving me up early and that hurt a lot. On the other hand, we had a wonderful time together and I am very grateful to you for that. I can keep the two feelings apart, i.e. I can love you constantly and still recognize the pain of rejection when it comes up.

Dear wife, I'm grateful that you like me all the time, but because of my empathy with my mother, I'm always afraid of being rejected. But since you don't reject me, it obviously has nothing to do with you. And if I even manipulate you into not responding to me, then that's my problem with my mother again. Since I can now directly resolve the ambivalence towards my mother by expressing love and recognizing the hurt, I no longer have to burden you with expectations that don't actually apply to you. How do they respond to this new form of communication?

Mr. F: Very well, by expressing love to my mother, which is certainly there, and also the pain of the injury. In this way, I can also distance myself from the excessive empathy. I simply say: Mother, your suffering is your fate, your tragedy, which I can understand and feel sorry for you for, but I no longer get caught up in an excess of pity that goes as far as identification. Now I also realize that I cannot "cancel out" your own suffering by feeling sorry for you. This realization is followed by the second: I no longer have any reason to burden my wife with expectations that have nothing to do with her. So if I have a problem with my wife or mother, I know which exercise is good for me.

2) Mr. Ü (46 years old) - social psychologist

Trainer: What is your main problem?

Mr. Ü: I am slim and look athletic. Nevertheless, I have been struggling with various illnesses and physical symptoms since I was 17. For example, I got ulcerative colitis at the age of 17, then I had spinal problems, knee problems, depression - I was never really healthy. I wonder how this came about.

Trainer: Can you please tell us something about your parents' home?

Mr. Ü: Between the ages of 12 and 16, I had relatively poor grades at school. My father regularly had fits of crying, especially when I came home with a bad grade. He was completely hysterical. He never turned to me directly, he never beat me up, I very rarely got a little slap in the face. But the massive screaming about me, usually in the next room in the presence of my mother, was directed at me and I always heard it very clearly. I felt completely helpless and totally overwhelmed. I fell into prolonged depression and even considered taking my own life. Sometimes I was angry and felt the desire to physically attack

him, but ultimately I reacted helplessly and withdrew completely. When I was abroad once, I was completely alone there and yet experienced a certain relief. On the one hand, my mother had tried to bind me to her excessively and gave me signals that I was more important to her than my father, but on the other hand, she always stood behind my father and thus latently against me when my father had a tantrum. I saw this as a betrayal and was no longer prepared to let my mother get very close to me. It wasn't until much later, when my parents were very old, that I wrote them letters, also about the enormous hurt caused by my father's shouting, and I had the impression that they understood me. That was an incredible experience for me. It made me feel happy, even though I have to cry now when I talk about these experiences.

Trainer: Do you have people in your family who supported you back then?

Mr. Ü: Yes, my older sister was always there. When she noticed that I was completely helpless against my father and was practically paralyzed, she would take my side, for example by speaking up for me and defending me. We still have an extremely good relationship today.

Trainer: Now that you have described so much so wonderfully, what do you expect from autonomy training?

Mr. Ü: The main thing is my desire **not to be an eternal slave to my body**, I am simply tired of slipping from one physical illness to another, especially when it spoils very nice experiences for me, such as being able to go out into nature.

Trainer: I will now take the liberty of expressing some hypothetical interpretations/explanations for your behavior. Please listen carefully and only accept my assumptions if they are completely plausible and coherent for you.

Could it be that your father's screaming, which, as you reported, led to helplessness, inner paralysis, depression and even suicidal intentions, triggered shock experiences with lasting effects in you? Such a lasting effect could be, for example, that symptoms of illness developed relatively immediately in response to the father's behavior, e.g. as protective measures?

Mr. Ü: I am convinced that my symptoms, e.g. ulcerative colitis, were triggered by my father's shouting as a result of the extremely stressful situation. I don't think it was a protective reaction at all, because I was so depressed that I felt permanently defenseless, totally helpless and paralyzed. Your assumption that this was a shock experience is completely plausible to me on the one hand, but completely new to me on the other, because I had never thought about it. Until now, I always thought that the experiences were in the past and that I had long since come to terms with them, but that may not be true.

Trainer: Could it also be that the massive shock situations she experienced, triggered by her father's screaming, still unconsciously lead to symptoms of illness, as if her father's screaming were still occurring today?

Mr. Ü: This assumption also seems very plausible to me, even if I have never thought that far. I feel that it could be that these effects still persist today. I now also understand rationally that I showed all the symptoms of a prolonged shock experience for a very long time, e.g. the unexpectedly massive impact, the complete helplessness and paralysis, the long-lasting depression with suicidal thoughts.

Trainer: Could it still be possible that they react inadequately to elements of the shock situation with physical consequences, even though the stress and threat from their father no longer exists?

Mr. Ü: Completely plausible, although I would never have thought of it. I was too focused on the suffering from the physical symptoms and thought that I wasn't doing so badly mentally - considering that my mother takes care of me, my heaviest is behind me and I was able to reconcile with my father before he died. If her assumptions are correct, and I feel that they are: What can I do now, today?

Trainer: As you know, this weekend we are concentrating on resolving ambivalences in the context of the family of origin and the current situation and learning effective methods. To do this, it is necessary to identify the injuries very precisely, as well as the positive experiences. Now that we have been able to address her injuries and possible long-lasting effects of

shock experiences, as well as the positive experiences with her parents (which made her cry), we can attempt to define alternative forms of communication in the expectation that the long-term negative effects of shock experiences will be inactivated. I will ask questions again and they will only answer if it is completely coherent for them.

Could you use the method of removing ambivalence with the following content? Dear father, dear mother - you were extremely important to me and I am very happy that I was able to reconcile with you in a way that brought me happiness. I am ready and willing to send you my respect and love again and again. I also know that you have hurt me very much in different ways, especially you father, with your screaming fits during the day, which have damaged me for a long time and hurt me so much that I can't rule out that I have become ill as a result. And mother, you hurt me just as much because at crucial moments, i.e. especially during father's crying fits, you didn't stand behind me, but behind father. Despite these experiences, I keep sending you my love and I am perfectly capable of separating the two aspects and not mixing them up. Because I feel that I can do this, I am developing as a person in such a way that I am strong inside. I also no longer need to transform my emotional pain and the consequences of the shock experiences into physical symptoms, mainly because I can now bear the pain emotionally. I am also not afraid of being abandoned by my parents if I keep experiencing my justified pain, because I send my parents love and know that I have also experienced love from them.

Mr. Ü: Without exception, that sounds very coherent to me. I have already experienced many elements, such as the experience of love for my parents or the identification of sources of pain. Nevertheless, I have not yet been able to achieve what you call integration here, namely: a new connection between the knowledge of my shock experiences and the awareness of the resulting skills. I achieve this competence through my ability to express permanent love and respect for my parents on the one hand and, on the other, to feel the pain they inflicted on me separately. As I can bear the emotional pain in this way, it could very well be that the physical reactions to residual experiences (from the shock experiences) that still exist will no longer occur.

3) Mrs. E (49 years old) Artist

Mrs. E: I'll save myself the trouble of talking about positive and negative experiences in my life and come straight to my main problem: I suffer greatly from my husband's indecision (who is also present here.) When I married him, I had decided to solve all my problems together, to grow old together in love, so to speak. The central issue for me is "love" and in my current despair I ask myself whether I am capable of love at all or whether I am just suffering under incredible pressure so that I don't even know what I want at the moment. I feel very bad about it. My husband keeps a friendly distance and I can't know whether he doesn't love me anymore, whether he loves someone else or whether I'm completely overwhelming him with my expectations. He just doesn't say anything and communication is crucial for me. Whenever I communicate with people, face to face, directly and honestly, I know what's going on and feel comfortable and safe. I can't do that at the moment. I don't know, maybe I'm also burdening my husband with childhood experiences and overwhelming him. Since I don't know anything, I'm incredibly insecure and emotionally very threatened (Mrs. E cries a lot during this, but is highly concentrated and very motivated to find a solution).

Trainer: Can you tell us about your childhood?

Ms. E: I didn't feel accepted by my father or mother until after puberty. My reaction was impossible behavior, especially during puberty, when I went so far into opposition that I was told that I was no longer my parents' child and that I had no place in my parents' home. So I moved out and felt very lonely and unhappy. It took years for me to reconcile with my parents. My mother was slightly more important than my father, but when they both showed me when I was an adult that they respected me despite everything and tolerated me in a positive way, I was able to forgive my parents and lovingly tolerate their behavior. Just when I thought that the pain of rejection and attacks on my person, which I had given plenty of

cause for, had been dealt with, it resurfaced again due to the unfortunate events with my husband. I think he has the key to resurrecting the pain from my past. Although I am a very communicative person and friends visit me of their own accord and I feel very happy communicating with them, I am now completely helpless due to my husband's behavior, sunk as if in a black hole, or screaming helplessly around me. All the while my husband is getting colder and more inhibited and I am not getting the information of what is going on inside him. We went to group therapy and I hoped in vain that he would speak out. He simply refused. I always say to myself: "You have no choice but to separate for good. But then I feel an unbearable fear of being abandoned, so I don't dare to break up either. However, I know that I would be fine if I could take this step, but I just can't do it.

Trainer: what is your most important goal?

Mrs. E: First of all, I would like to get clarity about what is going on with my husband and I would also like to find my inner peace, because I can't stand this tension, which has been going on for two years now, for much longer.

Trainer: Well, may I first ask a few questions that will help clarify the communication and then ask a few questions regarding the development of alternative forms of communication with the intention of solving the problems.

Ms. E: Yes, I ask for it.

Trainer: Could it be that, on the one hand, you have resolved the conflicts with your parents well, so that a mutual loving acceptance has developed, but on the other hand, the painful experiences at home are now being reactivated in contact with your husband, e.g. not being accepted, not being loved, not being understood? Could it also be that the painful experiences from the parental home date back to the time before they finally reconciled with their parents?

Ms. E: Yes, that's definitely the case. Your question also implies that I'm regressing to a level here that I don't really need to.

Trainer: If that's the case, then I'll try to put a few questions to them now and ask them to follow the content very carefully and only agree if it's absolutely right for them.

If they realize that all the suffering their husband is causing them through his indecisive behavior is related to memories of the suffering their parents caused them before the reconciliation, it would then make sense to transform the existing communication into a reframed communication, as follows: Whenever I experience emotional suffering at the hands of my husband, usually because I feel rejected and not understood by him, I first focus on the following dialog with my parents: Dear father, dear mother, I am so happy to be able to love you and that a wonderful reconciliation in love was possible for us. I was tolerant towards you, so I was able to tolerate the earlier pain through a lot of love, and you were also tolerant towards me. This encourages me to be tolerant towards my husband in the future, i.e. I take him as he is and what I feel for him: both suffering and great love. Because he can't express himself at all and seems helpless like a toddler, he is also my baby husband from now on. I am sure that I am relieving him of my enormous expectations and at the same time distancing myself from my expectations and am able to go into autonomous and creative freedom, e.g. by having fun with my good friends. Tolerance towards my husband includes: Neither separation nor suffering, but love for a person who is in the status of an undecided child.

Mrs. E's eyes begin to light up, she laughs intensely with joy and says:

That is exactly what I unconsciously wished for, but could not find a common denominator. I have experienced tolerance and am also able to practise loving tolerance. For me, the keyword "tolerance" is central. I am also highly valued in my circle of friends because of my tolerance, so why should I burden my husband with a past that has long since been dealt with. I am taking the key to my injuries away from him and appointing him as my baby. In my ambivalence towards him, I always had both feelings inside me, namely the maternal ones, feeling his helplessness and at the same time anger, disappointment and despair, because I felt threatened, abandoned and betrayed. But it was precisely through their descriptions that I became fully aware that these feelings were actually still directed at my parents and, as they say, stemmed from the early phase, even before the reconciliation. My husband has

probably never experienced tolerance and I can give it to him. I feel that I am no longer at all interested in the question of whether he still loves me or not, whether he has someone else or not. My baby can do whatever he wants, even though I now see him as an adult husband, my inner joy is very great because I feel that I have found my inner balance, I experience joy again because I am allowed to be who I actually am through my new communication.
The husband was asked in the group what he thought of the development of the conversation. He only said that he was very satisfied and felt very free and happy. He would have liked his wife to be like this before.

4) Mrs. W (51 years old) - Management consultant
Ms. W: My main problem is that I have terrible writing inhibitions, for example, I am not able to write down my ideas and I find it very difficult. I also have big problems with perfectionism. On the one hand, I try to be as perfect as possible at work, but on the other hand I hate being perfect and I resist it. This conflict is a burden in my professional life, even though I am successful.
Trainer: Can you tell me something about your childhood?
Ms. W: My childhood was very bad at first, I had a younger brother who was always ill. As he was very difficult to accept from other children as a child, I always had to defend him and tell the other children that they could either play with both of us or with neither of us. However, my parents put a lot of pressure on me to look after my brother in this way. If the pressure hadn't been so great, I might have been happy to do it myself. They kept saying things like: You have to do this, you have to look after the sick child .... . All my love went to my brother and I always had the impression that I was missing out. In other areas, too, I was told what the norm was and how to behave, e.g. I always had to behave in a "girly" way and as soon as I wanted to do something that normally only boys do, I was immediately reprimanded. I grew up in a typical stuffy GDR family. People there always imagined that they knew exactly what the norm was and how to behave impeccably. I didn't feel understood by my parents until I was an adult and it was only in the last few years that there was mutual recognition. This recognition did me a lot of good, Mrs. W began to cry quietly. For a long time I didn't know what my problem was, but today I think that the symptoms that somehow developed in my parents' home are concentrated in the conflict with perfectionism. I don't know how or why, but it's really bothering me!
Trainer: Could it be that, due to the suppression they experienced at the hands of their parents, they understood normative requirements as if they were expected to behave perfectly, which was completely at odds with their own needs? Could these experiences result in an extremely negative impression of the concept of perfectionism? Could it also be that they themselves try to be as perfect as possible in a positive sense at work and in everyday life because this characteristic meets their needs? Does the experience gained at home conflict with today's wishes?
Ms. W: That sounds very plausible, I can understand and experience what you are saying very well.
Trainer: Can you imagine that you could achieve integration in the direction of new problem-solving behavior and reorganization of communication in the following way?
1 Although I have experienced suffering and joy through recognition with my parents, in future I will always concentrate on both aspects: on the one hand, I always express the love and sympathy I have experienced, both in my thoughts and in communication, and on the other hand, I also concentrate on the suffering I have experienced and am able to experience and accept it.
Ms. W: Yes, I can do that, it will do me good, I can feel it.
Trainer: Can they now mentally communicate the following to their parents and accept it for themselves?
Dear parents! Since I like you, I am now informing you that I have decided that in future I will be perfectly imperfect in all areas in which demands are made on me that do not correspond to me, i.e. I will perfectly avoid reacting with perfectionism. However, if I want things for

myself, I will become perfect from the state of imperfection, e.g. by learning quickly and using intelligent working methods. How is the alternative behavior presented here for discussion received?

Mrs. W: laughs and is visibly thrilled: Ideal, it solves all my problems, I am allowed to express my love, bear the pain and not only show my protest against pseudo-perfectionism, which was instilled in me in childhood, but also subversively overcome it by just being perfectly imperfect. If someone makes demands of me that I know in advance are pointless, I will not react with annoyance and helplessness, as I did before. On the contrary, I will undermine them with relish, I will achieve the imperfect with a great deal of perfectionism. However, if I need to be perfect at work, I can do so with great joy, without the pseudo-perfectionist demands from my childhood coming back to haunt me. It's good that she taught me to recognize the two forms of perfectionism I experience.

Discussion of the cases

The question arises: What are the **principles of effectiveness** of autonomy training, i.e. which interventions are used to achieve solutions to problems that are experienced as beneficial changes and which, as our statistical results show, can lead to long-term positive consequences (e.g. with high prevention effects).

This question is also related to the following question: How do you find such different alternatives in behavior that lead
to specific solutions to problems
 tailored to the respective individual?

In some of our examples, a standardized method developed by us was presented, which we call the **elimination of ambivalence** by decoupling positive and negative experiences: The earlier linking of love/hate and disappointment/longing, especially with regard to experiences in the family of origin, are separated, released from their entanglement. The person learns to constantly express elements of love and appreciation and to perceive experiences where they were loved. At the same time, they learn to accept and bear the pain of rejection/hurt. As the two feelings are no longer connected but experienced as separate, the person frees themselves from an unbearable ambivalence and **achieves clear behaviors that make** them feel stronger. The **motto** here is: If I can express my love despite the hurt and if I can bear hurt in love, then I have become much stronger through my alternative behavior than if I remain in the ambivalence in which both emotional qualities are in contradiction. Here, an "either-or behavior" is transformed into a "both-and" behavior.

Although a very large percentage of people are highly ambivalent towards their family of origin, the method would not be fully effective if it were simply applied across the board.
In order for the method to unfold, it is necessary that the specific content of the injury experienced is found and defined
through the conversation. It is also important that the positive experiences are found and defined through the conversation, no matter how insignificant they may seem.
This is so important because a person's orientation is based on very specific experiences and not on overarching (theoretical) principles. In HIS mental training, he must therefore be able to build on very specific injuries and very specific positive experiences.
The interview must clearly identify elements that have enabled the person to feel competent in the past, especially in areas where positive experiences have occurred. These experiences are important because they are used in the integration phase, i.e. in the development of integrating and problem-solving behavior.
In the diagnostic interview, conditions/effects are recorded and passed on to the person as information in the form of hypotheses and questions.
Another diagnostic point is the identification of misguided orientations (with negative consequences). By misguided orientation, we mean various symptom formations/behaviors that have arisen from conflicts or negative experiences.

In order to describe an alternative behavior that can be assumed to be both in line with deep individual desires and feasible with existing skills, it is also important to develop an empathy that enables the trainer to suggest feasible alternative behaviors that meet individual needs. **Attention is focused on the area where it can be assumed that the person expressed their strongest feelings.**

The trainer should take care to avoid premature interpretations and assumptions, i.e. not to interrupt the flow of conversation too early with (rigid) interpretations, high self-confidence that the solution appropriate to the need will be found, e.g. based on a combination of empathy and logical thinking.

The analytical discussion ends when the impression arises that enough aspects have been recorded to enable a consistent interpretation and a needs-based reorganization of communication.

Basically, the aim of the conversation is always to identify experiences/behaviors that have the highest positive or negative emotional significance for the person. These are often either expressed directly during the conversation or are only found during the course of the conversation (e.g. by asking specific questions).

Interpretation is about capturing different areas of experience that potentiate or contradict each other.

The aim of autonomy training is to interactively link the pleasant life experiences and deactivate the negative ones. This can only be achieved through reorganized communication.

For this reason, autonomy training is not a symptom-oriented new form of therapy, but rather communication training that pursues saltogenetic goals.

Summary of the four cases:

1 The method of removing ambivalence was used in all examples.

2 In all examples, the specific injury and the sources of specific positive experiences were identified. In one case, for example, the injury was triggered by the father's shock-like behavior, in another case by the child being placed in residential care or, for example, by being overwhelmed by caring for a younger brother in childhood. Positive sources of experience are, for example, reconciliation with the parents.

3 In all cases, experiences in different areas of life were recorded in which the persons felt particularly competent (e.g. overcoming conflicts with parents, e.g. due to personal conversations or letters).

4 The redesign of problem-solving communication, which we call integration, led to the integration of specific injuries and skills in all cases.

5 In all cases, integration was undertaken in such a way that sources of excessive demands and unbearable stress were eliminated by making the often unconscious stresses conscious on the one hand, and by consciously experiencing the resources on the other. This enabled shifted sources of conflict, e.g. from the mother to the wife, to move dynamically back to where they actually originated.

6 The alternative behaviors were accepted if they opened up more well-being, pleasure, security, sensory development and development opportunities than if the person remained in the old conflicts and systems. The fact that the alternative behavior is accepted is usually evident from the fact that the person spontaneously expresses that the redesigned communication is extremely coherent for them.