

PERSONALITY TYPE, SMOKING HABIT AND THEIR INTERACTION AS PREDICTORS OF CANCER AND CORONARY HEART DISEASE

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TYOLOGY: A DESCRIPTION

In the first paper of this symposium, it was concluded that the evidence was strong concerning the relationship between individual traits of personality, such as hopelessness/helplessness, neuroticism and its obverse, namely rational-antiemotional behaviour, and anger/arousal on the one hand, and diseases like cancer and coronary heart disease, on the other. It was also suggested that a more global concept of personality type, either cancer-prone or coronary heart disease-prone, might be even more predictive than a simple combination of the traits in question. Such an attempt is described here, giving much greater detail about the nature of the types in question than was contained in previous accounts (Eysenck, 1987a, 1987b; Grossarth-Maticek, 1986). This system of typology does not claim universal validity, but is specifically geared to the prediction of cancer and cardiovascular disease in people who experience certain types of stress and react in certain ways to this stress. As a consequence, it is specifically the *occurrence* of this stress, and the particular *reaction* of the different types to this stress, which are important. A brief description of the four types will first be given, followed by the actual questionnaire used in the three prospective studies here reported. The stress which forms the basis of the system arises from the individual's failure to relate positively to an emotionally highly important object, which could be a person, specific professional success, or a particular aspect of living.

Type 1: Understimulation

Persons of this type show a permanent tendency to regard an emotionally highly valued object as the most important condition for their own wellbeing and happiness. The stress produced by the continued withdrawal or absence of this object is experienced as an emotionally traumatic event. Type 1 individuals fail to distance themselves from the object and remain dependent upon it. Thus individuals of this type do not achieve success in reaching the object, and remain distant and isolated from this highly valued and emotionally important object. Great stress is produced by this failure to achieve nearness to the highly valued person, success in the highly valued occupation, or whatever. This type shows a lack of *autonomy*.

Type 2: Overarousal

Persons of this type show a continued tendency to regard an emotionally highly important object as the most important cause for their particular distress and unhappiness. Rejection by the object (if a person), or failure to reach it (as in the case of occupational success) is experienced as an emotional trauma, but persons of this type fail to achieve disengagement from the object; rather, they feel more and more helplessly dependent on the object. Thus persons of this type remain in constant contact with these negatively valued and emotionally disturbing people and situations, and fail to distance themselves and free themselves from dependence on the disturbing object. Where persons of Type 1 keep on seeking nearness to the object of their desires, and experience their failure in terms of hopelessness and helplessness, persons of Type 2 fail to disengage themselves from the object, and experience a reaction of anger, aggression and arousal.

Type 3: Ambivalence

Persons of this type show a tendency to shift from the typical reaction of Type 1 to the typical reaction of Type 2, and back again. As Grossarth-Maticek (1986) put it: "This type shows a permanent tendency to regard an emotionally highly valued object alternately as the most important condition for his own wellbeing, and as the main cause for his own unhappiness". (p. 27.) Thus in individuals of this type, we have an alternation of feelings of hopelessness/helplessness and of anger/arousal.

Type 4: Personal Autonomy

The typical reactions of Types 1, 2 and 3 indicate a dependence on the highly valued object and their reactions are characterized by constant contradiction between expected consequences and the actual consequences of their actions. For persons of Type 4 there is a strong tendency to regard their own autonomy, and the autonomy of the persons with whom they wish to be in contact, as the most important condition for their own wellbeing and happiness. This enables persons of Type 4 to experience realistically the approach or avoidance behaviour of the object of their desires, and thus enables them to accept the autonomy of the object. In other words, persons of Types 1 and 2 show a dependence on important objects which engage their emotions, but cannot remain autonomous when these emotional objects withdraw or remain unattainable; it is this that constitutes the stress which according to the theory leads to cancer of coronary heart disease. Persons of Type 4 are able to deal with this situation by virtue of their autonomy-preserving ability, and thus avoid the stress reaction. A better understanding of these four types than is given by this brief description can be obtained from the Questionnaire in Appendix A, which was used to assign individuals to their proper type.

In terms that will be more familiar to English-speaking psychologists, failure in relation to emotionally highly valued people and/or life goals is experienced by persons of Type 1 and 2 as *unavoidable*, whereas persons of Type 4 possess the ability to cope with the situation, and hence the stress is *avoidable*. Given that unavoidable stress is closely related with disease, whereas avoidable stress is not (Sklar and Anisman, 1979, 1981) it is clear that Type 4 should be less likely to suffer from cancer and heart disease than Types 1 or 2. Type 3 may also be protected to some extent by changing its reaction to the stressful situation from behaviour typical of Type 1 to behaviour typical of Type 2, and back; in this way persons of Type 3 avoid to some extent the build-up of behaviour patterns related to cancer or coronary heart disease respectively.

The terms in which Grossarth-Maticek describes his types are not taken from academic psychology, but his conceptions seem to encapsulate the major parts of Miller's (1959) theory of gradients of reinforcement, and his theory of approach-avoidance conflict. According to orthodox learning theory, particularly the work of Hull and Spence, there exists a *gradient of reinforcement* in the sense that the closer a positive goal is, the stronger the drive to reach it becomes. In a similar way, the more imminent and unpleasant or aversive an experience is, the stronger will be the disposition to draw away from it. Miller described these two tendencies respectively as the *gradient of approach* and the *gradient of avoidance*. By adding the assumption that a gradient of avoidance is steeper than the gradient of approach, Miller offers a plausible account of why an animal that has been given an electric shock while receiving food in the food-box will thereafter at some point in his progress towards the food stop, and perhaps show a pendulum-type alternation between approach and avoidance. The gradient of avoidance has at that spot presumably cut across the gradient of approach, thus equalizing the forces leading to adient and abient behaviour.

In these terms, we might say that Type 1 is characterized by a relatively steep approach gradient, which is only just cut off by the avoidance gradient a short distance from the desired object, whereas for Type 2 the approach gradient is much less deep and hence cuts the avoidance gradient nearer the starting point. Type 3 then would be intermediate between the other two, with an approach gradient cutting the avoidance gradient at an intermediate point. Figure 1 illustrates these three contingencies. The drawing is illustrative in the usual manner of the Miller-type research in which rats move along a runway motivated by the food which is present at the end of the runway, but deterred by a shock which is given when they reach the end of the runway. In the case of the rat, therefore, we have two different sources for the approach and the avoidance behaviour,

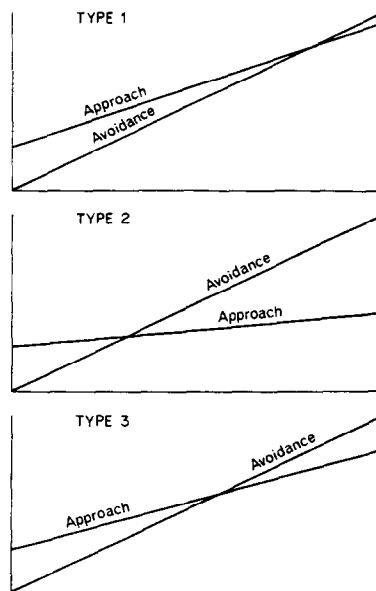


Fig. 1. Personality Types 1, 2 and 3 as typical reaction types in approach-avoidance situations.

respectively, namely the food and the shock; in the situation envisaged by Grossarth-Maticek, however, it is the same personal situation which causes both approach and avoidance behaviour.

Type 4 is clearly more difficult to fit into the Miller paradigm because such concepts as autonomy have little place in the typical rat experiment on which Miller relied. Also, of course, in the typical Miller experiment the rat was unable to leave the experimental situation, being constrained by the walls of the box. This would make Type 4 behaviour difficult if not impossible. It might be better to think in Lewinian terms about the situation, i.e. the people considered by Grossarth-Maticek are constrained to remain in the situation by their strong drives, whereas individuals of Type 4 may have weaker approach or avoidance drives, and/or stronger drives towards autonomic functioning. The fit of Miller's systematic theorising to Grossarth-Maticek's conceptions is obviously far from perfect, but there would seem to be sufficiently close resemblances which may make the Grossarth-Maticek conceptions easier to understand. Obviously it is possible to manipulate the relative approach and avoidance gradients in different ways, but the general point will be clear.

To return to the Grossarth-Maticek description of Type 1, the strong approach gradient of this type makes it difficult for him (or her) to effectively withdraw from the highly valued object, in that relative nearness will keep the approach tendency at a high level. Conversely, the Type 2 individual has a very strong avoidance tendency relative to his approach tendency, but still cannot withdraw completely because before being able to do so he must cross the approach gradient. Type 3, with a crossover point somewhere between the other two, is most likely to show the pendulum-like alternation between approach and avoidance behaviour.

The differences in the structure of the approach-avoidance conflict situation between the different types comes out clearly in some of the differentiations emphasized by Grossarth-Maticek (1986). Thus, in dealing with the essential ambivalence shown towards highly valued but rejecting objects, persons of Type 1 are said to be concerned primarily with positive aspects of the ambivalence, e.g. an idealization of the object which is being sought. Persons of Type 2, on the other hand, experience primarily negative aspects of this ambivalence, attributing negative values to the object, devaluing it, and seeking to escape from it. Persons of Type 3 oscillate between the positive and negative aspects of the ambivalent situation and fail to reach any kind of integration, e.g. by sometimes idealizing the object, sometimes devaluing it.

Similarly, Grossarth-Maticek refers to the special vulnerability of persons of the different types by pointing out that persons of Type 1 are specially vulnerable because of the sudden or gradual withdrawal of the idealized object; this is particularly hurtful because of the close approximation

to the object as illustrated in Fig. 1. Persons of Type 2, with a flatter approach gradient, are enabled by their greater distance from the disturbing object to react with anger and aggression. Persons of Type 3 react to the continued existence of such objects by alternating between emotional coldness and emotional responsiveness, their crossing point for the two gradients being intermediate between Types 1 and 2.

There is one other important difference between the animal model and the human model. In the animal model interest is in the point at which the two gradients intersect, and the animal has a choice of where this point is located in his case. He can stay close to the starting end of the runway, or he can go right up to the reinforcement end, or choose any intermediate position. For the human model, the situation is entirely different. Not only is there a physical presence or absence of the ambivalent object, but in addition there is a mental representation which can substitute for the physical presence of the object. Secondly the choice of physical proximity may not lie with the person in question; in a Type 2 situation, for instance, the object may be a censorious employer whose presence cannot be avoided by the employee. Thus while the concepts employed in Miller's paradigm would seem to be relevant to the Grossarth-Maticek typology in principle, there are also important differences which must be borne in mind in using the Miller paradigm in relation to the personality typology here suggested.

The emotional reactions of persons of these types follow from what has been said. Persons of Type 1 react with depression and hopelessness to the loss of the idealized object, whereas persons of Type 2 react with anger and arousal to the feeling of being helplessly delivered to a hostile object. Persons of Type 3 vary from anxiety and fear to aggressive tendencies stimulated by the recalcitrance of the object.

According to Grossarth-Maticek, the typical reactions of persons of these various types are largely moulded by specific dynamics of their family life and early development. Thus persons of Type 1 experience early rejection by parents, combined with parental demands to idealize and love the parents. Persons of Type 2 typically experience positive emotional attachment to one parent, with a demand to regard the other as hostile. Persons of Type 3 are exposed to alternating rejection and attraction. It should not be assumed, of course, that even though there may be statistical relationships of this kind, these must have a causal role. It is more plausible to think of the relationships being mediated by genetic factors.

It may be easier to understand the typology in question by reference to case histories illustrating the reactions of the different types. Below are given actual examples of typical Type 1, 2, 3 and 4 case histories.

Type 1. Mrs B. is 55 years of age, and although a non-smoker has suffered for three years from lung cancer. Eight years ago her daughter, aged 25, died from meningitis. Mrs B. separated from her husband when the daughter was 5 years old, and lived with her daughter in a very close symbiotic relationship. The daughter was always a source of fascination for her, producing reactions of excitement and contentment. While living with her daughter, the mother tried compulsively to make no mistakes in the relationship and never to disappoint her daughter, because she already then had a feeling that she would not be able to live happily and contentedly without her daughter. After the death of her daughter the mother experienced the distance to her highly valued daughter, now taken from her by her death, as insupportable. She thought every day of her daughter with love, fascination and strong emotional excitement, and experienced a need for her nearness. This led to feelings of hopelessness, despair, depression etc. Mrs B. tried to develop activities which might get her over these feelings, such as looking after patients, and occasionally she felt that this raised new hopes, but in the long run her hopelessness continued. She feels the pain of her separation very strongly, but in relation to her neighbours and friends she disguises these feelings of despair and depression by an assumed friendliness and continued readiness to help and be of assistance.

Type 2. Mrs G. is 56 years of age, and suffered her first heart infarct 3 years ago. Her 21 year old marriage is very unsatisfactory for her, but she has no way out. She does not value her husband highly, attributes to him negative character qualities such as envy, blatant aggressivity and maliciousness. Although she often tries to build up a more harmonious relationship, in which problems could be solved on a rational basis, her husband regularly and almost every day gives many grounds for excitement and annoyance. As an example, Mr G. interferes with her artistic

activities, threatens to destroy her pictures with an axe, is jealous and keeps her from making contacts. Mrs G. feels helplessly committed to her husband, because she is unable to change him according to her wishes. The real maliciousness of Mr G. is difficult to separate from the manipulation of Mrs G. driving him into this role. Mrs G. has a too-loving mother who demanded absolute loyalty from her and also restricted her contacts with others. After her marriage Mrs G. devoted all her energy to her husband, and tried to separate herself emotionally from her mother. For some time both made similar emotional demands of an exclusive kind on Mrs G. Both mother and husband expected from her absolute devotion. When Mr G. felt rejected, he reacted aggressively, a mode of behaviour used by Mrs G. as proof of the maliciousness of her husband. Mrs G. attempted several times to separate from her husband, and moved out of the flat, but because of financial difficulties she always returned and the couple became reconciled again. Mrs G. reports that she quite likes her husband, and would like to change him according to her wishes, but that this has proved impossible; hence a long continued feeling of excitement, annoyance and helpless deliverance. When Mrs G. speaks about her husband, she only mentions negative aspects, apparently being unable to admit positive ones. After the death of her husband, when she was 52 years of age, she developed strong suicidal tendencies, and has strong feelings of compassion for herself because of the lack of fulfillment in her life. In spite of the fact that she obviously suffers from the death of her husband, she still has the greatest difficulties in admitting positive feelings for him. Her particular suffering stemmed from a failure to combine in some way the views of her husband with the views of her mother; had she succeeded in this, she might have succeeded in loving her husband. When these attempts failed, Mrs G. saw herself in a very negative light, because she took to heart very much the criticisms of her husband and her mother.

Type 3. Mr Z. is 50 years of age, and a painter. During his life he had phases in which he idealized his mother, talked for hours of her, but at other times he expressed extreme hatred for her and acted aggressively towards her. He called her a whore and expressed great dislike. His father, too, he idealized at certain times, but at other times he devalued him completely. In his relations with women he repeated the same type of behaviour, having married and divorced four women. In some respects he idealized his wives, attributed to them characteristics which would make them superior to others, both behaviourally and with respect to looks and sexual attraction. He sought for a close symbiotic relationship, and demanded absolute trust. On the other hand he also experienced periods of extreme jealousy, attributing to his wives desires and behaviours which later on he realized simply were not there. In such situations, e.g. when he thought his wives were flirting with other men, he reacted with extreme aggression, and threatened separation and banishment. During such times he valued his wives very negatively and attributed to them moral degeneracy, whore-like behaviour, and maliciousness. In such situations he regarded his wives as the most important conditions for his own unhappiness and believed himself unloved and neglected by his wives. When he succeeded in reaching a distancing from his wives, he believed for a while that he could be happy without them. When the distance became too great, however, he developed regularly a great need for nearness, recognition and reconciliation. In these phases he again idealized his wives and demanded love from them. Neither in feeling closeness nor in feeling distance from them did Mr Z. show a behaviour appropriate to the situation. Thus he might threaten suicide or try to make his wife jealous by confronting her with a mistress. One wife, who tolerated all his behaviours and would not depart from her own loving behaviour, producing such strong feelings of anxiety that one night he opened the window of the bedroom on the third floor in the middle of winter, got hold of the foot of his much smaller and lighter wife, who was sleeping at the time, and held her naked out of the window! This led to shock on the part of the wife, and complete separation from him. Mr Z. experienced a complete breakdown, had strong phobic feelings of anxiety, and recognized that he loved his wife over everything. When he failed to win back his wife he developed a heart phobic symptom and was unable to go out into the street for several months. This led to a belief in Mr Z. that he was suffering from coronary heart disease, and he attempted in this way to arouse compassion in his wife. When she agreed to meet him, however, he met another woman with whom he fell in love and whom he idealized to such an extent that he was convinced to have found the love of his life. This happened on the train which was taking him to meet his wife, and he left the train with his new love and told his wife that he wanted a divorce. He lived for 1 year with his new love, but just before his divorce he met his fourth wife and separated from the lady.

Type 4. Mr L. is 51 years old and had a very complicated childhood. His mother separated from his father when he was 1 year old and married another man when he was six. His birth was a very difficult one, and in addition the mother reports that she resented being pregnant, and was very disappointed that he was a boy. During the years from his 23rd to his 26th birthday he was living in a relationship with a woman which produced intensive feelings of anxiety. In his latter years Mr L. felt extremely well. He is in the position to recognize his contradictory feelings towards his mother. He knows that in certain situations he feels love, and in other situations hatred. He accepts both feelings, and has adjusted to his mother in a realistic fashion. "I love and hate her simultaneously and this leads to a reasonable distancing." In his relations with his mother, his partner, and the colleagues in his work, Mr L. has learnt to adjust his evaluation completely to its consequences; 'I have no difficulty in changing my views about a person when I receive negative reinforcement. This change in attitude usually leads to a change in behaviour, i.e. to a kind of distancing.' Mr L. neither idealizes overly nor devalues significantly the various objects of his emotional life, but allows them to act in a positive or negative fashion simultaneously, thus being in a position to take into account both sides in his thinking, feeling and acting. This allows other people to perceive accurately what his feelings are, and what he is trying to do, and he himself is in a position to express all aspects of his feelings through his behaviour. Towards himself Mr L. is reasonably appreciative and positive; earlier on he had alternated between positive and negative estimates of himself, but this has changed in the last few years. He has excellent relations with his partners and colleagues at work, male and female, and can accept their independence and support it. Mr L. is in the position to recognize his needs and to satisfy these regularly through his behaviour, e.g. by regulating nearness and distance from other people according to his needs. Thus he is in a position to tell other people clearly whether he is in need of closeness or distance. In this way he is in the position to avoid possible difficulties.

These case histories illustrate typical reactions of the four types, and may serve to make more clearly intelligible the somewhat abstract description given above, and the contents of the questionnaires in Appendices A and B.

While in these examples approach-avoidance conflicts have been treated on a purely individual basis, such conflicts are of course endemic in society, and occur much more frequently than the relative luxury of approach/approach conflicts, or the torture of avoidance/avoidance conflicts. Marriage is an obvious example of a social institution which is known to give rise to very strong approach-avoidance conflicts, the former being mediated by the attractions of a loving relationship, permanence, family life etc., while the avoidance aspects of marriage are based on alternative and antagonistic values, like independence, permissiveness, promiscuity etc., (Eysenck and Wakefield, 1981). Other social institutions of almost universal relevance are those of the employer-employee relationship, where the approach aspects are related to the common aims of both, i.e. the success of the firm financially, while the avoidance aspects are related to the antagonistic aspects of the relationship, i.e. the desire of the employer to pay as little as possible for as much work as possible, and that of the employee for doing as little work as possible for as much money as possible. Prostitution, also a universal and very wide-spread social institution, has exactly the same approach-avoidance aspects. Personal approach-avoidance problems probably give rise to much stronger emotions than social ones, but social ones often give rise to personal conflicts of this kind, as in the employer-employee relationship, or in that of husband and wife, or prostitute and client.

The actual allocation of cases to the four types was done using either a long questionnaire (Appendix A) or a short questionnaire (Appendix B). The long questionnaire is clearly ipsative, the subject being allocated to one or other of the four types. The short questionnaire could be used in a normative sense, as it gives rise to scores, but was in fact used in an ipsative sense, i.e. each subject was allocated to one of the four types only on the basis of his highest score. The long questionnaire was used for self ratings, the short questionnaire was used for interviewer ratings and ratings by relatives. The final allocation of a subject to one of the four types was done on the basis of scores on the *long* questionnaire. Only if there was marked disagreement between the two questionnaires was the interviewer asked to make the final decision. The long and short form were administered to the same subjects in 3 separate samples, discussed in detail in the next section, giving rise to Cramer association coefficients between the long and the short questionnaire, of

0.68 (for Yugoslavia), 0.62 (for Heidelberg representative), and 0.58 (for Heidelberg stressed) respectively.

The interview consisted of a half-hour free and a one hour standardized interview, the latter being concerned with the questionnaire items given in Appendices A and B, whereas the free interview enabled the interviewer to get the proband to discuss his private life, his work and other conditions where the proband had the strongest negative or positive feelings towards other persons, situations, etc. Interviewers were well acquainted with the criteria involved, and considered the behaviour and attitudes of each person as shown during the past 10 years, before making their ipsative ratings.

TYPOLGY AND ILLNESS

Three prospective studies employing different samples, in different countries, were carried out in order to collect data on the relationship between the personality types described above and the incidence of cancer and coronary heart disease. The first of these studies, which has already been mentioned in the first paper of this symposium, was carried out in Crvenka, a small Yugoslav town, between 1965 and 1976. Data were collected at the earlier date, and follow-up incidence of disease and cause of death ascertained at the later date. The subjects were 1353 persons, a great majority of whom were the oldest in the households selected at random in Crvenka. In this sample, there were also, in addition to the oldest in the household, 345 people who were rated as "highly stressed" in terms of smoking, drinking and personality traits. 71% of the sample were males, 90% ranging in age from 48 to 68. 67 persons refused to take part in the investigation, and are therefore not included.

A similarly randomized sample was studied in Heidelberg in the years 1972-1982. Here the investigators specified certain age and sex controls, but otherwise subjects were selected on a random basis. The sample was constituted of 1026 persons, 54 of whom were male, with 90% being between the ages of 40 and 60. This sample is thus considerably younger than the Crvenka one, and hence would be expected to have many fewer deaths at follow-up.

The third sample was selected by members of the normal Heidelberg sample, who nominated friends and relatives who were "highly stressed"; this sample contained 1537 persons, 50% of whom were male, with ages ranging from 42 to 63 in 90% of the sample.

From both the Heidelberg samples there were losses due to the ascertainment of chronic disease in some members, and there were also losses at follow-up due to leaving the town, leaving 872 for the normal sample, and 1273 for the highly stressed sample.

In addition, 231 cases in the highly stressed sample were used for an intervention study using behaviour therapy, some acting as controls, others being included in the experimental group, and these must be subtracted from this sample, leaving a total of 1042 persons. We thus have three samples differing in sex composition, age and amount of stress experienced; we would expect on theoretical grounds that a higher proportion of the Crvenka and the highly stressed Heidelberg study would die of cancer and coronary heart disease, the former because of their higher age, the latter because of the stress experienced, as compared with the normal Heidelberg sample. Our interest is specifically in the relationship between typology in each of these three groups, and the death rate from cancer and coronary heart disease, the expectation being that persons of Type 1 would die more frequently of cancer, persons of Type 2 more frequently of coronary heart disease, with persons of Type 3 and 4 relatively protected against both. The age and sex composition of the 3 groups may be of interest. They are given in Table 1, together with estimates of the significance of the differences. It will be seen that on average there are no significant differences between samples, except for sex only in the Heidelberg normal sample.

The results of the Yugoslav study are given in Table 2, and represented in Fig. 2. The most crucial figures are those which show that of type 1 46.2% died of cancer, but only 5.6% of coronary heart disease, whereas of those of Type 2, 8.3% died of cancer, and 29.2% of coronary heart disease. Negligible numbers of individuals of Types 3 and 4 died of either cancer or coronary heart disease, and individuals of Type 4 show a 90.7% survival rate, as compared with 56.7% with Type 3, 28.3% for Type 2, and 23.8% for Type 1. The numbers of individuals in the four type categories are given

Table 1. Sex and age distribution of psychological types in Yugoslav, Heidelberg normal and Heidelberg stressed samples

Type	1	2	3	4	Significance of differences
Percent female:					
Yugoslavia	31.0	30.4	26.7	27.0	NS
Heidelberg normal	60.0	48.7	51.7	39.5	0.0001
Heidelberg stressed	51.3	49.0	57.9	49.1	NS
Mean age:					
Yugoslavia	62.1	61.7	62.2	61.9	NS
Heidelberg normal	50.4	50.5	47.8	48.5	NS
Heidelberg stressed	51.9	52.1	49.1	50.3	NS

Table 2. Deaths from various diseases by type of personality in Yugoslav sample

Yugoslavia	Living	Cancer	Coronary heart disease	Other causes of deaths	Total <i>N</i>
Type 1	72 = 23.8%	140 = 46.2%	25 = 8.3%	66 = 21.8%	303
Type 2	96 = 28.3%	19 = 5.6%	99 = 29.2%	125 = 36.9%	339
Type 3	123 = 56.7%	4 = 1.8%	20 = 9.2%	70 = 32.3%	217
Type 4	437 = 90.7%	3 = 0.6%	8 = 1.7%	34 = 7.1%	482
Impossible to allocate to type	6	0	4	2	12
Total	734 = 54.2%	166 = 12.3%	156 = 11.5%	297 = 27.0%	1353

in the final column, and it will be seen that in this relatively normal and unselected sample, the great majority were of Type 4.

Results for the normal Heidelberg sample are given in Table 3, and the outcome is illustrated in Fig. 3. Here the survival rate is, of course, much higher, because the sample is much younger than the Yugoslav one. The crucial figures again are those showing that of Type 1, 17.4% died of cancer, whereas of those of Type 2, only 5.9% died of cancer. Conversely, only 1.8% of Type

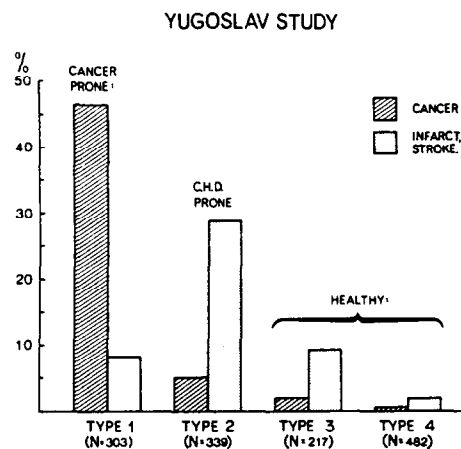


Fig. 2. Main causes of deaths for 4 personality types in Yugoslav study.

Table 3. Death from various diseases by type of personality in Heidelberg normal sample

Heidelberg normal	Living	Cancer	Coronary heart disease	Other causes of deaths	Total <i>N</i>
Type 1	78 = 71.6%	19 = 17.4%	2 = 1.8%	10 = 9.2%	109
Type 2	109 = 64.1%	10 = 5.9%	23 = 13.5%	28 = 16.5%	170
Type 3	185 = 98.4%	0	1 = 0.5%	2 = 1.1%	188
Type 4	387 = 99.0%	0	1 = 0.3%	3 = 0.8%	391
Impossible to allocate to type	14	0	0	0	14
Total	773 = 88.6%	29 = 3.3%	27 = 3.1%	43 = 4.9%	872

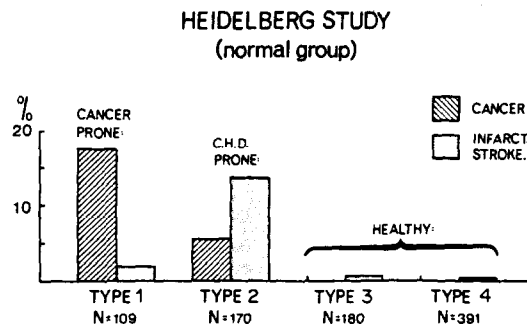


Fig. 3. Main causes of deaths for 4 personality types in Heidelberg normal sample.

1 died of coronary heart disease, but 13.5% of Type 2 did so. Again individuals of Type 4 showed the highest survival rate, followed by those of Type 3. In this sample there were almost as many persons of Type 4 as there were of Types 1, 2 and 3 together.

The results of the Heidelberg stressed sample are given in Table 4, and in diagrammatic form in Fig. 4. The results are very similar to those of the Yugoslav study. Of those persons who were of Type 1, 38.4% died of cancer, whereas only 2.3% of persons of Type 2 did so. Conversely, 27.8% of those of Type 2 died of coronary heart disease, but only 7.0% of those of Type 1. Again persons of Type 4 had the lowest death rate, followed by those of Type 3. In this group, as expected, only a small minority were of Type 4.

All the results mentioned are of course highly significant statistically. Chi-square statistics were calculated, correcting for age and sex differences in each case, using the Mantel-Haenszel (1959) formula; this left all the differences mentioned beyond the 0.01 level.

We must now consider the importance of smoking for the type-cancer relationship. Table 5 shows the number of cancer deaths, other deaths and total deaths for non-smokers and smokers

Table 4. Death from various diseases by type of personality in Heidelberg stressed sample

Heidelberg 'stressed' group	Living	Cancer	Coronary heart disease	Other causes of death	Total <i>N</i>
Type 1	188 = 38.4%	188 = 38.4%	34 = 7.0%	79 = 16.2%	489
Type 2	148 = 47.9%	7 = 2.3%	86 = 27.8%	68 = 22.0%	309
Type 3	153 = 92.7%	4 = 2.4%	0	8 = 4.8%	165
Type 4	71 = 97.3%	0	0	2 = 2.7%	73
Impossible to allocate to type	6	0	0	0	6
Total	566 = 54.3%	199 = 19.1%	120 = 11.5%	157 = 15.1%	1042

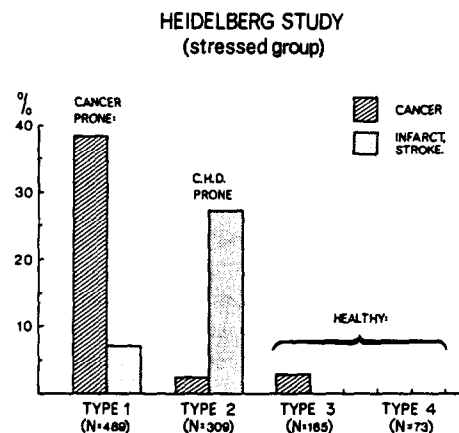


Fig. 4. Main causes of deaths for 4 personality types in Heidelberg stressed sample.

Table 5. Interaction of smoking and personality type in two samples for lung cancer and other deaths, separately for smokers and non-smokers

		Yugoslavia			Heidelberg (stressed)		
		Lung cancer deaths	Other deaths	Total	Lung cancer deaths	Other deaths	Total
Non-smokers	Type 1	1 = 0.8%	118	119	9 = 3.8%	227	236
	Others	0	550	550	3 = 1.0%	297	300
Smokers	Type 1	31 = 16.9%	153	184	37 = 14.6%	216	253
	Others	6 = 1.2%	482	488	0	247	247

of Type 1, as compared with individuals of the other three types. Among non-smokers, as expected, there are very few deaths from lung cancer, but of the 13 that occur *in toto*, 10 occur in persons of Type 1. For smokers, there are 74 deaths, only six of which occur in persons other than Type 1. These results give rise to an association between Type 1 and lung cancer of $P = 0.0001$ for both the samples considered when a correction has been made for differences in smoking habits according to the Mantel-Haenszel (1959) formula. It is clear that quite independently of smoking, individuals of Type 1 are cancer-prone, as compared to individuals of Types 2, 3 and 4.

The synergistic interaction between smoking and typology is also clearly brought out in this Table. The only groups which have a high proportion of deaths from lung cancer is that of smokers of Type 1; smokers not of Type 1, and non-smokers either of Type 1 or of the other types have negligible rates of cancer deaths. Of the two factors, smoking and personality, personality seems to be the stronger. Of 735 smokers not of Type 1, 6 only were found to have died of lung cancer; this figure is not very different from 3 non-smokers not of Type 1 who died of the 850 individuals who were non-smokers. *Clearly smoking appears to present a danger to health as far as lung cancer is concerned, only for individuals of Type 1.* This is an important finding, strongly supporting the stress laid by Eysenck (1980, 1985a, b) on the important of personality factors in this field, and the highly specific nature of the relationship between smoking and lung cancer, being characteristic only of certain personality types. This finding should enable us to isolate a particular group at risk for lung cancer from smoking, while demonstrating that for other much larger groups of personality types there is no such relationship.

In the table just considered, we singled out lung cancer and its interaction with smoking as being the strongest effect of an organic variable on a disease. (In this comparison the Heidelberg normal sample was not considered because the number of cases dying of lung cancer was too small to give meaningful results.) However, other comparisons are also of interest, and in Table 6 we give results relating to systolic blood pressure, diastolic blood pressure, blood cholesterol and cigarettes per day in their relationship to coronary heart disease (infarct/mortality), as well as another look at lung cancer mortality as related to cigarettes per day.

The interaction of an organic (risk) variable and psychosocial type for mortality was tested by means of the SAS-programme CATMOD, which is designed for the multivariate analysis of categorical dependent variables (e.g. dead: yes/no). The organic variable was standardised and then grouped into 5 intervals. As the dependent variable we used mortality itself (and not its log of log odds ratio). Zero frequencies in cells of the design—which would have disturbed the inversion of the covariance matrix—were replaced by Bayes estimates which are always different from zero. The analysis corresponds to an analysis of covariance with group-specific regression coefficients. The adjusted type-specific mortalities are those which would result if the type groups were shifted to an organic-variable mean of zero, using the type-specific regression coefficients. Because of the standardisation, zero corresponds to the general mean (but only approximately so, because of the grouping). This is needed for a meaningful analysis at least for blood pressure and cholesterol, where a *raw* value of zero would be completely unrealistic. For smoking, a zero *raw* value is not unrealistic; but shifting the type groups to the general mean of smoking still seems to make better sense than comparing them at an imputed value of zero smoking for everybody. (The common value to which the groups are shifted matters when group-specific regression coefficients and not a pooled one are used.) Table 6 gives the results.

Table 6. Interaction relationships of organic variables and psychological type with mortality

		Mean			b			Mort. (per cent)		
Type	Y	H1	H2	Y	H1	H2	Y	H1	H2	
rf: systolic blood pressure	1	151.0	174.2	0.056	—	0.024	7.6	—	7.2	
dis: infarct/stroke mortality	2	160.7	207.6	0.084	—	0.108	27.2	—	23.7	
	3	148.3	186.3	0.005	—	0.010	7.7	—	2.3	
	4	144.6	185.8	0.003	—	0.021	1.8	—	5.0	
all	150.7	—	187.7	0.035	—	0.041	11.1	—	9.1	
Significance of differences										
rf: diastolic blood pressure	1	90.0	0.0000	0.0004	—	0.0011	<0.0001	—	<0.0001	
dis: infarct/stroke mortality	2	93.7	93.5	0.093	—	0.071	26.8	—	7.2	
	3	88.6	88.9	0.020	—	0.004	8.5	—	24.5	
	4	86.8	89.0	0.014	—	0.007	2.1	—	2.5	
all	89.6	—	88.8	0.038	—	0.025	10.6	—	9.9	
Significance of differences										
rf: blood cholesterol	1	255.6	258.3	0.0137	—	0.0494	<0.0001	—	<0.0001	
dis: infarct/stroke mortality	2	250.4	305.1	0.036	0.004	0.037	8.3	3.2	8.5	
	3	245.8	282.6	0.027	0.054	0.046	29.4	9.7	24.7	
	4	217.9	280.5	0.001	0.000	0.003	9.2	1.8	1.8	
all	249.1	224.9	277.8	0.019	0.001	0.000	1.8	0.8	3.5	
Significance of differences										
rf: cigarettes per day	1	0.0330	0.0000	NS	NS	0.0486	<0.0001	0.0008	0.0000	
dis: infarct/stroke mortality	2	15.7	16.9	0.000	0.003	0.000	7.7	4.1	6.9	
	3	10.4	14.4	0.038	0.050	0.161	29.8	12.0	27.6	
	4	11.6	12.2	0.021	0.016	0.007	8.3	2.5	1.7	
all	10.8	8.2	10.9	0.002	0.008	0.011	1.8	1.2	3.5	
Significance of differences										
rf: lung cancer mortality	1	11.9	15.0	0.005	0.019	0.045	11.9	5.0	9.9	
dis: lung cancer mortality	2	0.0000	0.0000	NS	NS	0.0000	<0.0001	0.0002	0.0001	
	3	15.7	16.9	0.075	0.019	0.044	8.2	3.6	8.3	
	4	10.4	14.4	0.020	0.010	0.003	2.5	2.5	1.5	
all	11.6	8.9	12.2	0.003	0.015	0.007	1.3	2.4	1.7	
Significance of differences										
rf: differences	1	10.8	10.9	0.002	0.008	0.011	0.6	1.2	3.5	
dis: differences	2	11.9	15.0	0.025	0.013	0.016	3.1	2.4	3.7	
all	0.0000	0.0000	0.0000	0.0001	NS	0.0113	<0.0001	NS	0.0000	

largest (abs.) value is underlined

For Yugoslavia, the organic variables represent a single measurement taken in 1966 (cholesterol: 1969).
For Heidelberg, the organic variables are the average of up to 7 measurements taken in 1972.
Abbreviations:

rf = risk factor.

dis. = disease.

mean = mean of organic variable within type groups.

b = regression coefficient of the dependent variable on the organic variable within type groups.

mort. = mortality (the dependent variable) within type groups, adjusted for the organic variable.

Y = Yugoslavia H1 = Heidelberg representative H2 = Heidelberg stressed. NS means $P > 0.05$.

Results are quite similar, no matter which dependent variable, which organic variable and which place of investigation is considered. We therefore first state the general scheme and then discuss any peculiarities.

1. The organic variable has *different relevance for mortality* (different b), depending on the psychosocial type. Its relevance is greatest with that type which itself has the greatest specific mortality, i.e., type 1 for cancer and type 2 for infarct/stroke (coronary heart disease). In other words: the psychosocial types are relevant not only for mortality, but in a similar way for sensitivity to organic (risk) variables.

2. The psychosocial types do show differences with respect to the organic variables (columns "means"); but these differences *cannot explain away* the relevance of the types for mortality: according to the columns "mortality", type-specific mortality differences when adjusted for differences of the organic variable are still highly significant.

Exceptions to (1) are that in the Yugoslav investigation, the relevance of cholesterol and smoking for infarct/stroke (coronary heart disease) mortality is not significantly different between the types; and in the Heidelberg representative sample with its comparatively low mortality, there are no significant differences at all. An exception to (2) is that in the Heidelberg representative sample, there are no significant differences of lung cancer mortality between the types, controlling for smoking.

We may conclude that psychosocial variables, in particular personality type, are important in mediating death from cancer and coronary heart disease; that these personality variables are more influential than physical factors like smoking; and that personality and physical factors interact in a synergistic fashion. These conclusions suggest that current theorizing of the kind: "Smoking causes lung cancer" is over simplified and unscientific. A progressive research programme demands the inclusion of psychosocial variables of the kind here considered.

These data thus, in a somewhat different way, emphasize both the importance of personality variables (typology) and the synergistic effects of the interaction between organic variables and personality. No analysis of the organic variables can be considered complete which neglects, as most of them have done in the past, the importance of personality variables. This, we believe, is the main conclusion to be drawn from the data of these three large scale prospective studies. (Replication is obviously necessary and desirable, but in a sense the two Heidelberg studies can be regarded as replications of the original Yugoslav study, and the similarity of the results, particularly in view of the large numbers involved, suggests that the facts as stated are reasonably stable.)

Two final problems may be addressed at this stage. The first deals with relations between our typology, as here presented, and the trait data discussed in the first paper of this symposium.

We may thus look at the four types in relation to the data obtained from the original 109 item questionnaire concerned with variables such as the number of life events leading to hopelessness, the number of life events leading to anger, rationality-anti-emotionality, need for harmonious interpersonal relationships, ignoring signs of illness, etc., as mentioned in the first paper in this symposium. Table 7 gives the means within type groups of these variables, and the eta correlations for the three samples respectively. These data show a reasonably close relationship between the original questionnaire study, and the typology.

The next question to be asked deals with the problem of whether the typology here presented is in any way related to other typologies developed in English speaking countries, using empirical methods of research. A recent survey by Temoshok (1987) suggests close ties between the two sides. We have already discussed the similarities between the "Type A" personality and our "Type 2"—at least as long as we concentrate on the relevant aspects of Type A. Type B would correspond to our "Type 4", to a reasonable approximation. Temoshok (1987) has suggested, on the basis of her own work (1985) and of a review of research on cancer-psychosocial factor associations, that there existed a "Type C", different and indeed contrasting with Type A, and characteristic of the cancer-prone personality, (see also Morris and Greer, 1980) This "Type C" corresponds quite closely to our "Type 1", although "Type C" is derived from a study of patients already diagnosed as suffering from cancer, while our "Type 1" is derived from 3 prognostic studies in which personality diagnosis was made of healthy individuals, and preceded by 10 years the establishment of death and cause of death. This "Type 1" or "Type C" is related not only to *proneness* to cancer,

Table 7. Relationships between the 4 personality types and other psychosocial variables

	Type	Yugoslavia	eta	Heidelberg representative	eta	stressed	eta
Number of life events leading to hopelessness	1	2.74		6.11		6.11	
	2	1.01		3.44		3.90	
	3	0.53		1.81		3.50	
	4	0.39		0.80		2.39	
Significance of differences		0.0000	0.38	0.0000	0.62	0.0000	0.54
Number of life events leading to anger	1	1.49		1.72		2.43	
	2	1.81		3.56		4.94	
	3	0.51		1.04		2.36	
	4	0.33		0.40		1.37	
Significance of differences		0.0000	0.29	0.0000	0.53	0.0000	0.47
Rationality/anti-emotionality	1	8.19		—		6.76	
	2	7.52		—		5.69	
	3	3.62		—		4.35	
	4	2.24		—		3.71	
Significance of differences		0.0000	0.59	—	—	0.0000	0.38
Need for harmonious interpersonal relationships	1	2.34		3.97		2.83	
	2	1.33		3.20		2.73	
	3	1.23		3.39		3.27	
	4	1.25		3.21		3.31	
Significance of differences		0.0000	0.30	0.0000	0.19	0.0000	0.18
Ignoring signs of illness	1	1.93		1.67		1.71	
	2	1.30		1.53		1.61	
	3	1.14		1.33		1.33	
	4	1.02		1.22		1.43	
Significance of differences		0.0000	0.27	0.0000	0.15	0.0000	0.14

The table reports means within type groups.

Significances are from analysis of variance *F* tests. The etas are analogous to correlation coefficients.

but also to the development of cancer, once diagnosed, the activity of NK cells (natural killer cells), and the level of corticosteroids (particularly cortisol). These similarities emerging from widely differing research paradigms, different measuring instruments, in different countries, must be regarded as encouraging for the recognition of psychosocial and personality factors as causal aspects in cancer.

Our "Type 3" seems relatively unattached to disease, and difficult to relate to more orthodox descriptions of personality, although terms like "psychopath" and "personality disorder" spring readily to mind when looking at descriptions of the behaviour of "Type 3" individuals. In a recent study (unpublished) we have found a close relation between "Type 3" and sexual behaviour linked with Aids (large number of sexual partners, refusal to use condoms, homosexuality or bisexuality.) Table 8 shows some of these results.

It will be seen that out of 16 homosexual probands, 13 were of "Type 3", and out of 58 bisexual probands, 53 belonged to that type. Equally clear is the relative refusal of persons of this type to use condoms, and also the great promiscuity of "Type 3" probands. It seems likely that "Type

Table 8. Relationships between Types and Aids relevant variables

Probands (Male-Female)	Mean number of sex partners last year	Use of condoms	(Male) Homosexuality (<i>n</i> = 121)	(Male) Bisexuality
Type 1 60 (30/30)	8	17	1	0
Type 2 41 (21/20)	7	18	0	0
Type 3 75 (39/36)	42	13	3	7
Type 4 62 (31/31)	1.3	58	0	0
Total 238 persons (Student sample)			4	7
Type 1 264 (135/129)	5	56	1	4
Type 2 289 (171/118)	6	70	0	1
Type 3 456 (213/243)	21	17	10	46
Type 4 467 (218/249)	1.1	102	1	0
Total 1,476 persons (Adult random sample)			12	51

3" is related to Aids and other sexually transmitted diseases, although direct proof of this is still lacking. In this case, of course, the connection between conduct and disease is much more direct than in the case of cancer or coronary heart disease, and more readily intelligible.

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APPENDIX A

Instructions to Subjects

This questionnaire contains a description of four types of persons, and their behaviour. Give a Yes answer to each question which describes you accurately; if it does not, answer No.

In answering the questions you should concentrate on persons and conditions or situations which have been of the greatest importance emotionally for you, either in a positive or a negative direction. Particularly important are feelings, emotions, and behaviours which lasted a long time and are still active at the time of filling in this questionnaire. Pay particular attention to the past 5 years, and consider that any emotion or behaviour referred to in the question should have lasted a minimum of 1 year or more.

Type 1

1. Do you have a marked tendency to concern yourself lastingly with one emotionally important person, or one important aim in life, combined with a strongly marked faithfulness and a desire for belongingness?
2. Is it for you emotionally particularly important to achieve a lasting closeness and emotional attachment to a person who is important to you, but who has left you or is in the process of leaving you, or to achieve a very important aim which unfortunately is impossible for you to achieve?
3. After the departure of an emotionally important person, or the failure of an important aim, do you have feelings of inner emptiness, hopelessness and depression, feelings which you try to hide from other people?
4. After the departure of an emotionally important person, or the failure to achieve an important aim, have all your attempts to reestablish a reasonable degree of happiness failed, e.g. because you were not in a position to find other people who could replace the missing one?
5. Do you find it impossible to separate yourself emotionally and mentally from a particular person, or an aim which you found it impossible to reach, because you consider this person or this condition or aim as the most important for your own happiness?
6. Would you consider it better and less painful to die than to live in a condition of emotional distance from a particular person, or an unreachable but desired condition, but of course without actually committing suicide because of concern with duties, consideration for your family, etc.?
7. Do you have a strong tendency to view emotionally important people, aims and conditions in a positive, approving and favourable light, and only very rarely to attribute negative characteristics to them? At the same time, are you more likely to recognize negative characteristics in yourself, together with a difficulty in recognizing positive characteristics in yourself?
8. Do you constantly face the difficulty of failing to reach a desired emotional nearness or connection with a particular person, or a desired condition (e.g. in your working life)?
9. Do you regard a person who has left you, or a condition that no longer obtains, or an aim that cannot be realized as the most important condition for your personal wellbeing?
10. Is your feeling of personal worth, and your positive regard for yourself very low when you lack the emotional nearness to an important person who has left you, or without the realization of a desired aim which cannot be realized? In other words, is your sense of personal worth and your positive regard for yourself dependent on the attachment of certain persons or the realization of certain highly valued aims?

11. Do you experience in your life the permanent absence of a highly desired person, or a highly desired condition or situation, which is of the utmost importance for your happiness?

Type 2

1. Do you have a special tendency to be connected for a long period of time with several persons, aims or conditions, which pose expectations for you which are contradictory and cannot be reconciled, leading to a lack of success in fulfilling all these different expectations?

2. Do you suffer from constant criticism by persons close to you because of your failure to fulfill their expectations, leading to your judgement of yourself in a negative manner in spite of your wish to view your own person rather as positive, perfect and valuable?

3. Would you say that there is a particular person or a particular condition disturbing you, being the most important cause for your own unhappiness, mental anguish, or upset at your work place, from which you cannot emotionally disengage yourself in spite of a negative evaluation of the person or condition?

4. Have you resigned yourself to give up the battle with such a disturbing, excitement-producing and negatively evaluating person, or a condition which disturbs you, because you are not in a position to change the behaviour of the person or the circumstances at work, nor to distance yourself from these, or effect a separation?

5. Do you often react with feelings of excitement, annoyance, and helplessness to the experience that you cannot change a person or a condition which you find disturbing, and from which you cannot withdraw?

6. In spite of all attempts in turning away, separation, mental and emotional distancing and detachment from a permanently disturbing person or condition, have you nevertheless failed to achieve this?

7. Has your desire remained permanently unsatisfied to free yourself of a person or condition which disturbs you, e.g. by distancing yourself from that person or the condition, in spite of the importance you attribute to achieving such an emotional separation?

8. In relation to emotionally important persons and conditions, do you usually voice largely negative feelings and thoughts, i.e. of criticism, dissatisfaction, dislike etc., leaving the positive feelings and thoughts, e.g. of love, affection, satisfaction and recognition unspoken?

9. Do you often feel you would rather die than continue to live with the feelings of excitement, annoyance and helplessness, although you would never commit suicide because of a consideration for your duties, your family, etc.?

10. Do you have a tendency not to show to other people your inner emotional tensions, e.g. agitation, annoyance, helplessness vis-a-vis the disturbing persons and conditions, but rather demonstrate your emotional strength and react appropriately to the situations and demands made upon it?

11. Do you experience the continuing presence of an undesired person or a condition which prevents you from satisfying your needs and achieving happiness?

Type 3

1. Do you often experience contradictory feelings and evaluations, which are impossible to reconcile, such as love and hate, attachment and rejection, in relation to emotionally important persons, or in your judgement of certain conditions and situations which are very important for you emotionally?

2. Do you often experience contradictory and mutually exclusive reactions and messages of an emotional kind from people who are important to you, without being in a position to separate these out and interpret them, so that you are never in a condition to know which of these messages is the correct one, e.g. whether the person loves you or does not love you, accepts you or rejects you?

3. Is your behaviour, in relation to people who are important for you emotionally, usually unsuitable, in other words, do you behave in relation to such emotionally important people quite differently to what is expected, i.e. aggressively, unexpectedly, etc., thus giving some expression to your contradictory feelings for the person?

4. Do you experience great difficulties in the expression of contradictory feelings, e.g. like and dislike, towards emotionally important people or conditions in such a way that you do justice to both types of feelings, but rather alternate in an extreme expression of first one feeling, then the other?

5. Do you frequently have a strong feeling that you must die, or wish to die, while at the same time experience the feeling that you must live and want to live?

6. Is a particular person or condition for you simultaneously or alternately the most important condition for your personal happiness, as well as the most important cause for your personal unhappiness, and do you consider that you are emotionally dependent on such a person, or such a condition?

7. Do you usually experience great fear when you are close to persons who make emotional demands on you, and do you usually react to such people who express expectations and demands by means of unsuitable behaviour, e.g. by failing to turn up at dates, start a quarrel, or react with rejection to expressions of love?

8. Do you attempt to reach the desired nearness to emotionally important persons through the use of unsuitable behaviour, e.g. by seizing the initiative in such a way that your partner is completely overwhelmed, thus evading at the same time any emotional demands upon you?

9. Do you experience strong feelings of anxiety and aggression directed towards your own person or other persons, in situations in which you live in oppressive nearness to a person who makes emotional demands upon you, or in which an emotionally important person is finally leaving you?

10. Do you frequently attempt to attract persons who are important for you, and reject others who expect too much of you, by means of unsuitable behaviour, e.g. by expressing love for people who wish to avoid you, together with aggressive threats and sexual fantasies?

11. Through most of your life, have experienced a condition in which a needed and desired person was lacking or a person who was making disturbing demands upon you was present?

Type 4

1. Do you find it easy to preserve your own independence against all other people, and also to recognize the emotional independence of all other people, even of those who are particularly important to you emotionally?

2. Are you a very independent person whose emotional equilibrium is difficult to upset for any length of time when emotionally important people leave you, or disturb you, or love you and hate you in turn? Along the same lines, can you

be happy and contented living either with or without emotionally important people and social conditions, being always in the position of dealing adequately with all people and all situations?

3. When you have contradictory feelings and evaluations, such as love and hate, towards some person or condition, are you able to unify these in your behaviour, for instance by showing that in some ways you like a person, but reject him in others?

4. Are you able to evaluate yourself positively and to feel secure, even when things are not going particular well, i.e. when you are anxious, suffer from depression or excitement, or feel unsure in a certain situation?

5. Do you have a permanent and distinct trust in God, so that you are not emotionally dependent upon anybody and have a high degree of autonomy?

6. Do you always accept yourself in a positive manner, regardless of the behaviour of other people, and regard yourself as sympathetic, successful, important, capable, etc., and can rely on yourself even in a situation where you are uncertain, experience anxiety and other negative emotions and are very strongly challenged?

7. Do you change your behaviour according to consequences of previous behaviour, i.e. do you repeat ways of acting which have in the past led to positive results, such as contentment, well being, self-reliance etc., and to stop acting in ways which lead to negative consequences, i.e. to feelings of anxiety, hopelessness, depression, excitement, annoyance etc.? In other words have you learned to give up ways of acting which have negative consequences, and to rely more and more on ways of acting which have positive consequences?

8. Are you regularly able to engage, through your behaviour and your evaluation of other persons, in interpersonal relationships in which you can express and satisfy your most important emotional needs?

9. Are you able to manage your own behaviour in most life situations in such a way that your most important needs are satisfied?

10. Do you hardly ever get into conflicts through incompatible expectations of different persons which you attempt to fulfill simultaneously—because you rather orient your own valuations and not to others' expectations?

11. Are you regularly able to manage your own behaviour in such a way that it leads to positive long-term consequences, for which you are prepared to accept some negative short term consequences?

12. Do you have the ability to love yourself, other people and God, and be content with your life?

13. Are you always in a position to regulate life in such a way that you can achieve a desired nearness or a desired distance from various people according to your needs, so that you are neither too near to people from whom you wish to distance yourself, or too far away from people from whom you wish to be near?

14. Are the people and conditions in your life such that they serve the best possible satisfaction of your needs, i.e. are you in the position to make the best of each particular situation so that you are always stimulated by your surroundings?

15. Do you have a continual positive attitude toward yourself, originating in yourself and your activities, so that your self-attitude is not overly dependent upon the behaviour of emotionally important others?

16. Does your behaviour and your valuations regularly enable you to overcome all obstacles to your most important emotional needs?

17. Do you have a marked ability to perceive emotionally important persons in such differential ways that you do justice to their individuality, without being influenced by the opinion of other people?

18. Are you regularly able to achieve a good interplay of your emotions and your reason, so that in general a behaviour ensues which satisfies your needs?

APPENDIX B

Short Scale

This is a short scale for self ratings in relation to the four personality types discussed in this article. Each question is followed by a series of numbers from 1 to 10, and the subject is asked to indicate how closely the description fits him, 1 denoting, "not at all" and 10 denoting "perfectly".

1. Considering the last 10 years of your life, have you been repeatedly hopeless and depressed during this time, either because of the withdrawal of persons who were particularly important to you, and/or your failure to realize certain particularly important aims in life. This hopelessness and depression was caused because these events made it impossible for you to satisfy your most important emotional needs, such as those for love, nearness, understanding, recognition, etc. The cause might be the death of, or the separation from some particularly important person, causing disappointment, difficulties etc. How closely does this description fit your own case?

1 2 3 4 5 6 7 8 9 10

2. Considering the last 10 years of your life have you during that period been repeatedly excited, annoyed and resigned because of people who disturbed you and interfered with your plans? This excitement and annoyance would be caused by your failure in spite of constant effort to change the situation, so that this person or persons were able to prevent the satisfaction of your all-important needs, or the achievement of an all-important goal for you, such as happiness with a sexual partner, or advancement at work. How closely does this description fit your own case?

1 2 3 4 5 6 7 8 9 10

3. Considering the last 10 years of your life, particularly your relation with people who were particularly important for you from the emotional point of view (either positively or negatively) which of the four typical reactions described below would be most descriptive of you, and to what extent.

Type 1

I seek, and long for closeness and emotional contact with a person or persons all important to me who are at the moment too distant from me because of a separation, lack of understanding on the part of my partner, because of the death of an all important person, or because of some shocking or too demanding events. I would be willing to do anything to diminish this distance, but I do not succeed in reaching the wished for intimacy. How closely does this description fit your own case?

1 2 3 4 5 6 7 8 9 10

Type 2

I seek distance or separation from one person or persons whose closeness to me either as partner, in a work situation etc., I experience as crushing. In spite of my efforts I fail to achieve this distancing or separation, largely because of fear of the consequences, such as fear of financial difficulties. How closely does this description fit your own case?

1 2 3 4 5 6 7 8 9 10

Type 3

At different times I alternate between great emotional closeness to a person who is important to me, and great emotional distancing and separation. My actions only achieve a regular alternation of too great closeness and too great distance interspersed with moments in which nearness and distance are optimally equated for me. How closely does this description fit your own case?

1 2 3 4 5 6 7 8 9 10

Type 4

My relation with people who are important to me is characterized neither by too great emotionally crushing nearness nor too great distance, i.e. nearness and distance are for the most part optimal, and regulated appropriately, i.e. by increasing the distance to people who annoy me, and decreasing the distance to people with whom I interact positively. How closely does this description fit your own case?

1 2 3 4 5 6 7 8 9 10

4. Considering the last 10 years of your life, were you always in a position to enjoy relaxation in various bodily activities, such as sport, work, sex etc., using these activities as a pleasant alternative to mental relaxation and activity.

Yes/No

If the answer is No, were you prevented from doing so:

(1) By the sudden or gradual change due to persons distancing themselves from you, or the loss of a position in your work situation.

(2) Because of people or conditions disturbing and annoying you without you having the power to change them according to your desires, or to leave them.

(3) Through people who alternated and made emotionally unacceptable demands on you, while at other times distancing themselves from you. (A Yes answer denoted Type 4; answers 1, 2 and 3 respectively Types 1, 2 and 3.)

5. Considering the last 10 years of your life do you find that in your activities, your thoughts and your memories you have repeatedly acted in such a way that emotionally negative (undesirable) consequences occurred, and that you were unable to find ways of acting which led to more positive and desirable consequences, e.g. leading to better interaction between you and persons emotionally important for you. How closely does this description cover you?

1 2 3 4 5 6 7 8 9 10

6. We all have the will to live, but also sometimes a desire for death. These two tendencies tend to be balanced, and one may be stronger than the other depending on circumstances. Rate the strength of your desire to live, and the strength of your desire to die.

Will to live: Intensity 1 2 3 4 5 6 7 8 9 10

Will to die: Intensity 1 2 3 4 5 6 7 8 9 10

7. Do you have frequent feelings of fear and anxiety, i.e. a general state of anxiety, a syndrome of anxiety, periods during which you suffer from anxiety, fears of being threatened or persecuted, fear of not being able to cope with life and its problems, fear of specific situations? However these anxieties may have originated, reference is simply to the feeling mentally and bodily, or suffering from such fears. These fears should be relatively unrealistic, in the sense that you are in the position to avoid them if need be.

How strong is this anxiety: 1 2 3 4 5 6 7 8 9 10