# 疾病親和的パーソナリティ特性評価のための自記式質問票開発の試み ： 質問項目の作成過程と内容妥当性について

永野, 純
九州大学健康科学センター

須藤, 信行
九州大学健康科学センター

https://doi.org/10.15017/724

出版情報：健康科学. 23, pp.41-52, 2001-03-01. 九州大学健康科学センター
バージョン：
権利関係：

# Development of a self-administered questionnaire to assess disease-prone personalities: Item construction and content validity

Jun Nagano* and Nobuyuki Sudo†

## Abstract

The etiological roles of psychosocial factors in cancer and coronary heart disease (CHD) have received much attention in psychosomatic research, and recent epidemiological studies have added scientific evidence concerning this issue. Grossarth-Maticek and colleagues have shown, through their series of prospective studies, a strong relationship between certain personalities (reactions to stress) and diseases such as cancer, apoplexy, and CHD. Based on the Grossarth-Maticek theory, we have developed a self-administered questionnaire, the Stress Inventory (SI), to assess possible disease-prone personalities in the Japanese population. This paper describes the constructs to be assessed by SI and the procedure for creating items included in SI. Content validity is also discussed. We created a pool of items referring to the Grossarth-Maticek disease-prone/healthy personalities, including "Types 1 to 6", "7 traits", and "self-regulation". Using different sets of items selected from the pool, we interviewed doctors and nurses specializing in psychosomatic medicine if the items were easily understood and if they appropriately asked what we intended. According to their comments, a set of revised items was constructed. Similar procedures were then done with psychosomatic patients, followed by patients with cancer or myocardial infarction. Finally, a set of 75 items for SI was prepared to assess 9 constructs: 'low sense of control', 'having an idealized object that causes persistent hopelessness and depression', 'having a persecuting object that causes chronic irritation and anger', 'ambivalent dependence on an object', 'openness of negative emotions', 'unfulfilled needs for dependence', 'tendency to repress one's own needs', 'rationality and anti-emotionality', and 'lack of emotional experiences'. The current version of SI was found to be usable as a self-administered questionnaire and valid in content. Further examinations will aim at its factorial and construct validity, as well as reliability.

**Key words:** questionnaire, disease-proneness, personality, stress, content validity, Grossarth-Maticek

*Institute of Health Science, Kyushu University; 6-1 Kasuga Park, Kasuga, Fukuoka 816-8580 Japan; phone 81 92 583 7685; fax 81 92 583 7859; email nagano@ihs.kyushu-u.ac.jp

†Department of Psychosomatic Medicine, Kyushu University Graduate School of Medical Sciences; 3-1 Maidashi, Higashi-ku, Fukuoka 812-8582 Japan

## Introduction

The etiological roles of psychosocial factors in the onset and progression of cardiovascular disease (CVD), such as stroke and coronary heart disease, and malignant disease (cancer) have received increasing attention in recent years[1,2]. For example, Type A behavior and the related personality characteristics of hostility an anger are known to be risk factors for ischemic heart disease (IHD)[3]. There have also been reports of relationships between IHD and psychosocial factors such as depression, exhaustion, low sense of job control, and hopelessness[4-6]. Depression and hopelessness have also been suggested to be associated with cancer[4,7-9].

Grossarth-Maticek and colleagues have reported unique personality theories and relationships between certain personality profiles and specific diseases on the basis of cohort studies initiated in 1965 in the former Yugoslavia and in 1972 in the former West Germany[10-12]. Besides the elements sharing the constructs of above mentioned factors such as Type A, hostility/anger, and hopelessness/low sense of control, their theory include unique elements such as “autonomy and object dependence” and “self-regulation”. Their findings showed strong associations between these elements and incidence of and mortality from CVD and cancer. For example, during the 15-year follow-up period mortality risks from CVD and cancer were respectively 12 times and 8 times higher in people with the lowest autonomy score versus those with the highest autonomy score[12]. Intervention with cognitive-behavioral therapy to a low-autonomy population resulted in a 44% reduction in CVD mortality and a 36% reduction in cancer mortality[12]. Despite these noteworthy findings, replication studies have, so far, not been actively reported[13-15]. One reason for this is the complexity and lack of standardization in systems of personality assessment based on interviews and questionnaires. For example, the Grossarth-Maticek questionnaires were filled out by study participants after spending a considerable amount of time to discuss the aims of the questions. The participants would have found the questions quite difficult to answer without this kind of preparation[16].

We have developed the “Stress Inventory (SI)”, a self-administered questionnaire which, referring to the Grossarth-Maticek theory, is designed to evaluate psychosocial factors (personality traits) that are risk factors for CVD and cancer in the Japanese population[17]. In this article we provide a summary of the process of preparing the question items for this questionnaire, and describe the 9 constructs that these questions are designed to assess.

An individual's psychosocial stress is thought to be determined by an interaction between stressors and his/her responding style to the stressors. In this article we define “personality” as the cognitive and behavioral responding style to stressors.

## The Grossarth-Maticek Personality Theory

The Grossarth-Maticek theory typically proposes three models for disease-prone personalities. Of these, the easiest to understand may be the theory that posits six personality types (“Type 1” through “Type 6”, see Table 1) [18,19]. The Type 1 personality is considered to be cancer-prone, and Type 2 is considered to be

CVD-prone. For each of these types, characteristically the individual's psychological well-being can be strongly influenced by certain external objects (such as people and conditions). Grossarth-Maticek referred to this as “object-dependent behavior patterns”. Whereas a Type 1 person would idealize a certain object to provide individual satisfaction, and then have repeated experiences primarily of hopelessness and depression related to that object, a Type 2 person would believe that a certain object is the cause of his/her unhappiness, and would experience repeated bouts of anger and irritation related to that object. Type 4 is a healthy personality. When a Type 4 person has a sustained negative experience in relation to another person or a targeted object, he/she flexibly changes his/her thinking and behavior that has been associated with the object up to that point. Also, he/she usually seeks new ways of thinking and behaving that will provide desirable results in the long term. As a result, a Type 4 person rarely encounter repeated negative experiences with a specific objective. This characteristic is termed “autonomous behavior pattern” or “autonomy”. The Type 3 personality is characterized by continued oscillation between patterns typical of Type 1 and Type 2, and is designated as “ambivalent type”. Although object-dependent, Type 3 is considered under the Grossarth-Maticek theory to be a “healthy” personality type because it is prone neither to cancer nor to CVD. It has also been suggested that Type 1 and Type 2 persons are characterized by excessively repressing their needs (this is particularly pronounced in Type 1), while Type 3 persons tend to inappropriately express their needs [20]. The Type 3 personality is also characterized by egoistic and egocentric behaviors[21].

Type 5 and Type 6 are categories that were added later[19]. Type 5 is characterized by a tendency to repress emotional behaviors and to respond rationally when under frustrating and conflicting relationships with others (“rationality and anti-emotionality”, see below) [20-22]. This personality type is prone to depression and cancer[19]. In addition, there are indications that rationality and anti-emotionality which characterizes Type 5 personality, is also prone to CVD[23]. The Type 6 personality is antisocial, aggressive, and extremely egocentric. This personality type is unlikely to develop cancer or CVD, but is prone to substance addiction [19,21,22].

The second model posits a theory of personality traits. A discussion of this “7 traits” model was published prior to publication of the above noted personality typology[16,23-26]. Table 2 summarizes these traits, with their abbreviations used in this article and their relation to cancer and CVD. Of these traits, “chronic depression” and “chronic anger” correspond to one of the Type 1 constructs and one of the Type 2 core constructs, respectively. “Suppressing personal needs” is also an element included in the Type 1 construct, but a study on the traits theory has shown a weaker correlation between this trait and cancer than between chronic depression and cancer[26]. In contrast, findings from a prospective study that assessed “interpersonal repression” (the tendency to be repressed by others and to conform to others) indicate a clear correlation between this trait and cancer [27]. A tendency to repress one's own needs means that the needs are repressed primarily by the individual, while a tendency towards interpersonal repression means primarily that the individual is being repressed by others. Thus, strictly speaking these two traits have different nuances, but here we have treated them as being essentially the same construct. Findings from a multiple regression

model including the three traits of “disregarding symptoms”, “lacking social supports” and “lacking anxiety”, as well as the above four traits, only showed a weak correlation between the former three and cancer and CVD [26].

The third model involves a personality trait called “self-regulation” [12]. Although we have not found a clear definition in their publications, we have understood it as to mean ”the individual’s competence to adequately recognize frustrations and conflicts, to solve them through flexible coping behaviors, and to maintain mental and physical health”. Prospective studies showed that the majority of persons having a high self-regulation were categorized as Type 4 personality, and were less susceptible to different diseases including cancer and CVD [12].

## Constructs to be assessed by the Stress Inventory and the procedures for creating items to be included

Grossarth-Maticek, co-working with Eysenck and colleagues, has published a number of articles on their personality theory and methods for their personality assessments[10-12,18,19,28], and those articles provide considerable assistance in understanding the theory and methods involved. However, the questions used for the personality assessments included some that were not necessarily easy to understand, and there remained some for which the theoretical background was not clear. For these reason, one of the authors visited Grossarth-Maticek in 1995 in an attempt to achieve a better understanding through direct discussion. Subsequently we translated the Self-Regulation Inventory (SRI), a questionnaire to assess self-regulation, into Japanese, and arranged for a third party who was unfamiliar with Grossarth-Maticek's theories to back-translate our Japanese document into German. We then had the back-translation checked by Grossarth-Maticek in order to make sure that our Japanese document was consistent with the original. Grossarth-Maticek and colleagues have also developed a cognitive-behavioral therapy called “autonomy training”[10]. When we applied a form of autonomy training to Japanese patients with psychosomatic or psychological conditions, we found that the patients resolved their problems, particularly interpersonal problems, accompanied by improvements in different physical conditions[29,30]. We also observed a process whereby the patients tended to shift their behavioral pattern from object-dependent to autonomous. These findings helped us to obtain a greater understanding of the Grossarth-Maticek theory.

Assessment instruments (questionnaires) have been prepared for each of the three models in the Grossarth-Maticek personality theory. Of these, we referred to those for which English versions were accessible to us: the "Long Questionnaire"[18], the "Short Scale" [18], the "Personality Stress Questionnaire"[19] and the "Short Interpersonal Reactions Inventory"[19,31] for assessment of the 6 personality types (4 personality types in the early stage); and the SRI [12] for self-regulation. For the 7 traits, the only available English version was the set of 11 items for rationality and anti-emotionality [23], but we found detailed discussions of other traits in the literature[24-27,32], which provided greater understanding.

Because the 3 models are essentially based on the same theory (personal communication, 1995), these inventory items sometimes overlap, and there are numerous items that are quite similar[33]. We thus began the task of classifying and organizing these items. As for the SRI, we did a preliminary factor analysis (in men and women receiving health check-ups, 20 to 67 years of age with a mean of 39.1; unpublished data), and then referred to those results in classifying its items.

Our primary objective in developing the Stress Inventory was to assess disease-prone personalities, so in general we did not include constructs relevant to Type 3, Type 4, and Type 6 that are not considered to be disease-prone personalities. We did not include in our organizational process, either, the SRI items corresponding to the two main factors considered to be healthy (Factor 1: attitude to cope with problems flexibly; Factor 2: positive attitude to maintain physical and mental health). However, we made an exception in including some of the core elements of the Type 3 construct, such as “ambivalent dependence on an object” and “egocentric behavior”. Of the 7 traits, we included the 3 traits suggested to be most strongly associated with illness (“rationality and anti-emotionality”, “chronic sense of hopelessness”, and “chronic anger”), as well as “suppressing personal needs” which constitutes the Type 1 construct. Although Grossarth-Maticek and colleagues did not consistently find an association between “lacking social supports” and the development of illness [26], we included this construct because other researchers have shown a relationship with CVD [34-36] and cancer [37-39] .

Through the process described above, we prepared several pools of around 200 question items, from which we selected 60-100 items to form provisional questionnaires. We first asked about 20 physicians and nurses specializing in psychosomatic medicine to elicit their views regarding whether the questions were readily understandable, whether each question appropriately reflected the purpose of that question, and whether the questions would be understood by our subjects in the way that we intended. We then revised the questionnaires based on their feedback. Next, we administered the revised questionnaires to about 30 inpatients and outpatients who were receiving treatment for psychosomatic conditions. After they completed the questionnaires, we interviewed each patient and elicited their feedback in the same way we did for the doctors and nurses. We referred to this feedback in revising the questionnaires, as well as in supplementing those items that seemed unclear or imprecise. In the interviews with the patients, we had prepared different response forms using 2, 4, 6, or 10 possible choices, and obtained views on the difficulty or ease of responding to questions using each of these forms, and on the stability of these responses. Accordingly, we determined that the 6-choice type was best-suited for our purposes.

Subsequently, we used the questionnaire to survey inpatients who were hospitalized for CHD or cancer (15-20 patients in each category). In those interviews, the subjects were asked what they had been thinking about in their own personal situation when they were answering each question. A question was considered appropriate if the situation that the subject was thinking about was in accord with our intention when we drafted the question. If the subject was not particularly aware of thinking about a specific situation when answering a question, or if the subject appeared to misunderstand the question, the question was revised while eliciting the subject's comments. By this point, interviewers were beginning to get a clearer

understanding of the subject's actual spontaneous experience with others, and of the subject's way of thinking and behavioral patterns. From this we were able to preliminarily confirm that the Grossarth-Maticek "disease-prone" personality traits were found among the patients having the corresponding disease.

## The constructs to be measured by the Stress Inventory and questionnaire items prepared for those constructs

Through the procedures described above, we defined nine constructs to be measured by the Stress Inventory, and developed questions corresponding to each of them. The questionnaire at this stage consisted of 75 items in total. The question items along with corresponding abbreviations of those constructs are noted in Appendix. Table 3 shows the relationship between the Stress Inventory constructs and the Grossarth-Maticek personality types and traits on which they are refered to. Below we provide a brief discussion of each construct.

**Low sense of control.** The SRI, which measurs self-regulation, includes the item, "If I have a problem, I can always find a new way of thinking and/or a very good method for resolving it", and we considered it to correspond to the construct of "the sense of having control over stressful situations". In contrast, the Type 1 item, "I am still dragging along circumstances that occurred a long time ago (a death or calamity that affected me)" (from the PSQ), and the Type 2 item, "My discontent and stress are caused entirely by things that other people say and do, and I have no control over them" (from the SRI) appear to be related to the *lack of* sense of control over stressful situations. Steptoe and Appels took a number of interrelated and similar constructs such as job control presented by Karasek[40] and vital exhaustion by Appels et al.[41], and summarized them under the designation of "personal control", and called this concept a key to understanding the phenomenon of disease-proneness[42]. We consider their findings to correspond to this construct. We intend to measure the low sense of control over stressful situations with Stress Inventory items a1-a6 (see Appendix).

**Object dependence of loss.** These items are intended to measure "the tendency to regard a specific object as indispensable and to remain fixated on that object for an extended time, even while experiencing repeated disappointments", corresponding to chronic hopelessness that constitutes the Type 1 core construct. For situations in which one is no longer connected with the object (for example, because of death), items b1-b10 were designed to measure the extent to which the loss of that connection is still being felt at present. For situations in which one is still connected to the object, items b1-b10 are used to measure the extent of dissatisfaction with the situation, items b11 and b12 are intended simply to identify "the presence of an indispensable object", however. This construct may overlap with hopelessness/depression, which has been associated with cancer in other prospective studies[4,8,43].

**Object dependence of anger.** These items are intended to measure "the tendency to regard a specific object as persecuting and to remain fixated on that object for an extended time without changing attitude

toward the object", corresponding to the Type 2 core construct of chronic anger. Items c1-c12 were designed to meat the conditions: (1) they include implication that the subject had tried and failed in attempts to change, remove, or separate from the object; and (2) the unpleasant connection, if the object happened in the past, is still being dragged along at present, or it has been continuous over an extended period of time if the object is a matter of the present. Prospective studies by other researchers have shown that "anger", which this construct overlaps with, and "hostility", which it is closely related to, have been associated with IHD [44-46].

**Object dependence of ambivalence.** This constitutes the core construct of the Type 3 personality. Items d1-d6 attempt to measure "the tendency to continue to alternate in major ways between such two opposite dependency attitudes as at some times one regards a specific object as indispensable to his/her happiness, and with some trivial incident he/she views the same object as a cause of personal unhappiness". Other than the work by Grossarth-Maticek and colleagues, we know of no other research on the relationship between this construct and proneness to physical illness. Because this construct and the previous two constructs can be considered subconcepts to the upper concept of object dependence, the questionnaire items corresponding to these constructs were developed with special attention to their interrelationships (as shown as Group 2 in Table 3).

**Disclosure of negative experiences.** Items e1-e4 were designed to inquire into "the extent of openness of negative emotional experiences". The Grossarth-Maticek questionnaires include few relevant questions, although the SRI contains only a few. These questions are included in the present questionnaire as an element that is more different than might first be surmised as the subsequent construct, "unfulfilled needs for acceptance", and no particular relation to disease has been hypothesized for this construct. In the development process, however, these two constructs have been handled as a pair, and are shown as Group 3 in Table 3.

**Unfulfilled needs for acceptance.** The Grossarth-Maticek theory places psychological autonomy at the core of the healthy personality. On the other hand, when discussing dependence it is important to differentiate between "accepted dependence" and "unaccepted dependence", and only the latter can be a disease-pone property (personal communication, 1995). Of the 7 traits, lacking social supports may be close to this construct. Here we attempt to use items f1-f8 to assess "the situation where one holds needs for acceptance by others and such needs are unfulfilled", rather a simpler idea of the presence/absence of social support.

**Suppressing needs and emotions.** This construct, along with object dependence of loss, constitutes the Type 1 personality, and corresponds to suppressing personal needs of the 7 traits. PSQ and SIRI contain altruism as a relevant construct, which is represented by such items as "I often yield to other people and give up my own cause in order to get along with others". This construct is thought to be the opposite of the egoistic and egocentric attitudes which constitutes the Type 3 personality. In the present study we intend to measure "the tendency to repress one's own needs and to conform to others". For this purpose, we have

prepared items g1-g3 for egoistic and egocentric attitudes, items g4-g7 for altruistic attitudes, g8-g15 for self-repression based on ethics and logic, and g16 and g17 for a sense of "being unable to behave freely". However, this group is apparently made up of questions having different nuances. These questions may not be consistent enough to be grouped into a single construct. In a prospective study, Dattore et al found a positive correlation between cancer and the MMPI repression scale, which measures a similar construct to this; these findings were not confirmed by other studies, however [47,48] .

**Rational and anti-emotional behavior.** This constitutes the Type 5 core construct and corresponds to rationality and anti-emotionality in the Grossarth-Maticek personality traits. Items h1-h5 intend to measure "the personality trait that strongly avoids being emotional in interpersonal relationships and that represses emotion and strives to deal with conflicts solely on the basis of rationality". The Type 3 personality includes the opposite element, i.e., the trait of behaving emotionally in relationships with others. Rationality and anti-emotionality can be considered in a broad understanding an aspect of suppressing needs and emotions (shown as Group 4 in Table 3). Emotional suppression is a construct that has long been thought to be a cancer-prone personality[49-51], but such relationship has not necessarily been substantiated by findings from prospective studies[52-54]. Rationality and anti-emotionality, a unique construct by Grossarth-Maticek, is shown to have a clear association with cancer, and is also suggested to positively interact with Type 1 and Type 2 in predicting cancer and CVD[16].

**Lacking emotional experiences.** In order to verbally express emotions, it is necessary to go through the three stages of emotional identification, processing, and verbal expression[55,56]. The development of the Stress Inventory was based on the premise that the subject would be able to identify their emotions. Therefore, it should be of use if the SI assesses difficulties in emotional identification, and helps determining the validity of responses as a whole when the subject would have such difficulties. Items i1-i5 were designed to measure the "lack of strong emotional experiences". If this tendency is at an extreme level, it may be necessary to question whether the subject has problems with emotional identification.

## Closing remarks

Here we discussed the development of the Stress Inventory, a questionnaire to measure personalities that include those prone to cancer and CVD, with special focus on the description of constructs to be assessed and the developing process of items for measuring the constructs. Through administration of provisional questionnaires to subjects including cancer and IHD patients and subsequent interviews with them, we could develop the items that subjects properly understand what they are asked. We believe that the present version of the Stress Inventory covers some of the major elements of the disease-prone personalities by Grossarth-Maticek, and to some extent its content validity has been confirmed. Since the subjects were able to understand the intent of the questions without any prior interview-based explanation on their theoretical background and without any specific assistance in answering the questions, we consider it

feasible to use this instrument as a self-administered questionnaire. We plan to conduct further studies to assess factorial validity, construct validity, and reliability.

In addition to covering disease-prone personalities, the Grossarth-Maticek questionnaires also contain numerous items regarding healthy personalities such as the Type 4 personality, autonomy, and self-regulation. The Stress Inventory does not include items relevant to the healthy personalities. However, the present instrument may possibly be used to assess healthy personalities through measurements showing *no or weak* tendencies toward disease-prone characteristics; e.g., low scores on low sense of control, low scores both on object dependence of loss and object dependence of anger, low scores on unfulfilled needs for acceptance, low scores on suppressing needs and emotions, and lack of an extremely high score on rational and anti-emotional behavior. Further studies should examine this issue by comparing the response to the Stress Inventory with those to instruments that measure the Type 4 personality, high autonomy, and high self-regulation.

## Acknowledgments

We appreciate many people who gave us their supports in this study. Ronald Grossarth-Maticek (ECPD Institute for Preventive Medicine) provided us with important instructions and the SRI, Takahiro Arimura (Faculty of Languages and Cultures, Kyushu University) worked on the back-translation of the Japanese version of the SRI, and Yuko Doubeta (Department of Psychosomatic Medicine, Kyushu University School of Medicine) handled factor analysis of the SRI. Takehiko Fujino and Akira Babazono (Institute of Health Science, Kyushu University) provided their comments on the constructs to be assessed during the beginning stage of developing the Stress Inventory. Physicians and nurses from the Department of Psychosomatic Medicine, Kyushu University Hospital, gave us their comments regarding the validity of questionnaire items. Noriko Hiromatsu and Masahiro Takano (Takano Hospital), Katsumasa Nakamura and Koji Masuda (Department of Radiology, Kyushu University Hospital), Yoshitaka Hirooka and Akira Takeshita (Department of Cardiovascular Medicine, Kyushu University Hospital), Yukito Ichinose (Department of Thoracic Oncology, National Kyushu Cancer Center), and Ichiro Omura (Department of Cardiovascular Medicine, Fukuoka-Higashi National Hospital) provided us with subjects to take our questionnaire and with opportunities to interview individual patients. Chiharu Kubo of Kyushu University Graduate School of Medical Sciences (Psychosomatic Medicine) and Suminori Kono (Preventative Medicine) provided guidance in all phases of our research.

## References

1. Garssen B, Goodkin K. On the role of immunological factors as mediators between psychosocial factors and cancer progression. Psychiatry Res 1999;85:51-61.
2. Rozanski A, Blumenthal JA, Kaplan J. Impact of psychological factors on the pathogenesis of cardiovascular disease and implications for therapy. Circulation 1999;99:2192-217.
3. Matthews KA, Haynes SG. Type A behavior pattern and coronary disease risk. Update and critical evaluation. Am J Epidemiol 1986;123:923-60.
4. Everson SA, Goldberg DE, Kaplan GA, Cohen RD, Pukkala E, Tuomilehto J, et al. Hopelessness and risk of mortality and incidence of myocardial infarction and cancer. Psychosom Med 1996;58:113-21.
5. Appels A, Falger PR, Schouten EG. Vital exhaustion as risk indicator for myocardial infarction in women. J Psychosom Res 1993;37:881-90.
6. Frasure-Smith N, Lesperance F, Talajic M. Depression and 18-month prognosis after myocardial infarction. Circulation 1995;91:999-1005.
7. Spiegel D. Cancer and depression. Br J Psychiatry Suppl 1996:109-16.
8. Schulz R, Bookwala J, Knapp JE, Scheier M, Williamson GM. Pessimism, age, and cancer mortality. Psychol Aging 1996;11:304-9.
9. Molassiotis A, Van Den Akker OB, Milligan DW, Goldman JM. Symptom distress, coping style and biological variables as predictors of survival after bone marrow transplantation. J Psychosom Res 1997;42:275-85.
10. Grossarth-Maticek R, Eysenck HJ. Creative novation behaviour therapy as a prophylactic treatment for cancer and coronary heart disease: Part I--Description of treatment. Behav Res Ther 1991;29:1-16.
11. Eysenck HJ, Grossarth-Maticek R. Creative novation behaviour therapy as a prophylactic treatment for cancer and coronary heart disease: Part II--Effects of treatment. Behav Res Ther 1991;29:17-31.
12. Grossarth-Maticek R, Eysenck HJ. Self-regulation and mortality from cancer, coronary heart disease, and other cause: a prospective study. Person Individ Diff 1995;19:781-95.
13. Quander-Blaznik J. Personality as a predictor of lung cancer: a replication. Person Individ Diff 1990;12:125-30.
14. Schmitz PG. Personality, stress-reactions and disease. Person Individ Diff 1992;13:683-91.
15. Amelang M. Using personality variables to predict cancer and heart disease. Eur J Personality 1997;11:319-42.
16. Eysenck HJ. Reply to criticisms of the Grossarth-Maticek studies. Psychol Inquiry 1991;2:297-323.
17. Kubo C, Nagano J, Sudo N, Kono S. Development of a device to assess psychosocial factors that affect the onset and progression of cardiovascular and malignant diseases [in Japanese]. MOA Health Science Reports 1998;7:13-21.
18. Grossarth-Maticek R, Eysenck HJ, Vetter H. Personality type, smoking habit and their interaction as predictors of cancer and coronary heart disease. Person Individ Diff 1988;9:479-95.

19. Grossarth-Maticek R, Eysenck HJ. Personality, stress and disease: description and validation of a new inventory. Psychol Rep 1990;66:355-73.
20. Grossarth-Maticek R, Eysenck HJ. Personality, stress, and motivational factors in drinking as determinants of risk for cancer and coronary heart disease. Psychol Rep 1991;69:1027-43.
21. Grossarth-Maticek R, Eysenck HJ, Boyle GJ, Heeb J, Costa SD, Diel IJ. Interaction of psychosocial and physical risk factors in the causation of mammary cancer, and its prevention through psychological methods of treatment. J Clin Psychol 2000;56:33-50.
22. Grossarth-Maticek R, Eysenck HJ, Rakic L. Central nervous system and cancer. In: Nygaard OF, Upton AC, eds. Anticarcinogenesis and radiation protection 2. Plenum Press. New York, 1991:429-35.
23. Grossarth-Maticek R, Bastiaans J, Kanazir DT. Psychosocial factors as strong predictors of mortality from cancer, ischaemic heart disease and stroke: the Yugoslav prospective study. J Psychosom Res 1985;29:167-76.
24. Grossarth-Maticek R. Psychosocial predictors of cancer and internal diseases. An overview. Psychother Psychosom 1980;33:122-8.
25. Grossarth-Maticek R. Synergetic effects of cigarette smoking, systolic blood pressure, and psychosocial risk factors for lung cancer, cardiac infarct and apoplexy cerebri. Psychother Psychosom 1980;34:267-72.
26. Grossarth-Maticek R, Kanazir DT, Schmidt P, Vetter H. Psychosomatic factors in the process of cancerogenesis. Theoretical models and empirical results. Psychother Psychosom 1982;38:284-302.
27. Grossarth-Maticek R, Siegrist J, Vetter H. Interpersonal repression as a predictor of cancer. Soc Sci Med 1982;16:493-8.
28. Eysenck HJ. The respective importance of personality, cigarette smoking and interaction effects for the genesis of cancer and coronary heart disease. Person Indiv Diff 1988;9:453-64.
29. Nagano J, Kubo C. A trial to apply autonomy training to psychosomatic patients in Japan [in Japanese]. Jpn J Psychosom Med 1997;37:465.
30. Nagano J, Tanaka H, Sudo N, Kubo C. Effect of Autonomy Training on Japanese: application to the management of dystonic patients [in Japanese]. Jpn J Psychosom Med 2000;40:159-70.
31. Kubo C, Nagano J, Sudo N, Kono S. Reliability and validity of the Japanese version of the Short Interpersonal Reactions Inventory [in Japanese]. Research Reports from the MOA Health Science Foundation, in press.
32. Grossarth-Maticek R, Kanazir DT, Schmidt P, Vetter H. Psychosocial and organic variables as predictors of lung cancer, cardiac infarct and apoplexy: some differential predictors. Person Individ Diff 1985;6:313-21.
33. Amelang M, Schmidt-Rathjens C. Psychometric properties of modified Grossarth-Maticek and Eysenck inventories. Psychol Rep 1992;71:1251-63.
34. Orth-Gomer K, Rosengren A, Wilhelmsen L. Lack of social support and incidence of coronary heart disease in middle-aged Swedish men. Psychosom Med 1993;55:37-43.

35. Kaplan GA, Salonen JT, Cohen RD, Brand RJ, Syme SL, Puska P. Social connections and mortality from all causes and from cardiovascular disease: prospective evidence from eastern Finland. Am J Epidemiol 1988;128:370-80.
36. Reed D, McGee D, Yano K, Feinleib M. Social networks and coronary heart disease among Japanese men in Hawaii. Am J Epidemiol 1983;117:384-96.
37. Maunsell E, Brisson J, Deschenes L. Social support and survival among women with breast cancer. Cancer 1995;76:631-7.
38. Reynolds P, Boyd PT, Blacklow RS, Jackson JS, Greenberg RS, Austin DF, et al. The relationship between social ties and survival among black and white breast cancer patients. National Cancer Institute Black/White Cancer Survival Study Group. Cancer Epidemiol Biomarkers Prev 1994;3:253-9.
39. Ell K, Nishimoto R, Mediansky L, Mantell J, Hamovitch M. Social relations, social support and survival among patients with cancer. J Psychosom Res 1992;36:531-41.
40. Karasek R, Baker D, Marxer F, Ahlbom A, Theorell T. Job decision latitude, job demands, and cardiovascular disease: a prospective study of Swedish men. Am J Public Health 1981;71:694-705.
41. Appels A, Mulder P. Excess fatigue as a precursor of myocardial infarction. Eur Heart J 1988;9:758-64.
42. Steptoe A, Appels A, eds. Stress, personal control and health. ECSC-EEC-EAEC. Brussel-Luxembourg, 1989.
43. Jensen MR. Psychobiological factors predicting the course of breast cancer. J Pers 1987;55:317-42.
44. Kawachi I, Sparrow D, Spiro A, 3rd, Vokonas P, Weiss ST. A prospective study of anger and coronary heart disease. The Normative Aging Study. Circulation 1996;94:2090-5.
45. Koskenvuo M, Kaprio J, Rose RJ, Kesaniemi A, Sarna S, Heikkila K, et al. Hostility as a risk factor for mortality and ischemic heart disease in men. Psychosom Med 1988;50:330-40.
46. Barefoot JC, Larsen S, von der Lieth L, Schroll M. Hostility, incidence of acute myocardial infarction, and mortality in a sample of older Danish men and women. Am J Epidemiol 1995;142:477-84.
47. Persky VW, Kempthorne-Rawson J, Shekelle RB. Personality and risk of cancer: 20-year follow-up of the Western Electric Study. Psychosom Med 1987;49:435-49.
48. Hahn RC, Petitti DB. Minnesota Multiphasic Personality Inventory-rated depression and the incidence of breast cancer. Cancer 1988;61:845-8.
49. Bahnson MB, Bahnson CB. Ego defenses in cancer patients. Ann N Y Acad Sci 1969;164:546-59.
50. Kissen DM, Eysenck HJ. Personality in male lung cancer patients. J Psychosom Res 1962;6:123-37.
51. Kissen DM. Aspects of personality of men with lung cancer. Acta Psychother 1963;11:200-10.
52. Greer S, Morris T, Pettingale KW. Psychological response to breast cancer: effect on outcome. Lancet 1979;2:785-7.
53. Hislop TG, Waxler NE, Coldman AJ, Elwood JM, Kan L. The prognostic significance of psychosocial factors in women with breast cancer. J Chronic Dis 1987;40:729-35.
54. Giraldi T, Rodani MG, Cartei G, Grassi L. Psychosocial factors and breast cancer: a 6-year Italian follow-up study. Psychother Psychosom 1997;66:229-36.

55. Sifneos PE. The prevalence of "alexithymic" characteristics in psychosomatic patients. Psychother Psychosom 1973;22:255-62.
56. Kauhanen J, Kaplan GA, Cohen RD, Julkunen J, Salonen JT. Alexithymia and risk of death in middle-aged men. J Psychosom Res 1996;41:541-49.

Table 1. The characteristics and disease-proneness of the Grossarth-Maticek personality types

| Personality | Characteristics | Proneness to cancer and CVD |
|---|---|---|
| Type 1 | Dependence on a withdrawing object | Cancer |
| | Chronic hopeless/helpless feelings | |
| | Altruism and emotional suppression | |
| Type 2 | Dependence on a disturbing object | CVD |
| | Chronic anger and excitement | |
| Type 3 | Ambivalent, egocentric behaviors | Neither |
| Type 4 | Autonomy | Neither |
| Type 5 | Rational and anti-emotional coping behaviors | Cancer, CVD |
| Type 6 | Antisocial behavior | Neither |

CVD: cardiovascular disease

Table 2. The characteristics and disease-proneness of the Grossarth-Maticek personality traits

| Abbreviation | Characteristics | Proneness to cancer and CVD |
|---|---|---|
| Chronic sense of hopelessness | Tendency to experience chronic hopelesness and depression after life events | Cancer |
| Chronic anger | Tendency to experience chronic anger and excitement after life events | CVD |
| Rationality and anti-emotionality | Tendency to repress emotional behaviors and to respond rationally when under stress in relationships with others | Cancer, CVD |
| Suppressing personal needs | Tendency to seek for harmony with others by suppressing one's own needs | Cancer |
| Disregarding symptoms | Tendency to disregard or ignore physical symptoms | Weak |
| Lacking social supports | Tendency to lack emotionaly preferable social supports | Weak |
| Lacking anxiety | Tendency to lack psychologic symptoms such as anxiety | Weak |

CVD: cardiovascular disease

Table 3. The nine constructs of the Stress Inventory and their hypothetical associations with the Grossarth-Maticek personality types and traits

| Stress Inventory | Grossarth-Maticek personalities | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 types | | | | | 7 traits | | | | | Self-regulation |
| | Type 1 | Type 2 | Type 3 | Type 4 | Type 5 | Chronic depression | Chronic anger | Rationality and anti-emotionality | Suppressing personal needs | Lacking social support | |
| Group 1 | | | | | | | | | | | |
| Low sense of control | ○ | ○ | | ○ | | ○ | ○ | | | | ○ |
| Group 2 | | | | | | | | | | | |
| Object dependence of loss | ○ | | | ○ | | ○ | | | | | ○ |
| Object dependence of anger | | ○ | | ○ | | | ○ | | | | ○ |
| Object dependence of ambivalence | | | ○ | | | | | | | | |
| Group 3 | | | | | | | | | | | |
| Disclosure of negative experiences | | | ○ | | ○ | | | ○ | | | |
| Unfulfilled needs for acceptance | ○ | ○ | | ○ | ○ | | | ○ | | ○ | ○ |
| Group 4 | | | | | | | | | | | |
| Suppressing needs and emotions | ○ | ○ | ○ | ○ | ○ | | | ○ | ○ | | ○ |
| Rational and anti-emotional behavior | | | ○ | ○ | ○ | | | ○ | | | ○ |
| Group 5 | | | | | | | | | | | |
| Lacking emotional experiences | | | | | ? | | | ? | | | |

○: Types and traits that the Stress Inventory constructs refer to. ? : Types and traits that the Stress Inventory constructs may be associated with.

Appendix. The constructs to be assesed by the Stress Inventory and corresponding question items

Group 1

A. Low sense of control

a1. Do you find it difficult to forget about things that were extremely tough on you?

a2. Do you find it rather difficult to emotionally recover after experiencing something very disappointing?

a3. Do you think that when something happens like the loss of something important, it is difficult to forget about what was lost?

a4. Do you find it difficult to altogether forget about things that have made you very angry?

a5. Do you often feel it rather difficult to escape from unpleasant situations?

a6. When you are put into a position where you become very angry, do you often think that you cannot change the situation?

Group 2

B. Object dependence of loss

b1. Do you have a certain person who, among those you are separated from or who have passed away, you could not forget about?

b2. Do you often feel heartbroken when remembering a certain person?

b3. Do you have past experiences that cause painful feelings when you remember them?

b4. Do you have past experiences that make you feel sad every time you remember them?

b5. Is there something you have lost in the past that you can't seem to forget about?

b6. Do you have a certain person with whom you cannot seem to develop a good relationship and who has caused you sadness and loneliness?

b7. Is there someone whom you have felt for a long time you would like to understand you more?

b8. Do you have a certain person with whom you know you may never establish a good relationship, but you cannot stop trying?

b9. Is there something that, even though you know you will never have, you can't give up on trying to attain?

b10. Do you have a specific desire which even though has not been fulfilled; you have not given up on and it has repeatedly left you feeling hopeless.

b11. Do you have a certain person who makes you feel that you cannot be happy unless they are happy?

b12. Do you have a certain person who makes you feel you cannot be happy without them?

C. Object dependence of anger

c1. Is there a certain person who, although they are a thing of the past, still so frustrates or angers you that they repeatedly come to mind?

c2. Do you time and again get upset over a certain person when you think about them?

c3. Do you have an experience that, even though it's a thing of the past, made you so angry that you continue to remember it time and again even now?

c4. Do you have an experience that, even though it's a thing of the past, makes you angry when you frequently remember it?

c5. Is there a certain person who makes you angry because, even though you have been friendly to them, they won't accept you at all?

c6. Is there a certain person who understands your feelings so little that you always get frustrated?

c7. Is there a certain person who always frustrates you because they seldom change their attitude?

c8. Is there a certain person with whom, even though they make you angry, it is difficult to end the relationship with?

c9. Is there a certain person with whom you want to separate, but in reality it is difficult to separate from?

c10. Are there any circumstances or conditions that make you frustrated because you can't get away from them?

c11. Do you have any circumstances or conditions that you find deeply unpleasant because they cannot be changed?

c12. Do you have any circumstances or conditions that you have been very frustrated with for a long period of time?

D. Object dependence of ambivalence

d1. Do you often see your feelings changing to the extremes by getting very upset with a certain person who is at other times very important to you?

d2. Do you often have feelings that change to the extremes; such as first looking at a person with much attraction, then later with distaste?

d3. Do you often change your attitude towards a certain person who is important to you, being kind to them and then being harsh?

d4. Have you had many experiences in which you suddenly came to dislike a certain person who was very important to you because of some small reason?

d5. Have you had many experiences in which a certain person who was very important and necessary to you conversely became a burden?

d6. Have you had many experiences in which you came suddenly to dislike a certain person, which resulted in you leaving them, even though you had previously gotten along very well with them?

Group 3

E. Disclosure of negative experiences

e1. Do you tend to talk to someone when you have something you are worried about?

e2. Do you tend to talk to someone when you experience something difficult?

e3. Do you tend to talk to someone when you are experiencing something unpleasant?

e4. Do you tend to talk to someone when you experience something heartbreaking?

F. Unfulfilled needs for acceptance

f1. Have you frequently had the experience of being distressed and thinking that talking to somebody would lighten your mind, but in reality you could not?

f2. Have you frequently had the experience of being angry about something and thought that talking about it to someone would make you feel fine, but in reality you found that difficult?

f3. Have you frequently had the experience of coming across an annoying matter about which you thought you might feel fine if only you could talk about it to someone, but because of your personality you were not able to confide in anyone?

f4. Have you frequently had the experience of coming across a matter that made you angry and even though you thought you might feel better if only you could talk about it to someone, you were unable to talk to anyone because of your personality?

f5. Have you frequently had the experience of coming across an annoying matter about which you thought you might feel better if only you could talk about it to someone, but didn't have someone to confide in?

f6. Have you frequently had the experience of coming across a matter that made you angry and even though you thought you might feel better if only you could talk about it to someone you didn't have someone to talk to?

f7. Have you frequently had the experience of coming across an annoying matter about which you thought you might feel fine if only you could talk about it to someone, but in reality you could not?

f8. Have you frequently had the experience of coming across a matter that made you angry and even though you thought you might feel better if only you could talk about it to someone in reality you could not?

Group 4

G. Suppression of needs and emotions

g1. Do you tend to give priority to what you want to do even when there are many demands from people around you?

g2. Do you tend to think of your happiness first?

g3. Are you the kind of person who places priority on your happiness above the happiness of others?

g4. Do you tend to give up your own needs so as to get along well with others?

g5. Do you tend to accept conditions that are not advantageous to you?

g6. Do you tend to give up what you really want to do in consideration of others?

g7. Do you tend to yield to others so as to not make waves in human relations?

g8. Do you feel it is acceptable to hurt someone to some extent as long as you didn't mean any harm?

g9. Do you feel it is acceptable to cause other people trouble to some extent in order to achieve an important goal?

g10. Do you find it impossible to go against the expectations of someone important to you no matter what the circumstances?

g11. Do you find it impossible to do something that would betray someone no matter what the circumstances?

g12. Does your personality keep you from being irresponsible even when you feel your job (housework) is a burden?

g13. Do you tend to have troublesome matters on your hands often?

g14. Do you tend to accept requests that have no positive benefits for you personally?

g15. Do you try to stay away as much as possible from relationships from which you do not gain anything?

g16. Do you often feel that you cannot be yourself and behave more freely, even though you want to?

g17. Do you often feel that you would like to be more honest with yourself, but in reality find it difficult to do?

H. Rational and anti-emotional tendency

h1. Even if someone does a terrible thing to you, are you the kind of person who cannot be emotional in front of people, even in front of family members?

h2. Do you under all circumstances try to control your reasoning and avoid, as much as possible, being emotional?

h3. Even if your heart is very badly hurt by someone, do you try to be calm in your thinking and try not to criticize them in an emotional manner?

h4. Even if someone does a terrible thing to you, do you try not to become emotional and try to deal with the situation within the boundaries of commonsense?

h5. Even towards those who behave very offensively, do you try not to confront them emotionally by trying to understand them?

Group 5

I. Lack of emotional experiences

i1. In your whole life, have you experienced deep sorrow about something?
i2. In your whole life, have you experienced outrage about something?
i3. In your life, have you experienced uncontrollable anxiety about something?
i4. In your whole life, have you experienced jumping for joy about something?
i5. In your whole life, have you experienced heart thumping happiness about something?