Personality Assessment in Psychosomatic Medicine

Value of a Trait Taxonomy

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Although it is concerned with personality assessment, this chapter will not provide detailed evaluations of various tests and instruments, or make recommendations on which scales should be used in research on particular psychosomatic conditions [Dana, 1984]. Thorough reviews already exist for the most widely used construct, type A [Chesney and Rosenman, 1985; Matthews, 1983], and information on a variety of other psychological measures is available in books and series on assessment [Buros, 1978; London and Exner, 1978; Spielberger and Butcher, 1982–1985]. Instead, our aim will be to describe briefly the status of personality assessment in psychosomatic medicine and to suggest a general strategy for developing and evaluating scales by reference to a standard taxonomy of five trait dimensions. We will also present some data on a measure of anger to illustrate the heuristic value of this approach.

Personality Traits in Psychosomatic Research

The history of personality assessment in psychosomatic medicine has reflected in miniature the development of personality psychology. In the heyday of psychoanalysis, psychodynamic assessment procedures were

1 The authors wish to thank Prof. Charles D. Spielberger for providing the State-Trait Personality Inventory and for valuable discussions on the topics reviewed in this chapter.
used to uncover unconscious conflict thought to give rise to somatic conditions [Alexander, 1950]. With the development of the MMPI and the ascendance of empirical scale development, researchers contrasted the responses of ulcer [Scolde, 1953] or headache [Archibald, 1955] patients with others to discover the traits or syndromes that might predispose to the development of those diseases. Epidemiological and prospective studies also began to use factor-based instruments to systematically assess personality traits [Ostfeld et al., 1964; Robinson, 1964].

In the late 1950s, however, personality assessment entered a period of crisis. The charge that social desirability [Edwards, 1957] or other responses sets contaminated scores cast suspicion over self-report inventories. Personality ratings were also criticized, and few instruments could pass the test of multi-method validation [Campbell and Fiske, 1959] that psychometricians proposed. In the mid-1960s, the attack on trait measures was extended to traits themselves, as D’Andrade [1965] proposed that personality dispositions were essentially fictions. Perhaps the most damaging argument was that trait measures had generally failed to predict behavior [Mischel, 1968]. In part, these critiques were justified by the fact that personality scales had too often been created and used thoughtlessly [Block, 1977].

In the last decade, however, trait theory has reestablished itself within mainstream personality psychology. Defenders of trait models [Block, 1977; Hogan et al., 1977] have offered cogent rebuttals of earlier critiques, and personality measurement has benefited from real advances in methodology [Epstein, 1979; Jackson, 1975]. We can now assert with some confidence that social desirability need not invalidate questionnaires [Block, 1965; McCrae and Costa, 1983]; that external observers can confirm self-reports [McCrae, 1982]; that characteristic personality traits endure over the entire adult lifespan [McCrae and Costa, 1984]; and that trait measures predict important behaviors and life outcomes such as occupational shifts [McCrae and Costa, 1985] and life satisfaction [Costa and McCrae, 1980].

Trait measures and constructs have also reappeared in health psychology. Concepts such as alexithymia [Lesser, 1981], hostility [Williams et al., 1980], and hardiness [Kobassa, 1979] have been proposed as central to the development of disease, and the practice of creating scales to distinguish particular diagnostic groups continues [Baer et al., 1979]. The concept of traits – enduring and pervasive patterns of behavior, thought and feeling that characterize the individual – is too useful to be long abandoned.
The Need for a Trait Taxonomy

Much as we welcome the revived interest in personality traits, we are concerned that history not be allowed to repeat itself. Personality psychology can contribute to the study of health and disease, but only if clear concepts, valid instruments, and sound methods are employed. The researcher in psychosomatic medicine interested in constructing a scale should benefit from recent advances in scale development [Burisch, 1984], and should observe contemporary standards of scale validation. The user of scales developed by others shares this responsibility [American Psychological Association, 1974].

Adherence to methodological standards will improve the research of individual investigators, but will not in itself bring order to the field as a whole. Researchers interested in hypertension may create a scale to measure susceptibility to that condition; those concerned with cancer may hypothesize a personality disposition peculiar to cancer victims; other investigators may identify a set of traits that predict poor recovery from surgery, and make a scale to measure them. Provided each piece of research is properly conducted, each can add to our knowledge. But the result is likely to be a large and unwieldy set of scales whose relations to each other and to established dimensions of personality are unknown. This state of affairs might seem to be a greater problem for the personality theorist than for the psychosomatic researcher, but in fact there are a number of reasons why a systematic taxonomy of traits would benefit any field that employs personality measures.

A taxonomy of traits is a conceptual model by which related personality dispositions can be grouped together. Although the basis of categorization might be purely rational (e.g. cognitive vs. affective vs. behavioral traits), most personality psychologists prefer to employ a taxonomy that identifies empirically related dispositions. For that reason, factor analysis has played an important role in taxonomic efforts. Once a model has been developed, it can be used as a framework in which to classify and begin to understand specific traits and trait measures.

Without a standard framework for identifying traits, two problems arise: scales that measure different underlying constructs may be given the same name; and scales that measure the same construct may be given different names. The first type of confusion is all too familiar. For example, the correlation between the Jenkins Activity Schedule and the Structured Interview is usually about 0.25 [Chesney et al., 1981]. By any reason-
able criterion, these two instruments cannot be said to measure the same variable. Because both are considered operationalizations of the type A construct, however, they are frequently used interchangeably in research. The simple requirement that scales measuring the same construct should correlate highly with each other would be enough to prevent this kind of error.

The second confusion, however, is more subtle. If two scales bear different labels, and particularly if they have different theoretical or empirical origins, it is often difficult to recognize that they may essentially be measuring the same variable, or variables so closely related that the effects of one cannot be distinguished from those of the other. This situation produces redundancy and inefficiency, and can significantly impede the progress of research. Instead of building on the finding of other investigators, developers of a new scale may start from scratch, and duplicate both efforts and errors.

An example of this is provided in an otherwise excellent article by Baer et al. [1979]. These investigators set out to create a scale to differentiate hypertensives from normotensives. They used a relatively large initial sample of patients from a group practice clinic and contrasted them with normals screened in the community; they then cross-validated their scale. The result was a set of 16 items whose content was primarily anxiety and anger.

From the perspective of a trait taxonomy, it is immediately apparent that the Baer et al. scale reflects general neuroticism, the dimension of personality underlying chronic negative affects such as anger and anxiety [Watson and Clark, 1984]. The authors, however, do not appear to have perceived that fact; and that, in turn, led to a serious potential error in interpretation. In their review of the literature, Baer et al. [1979] noted that Cochran [1973] had attributed the association of neuroticism with hypertension to 'self-selection by anxious and hypochondriacal individuals for medical attention that might produce a hypertensive diagnosis' [Baer et al., 1979, p. 321]. If they had realized that their scale measured neuroticism, they might have wondered if self-selection influenced their results as well. Because they used a clinic population, that is a strong possibility; but because they were insufficiently familiar with the construct of neuroticism, they did not discuss it.

Technically, the problems of this study arise from a violation of the requirement of discriminant validity: the authors failed to show how their scale differed from a conceptually distinct dimension of personality (neu-
roticism) known to introduce confounds into results. In hindsight, lapses of discriminant validity are easy to see; but it is often far more difficult to foresee what variables a new construct must be distinguished from. Should a researcher be required to correlate his or her scale with every existing personality measure to make sure it adds something new? That task would surely be difficult, if not impossible.

But if all or most known traits could be summarized into a few pervasive dimensions, these few could form a standard reference by which each new scale could be evaluated. Researchers in psychosomatic medicine might begin this taxonomic project by investigating the dimensions in such familiar scales as the JAS, the Health Locus of Control Scales [Wallston and Wallston, 1981], or Kobassa’s [1979] Hardiness. A more systematic approach, however, would begin in basic personality research, where research on basic dimensions of individual difference has gone on for decades.

The Five Factor Model

We believe that one of the signal advances of personality research in the past few years has been an emerging consensus on the nature of a basic trait taxonomy. Foreshadowed by Fiske in 1949 and first clearly identified by Tupes and Christal in 1961, this model was recognized as a comprehensive taxonomy of personality by Norman in 1963. After 20 years of relative neglect, the five factor model has been rediscovered in a number of different forms by a variety of investigators [Amelang and Borkenau, 1982; Digman and Takemoto-Chock, 1981; Goldberg, 1982; McCrae and Costa, 1985b, in press].

Although different investigators give them somewhat different names and dispute the finer points of their content, five familiar dimensions have emerged in analyses of questionnaires and adjective checklists, in English and German, in self-reports and ratings. Neuroticism, extraversion, openness, agreeableness, and conscientiousness appear to define the major dimensions of human personality, and a brief description of each is in order.

Neuroticism is perhaps the most familiar to researchers in psychosomatic medicine, in large part because of the influential work of Eysenck and his colleagues [Eysenck, 1960]. Watson and Clark [1984] conceptualized this dimension as negative emotionality, and the tendency to experience distress and to evaluate experience accordingly is certainly central to
it. Fear and anxiety, anger and frustration, depression, loneliness, low self-esteem, poor impulse control, and self-consciousness are all aspects of neuroticism, and its correlates include unhappiness, dissatisfaction with life, irrational beliefs, and hypochondriasis. For many psychologists, this list of traits almost defines personality; it is important to recognize that neuroticism is only one of five independent dimensions. Researchers have perhaps concentrated too much on fine distinctions within this dimension (just as the MMPI perhaps devotes too many items to its measurement—see Costa et al. [1985]), neglecting potentially valuable information from other trait dimensions.

Extraversion is also familiar from Eysenck’s work; it includes not only sociability but also assertiveness, high energy levels, sensation-seeking, and the tendency to experience positive emotions like joy and laughter. Extraversion is a predictor of happiness, enterprising and social occupational interests, and coping strategies including positive thinking and direct action. It has been less used in psychosomatic medicine.

Individuals high in openness to experience are inquisitive, open-minded, sensitive to fantasy, feelings, and aesthetic experiences. Their closed counterparts are satisfied with routine, and their experience of both inner and outer life is somewhat blunted. It is perhaps as part of this dimension that alexithymia should be classified, leading to the hypothesis that individuals closed to experience in a variety of areas may be more prone to develop or report psychosomatic symptoms.

Antagonism, the opposite pole of agreeableness, is the form in which the fourth dimension of personality is most likely to be of interest to psychosomatic researchers. Antagonistic persons are suspicious, callous, and uncooperative. They may be hostile, but their hostility is likely to be of the cold-blooded variety. A number of recent researchers have linked some form of hostility to coronary disease [Dembroski and MacDougall, 1983; Williams et al., 1980], so this dimension may prove to be of considerable importance. We will return to this issue when we discuss some recent data on Spielberger’s Anger scale.

Finally, conscientiousness is a dimension that comprises persistence, industriousness, self-control, organization, and need for achievement. It too has been the object of relatively little research. However, it is probable that some components of type A behavior (e.g. work absorption) are related to conscientiousness. It also seems likely that conscientious individuals would be more likely to adopt and maintain good health habits and comply more fully with medical regimens.
The NEO Personality Inventory (NEO-PI) [Costa and McCrae, 1985] provides measures of each of these five basic dimensions; they can also be measured by adjective checklists or by combinations of existing instruments that measure one or more of these broad traits. This taxonomy can be used as a basic framework for describing and evaluating any personality scale, and the results from studies using measures of the same dimension can be combined to yield a picture of the relevance of broad categories of personality traits to psychosomatic medicine.

*An Empirical Example: The STPI*

Spielberger et al. [1979] have recently introduced a new personality measure called the State-Trait Personality Inventory (STPI), with scales for Anxiety, Anger, and Curiosity. State scales are intended to be sensitive to temporary alterations in mood, and are meaningfully interpreted only in terms of the situation in which they were gathered (e.g. under administration of a specific drug). Trait scales, by contrast, measure enduring tendencies of the individual to experience particular moods or states. Of the three trait scales in the STPI, Anger is of most interest here, because hostility and anger, expressed or suppressed, have often been thought to be associated with psychosomatic disorders, particularly hypertension [Harburg et al., 1973] and more recently, coronary artery disease [Williams et al., 1980]. It would be reasonable to hypothesize that anger scores should be positively related to indices of disease such as coronary stenosis.

However, hostility seems to be of two kinds: it may result from the irritability and frustration-proneness of individuals high in neuroticism, or it may reflect the antagonistic attitude of those low in agreeableness. This ambiguity is particularly important because neuroticism is often found to be negatively related to objective signs of coronary disease [Costa et al., 1982]. Apparently neuroticism itself has no causal effect on coronary artery disease, but does lead individuals to complain of chest pain. Some proportion of individuals undergoing catheterization are normally found to be free of disease [Kemp et al., 1973]; they are probably high in neuroticism, and were given the procedure not because they had coronary disease, but because they made insistent medical complaints [Costa et al., 1985]. The same self-selection bias noted by Cochran [1973] in the case of hypertension seems to operate here.
Because an anger scale may measure either neuroticism or disagreeableness, it is particularly useful to examine the STPI against measures of the five factor model. In Table I we present data from a sample of men and women participants in the augmented Baltimore Longitudinal Study of Aging [Shock et al., 1984]. These individuals ranged in age from 20 to 93, and were generally healthy and well-educated. Peer ratings on the NEO Personality Inventory were also available for about half the subjects [see McCrae and Costa, in press, for details on the sample, methods, and procedure].

As might be expected, these data show that STPI Anxiety is related chiefly to measures of neuroticism, and that STPI Curiosity is related to openness, extraversion, and low neuroticism. The highest correlates of STPI Anxiety are NEO-PI Anxiety and Depression; the highest correlate of Curiosity is NEO-PI Openness to Ideas.

Of primary interest, however, are the correlations of STPI Anger. The fact that its highest correlate is NEO-PI Hostility can be taken as evidence of convergent validity, but it must be recalled that hostility as measured by the NEO-PI is a facet of neuroticism. The STPI Anger scale is at least as strongly related to other aspects of neuroticism as it is (negatively) to agreeableness. This finding is not surprising when the item content is examined: Most items deal with hot temper or frustration – the cold-blooded vindictiveness of the disagreeable person is relatively absent.

Based on these data, we would conclude that anger as measured by the STPI scale is perhaps two-thirds neuroticism and one-third antagonism. Because neuroticism is negatively related to stenosis in clinical samples, we would predict that the STPI anger scale should show a negative correlation with arteriographic outcome data – and this is precisely what is found [C.D. Spielberger, personal communication, Oct. 11, 1986].

Spielberger's results that show an inverse relation between Anger and stenosis would appear to contradict the literature on hostility and coronary disease, but they can be reconciled once the STPI Anger scale is examined in the light of a personality taxonomy which shows the extent to which the STPI scale measures neuroticism. The next steps in this line of research are clear. Other measures of hostility currently in use should also be evaluated against the five-factor model to determine the relative contributions of neuroticism and agreeableness to their variance. If the scales with least admixture of neuroticism are those that best predict coronary disease, it would suggest that the toxic component of hostility is disagreeableness, not neurotic anger. If so, scales measuring other aspects of disagreeableness
Table I. Correlations of the STPI anxiety, anger, and curiosity trait scores with self-reports and peer ratings on the NEO personality inventory

<table>
<thead>
<tr>
<th>NEO personality inventory</th>
<th>STPI scales (self-reports)</th>
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<tbody>
<tr>
<td></td>
<td>anxiety</td>
<td>anger</td>
<td>curiosity</td>
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<td></td>
<td>self peer</td>
<td>self peer</td>
<td>self peer</td>
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<tr>
<td>Anxiety</td>
<td>53*** 41***</td>
<td>42*** 22***</td>
<td>-26*** -14*</td>
<td></td>
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<tr>
<td>Hostility</td>
<td>34*** 13*</td>
<td>55*** 35***</td>
<td>-19*** -05</td>
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<tr>
<td>Depression</td>
<td>58*** 46***</td>
<td>39*** 15*</td>
<td>-35*** -19**</td>
<td></td>
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<tr>
<td>Self-consciousness</td>
<td>49*** 31***</td>
<td>32*** 09</td>
<td>-30*** -16**</td>
<td></td>
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<tr>
<td>Impulsiveness</td>
<td>32*** 17**</td>
<td>33*** 25***</td>
<td>-30*** -03</td>
<td></td>
<td></td>
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<tr>
<td>Vulnerability</td>
<td>51*** 35***</td>
<td>27*** 16*</td>
<td>-36*** -19**</td>
<td></td>
<td></td>
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<tr>
<td>Neuroticism</td>
<td>62*** 40***</td>
<td>51*** 29***</td>
<td>-35*** -16**</td>
<td></td>
<td></td>
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<td>Warmth</td>
<td>-16*** -10</td>
<td>-17*** -23***</td>
<td>31*** 08</td>
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<td>Gregariousness</td>
<td>-03 -03</td>
<td>03 00</td>
<td>10* 08</td>
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<tr>
<td>Assertiveness</td>
<td>-30*** -23***</td>
<td>01 -02</td>
<td>28*** 23***</td>
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<tr>
<td>Activity</td>
<td>04 -05</td>
<td>22*** 06</td>
<td>27*** 29***</td>
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<tr>
<td>Excitement seeking</td>
<td>03 06</td>
<td>19*** 18**</td>
<td>05 06</td>
<td></td>
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<tr>
<td>Positive emotions</td>
<td>-16*** -10</td>
<td>-01 -07</td>
<td>31*** 18**</td>
<td></td>
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<tr>
<td>Extraversion</td>
<td>-15* -11</td>
<td>09 -01</td>
<td>35*** 23***</td>
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<tr>
<td>Fantasy</td>
<td>16*** 18**</td>
<td>20*** 10</td>
<td>10* 10</td>
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<td>-02 -10</td>
<td>23*** 14*</td>
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<td>11* 09</td>
<td>20*** 02</td>
<td>20*** 16**</td>
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<tr>
<td>Actions</td>
<td>-02 09</td>
<td>-06 -01</td>
<td>21*** 13*</td>
<td></td>
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<tr>
<td>Ideas</td>
<td>-14** -16*</td>
<td>-10* -10</td>
<td>40*** 34***</td>
<td></td>
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<tr>
<td>Values</td>
<td>02 -06</td>
<td>06 00</td>
<td>18*** 13*</td>
<td></td>
<td></td>
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<tr>
<td>Openness</td>
<td>02 03</td>
<td>07 -03</td>
<td>35*** 25***</td>
<td></td>
<td></td>
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<tr>
<td>Agreeableness</td>
<td>-24*** -02</td>
<td>-31*** -28***</td>
<td>29*** 01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-40*** -19**</td>
<td>-14** -12</td>
<td>39*** 14*</td>
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</table>

n = 445–470 for self-reports; 265 for peer ratings. Preliminary form of agreeableness and conscientiousness scales used for self-reports. Decimal points omitted.

* p < 0.05; ** p < 0.01; *** p < 0.001.
(e.g. stubbornness, criticality, manipulativeness, rudeness) might also be examined as possible predictors of heart disease.

We believe this program of research provides a useful paradigm for evaluating other scales measuring variables of interest to psychosomatic researchers, and we would hope that a future review in this area could summarize empirical evidence on the relation of all commonly used instruments to measures of the five factor model. These data could help organize findings by grouping together studies on scales measuring similar dimensions, and making distinctions between studies on scales measuring different dimensions. Researchers and practitioners in psychosomatic medicine need pragmatic guides to effective psychological assessment, and basic taxonomic research can provide a firm empirical basis for that guidance.

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We selected the assessment tools such as Kellner’s Symptom Questionnaire, Antonovsky’s Sense of Coherence, Ryff’s Psychological Well-Being Scales and Psychosocial Index that we found most helpful in clinical and psychosomatic practice and that displayed clinimetric properties of sensitivity in research. J Clin Psychiatry 2006 Oct;67(10):1536-41. Department of Psychiatry and Human Behavior, Brown University School of Medicine, Rhode Island Hospital, Providence, USA. Objective: Reliable, valid, user-friendly measurement is necessary to successfully implement an outcomes evaluation program in clinical practice. Self-report questionnaires, which generally correlate highly with clinician ratings, are a cost-effective assessment option.