

Structures of Personality and Their Relevance to Psychopathology

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Trait concepts are used extensively in psychopathology research, but much of this research has failed to consider recent advances in the dimensional structure of personality. Many investigators have discounted the importance of this structural research, arguing that (a) little progress has been made in this area, (b) structural models have little direct relevance for psychopathology research, and (c) the principal methodological tool of structural research—factor analysis—is too subjective to yield psychologically meaningful results. We dispute each of these objections. Specifically, we offer an integrative hierarchical model—composed of four higher order traits—that is congruent with each of the major structural subtraditions within personality. We also discuss the implications of this integrative scheme for basic trait research, for the conceptualization and assessment of psychopathology, and for the etiology of disorder.

Personality is a concept whose meaning is readily apparent to the average person. Indeed, all of us use personality trait concepts regularly in our daily lives both descriptively (“She’s warm and friendly”) and explanatively (“He didn’t finish the job on time because he’s disorganized”). Moreover, trait concepts have long played an important role in many areas of psychology, including psychopathology, organizational research, and health psychology. For example, within this decade alone, studies published in the *Journal of Abnormal Psychology* have examined such traits as self-esteem, self-efficacy, locus of control, assertiveness, perfectionism, dependency, self-criticism, sociotropy, autonomy, impulsivity, novelty seeking, harm avoidance, self-consciousness, alexithymia, guilt proneness, shame proneness, and empathy.

Common usage and professional familiarity, however, have fostered a deceptive sense of understanding regarding personality. In reality, a scientific definition of personality is more elusive—and the systematic study of personality traits is more complex—than their widespread usage may suggest. Consequently, research applications of trait concepts often have been somewhat haphazard and have yielded inconsistent results. One goal of this article, therefore, is to provide psychopathology researchers with an integrative summary of the progress that has been made in the scientific study of personality over the past several decades, so that they may use trait concepts more systematically and thus obtain clearer, more consistent findings.

Furthermore, although some scientists have a false sense of understanding regarding personality, others have rejected the

application of trait concepts to their area of research, arguing that (a) personality is too complex to study scientifically, (b) personality research is confusing or chaotic, or (c) the principal method of structural research in personality—factor analysis—is either too rigorously mathematical to capture the richness of personality (the complaint of phenomenologists and psychodynamicists) or involves too many subjective judgments (e.g., the number of factors to extract) to yield meaningful results. Therefore, a second goal of this article is to clarify these misunderstandings. Specifically, we hope to demonstrate that the results of personality research are both rich and systematic and that they are neither chaotic and confusing nor sterile and uninteresting.

Defining Personality, Personality Traits, and Trait Structure

As far back as 1937, Allport collected more than 50 definitions of personality as well as offering one of his own: “Personality is the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environment” (p. 48). Key aspects of this definition that are shared by most formal attempts to define personality are that it is internal, organized, and characteristic of an individual over time and situations; also mentioned frequently is the idea that personality traits are motivational or have adaptive significance (Staub, 1980). Initially, Allport emphasized intraindividual or idiographic trait organization, whereas the more recent personality research that we discuss in this article has focused on nomothetic structures that are highly generalizable across individuals.

Note that both the idiographic and nomothetic viewpoints distinguish enduring personality traits from more transient states, which themselves may be manifestations of associated traits. That is, it takes more than an occasional fit of pique for someone to be called a hostile person, whereas frequent displays of temper in a variety of situations could warrant that inference (Chaplin, John, & Goldberg, 1988; Watson & Clark, 1984). Traditionally, talents and abilities also have been excluded from personality, although the inclination to engage in skill-related

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behaviors has not. Thus, personality descriptors typically have included *intellectual* but not *intelligent*, *aesthetically oriented* but not *artistically talented*, and *sports nut*, but not *skilled athlete*.

As helpful as these definitional features are in understanding personality as a broad construct, they do not directly address the question of how specific trait inferences are made, that is, how one determines that certain behaviors can be considered exemplars of a characteristic trait. In other words, what data does one use to infer the existence of behavioral dispositions? Quite briefly, traits are inferred from systematic covariation. As Cattell (1946) noted, "the unity of a set of parts is established by their moving—i.e., appearing, changing, disappearing—together, by their exercising an effect together, and by an influence on one being an influence on all" (p. 71). Thus, trait concepts emerge from patterns of measures (items, scales, behavioral ratings, or other indicators) covarying together with—or apart from—one another. This covariation is the essence of structure, and the more general structure of personality, which we argue later is hierarchical, begins with the basic unit of the individual trait.

The substantive interpretation of traits and trait structure also has been a subject of discussion (Messick, 1981). For example, one approach has been to view personality traits as convenient summary labels for observed consistencies in behavior (see Buss & Craik, 1983). In contrast, the constructive realist position (Messick, 1981) asserts that traits and trait structures are fundamental causal variables that provide cogent explanations for consistencies in both test and extratest behavior (Loevinger, 1957; Tellegen, 1988). The essence of this latter position is that consistencies in observed behaviors (i.e., surface traits or structures) are indicators or signs of latent psychological structures that have a positive ontological status.

It is important to emphasize that the identification of systematic surface or phenotypic structures is not the endpoint of personality research; rather, it is the starting point for investigations into the nature of the latent psychological structures that give rise to the observed consistencies. In some cases, further research might reveal that the hypothesized factors were substantive but primarily environmental (i.e., environmental mold traits) rather than organismic. In other cases, empirical support for the latent factors might arise from other fields. To illustrate this from another domain, Vernon's (1950) model of intelligence, based on the surface structure of mental tests, posited separate verbal and spatial factors 20 years before experimentation on commissurotomy patients offered a clarified picture of the functional asymmetry of the cerebral hemispheres; the surface structure was therefore an indicator of underlying processes. In fact, neuropsychologists now interpret the two factor scores as differentially indexing two separate subsystems. Thus, identified factors can turn out to be real and causal and not simply summary labels, although delineation of latent structures clearly requires much convergent research beyond factor analysis. Nevertheless, because definitive research into the ontological status of personality traits and trait structures has not yet been completed, in this article we emphasize the more immediate value of phenotypic structures for psychopathology researchers.

Not only have cogent theoretical arguments been made con-

cerning the existence of traits but, in addition, a great deal of empirical research has provided much information regarding the nature of these traits. To summarize this large body of research: It is well established that personality traits (a) can be reliably measured (e.g., Epstein, 1979; Jackson & Paunonen, 1985); (b) are quite stable over time (e.g., Costa & McCrae, 1988b); (c) can be consensually validated (e.g., Funder & Colvin, 1988; Norman & Goldberg, 1966); (d) are not artifacts of interrater agreement due to language, base-rate accuracy, shared stereotypes, discussion between observers, or situation-based consistencies (Kenrick & Funder, 1988); (e) can account for respectable portions of the variance of interest (Funder & Colvin, 1991); (f) arise from the joint influence of genetic and specific environmental causes (e.g., Tellegen et al., 1988); and (g) can be linked to important life outcomes (e.g., Block, 1971; John, Caspi, Robins, Moffitt & Stouthamer-Loeber, in press; Watson & Clark, 1984), such as illness, fitness and health-related behaviors (e.g., Clark & Watson, 1991a; Costa & McCrae, 1992; Watson & Pennebaker, 1989), job stress, job performance, and job satisfaction (e.g., Barrick & Mount, 1991; George & Brief, 1992), and academic achievement (e.g., Digman & Takemoto-Chock, 1981).

Discovering the Structure of Personality Through Factor Analysis

What Is Structure?

As mentioned earlier, the essence of structure is covariation; for example, the specific behavior of hitting covaries with both kicking and yelling, so we infer a broader dimension of aggressive behaviors. The lower order covariance thus forms the variance of a higher level dimension of aggression. Variability in these behaviors can then be examined further in relation to other sets of behaviors that themselves also show systematic covariation; for example, if conning others covaries with exploiting others' weaknesses and with borrowing things without permission, we may infer a higher level dimension of manipulative behaviors. If the midlevel dimensions of aggression and manipulateness themselves covary, and also covary with a tendency to engage in illegal activities, we may infer a still broader and higher order dimension of egocentric and antisocial behaviors. Thus, trait dimensional hierarchies are variance-covariance hierarchies: The covariance of the lower order elements becomes the variance of the higher order elements.

Factor Analysis as a Discovery Process

There are several difficulties with this neat schematic. First, the relevant domain within which to look for covariation at the more specific lower order level is virtually inexhaustible, so that the initial task of choosing behaviors for examination is monumental. Second, assuming that a large and reasonably representative sample of behaviors is selected, the observed patterns of covariation at this lower order level are likely to be highly complex and may not lend themselves easily to the hierarchical analyses described. Accordingly, personologists have relied heavily on the multivariate technique of factor analysis to simplify complex data and to elucidate personality trait structure.

Although this technique encompasses a daunting variety of technical options, the common element in all types of factor analysis is that they summarize the pattern of covariation among measures—whether they are tests, items, ratings, behaviors, or other signs and indicators. In the personality domain, it typically has been found that the meaningful covariation in a matrix of well-chosen variables (and this is a critical point) can be captured quite adequately by a relatively small number of summarizing factors. That is, the observed correlations can be largely accounted for by hypothesizing variation along a few latent factors. The attraction of this method for personality researchers—who are seeking to understand the systematic covariation among large numbers and types of observable behaviors (i.e., are seeking to discover their structure)—is obvious, precisely because structures are patterns of covariation among measures, and factor analysis is a powerful method for generating such structural summaries.

Problems in Factor Analysis

Objections to factor analysis. As was noted earlier, a longstanding objection to factor analysis is that it is too subjective to yield scientifically meaningful results. That is, the factor analyst necessarily must make a number of decisions that may shape—in an important way—the emergent structure. It is argued, therefore, that even under optimal conditions factor analytic results are not definitive; moreover, if poor decisions have been made at any point in the process, the resulting solution may be flawed or even nonsensical (for an early discussion of and rejoinder to this criticism, see Eysenck, 1953).

Although it is true that factor analysts must make several decisions, accumulating data indicate that many of these decisions actually have little effect on the obtained solutions. For instance, factor structures have been shown to be highly robust across different methods of factor extraction (e.g., principal components vs. principal factor vs. maximum likelihood) and different types of rotation (e.g., varimax vs. oblimin), as long as the analysis is based on a suitably large sample and a carefully chosen set of variables (see Goldberg, 1990; Guadagnoli & Velicer, 1988; Snook & Gorsuch, 1989; Watson, 1988).

The factor extraction problem. Nevertheless, two basic decisions—each of which is associated with a widely perceived problem in factor analysis—must be briefly noted. First, the process of factor extraction can be continued until all of the covariation has been accounted for, in which case the number of factors will be quite large (in fact, in principal-components analysis one can extract as many components as variables). More typically, however, there comes a point of diminishing returns, that is, when the variance accounted for by additionally extracted factors is too small to be of practical significance; typically, therefore, the procedure is terminated at this point.

There are various methods for considering how many factors should be extracted (Everett, 1983; Zwick & Velicer, 1986), but these methods are not deterministic; rather, they provide the basis for an informed decision that necessarily involves theoretical and psychological as well as mathematical issues. Although this subjectivity may be troubling to some, it must be emphasized that it has not proven to be an insurmountable barrier to structural research in personality. In fact, the factor extraction

problem has become less of an issue in this area because personologists increasingly have adopted hierarchical models (to be discussed in more detail later) that acknowledge the existence of different levels of factors and traits, including those representing both very general and relatively specific dimensions; as such, hierarchical models are essentially equivalent to extracting different numbers of factors within the same set of data (e.g., Zuckerman, Kuhlman, & Camac, 1988). Thus, the adoption of hierarchical models has facilitated progress toward a common phenotypic trait structure in recent years.

The rotation problem. A second problem arises from the unarguable mathematical fact that, for a given number of latent factors representing the main structural features of a correlation matrix, there are an infinite number of mathematically substitutable rotations. It is certainly legitimate to ask: What is the value of a procedure that yields an infinite number of mathematically equivalent solutions? To answer this question, let us propose a visual analogy. Imagine a futuristic art museum with a glassed-in, inner courtyard sculpture garden containing four giant pieces, each with engaging shapes that play off of one another. Revolving elevators move completely around the garden, making it possible to view the sculptures from absolutely every angle. In terms of the sheer physics of measurement, the center line of one's visual field can be placed in an infinite number of locations, yet the availability of these limitless perspectives does not change either the shapes or structural relations of the objects in the courtyard. That is, the structures themselves remain the same, regardless of one's viewpoint.

Nevertheless, one soon realizes that not all viewpoints are equally interesting or informative. People stop the elevators far more frequently in certain locations than others, suggesting particularly good places from which to view the sculptures. When applied to factor analysis, the analogy suggests, first, that the availability of an infinity of factor solutions (viewpoints) in no way alters the reality of the patterns (i.e., structure) in the correlations that they represent and, second, that mathematical substitutability does not mean that all factorial viewpoints are equally informative psychologically.

How, then, does one choose the method of rotation? As our earlier analogy suggests, the ultimate criteria must be the interpretability and psychological meaningfulness of the resulting structure; of course, the replicability of this structure is also a crucial consideration (see Everett, 1983). Again, the subjectivity of this process may be troublesome to some, but it has not proven to be a major obstacle in personality, in large part because (a) factor analysts have tended to use only a few analytic methods of rotation in recent years and (b), as was noted earlier, the most commonly used rotational methods have been shown to yield extremely similar solutions (e.g., Goldberg, 1990; Watson, 1988). Accordingly, this rotation problem has not stopped trait psychologists from progressing toward a common, integrative phenotypic structure.

Benefits to Understanding Personality Structure

Structural information gives access to knowledge. In a later section we consider the practical implications of structural research in some detail. At this point, we briefly sketch some of the general benefits of structural research. First, let us consider

the hypothetical case of a team of clinical psychologists who have developed a self-report scale to assess construct x . The psychologists have explored the etiology, external correlates, and treatment implications of scores on Scale x , but—beyond computing coefficient alpha—they have ignored the issue of structure and the scale's relations with other self-report instruments. Nevertheless, accumulated data suggest that the scale works in the sense that it is reliable and predicts several important variables. What can these psychologists gain from a knowledge of personality structure?

Suppose further that a graduate student decides to correlate Scale x with measures of the well-established higher order dimensions of neuroticism (or negative affectivity) and disagreeableness and obtains correlations of .6 and .5, respectively. This surface structure information indicates that whole vistas of already developed research are relevant to construct x . That is, it now becomes apparent that x is not an isolated construct but is embedded in a broader nomological net of related dimensions. This knowledge enriches our understanding of both construct x and the larger network itself. Thus, structural information gives access to an expanded pool of knowledge.

Structural approaches facilitate consideration of alternative views. The correlational pattern of Scale x with the dimensions of neuroticism (or negative affectivity) and disagreeableness also raises questions about the structure of Scale x itself. Because these two higher order dimensions are largely uncorrelated, it may be that Scale x actually is a compound of these two more elemental dimensions. That is, some items on the scale may essentially represent neuroticism or negative affectivity (e.g., "I worry a lot"), whereas others may essentially reflect disagreeableness (e.g., "I frustrate others just to see what will happen"). Structural knowledge thus raises questions about the underlying integrity of the scale. Because acceptably high estimates of internal consistency reliability can be obtained artifactually if a scale is composed of two or more homogeneous subscales, a lack of concern for structure would mean that the scale's potentially multidimensional nature would remain hidden. Furthermore, if there were unacknowledged subscales, they likely would be differentially related to external variables, thereby yielding a complex and confusing correlational pattern. Under these circumstances, an understanding of the scale's internal structure would avoid such complexity and lead to clearer, more interpretable results (for further discussion of this issue, see Carver, 1989).

Alternatively, the scale might be composed predominantly of items that inherently blend the dimensions of neuroticism (or negative affectivity) and disagreeableness (e.g., "I worry that my habit of frustrating others is causing me problems"). Structural considerations require one to entertain the possibility that this rotation—that is, this perspective or interpretation—actually is superior to a clean separation of neuroticism (or negative affectivity) and disagreeableness. That is, a substantive interpretation of construct x as a unitary dimension potentially could offer fresh predictions and insights that might ultimately culminate in a new theoretical model of personality. Perhaps not. But to be aware of the possibilities—to regard these as important questions—is to be attending to the structure of personality.

We have considered definitions of personality, traits, and structure; discussed factor-analytic methods in personality trait

research; and described the strengths and limitations of the structural approach in rather abstract and general terms. We turn now to an examination of the empirical status of personality trait structure, describing historical origins briefly and then proceeding to a more detailed discussion of current models.

The Search for Structure in Personality

The Language of Traits

As suggested earlier, anyone considering a trait-oriented approach to personality is faced with an immediate problem, namely, that there are an almost infinite number of behaviors that can be used to define the dispositions that are to be assessed and studied. Over the years, trait psychologists have adopted a variety of strategies to solve this problem, such as deriving dispositional concepts from existing theoretical models (e.g., Jackson, 1984) or folk concepts (e.g., Gough, 1987).

Another approach to this problem takes advantage of the fact that language itself is a system for the classification of molecular behaviors into more molar concepts. That is, we are not starting entirely from scratch when we notice that hitting covaries with kicking and yelling; rather, to a certain extent, recognition of this covariation already has been encoded in the word *aggressive*. However, the human vocabulary itself is replete with terms that describe a rich—even bewildering—variety of traits. This is well illustrated in the classic study of Allport and Odbert (1936), who reasoned that any important personality trait ought to exist in the natural language. They therefore examined the 1925 edition of *Webster's New International Dictionary* and identified 4,504 terms that clearly described traits of personality (e.g., *aggressive*, *introverted*, and *sociable*).

The work of Allport and Odbert (which has been extended subsequently by such researchers as Norman, 1967 [cited in Goldberg, 1993], and Goldberg, 1982) is relevant to our discussion in two ways. First, the final group of 4,504 terms excited great interest because it apparently represented all of the trait names in the English language. Accordingly, many personologists perceived that systematic investigation of this comprehensive pool of terms would provide a particularly compelling structural model. In other words, Allport and Odbert's set provided a suitable basis for a structural model of personality.

Second, this enormous pool of descriptors demonstrated the need for a simple and coherent structure. Because it was impractical to assess individuals on more than a fraction of these traits, it became imperative to reduce the pool to a manageable set of basic dispositions. More fundamentally, the pool was wildly overinclusive in the sense that humans surely do not possess anywhere near 4,504 distinct and important traits. For example, many obscure or archaic terms have been eliminated by subsequent researchers (e.g., Goldberg, 1982). Furthermore, many terms were largely synonymous, and so—beginning with Cattell (1945, 1946)—personologists have used a variety of techniques to group similar trait terms to produce a more parsimonious structural model.

Multidimensional Trait Models

As we demonstrate shortly, personality researchers have made tremendous strides in their pursuit of a structural model, so that

it is now possible to offer some general assertions regarding the basic phenotypic traits of personality and the observed relations among them. However, this structural progress may not be readily apparent to those in other areas of psychology. After all, personality researchers have created hundreds—even thousands—of trait scales, as well as dozens of omnibus inventories, and many new measures are still being developed each year. Moreover, even a superficial examination of current personality journals reveals that an enormous number of dispositional concepts remain under investigation.

Furthermore, psychologists interested in dispositional concepts are confronted with a daunting array of assessment instruments that reflect widely differing structural models. The confusion is heightened by the fact that each of these instruments purports to measure the most important traits in personality, yet they appear to show little agreement on what these traits might be: Some assess 3 traits, others 5, and still others 16 or 30, and the names of these traits vary widely across instruments. In recognition of the apparent complexity—even chaos—in the personality assessment literature, we briefly review some of the most important structural schemes. It is beyond the scope of our article to consider each model individually, so for the sake of convenience we subdivide them into three basic types: (a) multidimensional, (b) the “Big Three,” and (c) the “Big Five.”

Multidimensional models are familiar to most psychologists. This structural tradition is represented by a long line of researchers who have developed comprehensive, omnibus inventories of personality. In comparison with the Big Three and Big Five models, researchers within this tradition have identified and assessed a larger number of relatively more specific traits. Table 1 lists eight of the most commonly used and influential of these multidimensional inventories, including the California Psychological Inventory (CPI; Gough, 1987), the Guilford-Zimmerman Temperament Survey (GZTS; J. P. Guilford & Zimmerman, 1949; see also J. S. Guilford, Zimmerman, & Guilford, 1976), and the Personality Research Form (PRF; Jackson, 1984). For each instrument, Table 1 shows the number and names of the assessed traits.

The most noteworthy aspect of this table is the rich diversity within this assessment tradition. Across the listed instruments, the number of assessed traits varies from 8 (in the Comrey Personality Scales; CPS; Comrey, 1970) to 30 (in the Revised NEO Personality Inventory [NEO-PI-R]; Costa & McCrae, 1992). This variability suggests that researchers have reached substantially different conclusions regarding the number of traits needed for a comprehensive assessment of personality.

Furthermore, the content of the assessed traits varies considerably across instruments. Several trait labels occur on two instruments (e.g., the CPS and NEO-PI-R both include activity scales, and the CPI and GZTS both contain measures of sociability), but none is found on more than three (the Sixteen Personality Factor Questionnaire [16PF], NEO-PI-R, and CPS all contain trust scales). To be sure, several seemingly unique names are simple grammatical variations and appear to represent similar constructs (e.g., the PRF Impulsivity scale and the NEO-PI-R Impulsiveness scale).¹ Other labels are related semantically and appear to reflect very similar traits (e.g., the PRF Affiliation scale, the NEO-PI-R Gregariousness scale, and the

CPI Sociability scale). Finally, several of the names seem to define opposite ends of the same bipolar continuum (e.g., the GZTS Restraint scale vs. the PRF Impulsivity scale). Even after accounting for these cases, however, Table 1 seemingly includes dozens of different traits.

General Factor Models

Big Three models. A second structural tradition has emphasized the importance of three very general superfactors of personality rather than focusing on specific traits. These Big Three models grew out of the seminal work of Hans Eysenck. Beginning in the late 1940s, Eysenck conducted an extensive series of analyses that identified two very broad factors, which he called *neuroticism* (vs. emotional stability) and *extraversion* (vs. introversion). Scales assessing these two general factors were first published in the Maudsley Personality Inventory (MPI; Eysenck, 1959); later they were revised and included (together with a newly developed Lie scale) in a second instrument, the Eysenck Personality Inventory (Eysenck & Eysenck, 1968). Subsequent analyses of an expanded item pool led to the identification of a third broad trait dimension, labeled *psychoticism*.² A scale assessing this third general factor was added to the revised Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975).

Other theorists have postulated similar three-factor models. Tellegen (1985; Tellegen & Waller, in press) proposed a scheme consisting of *negative emotionality* (similar to neuroticism), *positive emotionality* (corresponding to extraversion), and *constraint* (which has a strong negative correlation with psychoticism). Watson and Clark (1993) subsequently presented a highly similar model, with factors named *negative temperament*, *positive temperament*, and *disinhibition* (vs. constraint), respectively. Finally, in his reformulation of the CPI, Gough (1987) introduced the three higher order “vectors” of *self-realization*, *internality*, and *norm favoring*, which appear to be related to low neuroticism, low extraversion, and low psychoticism, respectively.

It must be emphasized that these models—despite substantial differences in terminology—all appear to define a similar structure. For example, Tellegen (1985; Tellegen & Waller, in press) has demonstrated a high degree of convergence between his factors and those of both Eysenck and Gough. Similarly, Watson and Clark (1993, in press) reported strong correlations between

¹ We must emphasize, however, that one cannot equate scale labels with underlying constructs; scale names are notoriously untrustworthy guides to their true meaning. Scales with similar—even identical—names may not be strongly interrelated. For instance, Costa and McCrae (1988a) reported that the PRF Impulsivity and NEO-PI-R Impulsiveness scales correlated only .38 with one another. Conversely, scales with quite disparate labels may, in fact, be closely related. For example, Gough (1987) obtained correlations of .72 and .61 between the CPI Sense of Well-Being and GZTS Objectivity scales. Accordingly, one cannot reduce the Table 1 scales to a more parsimonious set of traits on the basis of labels alone.

² Despite its name, the EPQ Psychoticism scale is better viewed as a measure of psychopathy (Digman, 1990) or of disinhibition versus constraint (Watson & Clark, 1993).

Table 1
Traits Assessed in Some Commonly Used Multidimensional Inventories of Personality

Inventory	No. of traits	Names of assessed traits
California Psychological Inventory (Gough, 1987)	20	Achievement via conformance, achievement via independence, capacity for status, communality, dominance, empathy, femininity/masculinity, flexibility, good impression, independence, intellectual efficiency, psychological mindedness, responsibility, self-acceptance, self-control, sense of well-being, sociability, social presence, socialization, and tolerance
Comrey Personality Scales (Comrey, 1970)	8	Activity, empathy, extraversion, masculinity/femininity, neuroticism, orderliness, social conformity, and trust
Guilford-Zimmerman Temperament Survey (Guilford & Zimmerman, 1949)	10	Ascendance, emotional stability, friendliness, general activity, masculinity, objectivity, personal relations, restraint, sociability, and thoughtfulness
Jackson Personality Inventory (Jackson, 1976)	15	Anxiety, breadth of interest, complexity, conformity, energy level, innovation, interpersonal affect, organization, responsibility, risk taking, self-esteem, social adroitness, social participation, tolerance, and value orthodoxy
Multidimensional Personality Questionnaire (Tellegen, in press)	11	Absorption, achievement, aggression, alienation, control, harm avoidance, social closeness, social potency, stress reaction, traditionalism, and well-being
Revised NEO Personality Inventory (Costa & McCrae, 1992)	30	Achievement striving, activity, altruism, angry hostility, anxiety, assertiveness, competence, compliance, deliberation, depression, dutifulness, excitement seeking, gregariousness, impulsiveness, modesty, openness to actions, openness to aesthetics, openness to fantasy, openness to feelings, openness to ideas, openness to values, order, positive emotions, self-consciousness, self-discipline, straightforwardness, tender mindedness, trust, vulnerability, and warmth
Personality Research Form (Jackson, 1984)	20	Abasement, achievement, affiliation, aggression, autonomy, change, cognitive structure, defence, dominance, endurance, exhibition, harm avoidance, impulsivity, nurturance, order, play, sentience, social recognition, succorance, and understanding
Sixteen Personality Factor Questionnaire (Cattell, Eber, & Tatsuoka, 1980)	16	Apprehensiveness, assertiveness, conscientiousness, conservatism, control, emotional instability, forthrightness, imaginativeness, intelligence, self-sufficiency, surgency, tender mindedness, tension, trust, venturesomeness, and warmheartedness

Note. In cases of bipolar trait names (e.g., trust versus mistrust), only one pole was selected for inclusion.

their factors and those of Eysenck and Tellegen. Finally, Gough (1987) obtained substantial correlations between his higher order vectors and the MPI Neuroticism and Extraversion scales. Nevertheless, although the cross-inventory convergences are generally quite high, those for the third dimension (i.e., psychoticism, disinhibition, and novelty seeking vs. constraint and norm favoring) tend to be somewhat lower than those for the other two traits (e.g., Watson & Clark, 1993).

Cloninger (1987) also has formulated a three-dimensional model—consisting of harm avoidance, reward dependence, and novelty seeking—that resembles these other schemes in many important respects. However, it is not clear how well the three scales composing Cloninger's (1987) Tridimensional Personality Questionnaire (TPQ) converge with those of the other theorists. Moreover, the factor structure of the TPQ is inconsistent and problematic; thus, although these scales eventually may be shown to assess important genotypic sources of variance, they do not seem to represent the clear and replicable phenotypic factors of personality we discuss in this article (see Cannon, Clark, Leeka, & Keefe, 1993; Waller, Lilienfeld, Tellegen, & Lykken, 1991).

The Big Five model. A third prominent structural tradition is based on five broad and robust traits. Researchers within this tradition have given these traits various names and inter-

pretations, but they recognize that they are all describing essentially the same structure (Goldberg, 1993). The traits comprising this structure are (a) neuroticism (or emotional disorganization) versus emotional stability (or ego strength); (b) extraversion or surgency; (c) conscientiousness, dependability, or will to achieve; (d) agreeableness (or friendly compliance) versus hostile noncompliance; and (e) culture, imagination, intellect, or openness to experience (see Digman, 1990; Digman & Takemoto-Chock, 1981; Goldberg, 1990, 1993; John, 1990; McCrae & Costa, 1987).

This five-factor model originated in the seminal work of Allport and Odbert (1936; for historical reviews of this literature, see Digman, 1990; Goldberg, 1993; John, 1990). Cattell (1945, 1946) reduced Allport and Odbert's pool of trait terms to 171 variables by rationally sorting the terms into synonym groups; these were reduced to 35 bipolar scales through a cluster analysis of trait ratings. Cattell initially identified 12–15 factors in peer ratings of these scales. However, subsequent investigators consistently found that five robust factors were sufficient to represent the structure of these traits (Borgatta, 1964; Fiske, 1949; Norman, 1963; Tupes & Christal, 1992).

The robustness of this structure has been confirmed in studies involving widely diverse conditions and populations and different sets of trait terms (for reviews, see Digman, 1990;

John, 1990). Moreover, although the Big Five model was identified initially in peer ratings, closely parallel five-factor structures have been observed in various types of self-report data (e.g., Borgatta, 1964; McCrae & Costa, 1987) and also in other languages, demonstrating the cross-cultural replicability of the model (e.g., John, Goldberg, & Angleitner, 1984).

Developing an Integrative Structure of Personality

Integrating the Big Three and Big Five Models

Even these brief sketches are sufficient to demonstrate the tremendous diversity within personality assessment. Although the magnitude of this diversity might cause one to be rather pessimistic about progress in the field since the time of Allport and Odbert, such pessimism is unfounded. Although progress was painstakingly slow for many years, its pace has accelerated greatly within the past decade, largely because trait psychologists have realized increasingly that these three structural traditions can be integrated into a single, more comprehensive model. This realization has been fueled by two important developments.

First, it has become apparent that the Big Three and Big Five models actually define rather similar trait structures (for discussions, see Digman, 1990; Goldberg, 1993; John, 1990). Most notably, extensive data indicate that the neuroticism (or negative emotionality) and the extraversion (or positive emotionality) dimensions of the Big Three are essentially equivalent to the neuroticism (vs. emotional stability) and extraversion or surgency factors, respectively, of the Big Five, typically correlating .65 or higher (McCrae & Costa, 1985; Watson & Clark, 1992b, 1993). Thus, these models share a common "Big Two" of neuroticism and extraversion.

What of the remaining traits? The data here are less extensive, but the available evidence suggests that the third Big Three dimension (i.e., psychoticism or disinhibition vs. constraint) represents some combination of conscientiousness and agreeableness (Digman, 1990; Goldberg, 1993; John, 1990; Watson & Clark, 1992b). For instance, McCrae and Costa (1985) reported correlations of $-.32$ and $-.28$ between the EPQ Psychoticism and NEO-PI-R Agreeableness and Conscientiousness scales, respectively. Similarly, Watson and Clark (1992b) conducted a joint factor analysis using both Big Five and Big Three instruments. Disinhibition, a measure of the third Big Three dimension from the General Temperament Survey (GTS; Clark & Watson, 1990) loaded primarily ($-.73$) on the conscientiousness factor but also had a substantial secondary loading ($-.38$) on the agreeableness factor.

Finally, it is noteworthy that the fifth Big Five factor (i.e., culture, imagination, or openness) appears to be unrelated to all of the Big Three dimensions. For example, McCrae and Costa (1985) reported that the NEO-PI Openness scale had correlations of .01, .15, and .05 with Eysenck's measures of neuroticism, extraversion, and psychoticism, respectively.

Taken together, these results suggest that the Big Three and Big Five models define a common "Big Four" space in which (a) two traits are equivalent (neuroticism and extraversion), (b) the third Big Three dimension represents some combination of two Big Five factors (conscientiousness and agreeableness), and

Table 2
Varimax-Rotated Factor Loadings of Big Three and Big Five Trait Measures

Scale	Loading on factor				
	1	2	3	4	5
GTS Negative Temperament	.90	-.06	-.03	-.13	.04
EPQ Neuroticism	.88	-.10	-.08	-.06	.06
NEO-PI-R Neuroticism	.87	-.15	-.23	-.10	-.03
BFI Neuroticism	.86	-.17	-.03	.01	-.01
EPQ Extraversion	-.03	.93	-.09	-.02	.05
NEO-PI-R Extraversion	-.12	.85	.10	.18	.09
BFI Extraversion	-.23	.84	-.02	-.05	.07
GTS Positive Temperament	-.11	.74	.28	.00	.26
NEO-PI-R Conscientiousness	-.14	.13	.91	.10	.02
BFI Conscientiousness	-.25	.17	.82	.00	.00
GTS Disinhibition	-.07	.23	-.72	-.49	.02
NEO-PI-R Agreeableness	-.11	.02	.04	.91	.02
BFI Agreeableness	-.22	.13	.05	.80	.08
EPQ Psychoticism	-.12	.05	-.42	-.64	.22
BFI Openness	-.08	.19	.13	-.11	.88
NEO-PI-R Openness	.17	.13	-.15	.09	.87

Note. $N = 185$. Loadings of $|\geq .40|$ or greater are shown in boldface. GTS = General Temperament Survey; NEO-PI-R = revised NEO Personality Inventory; EPQ = Eysenck Personality Questionnaire; BFI = Big Five Inventory.

(c) the final Big Five trait (imagination or openness) is excluded. The points of disagreement are not trivial, but neither are they substantial enough to obscure the clear and important similarities between these models.

To test this proposed integration, we assessed 185 undergraduates on two Big Three measures (the EPQ and GTS) as well as two Big Five instruments (the NEO-PI-R and the Big Five Inventory [BFI]; John, Donahue, & Kentle, 1991). Because these data include two measures of each construct, they should yield clearer evidence regarding the similarities and dissimilarities between the models. It is also noteworthy that the two Big Five measures represent the two assessment traditions within this general model: The NEO-PI-R reflects the questionnaire-based tradition exemplified in the work of Costa and McCrae, whereas the BFI represents the lexical or semantic tradition that has been championed by Goldberg, Norman, Digman, and others (see Goldberg, 1993). Subjects completed the measures in two group-testing sessions separated by a one-week interval; the GTS and BFI scales were completed in the first session, and the NEO-PI-R and EPQ were completed in the second.

We subjected the measures to a principal-components analysis; not unexpectedly, five clear factors emerged that jointly accounted for 79.4% of the total variance. These factors were then subjected to a varimax rotation. The resulting loadings (see Table 2) strongly support the proposed model. The EPQ, NEO-PI-R, and BFI Neuroticism scales and the GTS Negative Temperament scale clearly assessed the same common factor, whereas the EPQ, NEO-PI-R, and BFI Extraversion scales and the GTS Positive Temperament scale obviously defined another. As expected, measures of the third Big Three dimension split between the conscientiousness and agreeableness factors (Factors 3 and 4, respectively). The GTS Disinhibition scale loaded

primarily on the low end of the conscientiousness factor ($-.72$, Factor 3) and secondarily on the agreeableness factor ($-.49$, Factor 4), whereas the pattern for the EPQ Psychoticism scale was reversed: It was primarily a marker of low agreeableness ($-.64$, Factor 4) with a secondary loading on the conscientiousness factor ($-.42$, Factor 3). Finally, as predicted, none of the Big Three dimensions had strong or consistent loadings on the openness factor (Factor 5).

Specific aspects of these results (especially those involving disinhibition and psychoticism) clearly require replication in both larger and more heterogeneous samples; for our present purposes, however, the crucial point is that these data demonstrate strong congruence between the Big Three and Big Five models.

Integrating the Multidimensional and General Factor Models

The second major development that facilitated progress in structural research was the explicit recognition that general factor models could be reconciled with multidimensional structures (such as those shown in Table 1). This recognition was spurred by the growing awareness that personality traits are ordered hierarchically at different levels of abstraction or breadth, as discussed earlier (see also Goldberg, 1993; Guilford, 1975; Hampson, John, & Goldberg, 1986; Harkness & McNulty, in press; John, 1990). At the highest level of this trait hierarchy are superfactors, such as neuroticism and extraversion, that represent the broadest, most general dimensions of individual differences. These broad traits are the focus of such instruments as the EPQ, GTS, and BFI.

At the next lower level of the hierarchy, these very general dispositions can be decomposed into several distinct yet empirically correlated traits. For instance, the higher order factor of extraversion emerges from the covariation of the more specific traits of dominance (i.e., extraverts tend to be assertive and persuasive), exhibitionism (i.e., extraverts enjoy being the center of attention), gregariousness (i.e., extraverts seek the company of others), and energy (i.e., extraverts describe themselves as very active and full of energy). These more specific traits are the focus of assessment in the multidimensional inventories shown in Table 1. Of course, these specific traits themselves are composed—and reflect the covariation—of still narrower constructs, such as persuasiveness and talkativeness.

A hierarchical model of this sort is a rich source of information about trait interrelations because, as described earlier, a trait construct at a higher level of abstraction reflects or embodies correlations observed at the lower levels. That is, a higher order factor is a general dimension that (a) represents the shared communality of several lower order traits and (b) accounts for the observed correlations among them. Thus, a well-articulated hierarchical arrangement elegantly summarizes an enormous number of specific relations.

These trait interrelations can be easily understood by applying a simple general rule: Traits falling within the same higher order domain are substantially interrelated, whereas those placed in different domains are not. For example, because dominance and energy both fall within the general domain of extraversion, one can assume that these traits are, in fact, signifi-

cantly intercorrelated. Furthermore, if trust is found to be a component of agreeableness, then one can conclude that it is only weakly related to dominance and energy. Exceptions to this general rule inevitably will occur, but it nevertheless offers a good first approximation for formulating hypotheses and designing studies.

Viewed in the context of a hierarchical arrangement, superfactor and multidimensional models are in no way incompatible; rather, they represent different levels of generality and abstraction. It is noteworthy, therefore, that a growing body of evidence supports this hierarchical structure. For instance, the Big Three dimensions have emerged as higher order factors from analyses of both the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1985; Tellegen & Waller, in press) and CPI scales (Gough, 1987). Similarly, the Big Five can be extracted as general factors from analyses of the 30 primary traits in the NEO-PI-R (Costa & McCrae, 1992). Furthermore, Costa and McCrae (1988a) reported results demonstrating that the PRF scales can be viewed as specific traits within the more general framework of the Big Five model.

An Integrative Hierarchical Structure

By adopting a hierarchical model, therefore, we can propose a structure that represents a creative fusion of all three traditions. We must emphasize that this model does not represent a consensus structure that all trait psychologists will endorse. In fact, we are confident that most researchers will object to at least some of its specific aspects. Nevertheless, we are optimistic that they also will acknowledge that this integrative model captures some important psychometric truths that have emerged from several decades of structural research.

With these caveats in mind, we present an integrative structure in Table 3. To emphasize the congruence between the Big Three and Big Five models, we have restricted this structure to the Big Four traits they have in common (however, for a discussion of the excluded trait of imagination or openness, see McCrae, in press). Thus, at the apex of this structure we have positioned the Big Four constructs: neuroticism (or negative emotionality), extraversion (or positive emotionality), conscientiousness (or constraint), and agreeableness. At the next level, each domain includes several component traits that define the higher order constructs. These sets of component traits should not be regarded as definitive; rather, our goal is to provide a sense of both the type and the range of content subsumed within each domain, to clarify the nature of the higher order factors. Indeed, for the present, it is important not to get bogged down in the specifics of the components themselves. Rather, in examining this structure, the crucial task is to identify the essence of—that is, the basic organizing principle that underlies—each of the higher order factors. Because each general factor represents a latent dimension shared by its component traits, the key to understanding this structure is the identification of those shared qualities, which will provide insight into the basic organizing principles of the trait structure.

What are these basic organizing principles of personality? We briefly offer our own interpretations here; for other views, see Costa and McCrae (1992), Digman (1990), and John (1990). First, neuroticism or negative emotionality reflects individual

Table 3
An Integrative Hierarchical Structure of Personality Traits

Primary trait	Description of a high trait scorer
Neuroticism or negative emotionality	
Anxiety	Prone to fear, tension, worry, nervousness, and apprehension.
Depression	Experiences high levels of sadness, loneliness, and hopelessness.
Anger	Prone to episodes of anger, irritability, and frustration.
Guilt or self-blame	Frequently experiences guilt; blames self for mistakes and failures.
Self-consciousness	Prone to embarrassment and shame and feelings of inferiority.
Oversensitivity	Sensitive to criticism and ridicule; feels slighted easily.
Self-criticism	Dissatisfied with self; sees self as having many undesirable qualities.
Stress overreactivity	Copes poorly with stress; easily upset by even small disturbances.
Emotional lability	Experiences sudden, marked mood swings.
Negativistic appraisal	Tends to view events as threatening and problematic.
Somatic complaints	Frequently experiences troublesome somatic symptoms.
Extraversion or positive emotionality	
Gregariousness	Seeks out and enjoys the company of others.
Dominance	A leader; forceful, assertive, and persuasive in social situations.
Exhibitionism	Enjoys being the center of attention in social situations.
Energy	Feels lively and energetic; leads a full, fast-paced, and active life.
Positive affectivity	Is cheerful, enthusiastic, and confident.
Excitement seeking	Seeks out interesting, intense, and vivid experiences.
Conscientiousness or constraint	
Deliberation	Thinks through decisions; plans carefully before acting.
Dependability	Is reliable, scrupulous, and responsible; meets commitments fully.
Self-discipline	Is able to work hard and complete tasks even when bored or fatigued.
Achievement striving	Has high aspirations; willing to work hard to meet long-term goals.
Orderliness	Is neat, tidy, and well-organized.
Socialization	Readily accepts traditional laws and morality; respects authority.
Harm avoidance	Avoids situations that involve risk of danger and physical harm.
Agreeableness	
Trust	Believes that others are generally honest and worthy of trust.
Straightforwardness	Is frank and sincere; does not deceive others to further own ends.
Empathy	Is sympathetic, compassionate, and concerned for others.
Courtesy	Is pleasant, considerate, and courteous in social interactions.
Altruism	Is generous and willing to help others.
Cooperation	Prefers cooperation to competition or conflict; seeks to avoid overt expression of hostility or aggression.

differences in the extent to which a person perceives and experiences the world as threatening, problematic, and distressing. High scorers on this dimension experience various negative emotions (e.g., anxiety, depression, anger, shame, embarrassment, and guilt) more frequently and intensely than low scorers. They report suffering from a wide variety of problems (including minor somatic problems) and generally blame themselves for their problems; indeed, they tend to feel inadequate and inferior. They are both self-critical and overly sensitive to criticism, and they easily feel slighted. High trait scorers report elevated levels of stress and indicate that they cope poorly with that stress, causing pronounced emotional lability. Their stress appraisals are undoubtedly veridical to some degree, in part because these individuals actively create problems for themselves; however, they also are prone to negativistic appraisals of their environment and, therefore, tend to see threats, crises, and problems where others do not. In contrast, low scorers on this dimension are self-satisfied and view the world as essentially benign; they report few problems, low levels of negative affect, and

little stress. We describe low scorers more briefly both because less is known about these individuals and because this end of the trait generally has less clinical relevance.

Second, extraversion or positive emotionality involves the willingness to engage and confront the environment, including the social environment. Extraverts actively approach life with energy, enthusiasm, cheerfulness, and confidence. Accordingly, they seek out and enjoy the company of others and are quite confident and comfortable in their social interactions. They also seek out exciting and intense experiences, and they do not shrink from the social limelight. At the other extreme, introverts lack this confidence, energy, and enthusiasm. They tend to be reserved and socially aloof, and they avoid intense experiences. Generally speaking, they are more hesitant to engage their environment actively.

The third higher order trait, conscientiousness or constraint, is centered around the basic issue of impulse control. Conscientious individuals are less swayed by the immediate sensations of the moment and are controlled more strongly by the broader,

longer term implications of their behavior. These individuals plan carefully before acting and avoid situations involving risk or danger. They respect and observe the legal, moral, and ethical norms of their culture. They are serious, responsible, dependable, disciplined, and hardworking in pursuit of distant goals. Conversely, low scorers are oriented primarily toward the feelings and sensations of the immediate moment and are relatively unaffected by more remote or abstract considerations. They tend to be impulsive and to act without fully considering the longer term implications of their behavior. They minimize potential risks and dangers while pursuing interesting and stimulating experiences. They do not feel bound by the traditional rules and restrictions of their society. They lack the self-discipline and work ethic necessary to pursue long-term goals and lofty ambitions. Finally, they are careless and disorganized and frequently fail to fulfill their responsibilities and commitments.

The final trait, agreeableness, centrally involves the nature of one's relations with others. It can be contrasted with extraversion or positive emotionality—another trait with a strong interpersonal component—in that extraversion focuses more on the individual him- or herself, whereas the focus of agreeableness is explicitly relational. Thus, high trait scorers are sensitive, empathic, altruistic, and willing to perform prosocial behaviors; they also try to be kind and courteous to others. In addition, they are both more trustworthy and more trusting of others. At the other extreme, disagreeable individuals lack empathy. They are deceptive and manipulative and take a cynical view of life and other people. They also tend to be aggressive and selfish in pursuit of their own interests.

Implications of This Integrative Structure

In an earlier section we suggested that structural research has a number of important implications for psychopathology research. We now discuss some of the more important of these implications in the context of the integrative model that has just been described. These implications can be divided into three types: (a) those that specifically involve trait research, (b) those that concern the conceptualization and assessment of psychopathology, and (c) those that pertain to the etiology of psychological disorder. To conserve space, we confine our discussion to those issues that stem more or less directly from structural research per se; other aspects of the interface between personality and psychopathology are discussed throughout this special issue.

Implications for Trait Research

Ordering known relations within the structure. The structure presented in Table 3 elegantly summarizes an enormous amount of data regarding trait interrelations. It orders and organizes known relations between traits, identifying which characteristics are substantially related (i.e., those placed within the same higher order domain) and which are not (i.e., those falling in different domains). Both of these structural implications are important. On the one hand, several traits that might have been grouped together on an a priori basis have been shown to be quite distinct. For instance, one naively might think that individual differences in negative and positive emotionality would

be strongly negatively correlated with one another. That is, one might suppose that individuals who experience elevated levels of anxiety, anger, and guilt also would be relatively low in cheerfulness and enthusiasm. Structural research, however, has demonstrated that this is not the case. Negative and positive emotionality are relatively independent of one another empirically and so have been placed in different domains (those of neuroticism and extraversion, respectively) in Table 3 (see Costa & McCrae, 1992; Tellegen, 1985; Watson & Clark, 1992b, in press).

Similarly, Table 3 illustrates that seemingly related affects and behaviors do not necessarily covary empirically. For example, the subjective experience of anger is related to the experience of other negative affects and so is subsumed under the domain of neuroticism or negative emotionality. However, the behavioral expression of anger (i.e., aggression and hostility) covaries with inconsiderateness, discourtesy, competitiveness, and so forth and therefore falls within the domain of agreeableness. Similarly, the subjective experience of fear and anxiety is part of the domain of neuroticism or negative emotionality, but the avoidance of situations involving the risk of physical harm—which one would expect to be fear based—in fact covaries with other kinds of behavioral control and thus is a component of the conscientiousness or constraint domain.

Conversely, Table 3 demonstrates that some seemingly dissimilar constructs are, in fact, positively related. For instance, on the face of it, individual differences in self-consciousness and anger, or gregariousness and energy, might not be predicted to be significantly interrelated, but the former are both subcomponents of neuroticism or negative emotionality, whereas the latter are both facets of extraversion or positive emotionality. In a related vein, one might suppose that the subjective experience of anxiety is quite distinct from (perhaps even incompatible with) that of anger, given that these affects are related to flight and fight responses, respectively. Table 3, however, indicates that these affects are both facets of neuroticism or negative emotionality and, therefore, positively correlated with one another.

Connecting with information outside the structure. These structural relations have two important further implications. First, as discussed earlier, because lower order traits are part of larger, more elaborated nomological networks, accumulated knowledge can be pooled across related traits. Furthermore, the stronger the trait interrelations, the more confidence one has in this process of data aggregation. For instance, consider the trait we have labeled *oversensitivity* (i.e., being easily slighted and oversensitive to criticism). Because little research has examined this specific trait, some of its essential characteristics (e.g., heritability and temporal stability) are not well established. Even in the absence of specific research on oversensitivity, however, one can make some reasonable predictions on the basis of accumulated research on the higher order construct of neuroticism and other component traits within this domain. For example, extensive evidence indicates that neuroticism or negative emotionality is strongly heritable (e.g., Fulker, 1981; Tellegen et al., 1988) and stable over time (e.g., Costa & McCrae, 1988b, 1992; Watson & Clark, 1984); similar results have been demonstrated for several component traits within this domain (e.g., Costa & McCrae, 1988b). Thus, it is reasonable to predict that oversensitivity will show very similar characteristics.

Second, because the lower order traits within a domain are all significantly interrelated and share overlapping variance, they are potential "third variables" that complicate the interpretation of observed relations with other variables. For instance, suppose that one researcher finds that the lower order trait of deliberation is significantly related to substance abuse, such that high scorers on a measure of this trait are less likely to abuse alcohol and other drugs; similarly, a second investigator reports that harm avoidance is significantly negatively correlated with substance abuse. Are these two separate effects or do they reflect the same basic finding? Furthermore, if they represent one finding, what is the important causal agent: Is it deliberation, harm avoidance, or perhaps the higher order construct of conscientiousness or constraint? Without measuring several component traits within a domain (thus also permitting some estimation of the higher order factor), it is impossible to disentangle these various possibilities. Conversely, the use of multiple measures representing different levels of hierarchy greatly increases the possibility of identifying the potent variables. (For further discussion of these issues, see Watson & Clark, 1992a.)

Predicting new relations. However, as is the case with any good heuristic model, the structure outlined in Table 3 does not simply order what is already known; it also permits one to make powerful predictions regarding previously unstudied phenomena. That is, because each of the higher order factors represents a basic organizing principle of personological structure, one can make reasonably precise predictions regarding the placement of new items, scales, and traits within the structure by considering how new phenomena are related to these already established principles of organization.

Thus, returning to an earlier example, if the developers of Scale *x* had been aware of personality trait structure, they might have saved themselves a great deal of time and effort for two reasons. First, it would have aided them in defining their construct before proceeding with its development; that is, they could have recognized that their target, construct *x*, was a blend of neuroticism (or negative emotionality) and (dis)agreeableness. Second, if they then decided to proceed with scale development, they could have made more deliberate and reasoned decisions regarding the item composition of the scale.

Indeed, once these basic organizing principles are well understood, researchers can use them as powerful guides in the writing of items and the construction of scales. For example, Table 3 demonstrates that affective valence strongly influences the ultimate placement of an item: Hedonically negative items tend to fall within the domain of neuroticism or negative emotionality, whereas positively valenced items and scales are subsumed under the domain of extraversion or positive emotionality.

The importance of affective valence is illustrated in a study by Marshall, Wortman, Kusulas, Hervig, and Vickers (1992), who examined optimism and pessimism. These constructs typically are viewed as opposite ends of a single bipolar continuum, but Marshall et al. (1992) found that the positively valenced optimism items (e.g., "I look forward to the future with hope and enthusiasm") were related primarily to extraversion and positive affect, whereas negatively valenced pessimism items (e.g., "My future seems dark to me") were more strongly associated with neuroticism and negative affect. Accordingly, by at-

tending carefully to item wording, researchers can significantly influence the nature and correlates of their scales.

In this regard, consider the widely studied trait of self-esteem (e.g., DeVellis & Blalock, 1992; Metalsky, Joiner, Hardin, & Abramson, 1993). Where should it be placed in Table 3? Consistent with the preceding discussion, if self-esteem is assessed primarily with negatively valenced items (e.g., "My life is pretty mixed up" and "I often get discouraged with myself"), then it can be expected to be a component of neuroticism or negative emotionality. In contrast, if it is assessed primarily with hedonically positive items (e.g., "I'm fun to be around" and "I am confident of myself"), then it should be a marker of extraversion or positive emotionality. Of course, if self-esteem is assessed with both types of items, then it should split between these two domains.

Implications of Structural Research for Psychopathology

Beyond its significance for trait research, the proffered integrative structure also has notable implications for the conceptualization and assessment of psychopathology. We note two of these implications, both of which stem from the fact that Table 3 contains content that is directly linked to various symptoms and diagnoses. The neuroticism or negative emotionality domain, especially, includes traits that are relevant to a wide range of psychopathology, including mood (depression and guilt or self-blame), anxiety (anxiety), somatoform (somatic complaints) and personality (oversensitivity and emotional lability) disorders. The other domains also subsume traits relevant to various syndromes, including mood (low energy in the positive emotionality domain), conduct (socialization in the conscientiousness domain and cooperation in the agreeableness domain), and personality (e.g., low empathy and low trust in the agreeableness domain) disorders. Note also that each dimension listed in Table 3 is a relatively stable trait of personality, such that individual differences in these characteristics tend to persist over time.

Putting these two considerations together, we arrive at the general implication that many types of psychopathology may be somewhat stable and traitlike in character. For qualities that are relevant to the Axis II personality disorders (e.g., oversensitivity and empathy), this point is widely recognized and is hardly controversial. However, the chronicity of disorder may be underappreciated in research on depression, anxiety, and other clinical syndromes of Axis I (for a discussion see Depue & Monroe, 1986).

For instance, diathesis-stress models play a prominent role in contemporary depression research. These models differ in their particulars, but each asserts that exogenous factors (such as stressful life events) and intraorganismic vulnerabilities (e.g., dysfunctional cognitive schema, negativistic attributional styles, or personality traits such as low self-esteem, perfectionism, and dependency) may interact to produce depressive episodes in previously asymptomatic individuals (e.g., DeVellis & Blalock, 1992; Metalsky et al., 1993). The integrative structure in no way contradicts or refutes these models, and we must emphasize that stressful and traumatic events are associated with marked, transient increases in depression, anxiety, and general negative affect (e.g., Watson & Clark, 1984). Nevertheless, this

integrative structure does suggest that these previously asymptomatic individuals may be somewhat rarer than has been supposed. That is, given the stable and traitlike character of depressed affect, it seems reasonable to propose that many currently depressed individuals have experienced elevated levels of depression in the past (cf. Clark, Watson, & Mineka, 1994 [this issue]); indeed, it may be impossible to find significant periods of time during which they were completely asymptomatic. Similar considerations apply to anxious affect and other relevant characteristics in Table 3.

Second, the integrative model demonstrates that many conceptually distinct disorders are, in fact, empirically related to one another; this implication again stems from the general principle that lower order characteristics within the same domain are significantly intercorrelated. Some of these empirical correlations are well known to psychopathology researchers, but others may be less familiar. For instance, on the basis of an extensive body of evidence, it is now widely acknowledged that measures of depression and anxiety (including self-report scales, clinicians' ratings, and diagnostic judgments) are substantially interrelated (e.g., Brady & Kendall, 1992; Clark & Watson, 1991b; Kendall & Watson, 1989; Maser & Cloninger, 1990). Table 3 accurately reflects this robust finding by placing depression and anxiety within the same domain of neuroticism or negative emotionality. The table goes beyond this familiar finding, however, by illustrating that depression and anxiety are each related to a number of other clinically important characteristics, such as anger, guilt or self-blame, oversensitivity, and self-criticism. Thus, this integrative model demonstrates that the widely recognized comorbidity of anxiety and depression is simply a special case of a more general problem. Accordingly, this structural scheme helps to explain why measures such as the Symptom Checklist (SCL-90; Derogatis, Lipman, & Covi, 1973)—which assesses symptoms relevant to a broad range of disorder—are characterized by a single strong general factor (e.g., Gotlib, 1984; Levenson, Aldwin, Bossé, & Spiro, 1988). This general factor is easily recognizable as the symptom counterpart to the higher order personality dimension of neuroticism or negative emotionality.

These empirical interrelations have further implications that closely parallel those that were previously discussed in connection with traits. That is, (a) accumulated knowledge may be pooled across empirically related symptoms and disorders, and (b) specific disorders should not be studied in complete isolation but ideally should be examined together with other disorders falling within the same higher order domain suggested by the hierarchy of personality traits.

Implications for the Etiology of Disorder

Finally, the structure presented in Table 3 suggests alternative explanations for some commonly reported findings in the psychopathology literature; these alternative explanations again arise from the fact that many conceptually distinct phenomena are subsumed within the same higher order domain. For instance, as was noted earlier, current theoretical models argue that dysphoric mood states (such as depressed and anxious affect) result from an interaction between stressful life events and vulnerability factors such as dysfunctional cognitive

schema. Thus, in response to elevated levels of stress, individuals with dysfunctional cognitive styles are hypothesized to be vulnerable to sudden, sharp increases in negative affect. Note that such models view life stress and cognitive style as potential causal factors, with dysphoric affect as the resulting effect or dependent variable.

Table 3, however, suggests a different explanation for these interrelations, namely, that dysfunctional cognitions, stress appraisals, and dysphoric affect are all components of a single, more general construct: This common, unifying construct might either be the higher order disposition of neuroticism or negative emotionality itself or its state or symptom counterpart (i.e., general distress or negative affect). That is, dysfunctional cognitions, stress appraisals, and dysphoric affect have been shown to covary consistently with one another, such that the same individuals are likely to perceive innocuous or ambiguous events as stressful (negativistic appraisal), to respond poorly to actual stressors in their lives (stress overreactivity), to have a negativistic and dysfunctional cognitive style (e.g., self-criticism and self-blame), and to experience intense episodes of dysphoria (e.g., anxiety, depression, guilt, and anger). This view suggests that dysphoria—rather than being caused by stress and dysfunctional cognitions—may be another subcomponent of the same general construct. Having said this, however, we must emphasize that the Table 3 structure does not prove that this explanation is correct; it merely raises it as a plausible alternative (for further discussions of these issues, see Clark & Watson, 1991a; Watson & Pennebaker, 1989).

Conclusion

In conclusion, we hope to have established two fundamental points. First, despite the complexity of the field, trait psychologists have made remarkable progress in their search for an underlying, coherent structure of personality. Second, this emergent structure has extremely important implications for researchers who are studying personality and psychopathology.

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