

Individual Differences Science for Treatment Planning: Personality Traits

Allan R. Harkness
University of Tulsa

Scott O. Lilienfeld
Emory University

Evolving ethical, legal, and financial demands require a plan before treatment begins. The authors argue that individual differences research requires the inclusion of personality trait assessment for the construction and implementation of any treatment plan that would lay claim to scientific status. A primer of personality individual differences for treatment planning is presented, including an introduction to constructive realism and major research findings from trait psychology and behavior genetics bearing on treatment planning. The authors present 4 important gains for treatment planning that can be realized from the science of individual differences in personality: (a) knowing where to focus change efforts, (b) realistic expectations, (c) matching treatment to personality, and (d) development of the self.

Gone are the days when a therapist could delay planning and simply allow therapy to unfold. Instead, evolving ethical demands (e.g., informed consent), legal demands (e.g., liability management, mandated record keeping), and financial demands (e.g., third-party preapproval) require a plan before treatment begins. In this article, we show that science makes demands as well. The last 40 years of individual differences research require the inclusion of personality trait assessment for the construction and implementation of any treatment plan that would lay claim to scientific status.

Science Should Guide Treatment Planning

The Fundamental Rule of Treatment Planning

How should a treatment plan be constructed? What information should it use, and what procedures should it prescribe? We offer a simple and perhaps obvious formula and co-opt Freud's terminology to label it. Our *fundamental rule of treatment planning* states that the plan should be based on the best science available.

Ethics and laws provide boundaries for the treatment plan, but within those boundaries, science should determine the treatment. In fact, both ethical and legal guidelines converge in placing science in the driver's seat. The American Psychological Association's (1992) Ethical Standard 1.05 demands that psychologists keep up to date on scientific and professional information, and Standard 1.06 requires that psychologists "rely on scientifically and professionally derived knowledge when making scientific or professional judgments" (p. 1600). For anyone operating in the scientist-practitioner model, no conflict should

arise between scientifically and professionally derived knowledge. These guides constitute standards of the profession and are legally essential in determining when practice is adequate and when it falls short. Thus, if treatment planning is to meet or surpass the standards mandated by the field, then the fundamental rule of treatment planning applies: The plan should be based on the best science available.

The fundamental rule imposes a great duty on the therapist. The therapist must be well informed regarding recent scientific findings, even if those findings were not emphasized in the psychologist's schools or practice settings. The necessity of being widely informed is made clear in one of the guides we have for induction: Carnap's (1962) requirement of total evidence.¹ If relevant facts *X*, *Y*, and *Z* are available, induction will be flawed if one decides to ignore *Z* and only use one's favorite facts, *X* and *Y*. Use of favorite facts in neglect of the total evidence requirement characterizes much of contemporary treatment planning. In the present article, we seek to remind treatment planners of highly relevant fact *Z*: People powerfully differ from each other in their personality dispositions.

The science of individual differences is an entire branch of psychology. Nevertheless, many psychologists who plan treatments may be relatively unfamiliar with this highly relevant set of facts. In this article, we draw from diverse literature to present an overview of the individual differences science underlying personality trait assessment, and we explore its implications for

¹ Carnap (1962) explained the requirement: "In the application of inductive logic still another difficulty is involved, which does not concern inductive logic itself. This difficulty consists in the fact that if an observer wants to apply inductive logic to a hypothesis *h*, he has to take as evidence *e* a complete report of all his observational knowledge. Many authors on probability have not given sufficient attention to this *requirement of total evidence*. They often leave aside a great part of the available information as though it were irrelevant. However, cases of strict irrelevance are much more rare than is usually assumed" (p. 208, italics in original). As an example, it is unlikely Gregor Mendel would have correctly induced the dihybrid proportions for unlinked traits if he had been tossing away pea plants from the unlinked experiments; yet his failure to discover linkage has been taken to suggest there may have been some violation of total evidence in the research program.

Allan R. Harkness, Department of Psychology, University of Tulsa;
Scott O. Lilienfeld, Department of Psychology, Emory University.

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Correspondence concerning this article should be addressed to Allan R. Harkness, Department of Psychology, University of Tulsa, 600 South College Avenue, Tulsa, Oklahoma 74104-3189. Electronic mail may be sent via Internet to psy_ah@centum.utulsa.edu.

treatment planning. The assessment of intellectual functioning is another fruit of individual differences science, but discussion of it is beyond the scope of this article. To see how individual differences science has often been neglected in treatment planning, we first examine historical trends in treatment planning.

Treatment Planning Then and Now: A Picture Completion Problem

We briefly sketch treatment planning as it once was and as much of it is now. We argue that an important piece is missing from both eras. In psychotherapies of the 1950s and 1960s, the work was frequently allowed to emerge from the sessions, guided by the emerging dynamics of the sessions. In some schools, planning would have been regarded as a therapeutic error, destined to interfere with, for example, genuineness in a client-centered approach or free association characterizing psychodynamic therapies.

Analysis of the therapies of this era reveals serious epistemological risks in becoming immersed in sessions. With regard to psychoanalysis, for example, Grünbaum (1984) argued that within-session material is suspect as a basis for clinical inferences. Specifically, the client's verbal output may be inadvertently contaminated by subtle therapist suggestions, leading to spurious confirmations of the therapist's predictions. Moreover, therapists may erroneously interpret their clients' consistent verbal responses to suggestion within and across sessions as providing impressive evidence for the corroboration of their predictions.

Without adequate assessment, any planning of this era was especially vulnerable to a problem we label the *clinical hermeneutics error*.² Meehl (1973) and Butcher (1990) both noted that in adopting the patient's perspective, the therapist can lose track of the actual degree of pathology and begin to underestimate it. Thus, when the clinician expends effort in high-level depth of processing or in interpreting and explaining the behavior of a patient, there is an attendant loss of normative judgment. Meehl (1973) in his classic paper "Why I Don't Attend Case Conferences," succinctly entitled a section "Understanding It Makes It Normal." Keddy and Piotrowski (1992), in reviewing the literature on testing in psychotherapy, summarized an appraisal of the Menninger Foundation's Psychotherapy Research Project (a project spanning part of this era) by saying: "The largest source of error was the therapists' tendency to ignore test findings and thereby overestimate the ego-strength of the patients. This resulted in less appropriate interventions and consequently less effective treatments" (p. 33). From the frequent lack of treatment planning of the 1950s, we turn to current practice.

Since the 1980s, with the adoption of Neo-Kraepelinian diagnostic rubrics (see Blashfield's [1984] elegant account of the early stages of this shift), we have experienced a restructuring of much of clinical activity. The Neo-Kraepelinian prescription entails (a) ascertainment of facts to determine the presence or absence of relatively explicit diagnostic criteria, (b) the making of differential and multiaxial diagnoses using the categories and language of the current *Diagnostic and Statistical Manual of Mental Disorders*, now the fourth edition (*DSM-IV*; American Psychiatric Association, 1994), and (c) differential selection of

treatment guided by the differential diagnosis. Clinical activity is often reported as having followed this ideal. Coupled with the recent emphasis on empirically validated treatments (Chambless, 1995), it is a process that leaves many psychologists with the feeling that their practice is adequately scientific. We argue that it is not scientific enough.

Our criticism of current practice is that diagnosis, in the absence of a personality individual differences formulation, misses the point that the signs and symptoms that appear under the heading of "presenting complaints" or "targets of treatment plan" may often be manifestations or sequelae of personality traits. That is, the features the diagnostician focuses on may be consequences of (a) extreme levels of personality traits, (b) especially problematic configurations of trait levels (see Grove & Tellegen, 1991), or (c) extreme (i.e., socially or personally maladaptive) adaptations to personality traits or their configural properties (see Clark, Watson, & Mineka, 1994; Eberly, Harkness, & Engdahl, 1991; Watson, Clark, & Harkness, 1994).

As one example, the higher order personality dimension of Negative Affectivity or Negative Emotionality (NE; presented in greater detail later) is associated with a wide variety of psychopathological conditions, including mood, anxiety, and somatoform disorders (Tellegen & Waller, 1994; Watson & Clark, 1984). Although a number of individual differences dimensions are associated with these conditions, many prominent features of these disorders, such as tension, guilt, pessimism, and irritability, are among the core indicators of high NE trait levels and may be thought of as manifestations of this dimension (Clark & Watson, 1991b). The rampant "comorbidities" found when applying the current diagnostic rubrics may in part reflect that many of these phenotypic descriptor categories are saturated with variance from a relatively small number of individual differences variables. Weak discrimination among such categories can be produced by varied but quasi-arbitrary selection of cutting points along these dimensions. Thus, the degree of comorbidity should come as no surprise to clinicians who are aware of individual differences science (Lilienfeld, Waldman, & Israel, 1994).

In addition, features of disorders that some have considered causal may instead turn out to be simply correlated properties when examined from an individual differences perspective. For example, the cognitive attributional style typical of individuals with major depression, that is, a propensity to make stable, global, and perhaps internal causal attributions for negative life events (Abramson, Seligman, & Teasdale, 1978), may in some cases be a reflection of elevated levels of NE (Clark & Watson, 1991a). Specifically, individuals with high NE tend to focus on the negative aspects of their life situations and to dwell on their inadequacies (Watson & Clark, 1984). As Tellegen (1991) noted (see also Wachtel, 1977), personality traits tend to have an assimilative character in a Piagetian sense in that they influence how individuals interpret and construe life events. Consequently, there is internal consistency in the observation that individuals with high levels of NE, including individuals with de-

² We chose *hermeneutics* to express the psychologist's role as an interpreter, an explainer of the patient's behavior.

pression, often exhibit an attributional style characterized by excessive pessimism and self-blame. Moreover, there is evidence that this attributional style is not specific to depression, but may extend to other conditions characterized by high NE, such as anxiety disorders (Clark & Watson, 1991a). Beck's (1976) well-known *depressive triad*—negative thoughts regarding oneself, the world, and the future—can similarly be seen as consistent with the cognitive processes of high-NE individuals.

The formal distinction between Axis I and Axis II disorders, although well intentioned, has perhaps been an impediment to the integration of personality individual differences with psychopathology. Although this distinction has undoubtedly sensitized a generation of clinicians to the profound clinical relevance of personality, the distinction nevertheless implies that major mental disorders are separate from personality. We argue that this is a perspective not justified by the best science. Both treatment planning and psychopathology research suffer when there is insufficient appreciation of the ubiquitous and intrinsic nature of individual differences. The categories of the *DSMs* are instantiated in people, not identical carbon atoms.

Nevertheless, although critical of certain aspects of current treatment planning based on Neo-Kraepelinian practices, we are not antinosological. For example, taxonicity, in Meehl's (1995) strong sense, is essential to isolating and understanding conditions or forms of individual differences sharing a specific and distinct causal chain. High-quality clinical description, as exemplified in the area of the mental retardations, often consists of both a diagnosis (that truly carries etiological or other important class membership information) and normatively calibrated information on relevant dimensions (e.g., IQ). This reflects the clinical reality that even Meehl's taxons are instantiated within a web of potentiating or compensating individual differences (Meehl, 1972). But much of the current nosological effort is patently anti-etiological (see Faust & Miner, 1986) to which we object.

We contend that the practices of both eras, the underplanning of the 1950s and 1960s and the current Neo-Kraepelinian diagnose-and-treat formula, violate the fundamental rule. The emerging science of individual differences has been neglected in treatment planning, both then and now.

A Personality Individual Differences Primer for Treatment Planners

Even before Cronbach (1957) spoke of the two disciplines of psychology, Spearman (1930/1961) noted, "Among the worst evils in modern psychology is that its two halves, called 'general' and 'individual,' respectively, have been irrationally and disastrously divorced from each other" (p. 326). The part of psychology that Spearman called individual, or in today's language, individual differences science, is often neglected in the training of clinical psychologists. This bifurcation creates a serious total evidence problem. Therefore, we have attempted to distill the most critical concepts, findings, and implications of personality individual differences science for treatment planning. We present this distillation in this section of the article, calling it a *primer*, although we hope to have educed a novel synthesis and fresh implications.

One Theoretical Viewpoint on Traits: Constructive Realism

Talking about other people and their dispositions, without the discipline of critical scientific analysis, is a ubiquitous human activity. Because of the long history of unexamined habits of lay discourse, some of the helpful basic distinctions and viewpoints that provided great benefits to other fields were slow in coming to individual differences science. Astronomers begin with the falsifiable assumption that the planet under study exists independently of the observer. They automatically separate their theories of the orbit of the planet from the actual orbit, and they further separate the observation measurements from theory, the astronomical object, and its behavior. Such reasonable distinctions have not come easily for personality psychology: Traits, constructs, dimensions, and scales are terms that have been used indiscriminately and imprecisely. Loevinger (1957) however, articulated the elements of a science of human personality that begins with the falsifiable assumption that traits are real, that they exist separately from the observer, and that traits are not to be confused with constructs or measures. Loevinger's approach was then named "constructive realism" by Messick (1981) and was further developed by Tellegen (1988, 1991), Harkness and Hogan (1995), and McCrae and Costa (1995). Here are some of the most critical elements of constructive realism for treatment planners.

Traits are real. Tellegen (1988) defined a trait as "a psychological (therefore organismic) structure underlying a relatively enduring behavioral disposition, i.e., a tendency to respond in certain ways under certain circumstances" (p. 622). According to Tellegen, "In the case of a *personality trait* some of the behaviors expressing the disposition have substantial adaptational implications" (p. 622). Approached in this way, the study of human individual differences is falsifiable and inherently multidisciplinary, involving not only social sciences but biological and medical sciences as well.

Traits are separate from constructs and measures. Constructs are elements in psychologists' theories of traits. As underlying physiological and psychological systems that give rise to dispositions, traits become known through their behavioral implications. Trait inferences are made from such data sources as questionnaire responses, ratings by observers, laboratory data, and the data of life course. From these trait inferences, new predictions of behavior can be made (Tellegen, 1991). But the manifest behaviors are not the traits. Psychologists still wedded to strict operationism will find these distinctions difficult to comprehend. However, most psychologists, following Cronbach and Meehl's (1955) explication of construct validity, have become more comfortable with the scientific respectability of inferred but falsifiable entities and the distinction between them and their observable indicators.

Traits exist in individuals, but traits lead to population concepts. Each person's psychophysical systems give rise to specific dispositions; what Tellegen (1988) called the person's *trait levels*. If people are at different levels of a trait, then across the composite of the population, those individual levels constitute a *trait dimension* (Tellegen, 1988). Just as each person has a specific level of the physical characteristic of height, the dimension of tallness emerges as a population concept. Using

populations, one can examine the following question: What are the major dimensions along which people differ? This is a question about the nomothetic structure of trait dimensions, and an answer is offered in the next section.

Some Major Research Findings on Traits

One question that has received considerable attention over the last 30 years has been the following structural question: What are the major dimensions of personality individual differences, and how do those dimensions relate to each other? A general answer is that there are major replicable trait dimensions, and that they are organized hierarchically. Some earlier workers focused either on a few broad trait dimensions or on many narrow trait dimensions. These different levels of generality or specificity, however, are not qualitatively separate phenomena but rather constitute a single hierarchical nomothetic (population) structure in which the covariance of narrower, lower order traits becomes the variance of broader, higher order traits (Eysenck, 1947, 1991; Watson, Clark, & Harkness, 1994).

For the purpose of introducing personality individual differences to treatment planners, we concentrate on three broad-gauge trait dimensions, factors at the Eysenck (1947) and Tellegen (1978/1982) level. As we detail later, much research is available on traits at this level of the hierarchy. However, we are simply using this three-factor level to provide an introduction to findings and concepts necessary for treatment planning; we are not advocating this specific level over other levels of the hierarchy.

We begin with *extraversion* and *neuroticism* (Eysenck, 1947), two dimensions which emerge from factor analyses of virtually all omnibus measures of personality. Tellegen (1978/1982; see also Tellegen & Waller, 1994) and Watson and Clark (1984, 1997) have reinterpreted these two dimensions as the somewhat broader (temperamental, interpersonal) dimensions of Positive Emotionality (PE) and NE, respectively. It is important to note that PE and NE are essentially orthogonal dimensions, rather than opposite poles of a single bipolar dimension (Watson & Clark, 1984).

In addition, we describe findings concerning a third major personality dimension that may bear important implications for treatment planning, a dimension that Tellegen (1978/1982) termed *constraint* (CN; see also Watson & Clark, 1993). This dimension appears to be related to Eysenckian (reversed) psychoticism (Eysenck, 1991) and (reversed) Sensation Seeking (Zuckerman 1979, 1994). In fact, Lykken (1995) concluded that (reversed) Sensation Seeking and CN are "psychometrically equivalent" (p. 105). We agree with Lykken for the most part, but consider Sensation Seeking to be somewhat lower in the personality hierarchy (i.e., narrower) than CN.

Here, then, are three important ways in which individuals differ. Individuals can be predisposed to enjoy life, to become engaged in its activities, to seek and enjoy the company of others, or they may possess low levels of this propensity (i.e., low PE). Another dimension (NE) entails individual differences in the capacity to experience negative emotions of many kinds; to become tense, moody, and irritable; and to perceive life's daily hassles as markedly aversive or even catastrophic. Finally, individuals differ in the extent to which they seek or avoid thrill

and adventure, are inhibited or uninhibited, and are traditional or uninfluenced by imposed guidelines of the social order (CN). All three of these individual differences dimensions have substantial genetic influence (e.g., Tellegen et al., 1988) and are associated with a variety of forms of psychopathology (e.g., DiLalla, Gottesman, Carey, & Vogler, 1993; Krueger, Caspi, Moffitt, Silva, & McGee, 1996; Lilienfeld, 1997b), including the personality disorders (Trull, Useda, Costa, & McCrae, 1995).

For each of these three broad personality domains, substantial evidence for convergence between self- and observer reports has accumulated (e.g., Costa & McCrae, 1988, on PE and NE; Harkness, Tellegen, & Waller, 1995). In addition, there is compelling evidence that these personality traits exhibit considerable long-term stability in adulthood (e.g., Costa & McCrae, 1988; Finn, 1986; Harkness, Spiro, Butcher, & Ben-Porath, 1995).

Where Do Personality Traits Come From?

New methods of study have offered the possibility of disentangling features hopelessly confounded in the research designs of classic psychology. By examining people who have different degrees of genetic relatedness and different amounts of shared environmental experience, the relative magnitude of causal contributions of different types of environmental and genetic effects can be estimated. With adequate data and analytic techniques, environmental effects can be subdivided into two sources: *shared* (i.e., environmental factors that increase familial resemblance for a trait) and *unshared* (i.e., environmental factors that do not promote familial resemblance for a trait). Genetic effects can be subdivided as well (see, e.g., Loehlin, 1992).

The research designs of behavior genetics coupled with structural equations modeling (see, e.g., Loehlin, 1992) allow for estimation of the potency of causal sequences that are themselves yet unknown. However, there is nothing more mystical about this than being able to weigh a series of barrels without peering inside them to know their contents. Treatment planners should know about four important issues addressed by the powerful research methods of behavior genetics: (a) the heritability of personality traits, (b) recent initial findings on the source of stability of personality traits, (c) gene-environment correlations, and (d) the apparent impotency of shared family environmental experiences in shaping personality traits. As will be shown later, each of these issues bears critical implications for the planning of efficacious treatments.

Heritability of personality traits. Heritability (h^2) is defined as the proportion of the phenotypic (behavioral, observable) variance in a trait that is attributable to genetic influences. Because it is based on variances, it is a population, not an individual, concept. Heritability does not necessarily imply a lack of malleability. As the example of phenylketonuria (PKU) shows us, a trait may be highly heritable (technically, what is called broad h^2 , as PKU involves a Mendelian recessive mechanism), yet it may be modified dramatically by an environmental manipulation (in the case of PKU, early dietary intervention). This is because the *reaction range* (Gottesman, 1963) of many genotypes—the extent to which their phenotypic expression can be modified by environmental factors—is considerable, though probably not unlimited.

Across a large number of twin and adoption studies, the heritabilities of measures of most personality traits have ranged from .30 to .60 (G. Carey & DiLalla, 1994), with .50 being a commonly cited mean figure (Tellegen et al., 1988). The heritabilities derived from twin studies have generally been somewhat higher than those derived from adoption studies, possibly because twin studies include in heritability estimates certain types of genetic effects that adoption studies do not. An alternative explanation of higher h^2 estimates in twin studies is that monozygotic (identical) twins may have more similar trait-relevant environments than dizygotic (fraternal) twins (Loehlin & Rowe, 1992), although the equal-environments assumption³ has generally been upheld (Kendler, 1983).

Initial findings on the source of personality trait stability. Earlier we cited evidence concerning the stability of personality traits. But from where does this stability in personality derive? Recent research in the field of developmental behavior genetics has yielded provocative answers. Although persons of different degrees of genetic relatedness and degrees of common rearing can be studied at a single point in time, they can also be studied over time (Plomin, 1986). When observations are made at two points in time, genetic and environmental contributions to both stability and change can be examined. To convey a simplified summary of the findings for the dimensions of PE and NE, it appears from initial studies that much of the stability of personality traits stems from genetic factors, whereas change arises primarily from unshared environmental factors (McGue, Bacon, & Lykken, 1993; Viken, Rose, Kaprio, & Koskenvuo, 1994). These initial findings require replication, but if they hold true, the implications for treatment planning are great.

It is important to note that multiple genetic mechanisms underlie the stability of personality traits. These various genetic mechanisms influence behavior through causal chains of differing lengths. Some causal chains are relatively short and some are longer, less direct. That is, some genetic mechanisms have an effect on behavior through relatively direct biological influences of genes on temperamental and personality variables, and some mechanisms influence behavior through less direct causal routes. One important instance of a more indirect mechanism is the case in which individuals with certain genotypes select and create environments that are conducive to the expression of their genotypes. These environments then support and maintain the stability of the traits. This second source of personality stability has been termed *active gene-environment (g-e) correlation* by behavior geneticists (Plomin, DeFries, & Loehlin, 1977) and has been referred to as *nature via nurture* by Bouchard, Lykken, McGue, Segal, and Tellegen (1990). Although active g-e correlation contributes to heritability coefficients, Block (1995) complained that it is technically a different source of genetic influence than "direct heritability." However Block's (1995) dichotomizing into direct versus indirect is too strong: Genes can only affect behavior through causal chains differing in the degree of indirectness. Next, we discuss g-e correlations in more detail, because of their potential importance for treatment planning.

Gene-environment correlations. As noted above, individuals with differing genotypes are not randomly assigned to environments. In the case of active g-e correlation, it is through

the agency of the person that environments are selected or created that are consonant with the genotype.

Although the concept of active g-e correlation has only recently received attention from personality psychologists, a number of authors writing from perspectives outside of behavior genetics have proposed that the tendency of individuals to seek and create trait-relevant environments is a major source of personality stability. For example, a cornerstone of Wachtel's (1977) model of *cyclic interactionism* is the propensity of individuals who are exposed to early developmental experiences (e.g., parental rejection) to later select situations (e.g., hostile romantic partners) that maintain and reinforce previously established behavioral propensities.

According to Wachtel (1973), the principal source of cross-situational consistency in personality is precisely this active selection of trait-relevant environments. Of particular relevance to our arguments, Wachtel suggested that psychotherapeutic interventions should be targeted toward the choices of current environmental stimuli, rather than toward the underlying dispositions created, in his view, by early developmental experiences.

Similarly, Snyder and Ickes (1985) argued that the situations in which individuals find themselves are largely a function of preexisting personality dispositions. Such situations, they contended, promote and sustain both the temporal and cross-situational consistency of these dispositions. Snyder and Ickes cited evidence indicating, for example, that extraverts tend to prefer and choose situations that afford opportunities for assertiveness, social intimacy, and achievement (Furnham, 1981); that individuals with an internal locus of control tend to select situations in which they possess considerable personal control (Kahle, 1980); and that high sensation-seekers tend to select leisure-time activities that permit the expression of risk-taking propensities (Zuckerman, 1974).

Behavior geneticists refer to two other forms of g-e correlation: *passive* and *reactive* (evocative). Passive g-e correlation results when parents provide both genes and environmental influences that contribute to the development of a characteristic in their children. For example, highly impulsive parents may not only pass on their genes to their children but also provide their children with disorganized and poorly structured environments. Reactive g-e correlation occurs when other individuals (not necessarily genetic relatives) respond to behavior produced by the individual's genotype in characteristic ways. For example, a highly sociable child may evoke affectionate reactions from both parents and teachers.

Scarr and McCartney (1983) have placed these three types of g-e correlation within the context of a developmental model of individual differences. According to Scarr and McCartney, passive g-e effects are substantial early in life and decline shortly thereafter, reactive g-e effects persist throughout the life span, and active g-e effects increase from childhood to adulthood. This increase in active g-e correlation, they argued, results from the increase in individuals' capacity to seek out, select, and create niches that are consonant with their genetic predispositions.

³ The equal-environments assumption posits that the environmental influences promoting similarity on a given trait are equivalent in monozygotic and dizygotic twins (Plomin, 1986).

The unexpected weakness of shared family influence in shaping personality traits. Perhaps the most surprising finding emerging from recent behavior-genetic studies of personality, and in our view one of the most significant findings in personality and clinical psychology over the past several decades, is the negligible role of shared environmental influences on most or all personality traits in adulthood (Rowe, 1994). For example, the similarity in personality among identical twins reared apart is generally comparable with that among identical twins reared together (Tellegen et al., 1988), suggesting that common environmental experiences do not contribute substantially to personality resemblance. Although shared environmental influences may exert a lasting influence on personality at the extremes of parenting practice (e.g., abuse, neglect; Lykken, 1995), the findings suggest that in the broad range of what Hartmann (1958) called "average expectable environments," sharing family life does not strongly promote personality similarity of family members. If shared environmental effects on personality are observed, they appear to be moderated by age: Shared environment exerts a moderate influence on personality in childhood, but this influence declines or disappears by adulthood (McCartney, Harris, & Bernieri, 1990). Consequently, the primary environmental influences relevant to personality in adulthood appear to be unshared (Plomin & Daniels, 1987), although attempts to pinpoint specific unshared influences on personality traits have met with little success.

The finding that shared environmental influences on most personality traits are negligible bears crucial implications for theories positing a lasting causal role for parental socialization (e.g., Baumrind, 1971). This is particularly important for treatment planners to understand because mechanisms that might have been thought to produce homogenizing influence in families, such as direct parental instruction and role modeling, have been templates in the design of many forms of therapy. Nevertheless, the impact of this counterintuitive finding on contemporary theorizing in personality and clinical psychology, thus far, appears to have been minimal (Rowe, 1994). Next we turn from behavior genetics to a distinction critical for treatment planners.

Basic Tendencies and Characteristic Adaptations

For any level of an individual difference, there are many potential life adaptations (i.e., the principle of *equipotentiality*; see Pervin, 1994). The thesis that markedly different life adaptations can reflect the same or similar underlying personality dispositions can be traced back at least to Adler (1931). Adler's concept of the *style of life* emphasized that different individuals can fashion dramatically different adaptations as a means of compensating for deep-seated feelings of inferiority. Because psychopathology, according to Adler, can be conceptualized as the adoption of a style of life that interferes with healthy interpersonal relationships (i.e., social interest), the goal of psychotherapy is to assist individuals to find more socially constructive adaptations to their inferiority feelings. Adler's view differs from our own, however, in that it posits only a global state of inferiority as an impetus for life adaptations and does not link different types of life adaptations with specific individual differences in personality.

McCrae and Costa (1995), in a broad model of human nature,

distinguished between *basic tendencies* (what would classically have been considered the underlying dispositions, or what Cattell, 1950, called source traits) and *characteristic adaptations*, which are "the concrete habits, attitudes, roles, relationships, and goals that result from the interaction of basic tendencies with the shaping forces of the social environment" (McCrae, 1993, p. 584). So for any level of a basic tendency, there are many potential characteristic adaptations, and these adaptations vary greatly in social cost, personal suffering, and growth or stagnation.

Psychologists have typically focused on adaptation to external circumstances. Individual differences science, however, adds a new perspective. Adaptation involves not only coping with and creating external circumstances but also adaptation to oneself, to one's own basic tendencies. In addition, the very modes of adaptation selected are a function of those basic tendencies. For example, the person high in NE must not only learn how to live in a world providing challenges but also how to successfully live with high NE and accomplish that adaptation with a mind biased to evaluate the world more for its costs than for its opportunities.

A dramatic illustration of this principle can be found in the widely publicized case of Jack and Oscar, a pair of monozygotic twins who were separated shortly after birth and were reunited in their 40s as part of the Minnesota Study of Twins Reared Apart (Begley & Kasindorf, 1979). Jack was raised by a Jewish family in the Caribbean until age 17, when he moved to Israel and joined a Kibbutz. Oscar was raised by his maternal grandmother in the Sudetenland. Although the twins had extremely similar Minnesota Multiphasic Personality Inventories (MMPIs; Holden, 1980), many features of their life histories were strikingly different. Jack was a devoted and deeply religious Jewish person who enjoyed war movies that denigrated Germans. Oscar, in contrast, was an ardent Nazi and antisemite who was prepared to enter the Hitler Youth as World War II ended. The Jack-Oscar case underscores the importance of distinguishing between basic tendencies and characteristic adaptations: Markedly different phenotypic adaptations may reflect similar underlying basic tendencies, in this case, intense loyalty and devotion to sociopolitical causes, religious causes, or both.

As another example, Lykken (1982, 1995) conjectured that the psychopath and the hero are often "twigs from the same branch" (p. 22). Specifically, Lykken argued, low levels of fearfulness (i.e., constraint) can be manifested in either psychopathy or heroism (or, in some cases, both). Lykken (1995) conjectured that explorer Sir Richard Burton, pilot Chuck Yeager, and President Lyndon Johnson were individuals who possessed "the genetic talent" for psychopathy but "because of special talent or opportunity, manage(d) to become tolerably socialized and even . . . achieve great worldly success" (p. 155). Consistent with Lykken's hypotheses, Lilienfeld (1997a) found that in several undergraduate samples, measures of fearlessness were positively and significantly correlated with both indexes of antisocial behavior (e.g., criteria for *DSM-III-R* [American Psychiatric Association, 1987] antisocial personality disorder) and heroic behavior. Because Lilienfeld's findings were derived exclusively from self-report indexes, however, constructive replication (Lykken, 1968) of these results using other modes of assessment is necessary.

Further, Zuckerman (1994) reviewed evidence showing that although criminals have higher average Sensation Seeking scores than students, the average for criminals does not differ from firefighters. Although both crime and firefighting offer sporadic relief from boredom, and perhaps thrills, danger, and adventure, crime and firefighting are utterly different characteristic adaptations when the social cost is counted. Farley (1981) similarly argued that thrill-seeking can predispose to either delinquency or creativity, depending on socioeconomic status and educational methods.

An important implication of the basic tendency versus characteristic adaptation distinction is that one may expect moderate, rather than extremely high, correlations between trait measures and categories of psychopathology. Some diagnostic criteria sets are in fact complex descriptions that mix together basic tendencies and characteristic adaptations. Hence, relatively pure dispositional measures may show only moderate relations with diagnostic categories.

This completes a brief primer on personality individual differences for the treatment planner. In the next section, we examine the direct implications of these concepts and findings for treatment planning.

Trait-Informed Treatment Planning: Knowing Where Change Is Possible, Realistic Expectations, Matching Treatment to Personality, and Growing a Self

How would treatment planning change if a psychologist followed the total evidence requirement and attended not only to general laws but also to individual difference science by incorporating personality trait assessment? Beyond avoiding the *clinical hermeneutics error*, we contend that there are four major benefits. First, better information would be available on where to target change efforts; this leads to a second gain, namely, more realistic expectations for change would be generated; third, there is the possibility of matching treatments to personality; and fourth, opportunities for the patient's increased self-knowledge are created.

Knowing Where Change Is Possible

Personality assessment first contributes to treatment planning by helping to decide if problems are intimately linked with a person's broad personality dispositions or whether they are more circumscribed. According to Beutler (1986; see also Beutler & Clarkin, 1990), *simple* problems involve situationally specific and transitory habits that are primarily products of current environmental contingencies. An example of a simple problem would be a specific phobia of dogs that arises in response to a traumatic conditioning experience and is maintained by current avoidance behavior but is developed in the absence of special dispositional diatheses (e.g., no above average trait-like fearfulness, no unusual conditionability to danger signals). In contrast, *complex* problems involve cross-situationally pervasive signs and symptoms reflecting long-term patterns of adjustment. In this scheme, complex problems, unlike simple problems, can be viewed largely as manifestations or consequences of enduring personality traits. The distinction between simple and complex problems is presumably one of degree rather than of kind, and

assessment allows the treatment planner to ascertain where the problem stands on the simple-complex continuum.

Another way in which the individual differences perspective helps to target change efforts involves focusing those efforts on characteristic adaptations rather than on basic tendencies. To illustrate these ideas, we present the following two vignettes.^{4,5}

Vignette A. A middle-aged man has a high level of NE. His aptitude for guilt, emotional upset, anxiety, and punitive self-criticism creates powerful negative reinforcement potential for any behavior that produces quick, state-like relief from these feelings. Through trial and error, he learns that cigarettes, fatty foods, alcohol, and the distraction from self-focus provided by television produce brief islands of relief. Strong habits develop. His lifestyle is not shared by his partner, to whom it seems unattractive, causing increasing stress in the relationship.

Vignette B. A young woman in her 20s has a low level of CN, or in Zuckerman's terms, a high level of Sensation Seeking. She might hazard physical risks (and perhaps underestimates risks) rather than endure boredom. She is more spontaneous than planful, seeks the novel, and is not constrained by rules and tradition. In preparation for assessment, a psychologist using Finn's (1996) approach asks her what she might want to learn from an assessment. She asks, "Why do I pick such lousy boyfriends?"

These vignettes illustrate McCrae and Costa's (1995) distinction between *basic tendencies* and *characteristic adaptations*. Basic tendencies are the trait levels: high NE in Vignette A and low CN or high Sensation Seeking in Vignette B. In contrast, characteristic adaptations are illustrated by smoking, food and leisure choices, and drinking in Vignette A and possibly by the self-reported choice of lousy boyfriends in Vignette B.

A major contribution of individual differences science to the care of human problems comes in focusing interventions on characteristic adaptations rather than on basic tendencies. That is, the main goal is not to change the person in Vignette A to someone low in NE, or to change the person in Vignette B to someone high in CN. Rather, the main goal is to help patients find more promising characteristic adaptations. Another contribution of individual differences science is to remind the treatment planner that these new characteristic adaptations should be constructed with sensitivity to the patient's basic tendencies. Note that we do not deny that change is possible in traits (Eberly, Harkness, & Engdahl, 1991). But in terms of potential yield, characteristic adaptations make better change targets.

What about the patient in Vignette B, who picks boyfriends she describes as lousy? Lykken and Tellegen (1993) showed that although personality does not usually result in likes assorting with likes (e.g., neurotics do not show much tendency to select other neurotics as mates), it was an element of CN that showed the highest spousal correlations. Zuckerman (1994) reviewed studies indicating that Sensation Seeking is one personality variable in which like assort with like. We can predict that the young woman in Vignette B will be easily bored by sameness and that a predictable, traditional, and cautious man

⁴ Vignette A was constructed from nomothetic findings reported in Harkness et al. (1995).

⁵ Vignette B was constructed from a case in the study reported by Harkness, Royer, and Gill (1996).

may be unattractive to her. An unpredictable, nontraditional, and perhaps even slightly dangerous man might attract and intrigue her. Thus, she may be initially attracted to those like her (i.e., low CN, high Sensation Seeking). But the initial stages of a relationship are not the whole story. As time goes by, the very features that made the low-CN man attractive (e.g., his unpredictability, his perpetual novelty) may make him a trying, frustrating partner who is unreliable and not sufficiently trustworthy for a lasting relationship. What made him a source of pleasure in the short term may make him a source of pain, frustration, and disappointment in the long term. She may be actively creating a social world of low-CN male partners who are consistent with her traits. The characteristic adaptation, in this case a painful pattern in relationships, may be flowing from a basic tendency. These conjectures would need to be explored; further clinical evidence would be required.

Our emphasis on altering characteristic adaptations is broadly consistent with the approach adopted by some therapists operating within a behavior analytic perspective (M. P. Carey, Flasher, Maisto, & Turkat, 1984). Nevertheless, the individual differences perspective contributes the notion that new adaptations should be designed with attention to the patient's basic tendencies. This naturally requires the guidance of high-quality personality assessment.

Earlier, we noted the finding of weak or nonexistent shared family environmental influence on personality traits. But it is critical for treatment planners to realize that the causal impotence of shared family environmental influence may apply only to basic tendencies, not to characteristic adaptations. For example, although the personality traits that have generally been found to be risk factors for antisocial behavior (e.g., low constraint, aggression) appear to be uninfluenced by shared environmental factors (Tellegen et al., 1988), antisocial behavior itself has been found in several adoption studies to be influenced by shared environmental factors, such as the socioeconomic status of the adoptive parents (Bohman, Cloninger, Sigvardsson, & von Knorring, 1982). Thus, although the underlying dispositions that sometimes lead to antisocial behavior may not be influenced by shared environmental factors, shared influence processes may play an important role in the phenotypic expression of such dispositions.

The concept of active *g-e* correlations leads to the same targeting of change efforts. As noted earlier, part of the genetic influence counted in a heritability coefficient is of the more indirect type of genetic influence, realized as the person selects and creates environments. Therapists can help patients select and construct social worlds consistent with themselves, but with higher potential for health and growth. The people in these vignettes, and people in general, do not randomly choose adaptations; the adaptations that are created are consonant with their basic tendencies. Finding new adaptations, with less personal and social cost and greater potential for growth, which are also consonant with the patients' basic tendencies, poses an exciting new clinical challenge.

Reactive *g-e* correlations, realized when the patient's basic tendencies lead to predictable reactions from the social surround, create other opportunities for the treatment planner. Psychoeducation can help sensitize people to the responses they evoke from their environments. Opportunities to interrupt or

channel cyclical processes can be explored (see also Wachtel, 1977).

Individual differences science makes available a research-based, comprehensive viewpoint on the transactions creating and maintaining characteristic adaptations of the persons in Vignettes A and B. We contend that this scientifically based viewpoint targets change efforts more rationally than viewpoints of the 1950s or 1960s, when the effort might have been a decade-long attempt to restructure basic tendencies. As MacKenzie (1994) put it, "It is somewhat of a culture shock to consider personality as something that someone simply has and must live with, like being tall" (p. 238). We also contend that this research-based viewpoint is more comprehensive and, thus, more observant of the total evidence requirement than current Neo-Kraepelinian diagnostic approaches that focus predominantly on specific phenotypic disorders. More complete science leads to a more complete picture of the person. Further, it leads to more realistic expectations.

Realistic Expectations

A central ethical concern in establishing a negotiated treatment plan with an informed patient involves supplying realistic expectations. If the problem is complex, in Beutler's (1986) terms, then individual differences science is essential for providing realistic prognoses for therapy. A modal personality feature of self-presenting clinical patients is high NE (Miller, 1991; Watson & Clark, 1984). Given this fact, we will hazard a proposal: The single greatest misconception that patients (and perhaps some therapists) hold about therapy is the expectation that a high-NE person can be turned into a low-NE person. Instead, as noted earlier, individual differences science offers the concept of *reaction range* (Gottesman, 1963): Genetically influenced traits may be modified by environmental manipulations, but only within certain limits.

Matching Treatment to Personality

The notion that people actively select and create environments that support, maintain, and perhaps even amplify their personality traits has important implications for treatment selection. Therapy is no different from any other interpersonal situation in its capacity to enthrall, entice, bore, or revolt a patient. If one seeks to have a patient stay in therapy, to remain engaged in the work, and to suffer as little discomfort as possible, then matching treatment to personality offers a strategy. Miller (1991), an eclectic therapist in private practice, provided a scientist-practitioner's account of treatment-matching issues in his sample of 119 private practice patients and family members. He routinely administered personality measures and became a strong advocate of matching therapy to personality. Miller (1991) systematically presented the treatment implications of the structural model he used: the five-factor model. For example, in discussing extroversion (E), in which the rate of verbal production is an issue, he recounted the following:

I recall one low E client who at first seemed a good candidate for brief psychodynamic therapy. During the first three sessions he became increasingly uncomfortable, as I searched for the aplomb to handle long pauses in our dialog. In the fourth session, I shifted

gears and started doing conventional cognitive therapy, a method I did not favor at the time. The client was visibly relieved. Toward the end of this session he said, "Gee, the therapy has finally begun. Did we really have to sit around and stare at each other for 3 weeks?" (p. 424)

Because therapies differ dramatically in degree of structure, directedness, introspective demands, required verbal productivity, emotional precipitation, patient initiative, and depth of interpersonal interaction, rich opportunities exist for matching treatment to personality, or at least for avoiding the type of mismatch Miller (1991) recounted in the above quotation. What is the evidence for the utility of matching?

Relatively few investigators have attempted to examine statistical interactions between personality traits and treatment approaches, and most of these efforts have been unsuccessful (Beutler, 1991). Few studies of personality-treatment matching, however, have been guided by a strong theoretical framework linking structurally informed individual differences to different treatment methods. Nevertheless, not all of the findings have been negative. Spoth (1983), for example, reported that among alcohol abusers, a relatively unstructured treatment that emphasized cognitive control over anxiety tended to reduce anxiety among individuals with an internal locus of control, whereas a more structured treatment that de-emphasized cognitive control over anxiety tended to reduce anxiety among individuals with an external locus of control. Beutler et al. (1991) found that depressed patients with an externalizing coping style tended to respond best to group cognitive therapy, whereas depressed patients with an internalizing coping style tended to respond best to self-directed therapy. We recommend that further studies of personality-treatment interactions within an explicit theoretical framework be undertaken, bearing in mind Cronbach's (1975) caveat that some of these interactions may be moderated by still higher order interactions, thereby rendering generalizations across samples difficult.

Growing a Self

Although to some the construct of self might seem hopelessly vague and unscientific, the topic has been increasingly examined by psychological science. The acceptance of this topic has come as part of the cognitive revolution in psychology. Since Tolman (1948) postulated that rats exploring a maze were developing a cognitive map (the latent learning paradigm), psychology has become increasingly concerned with the internal representation of information. As one example, Rescorla (1988) suggested that one could predict many modern findings in classical conditioning, such as contingency effects, merely by positing that the organism is building an inner mental model of the conditioning events. One such model has been of particular interest to clinical psychology: the inner mental representation of oneself, known simply as the self. From post-Freudian analysts such as Kohut (e.g., Kohut & Wolf, 1978), to cognitive theorists of clinical phenomena such as Beck (e.g., see Beck, Freeman, & Associates, 1990, on self-schemata), to social psychologists (Markus, 1977), there has been increasing interest in the self and its clinical implications.

What are the clinical implications of self? To take one simple example, compare a person who becomes anxious in situations

x , y , and z but is unaware of this tendency, with another person who becomes anxious in situations x , y , and z but who has an understanding of this tendency, an internal model of self that includes this information. The person with the more comprehensive self has greater resources, options, and capacities than the person with the less comprehensive self.

Consider again Vignette B: the young woman low in CN (high in Sensation Seeking) who wonders why she picks lousy boyfriends. Presumably, her inner representation of self lacks a coherent picture of her status on CN (or Sensation Seeking), including her susceptibility to boredom, and an understanding of how these characteristics lead to attraction to surprising, unpredictable men. Further, she lacks an appreciation of the repeated pattern: initial attraction to an exciting man, only to discover that the initially appealing unpredictability and rule bending makes for poor long-term prospects. Finally, she lacks an integrative understanding of how the cyclical pattern of initial attraction and eventual disappointment flows from her personality. To help her understand this pattern would be to potentiate new perceptions, to provide her with new options, to give her a sense of intellectual power (even if she repeats the pattern), and to open the door to new adaptations. The assertion of self-psychology is that a comprehensive, reality-based model of the self offers new resources for mental health.

We contend that reliable, valid, and well-normed personality assessment—the fruits of psychometric science—in the hands of a talented clinician, offers a basis for empirically grounded, rapid, and accurate increases in self-knowledge. That is, individual differences science can help with a unique goal in the treatment plan: helping the patient grow a self.

Finn's (1996) collaborative therapeutic assessment procedures are ideally suited to this goal. In Finn's procedure, questions are solicited from the patient prior to assessment. Following assessment, the test results are used to answer the patient's questions. This method frames the feedback in terms of the major adaptive challenges facing the patient. It tends to make the results interesting and comprehensible, because answers are worked out in terms of specific problems rather than abstract principles. Most important, Finn and Tonsager (1992), and recently Newman and Greenway (1997), have shown that test feedback, presented in a manner that promotes the growth of self, can itself ameliorate symptomatic distress.

Conclusion

Treatment planning should be based on the most complete and best science available. We have provided an overview of individual differences science showing that people differ powerfully from each other in stable basic dispositions called personality traits. The accumulating body of concepts and findings of individual differences science, such as heritabilities, the weakness of shared family influence on personality traits, g - e correlations, and the basic tendency versus characteristic adaptation distinction all bear important implications for treatment planning. We contend that a clinician who understands and applies these concepts is more likely to help patients find trait-consonant adaptations that will reduce suffering, foster growth, and stand the test of time. Clinicians aware of these concepts can harness psychometric technology to help their patients develop a norm-

based and comprehensive sense of the basic tendencies that channel the adaptive struggles of life. To ignore this information is to practice substandard treatment planning.

We have advocated the application of sound scientific principles to treatment planning. Nevertheless, the efficacy of application of even solid science demands testing (Faust, 1997). Although a number of models linking assessment to treatment have been proposed (e.g., a functional analytic strategy, diagnostic strategy), few of these models have been subjected to stringent empirical tests (Nelson, 1988). As noted earlier, Finn and Tonsager (1992) and Newman and Greenway (1997) have demonstrated the positive impact of a thoughtfully designed assessment process on therapeutic goals. Our thesis that explicit consideration of individual differences in personality can aid in treatment planning could be tested by the technique of manipulated assessment (Hayes, Nelson, & Jarrett, 1987; see also Meehl, 1959). This technique treats therapists as participants and randomly assigns them to either receive assessment information or no assessment information. The extent to which the provision of assessment information contributes to treatment efficacy is a direct test of the treatment utility (Hayes et al., 1987) of such information. The use of manipulated assessment designs would provide a stringent test of the hypothesis that the incorporation of personality assessment data within the therapeutic framework we have outlined will produce clinically significant improvements in treatment outcome. However, in realizing these designs, therapists would not merely need assessment information; they would need an adequate understanding of the principles and findings of the individual differences science of personality. Then they could follow the *fundamental rule of treatment planning*.

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