The revised NEO personality inventory (NEO-PI-R)

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CHAPTER 6

The NEO Inventories[1]

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Introduction

The NEO Personality Inventory–Revised (NEO-PI-R; Costa & McCrae, 1992b) and its variations are questionnaire measures of a comprehensive model of general personality traits, the Five-Factor Model (FFM; Digman, 1990), or "Big Five." The NEO-PI-R and a slightly simplified NEO-PI-3 (McCrae & Costa, 2010; McCrae, Costa, & Martin, 2005) consist of 240 items that assess 30 specific traits, which in turn define the five factors: Neuroticism (N), Extraversion (E), Openness to Experience (O), Agreeableness (A), and Conscientiousness (C). The NEO Five-Factor Inventory-3 (NEO-FFI-3; McCrae & Costa, 2010) consists of selections of 60 of the items that assess only the five factors. Responses use a five-point Likert scale, from *strongly disagree* to *strongly agree*. Both self-report (Form S) and observer rating (Form R) versions have been validated and extensively used (Costa & McCrae, 1992b).

Although the NEO inventories are used around the world for basic research on personality structure and development, they are also intended for clinical use. Counselors, clinical psychologists, and psychiatrists can use the personality profiles provided by the NEO inventories to understand the strengths and weaknesses of the client, assist in diagnosis and the identification of problems in living, establish rapport, provide feedback and insight, anticipate the course of therapy, and select optimal forms of treatment. In

this chapter we will provide an overview of the instruments and address three basic questions:

1. What is the scientific basis of the inventories?
2. For what populations are the NEO inventories appropriate?
3. How can clinicians use the instrument most effectively?

Theory and Development

Throughout most of the 20th century, personality psychologists debated the question of personality structure: What are the enduring individual differences that allow us to describe the distinctive features of a person, and how are they organized? Some of this debate concerned the nature of the units—should we measure needs, or traits, or temperaments, or character?—and some concerned the nature and breadth of the factors or dimensions that describe how the units are structured. Guilford had ten factors; Cattell sixteen, Eysenck two or three. After decades in which it seemed impossible to reconcile these alternative models, it began to become clear in the 1980s that five factors were necessary and more or less sufficient to encompass the trait-descriptive terms in natural languages such as English and German and that these same five factors were found, in whole or in part, in most measures of individual differences (Digman, 1990; McCrae & John, 1992; Tupes & Christal, 1992). It is now known that the FFM incorporates both normal and abnormal personality traits (Markon, Krueger, & Watson, 2005) and that it is a universal feature of the human species (McCrae et al., 2005a), grounded in the human genome (Yamagata et al., 2006). Although alternative models are still sometimes proposed (Ashton et al., 2004), it is fair to say that the FFM is "the most scientifically rigorous taxonomy that behavioral science has" (H. Reis, personal communication, April 24, 2006).

Since their inception in 1978, the NEO inventories have been designed to assess the most important general personality traits and the factors they define, and they have grown with our understanding of the FFM. No single theory of personality was used to guide development; instead, the selection of traits was based on our reviews of the personality literature as a whole (Costa & McCrae, 1980). At first we distinguished only three major personality factors—Neuroticism (N), Extraversion (E), and Openness to Experience (O) (whence the name); in the 1980s, work with the natural language of personality traits convinced us that five factors were needed to form a comprehensive model (McCrae & Costa, 1985, 1987). We related these factors to instruments based on Murray's needs (Costa & McCrae, 1988), Jung's types (McCrae & Costa, 1989), Gough's folk concepts (McCrae, Costa, & Piedmont, 1993), and many other conceptions of personality, and thus we grounded the FFM in personality theory (McCrae & Costa, 1996).

To assess these traits, we developed scales using a combination of rational and factor-analytic methods. Simple, straightforward items were written that were intended to tap into each trait, and trial items were then analyzed in large samples of adult volunteers. Targeted factor analyses were used to select items that showed the best convergent and discriminant validity with respect to the intended set of traits (Costa, McCrae, & Dye, 1991; McCrae & Costa, 1983). The use of transparent items assumes that respondents are willing and able to describe themselves accurately, and that premise has been supported by a wealth of data on the multimethod validation of NEO scales (e.g., McCrae et al., 2004). Many of these same studies support another assumption—namely, that third-person rephrasings of the self-report items would yield valid observer rating scales. Our choice of a five-point Likert response format (instead of *true/false*) resulted in scales that provide accurate assessments across the full range of the trait (Reise & Henson, 2000), and our decision to use balanced keying eliminated most of the problematic effects of acquiescent responding (McCrae, Herbst, & Costa, 2001).

When first published (Costa & McCrae, 1985), the NEO Personality Inventory consisted of 180 items, with six facet scales for each of the Neuroticism (N), Extraversion (E), and Openness to Experience (O) domains, and brief global scales to measure Agreeableness (A) and Conscientiousness (C). Four years later we introduced the short version, the NEO-FFI, as well as new norms appropriate for use with college-age and adult respondents (Costa & McCrae, 1989). In 1992 the NEO-PI-R appeared, with new facet scales for A and C, and replacement of 10 of the original N, E, and O items. In 1994 a Spanish translation intended for use by Hispanics was published (Psychological Assessment Resources, 1994), and translations have now been made into over 40 languages. Research showed that the inventory could be used by children as young as 10, but that some items were difficult for adolescents to understand; a more readable version, the NEO-PI-3, has been developed, along with a NEO-FFI-3. These instruments can be used by both adolescents (age 12 and older) and adults, and they may be particularly useful in populations with limited literacy. The NEO-PI-3 and the NEO-FFI-3 were published in 2010. Computer administration, scoring, and interpretation has been available since 1985; major updates, with many features intended for the clinical use of the instrument, were released in 1994 and again in 2010 (Costa, McCrae, & PAR Staff, 1994, 2010).

The NEO-PI-3 and the NEO-FFI-3 introduced a number of features discussed in the 2010 *Professional Manual,* including the NEO Problems in Living Checklist (NEO-PLC), a tool for clinicians to assess problematic behaviors and symptoms associated with a NEO-PI-3 or NEO-PI-R profile; the NEO Style Graph Booklet, a new way to provide feedback to respondents; the NEO Job Profiler, a tool to identify traits relevant to an occupation

or position; adolescent norms for the observer rating version of the NEO-FFI-3 as well as supplementary norms for different age groups and for international comparisons; a glossary of NEO-PI-3 words for respondents with limited literacy; and a list of published translations of the NEO inventories.

All the NEO inventories assess the five factors. Because these broad constructs summarize so much information, they are the logical starting place for personality assessment. They explain whether the client is chronically predisposed to emotional distress versus emotionally stable (N); energetic and thrill-seeking versus sober and solitary (E); curious and unconventional versus traditional and pragmatic (O); kind and trusting versus competitive and arrogant (A); disciplined and fastidious versus laidback and careless (C). The domain scales of the NEO-PI-R and NEO-FFI provide measures of all five factors; more precise estimates can be obtained as NEO-PI-R or NEO-PI-3 factor scores.

Much research on the FFM has employed global measures that assess only the five factors. But for clinical purposes, we recommend the full-length inventories that provide detailed information on 30 distinct traits. This information can affect the interpretation of the overall factor. For example, a client who scores very high on E3: Assertiveness but average on E1: Warmth may have the same high Extraversion (E) score as one who scores very high on Warmth but only average on Assertiveness—yet surely these two clients are likely to have rather different interpersonal styles: the former will be forceful and directive, while the latter will be more friendly and invested in others. The constructs assessed by the NEO-PI-R facets are suggested by their labels, but prior to using the instrument, clinicians should study the descriptions of the individual facets given in the *Manual* (Costa & McCrae, 1992b; McCrae and Costa, 2010).

Scores from the NEO inventories can also be interpreted by examining pairs of factors, called *styles*. For example, the style of Impulse Control is based on scores for Neuroticism (N) and Conscientiousness (C): High N, high C is called Overcontrolled; high N, low C is Undercontrolled; low N, low C is Relaxed; and low N, high C is Directed. Style graphs describe each of these styles. For example, clients who have an Overcontrolled style "have perfectionistic strivings and will not allow themselves to fail even in the smallest detail . . . they are prone to guilt and self-recrimination. They may be susceptible to obsessive and compulsive behavior" (Costa, McCrae, & PAR Staff, 2010).

Basic Psychometrics

Internal consistencies of the 48-item domain scores are high. For example, in an adult sample (N = 635), coefficient alphas for Neuroticism (N),

Extraversion (E), Openness to Experience (O), Agreeableness (A), and Conscientiousness (C) domain scores from the NEO-PI-R were .92, .89, .88, .90, and .91, respectively, for Form S and .93, .90, .88, .93, and .93 for Form R (McCrae, Martin, & Costa, 2005). The corresponding values for 14- to 20-year-olds ranged from .87 to .94 (McCrae, Costa, et al., 2005). Coefficient alphas for the eight-item facet scales are understandably lower; in the adult sample they ranged from .51 to .86 (*Mdn*s = .75 for Form S, .78 for Form R); in the adolescent sample they ranged from .44 to .84 (*Mdn*s = .73 for Form S, .75 for Form R). Internal consistencies below .70 are sometimes considered problematic, but the few NEO-PI-R facet scales with values lower than .70 have nevertheless shown evidence of heritability, cross-observer agreement, and longitudinal stability comparable to those of the more internally consistent facets (McCrae, Kurtz, Yamagata, & Terracciano, 2011). Internal consistencies for the five 12-item Form S NEO-FFI-3 domain scales ranged from .71 to .87 for middle-school children, .72 to .83 for adolescents, and .79 to .86 for adults (McCrae & Costa, 2007).

Robins, Fraley, Roberts, and Trzesniewski (2001) reported two-week retest reliabilities of .86 to .90 for the NEO-FFI scales. McCrae, Yik, Trapnell, Bond, and Paulhus (1998) reported two-year retest reliabilities for the full NEO-PI-R; coefficients for N, E, O, A, and C were .83, .91, .89, .87, and .88. Retest reliabilities for the 30 facet scales ranged from .64 to .86 (*Mdn* = .79). McCrae, Kurtz, and colleagues (2011) reported one-week retest coefficients of .70 to .91 for the facets and .91 to .93 for the domains in a sample of 132 college students. Terracciano, Costa, and McCrae (2006) reported 10-year stability coefficients for the NEO-PI-R. The median value was .70 for facets and .81 for factors.

As an operationalization of the FFM, the foremost test of the validity of the NEO-PI-R is the replicability of its factor structure, and this has been the topic of dozens of articles. The structure has been satisfactorily recovered in adults, college students, and children as young as 12, in men and women, and in black and white Americans (Costa et al., 1991). Recently, observer rating data were obtained from 50 cultures using translations of the NEO-PI-R into over 20 languages (McCrae et al., 2005a). Of 250 factor congruence coefficients, 236 (94.4%) were higher than .85, indicating factor replication (Haven & ten Berge, 1977), and all but one were significantly higher than chance. Deviations from the intended structure were found only in cultures where the quality of the data was low (for example, where the respondents took the test in a second language).

Cross-observer agreement is key in evaluating the validity of any personality inventory. On one hand, human judges who are well acquainted with the target can integrate a wealth of knowledge into an accurate assessment of personality; on the other hand, they do not share the artifacts that

can inflate the correlation of one self-report with another. To the extent that a self-report and an observer rating agree, both are likely to be valid. Cross-observer validity for the NEO inventories has been repeatedly demonstrated, with correlations generally in the .40 to .60 range—far above the so-called .3 barrier once thought to represent the limit of validity for trait measures. In analyses of the NEO-PI-3, self/other correlations for Neuroticism (N), Extraversion (E), Openness to Experience (O), Agreeableness (A), and Conscientiousness (C) factors ranged from .56 to .67 (McCrae, 2008). Bagby and colleagues (1998) reported comparable correlations in a sample of depressed outpatients. Using a Mandarin translation of the NEO-PI-R, Yang and colleagues (1999) reported agreement between Chinese psychiatric patients and their spouses ranging from .32 to .51 (N = 160, all ps < .001). Soldz, Budman, Demby, and Merry (1995) found modest agreement between group psychotherapy patients' NEO-PI scores and other group members' ratings on an adjective measure of the FFM.

Note, however, that these correlations seldom approach 1.0. Different observers have different opinions about an individual's personality, and the views of all informed observers are worth considering. Indeed, discrepancies in perceptions between members of a couple may be particularly informative (Singer, 2005).

The validity of NEO scales is attested by the results published in over 2,000 articles, chapters, and books. NEO scales have been correlated in meaningful ways with scales from the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1983; Siegler et al., 1990), the Millon Clinical Multiaxial Inventory (Lehne, 2002), the Personality Assessment Inventory (PAI; Morey, 1991), and the Basic Personality Inventory (Costa & McCrae, 1992a). They have proven useful in predicting vocational interests (De Fruyt & Mervielde, 1997), ego development (Einstein & Lanning, 1998), attachment styles (Shaver & Brennan, 1992), and psychiatric diagnoses of personality disorders (McCrae, Yang, et al., 2001).

In the past 20 years, the FFM has become the dominant model in personality psychology (Funder, 2001; Markon et al., 2005), consolidating decades of research on personality structure. Of the many operationalizations of the FFM, the most widely used and extensively validated are the NEO inventories.

Administration and Scoring

Instructions for the administration and scoring of the NEO-PI-R and NEO-PI-3 are given in the manual (McCrae & Costa, 2010). The instrument can be administered to individuals or groups, and it can be administered orally to those with limited literacy or visual problems. Both machine- and hand-scoring answer sheets are available; the test booklet is reusable.

The NEO-PI-3 is intended for individuals age 12 and older, while the NEO-PI-R is intended for individuals aged 18 and older, although it has been used successfully with high-school students (McCrae et al., 2002). It has a Flesch-Kincaid reading level of 5.7 overall. The NEO-PI-3, in which 37 NEO-PI-R items were replaced, has an overall Flesch-Kincaid level of 5.3 and eliminated most of the items that were difficult for adolescents to understand. It can be used by adults or by children as young as 12. If respondents do not understand an item, the administrator can explain it; suggested language is provided for use with the NEO-PI-3 (Costa, McCrae, & Martin, 2008).

The publisher has classified the NEO inventories as Level B or S, meaning that they are available to individuals with a college degree in psychology or a related discipline or in one of the health care professions, provided that they have appropriate training in the use and interpretation of psychological tests. We assume that users will familiarize themselves with the *Manual*.

Perhaps the most important requirement is that the administrator make every effort to engage the cooperation of the respondent. Providing a comfortable setting and ample time, giving assurances of privacy, explaining the purpose of testing, and perhaps offering feedback can minimize problems of careless or distorted responding.

Computerization

The NEO Software System (Costa et al., 2010) administers, scores, and interprets the NEO-PI-R, NEO-PI-3, and NEO-FFI-3. Interpretive statements reflect our understanding of ranges of scores. For example, an individual whose most extreme score is T = 72 on the Openness to Experience (O) factor would receive a report that begins:

> The most distinctive feature of this individual's personality is his standing on the factor of Openness. Very high scorers like him have a strong interest in experience for its own sake. They seek out novelty and variety, and have a marked preference for complexity. They have a heightened awareness of their own feelings and are perceptive in recognizing the emotions of others . . . Peers rate such people as imaginative, daring, independent, and creative.

The NEO-PI-R Interpretive Report provides a graphic profile, a discussion of protocol validity, descriptions at the level of factors and facets, and a summary of personality correlates based on published findings. A clinical module calculates profile agreement statistics that lead to hypotheses about possible Axis II diagnoses. Another module provides a description of personality suitable for use as client feedback. A special feature allows the clinician to input two different assessments (e.g., a self-report and a spouse

Quick Reference 6.1

The NEO inventories are available from Psychological Assessment Resources, 16204 N. Florida Avenue, Lutz, FL 33549. Fax: 1-800-727-9329. Phone: 1-800-331-8378. Web site: www.parinc.com.

To request a license to adapt the instruments or use an authorized translation, e-mail Customer Support at custsup@parinc.com.

A bibliography of articles, chapters, and presentations using NEO Inventories is available at www4.parinc.com/WebUploads/samplerpts/NEO%20Biblio%202011_1.pdf.

rating); this generates a combined report based on the adjusted average of the two sets of scores and calls attention to traits on which there is substantial disagreement, suggesting the need for additional inquiry. Optionally, the report can include a list of potential Problems in Living that the clinician can use as a guide to a focused interview. For example, a client who scores low on Conscientiousness might show "Poor academic performance relative to ability" or "Problematic health habits that lead to medical problems," and the clinician may wish to inquire about these issues.

Reise and Henson (2000) showed that the items of the NEO-PI-R could be used in a Computer Adaptive Testing system, but this is not currently available.

Applications and Limitations

Settings and Uses

As general personality trait measures, the NEO inventories can be used in a wide variety of settings. They have been widely used in clinical practice in both inpatient (Yang et al., 1999) and outpatient (Piedmont, 2001) settings. Health psychologists use them in medical settings (Christensen & Smith, 1995). The questionnaire can be mailed to respondents.

The NEO inventories are useful in a wide variety of contexts, from selecting police in New Zealand (Black, 2000) to documenting personality changes in Alzheimer's disease (Strauss & Pasupathi, 1994) to school counseling (Scepansky & Bjornsen, 2003). For the clinician, these measures are particularly valuable, because they assess strengths as well as weaknesses. Measures of psychopathology are useful in identifying problems but may give few clues about the client's creativity, organization, or generosity. Inventories like the MMPI that are supposed to assess both normal and abnormal aspects of the individual often lack the scope of the NEO-PI-R with respect to general personality traits. For example, the MMPI lacks

items that measure Conscientiousness (C) (Johnson, Butcher, Null, & Johnson, 1984). The full-length NEO-PI-R and NEO-PI-3 assess 30 facet scales as well as the five factors, and these facet scales have incremental validity in predicting behaviors (Paunonen & Ashton, 2001) and personality disorder symptoms (Reynolds & Clark, 2001); thus, these instruments are preferable to the shorter NEO-FFI and other Big Five measures that provide only global scores.

A relatively novel feature of the NEO inventories is their emphasis on feedback. A brief, non-threatening description of high, low, and average scores for the five factors is provided by *Your NEO Summary*; the administrator checks the appropriate level for each factor. This sheet has been widely used as an incentive for research volunteers and an educational tool for psychology students.

Traditionally, psychological assessments were not shared with clients, on the assumption that results might be misunderstood or distressing. These concerns do not appear to be applicable to the NEO inventories because of the general nature of the traits they assess, and many clinicians discuss plotted NEO profiles with patients as part of the therapeutic process (e.g., Singer, 2005). Mutén noted that even high Neuroticism (N) scores are not problematic: "Most people who score very high on N facets are well aware of their depression, hostility, or impulsiveness and appear to welcome a candid discussion" (1991, p. 454). At the request of clinicians, the NEO Software System now includes a Client Report that gives a detailed explanation of factor and facet scores in lay language.

Limitations

The NEO inventories assess general personality traits. Although these cover a wide range of emotional, interpersonal, experiential, attitudinal, and motivational characteristics of the individual, they do not constitute a complete psychological assessment. They do not address cognitive abilities or distortions. Although they can be interpreted as a guide to likely problems in living or psychopathology, they do not assess these conditions directly. A client who scores very low on Agreeableness (A) is likely to have interpersonal problems, but the clinician must determine by interview or other assessment instruments exactly what those problems are, and whether they merit attention as a focus of treatment. Certain profiles can suggest Axis II diagnoses, but one cannot determine from the NEO-PI-R alone whether the client meets *DSM-IV* criteria for a personality disorder.

Use of the NEO inventories is not appropriate in all situations. Respondents must have a minimal level of intellectual competence and must not be demented, delirious, or floridly psychotic. However, illiterate clients can be administered the instrument orally, and clients with many kinds of severe

mental disorder, such as acute major depression, can nevertheless provide valid information through self-reports (Costa, Bagby, Herbst, & McCrae, 2005). For other patients, such as those with dementia or mental retardation, observer ratings from knowledgeable informants provide clinically useful data (Bagby et al., 1998).

Of particular concern are questions of motivated test distortion. Although there are some simple checks on protocol validity, the NEO inventories do not include validity scales intended to detect lying, defensiveness, or malingering. Such scales have been proposed (Schinka, Kinder, & Kremer, 1997), but we have not incorporated them into the scoring of the instrument because we are not convinced that such scales actually work (see, e.g., Morey, Quigley, et al., 2002; Piedmont, McCrae, Riemann, & Angleitner, 2000; Yang, Bagby, & Ryder, 2000). We discuss this issue in detail below, under "Current Controversies." This precludes the use of the NEO inventories in a few contexts. For example, a study of child custody litigants (Langer, 2004) showed that ex-spouses described each other as almost three standard deviations lower than they described themselves on Agreeableness (A) and Conscientiousness (C). It is not clear whether any questionnaire measure could provide valid assessments in such a situation.

Contributions to Psychotherapy and Treatment Planning

Scales from the NEO inventories have been linked to a wide range of psychiatric diagnoses, and a clinician familiar with this literature would be guided toward many diagnoses. For example, individuals very low in Agreeableness (A) and Conscientiousness (C) are prone to psychopathy (J. D. Miller, Lynam, Widiger, & Leukefeld, 2001) and substance abuse (Ball, Tennen, Poling, Kranzler, & Rounsaville, 1997); those scoring high on Neuroticism (N) and low on Extraversion (E) are prone to depression (Bagby et al., 1998). The most intensive research, however, has been on the utility of NEO-PI-R scores as predictors of Axis II personality pathology.

Widiger, Costa, Gore, and Crego (2013) reviewed a large body of research that shows that particular patterns of NEO-PI-R profiles are associated in theoretically meaningful ways with *DSM* personality disorders. For example, individuals diagnosed with Paranoid Personality Disorder generally score high on N2: Angry Hostility and low on A1: Trust, A2: Straightforwardness, and A4: Compliance. The NEO inventories computer Interpretive Report includes a Clinical Hypotheses section, in which prototype profiles for the personality disorders are compared to client profiles. If profile agreement is substantially higher than that normally found in nonclinical populations, the clinician is alerted to the possibility that the client may have features of the disorder. We (Costa & McCrae, 2005) have proposed a simplified system for hand scoring NEO-PI-R personality disorder scales that

can yield the same clinical hypotheses (see also J. D. Miller, Bagby, Pilkonis, Reynolds, & Lynam, 2005). Clinicians are cautioned that these hypotheses need to be confirmed by evaluation of the *DSM* diagnostic criteria.

However, the *DSM-IV* categorical personality disorders have been widely criticized: They are arbitrary, show serious comorbidity, are unstable over time, and generally lack empirical foundation (McCrae, Löckenhoff, & Costa, 2005). Instead of attempting to predict membership in one of these rather dubious categories, Widiger, Costa, and McCrae (2013) have proposed that clinicians assess the factors and facets of the FFM and then focus on problems or symptoms associated with high or low standing on each. For example, a client who scores high on C2: Order may be "preoccupied with order, rules, schedules, and organization . . . [T]asks remain uncompleted due to a rigid emphasis on proper order and organization; friends and colleagues frustrated by this preoccupation" (Widiger, Costa, & McCrae, 2013, p. 296). Of course, not all clients who score high on C2: Order will have these problems, but the clinician should inquire about these issues and may discover problems in living that should become a focus of treatment. If they are sufficiently severe, they may warrant a diagnosis. Under Widiger et al.'s proposal, this would be styled a C+PD (high Conscientiousness personality disorder); under the existing Axis II it would be Personality Disorder Not Otherwise Specified.

Among the first clinicians to appreciate the value of the NEO-PI-R in treatment planning was T. Miller (1991). Drawing on his experience with a series of 119 clients, he reported that information from the NEO-PI was useful in understanding the client and in anticipating problems in therapy. He offered a list of key problems, treatment opportunities, and treatment pitfalls associated with each of the factors. For example, a client who is high in Agreeableness (A) is likely to form a therapeutic alliance easily but may be so uncritical in accepting interpretations that the therapy misses the essential problems. Traits can also suggest the most promising forms of therapy: Clients high in Openness to Experience (O) may enjoy and profit from imaginative role-playing, whereas those low in O may prefer concrete therapies such as behavior modification.

More recently, implications of NEO scores for the treatment of personality disorders have been discussed by Stone (2013) and others in the Widiger and Costa (2013) volume. Harkness and McNulty (2002) went beyond the use of trait information in characterizing a patient; they draw out the implications for psychotherapy of the whole body of individual differences science. For example, evidence on the heritability and stability of personality traits suggests that it will be useful to adopt realistic expectations for what can and cannot be changed in therapy and to focus therapeutic interventions on the client's characteristic maladaptations rather than on the enduring underlying traits they express.

Just the Facts 6.1

Ages: 12 to 99+
Purpose: Provide a comprehensive assessment of general personality traits.
Strengths: Assesses the best-established model of personality structure using either self-report or observer rating methods; provides scales with demonstrated longitudinal stability and cross-cultural generality. Feedback can be provided.
Limitations: Susceptible to conscious distortion under some circumstances.
Time to Administer: 35–45 minutes.
Time to Score: 5 minutes.

Singer (2005) integrated trait psychology into a program for treating the whole person and found that the NEO-PI-R has great utility in the crucial first phase of beginning to understand the patient. Because it assesses both broad factors and specific facets, and because patterns and combinations of facets can be interpreted by the experienced clinician, it provides a wealth of data. As Singer illustrated in a case study of therapy for a couple, even richer characterizations can be obtained by examining both self-reports and ratings from a knowledgeable informant.

Treatment planning. Several studies have shown that the NEO inventories can be helpful in anticipating the course of therapy and predicting outcomes. Mattox (2004) assessed the personality of 53 undergraduates who participated in a mock interview with clinical psychology students; the interviewers, participants, and two observers rated the treatment alliance established in the single session. NEO-PI-R Extraversion (E) was significantly related to all three assessments of alliance, probably because extraverts excel in initiating social contacts. (In the long term, Agreeableness may be more important for the treatment alliance; see T. Miller, 1991.)

Ogrodniczuk, Piper, Joyce, McCallum, and Rosie (2003) assessed personality with the NEO-FFI before treatment by interpretive or supportive group therapy in a sample of 107 patients with complicated grief reactions. Those patients who were initially higher in Extraversion (E), Openness to Experience (O), and Conscientiousness (C), and lower in Neuroticism (N), showed more favorable outcomes in both treatments, whereas patients high in Agreeableness (A) showed better outcomes only in the interpretive group.

Talbot, Duberstein, Butzel, Cox, and Giles (2003) examined the influence of personality on outcomes to two different therapies in a sample of 86 women with histories of childhood sexual abuse. A Women's Safety in Recovery (WSIR) group was a highly structured treatment that focused on problem-solving skills for dealing with current problems. Comparison

with a less structured treatment-as-usual group showed that women low in Agreeableness (A) and Extraversion (E) benefited most in the WSIR group. These findings are consistent with other research showing that highly structured therapies are more effective for introverted patients (Bliwise, Friedman, Nekich, & Yesavage, 1995).

Lozano and Johnson (2001) examined manic and depressive symptoms in 39 bipolar patients. High Neuroticism (N) predicted increased depressive symptoms, whereas high Conscientiousness (C) predicted increasing manic symptoms, consistent with the "increase in goal-directed activity" noted by the *DSM-IV* as a criterion for a manic episode.

Psychotherapy is only possible when the client is willing to accept treatment. Hill, Diemer, and Heaton (1997) asked which students were willing to participate in a therapeutic dream interpretation session. Of 336 students initially assessed on the NEO-FFI, 109 indicated an interest in participating, and 65 of these attended the session. Whether or not they actually participated, students who were interested in dream interpretation sessions scored nearly three-quarters of a standard deviation higher in Openness to Experience (O) than those who were not. Dream interpretation is probably not a therapeutic option for very closed patients.

Treatment progress evaluation. In nonclinical samples, the traits assessed by the NEO inventories are highly stable over time (Terracciano et al., 2006). Even in patients treated for psychiatric disorders, stability rather than plasticity is the rule (Costa et al., 2005). As a result, Harkness and McNulty (2002) have argued that substantial change in personality trait levels is not a realistic goal of psychotherapy, which should focus instead on how traits are manifested in concrete problems in living.

Nevertheless, true personality change is sometimes the result of psychotherapy, especially when the disorder, such as major depression, has a neurochemical basis. Two studies have shown that NEO trait levels are affected by pharmacological treatments for depression—but only among patients who respond to medication (Costa et al., 2005; Du, Baksih, Ravindran, & Hrdina, 2002). In both studies, Neuroticism (N) decreased and Extraversion (E) increased as the result of successful treatment. Piedmont (2001) assessed personality change in 99 outpatient drug rehabilitation patients. At the end of a six-week treatment program, there were significant decreases in N and increases in Extraversion (E), Openness to Experience (O), Agreeableness (A), and Conscientiousness (C); the effects for N, A, and C were also seen in a subsample followed 15 months later.

The changes seen in all three studies were modest in magnitude. For example, in Piedmont's follow-up sample, mean Neuroticism (N) T scores declined from 63 to 58; among Costa et al.'s (2005) responders, N declined from 72 to 62. Compared to the normal average T score of 50, both sets of

effectively treated patients remained high in N. As Harkness and McNulty (2002) would have predicted, therapy did not radically alter basic personality traits. Nevertheless, the changes seen are statistically and clinically significant, and they demonstrate that the NEO inventories are capable of registering change when it occurs. That is also shown by a study of caregiver ratings of Alzheimer's disease patients (Strauss & Pasupathi, 1994): The personality changes that characterize that disease could be detected through observer ratings on the NEO-PI-R over a period as short as one year.

Research Findings

Psychiatrists and clinical psychologists trained in the use of the *DSM* are familiar with categorical models of psychopathology, in which patients either do or do not have a disorder. It is sometimes claimed that clinicians are so accustomed to categorical or typological thinking that they would not be able to use dimensional models of personality. Samuel and Widiger (2006) put this claim to the test. They provided descriptions of individuals with personality pathology and asked the clinicians to describe the individuals in terms of the FFM and the *DSM-IV* personality disorders. When asked to evaluate these two characterizations, the clinicians preferred the FFM for describing personality, communicating with the patient, covering the full range of problems, and formulating effective treatments. The FFM and the NEO inventories are clinician-friendly.

The NEO Inventories Bibliography (www4.parinc.com/WebUploads/samplerpts/NEO%20Biblio%202011_1.pdf) lists over 400 publications in its section on Counseling, Clinical Psychology, and Psychiatry. Many of these refer to studies concerning personality disorders collected in Widiger and Costa (2013) or published as part of the Collaborative Longitudinal Personality Disorders Study (e.g., Morey, Gunderson, et al., 2002). In this section we review selected studies on other aspects of psychopathology and psychotherapy.

Diagnostic Utility

Katon and colleagues (1995) showed that patients who do not meet *DSM-III-R* criteria for panic disorder because their attacks are infrequent score just as high on NEO-PI-R Neuroticism (N) as patients who do, and much higher than controls. Further, despite the fact that they did not meet diagnostic criteria, patients with infrequent panic attacks showed as much disability as those who obtained the diagnosis. In this case, N was a better predictor of disability than diagnostic status was.

It is well known that Neuroticism (N) is associated with clinical depression—indeed, one of the NEO-PI-R facet scales is N3: Depression. But Wolfenstein

and Trull (1997) showed that NEO-PI-R Openness to Experience (O), a factor rarely measured by clinical instruments, is also a predictor of depressive symptoms in a college sample. Although O is generally regarded as a desirable trait, the sensitivity it imparts also puts some individuals at risk for depressive episodes.

Nigg and colleagues (2002) used data from 1,620 respondents in six community and clinical samples to link symptoms of childhood or current attention deficit/hyperactivity disorder (ADHD) to self-reports and (in one sample) spouse ratings on the NEO-FFI. They found that the inattention-disorganization cluster of ADHD symptoms was strongly related to low Conscientiousness (C), whereas the hyperactivity and oppositional symptoms were associated with low Agreeableness (A). Some of these correlations were strikingly large; for example, Attention Problems showed correlations ranging from –.42 to –.78 with C. Results from self-reports were replicated when spouse ratings were analyzed, suggesting that both Forms are useful in clinical assessment.

Quirk, Christiansen, Wagner, and McNulty (2003) addressed the critical question of incremental validity: Do NEO-PI-R scores tell the clinician anything more than assessment with standard clinical instruments? To answer this question, they administered the NEO-PI-R and the MMPI-2 to a sample of 1,342 inpatient substance abusers and predicted Axis I and Axis II diagnoses. They concluded that NEO-PI-R scales were substantially

Important References

McCrae, R. R., & Costa, P. T., Jr. (2003). *Personality in adulthood: A Five-Factor Theory perspective* (2nd ed.). New York: Guilford Press.
This book focuses on adult personality development, but includes non-technical introductions to the psychometric and theoretical bases of the NEO-PI-R.

McCrae, R. R., & Costa, P. T., Jr. (2010). *NEO Inventories professional manual*. Odessa, FL: Psychological Assessment Resources.
This is the basic reference for the instruments, with summaries of research until 2010.

Piedmont, R. L. (1998). The Revised NEO Personality Inventory: Clinical and research applications. New York: Plenum.
A book-length guide to clinical use of the instrument.

Singer, J. A. (2005). Personality and psychotherapy: Treating the whole person. New York: Guilford Press.
Reports an attempt to integrate therapy at the level of traits, characteristic adaptations, life narratives, and relational dynamics. Both individual and couple case studies illustrate use of the NEO-PI-R.

Widiger, T. A., & Costa, P. T., Jr. (Eds.). (2013). *Personality disorders and the Five-Factor Model of personality* (3rd ed.). Washington, DC: American Psychological Association.
This volume reports research, theory, and practical applications of the FFM in the context of *DSM* personality disorders. Chapter 19 presents a radical proposal for dimensionalizing Axis II and diagnosing a personality disorder using the FFM.

related to most diagnoses they examined and that they explained variance above and beyond that accounted for by 28 MMPI-2 scales. They also showed that NEO-PI-R facet scales provide additional information over the five domain scales and that facet scales from each of the five factors contributed incrementally to the prediction of diagnoses. For example, O1: Fantasy made a unique contribution to the diagnosis of bipolar disorder, and low E2: Gregariousness made a unique contribution to the diagnosis of posttraumatic stress disorder. Quirk and colleagues concluded that their results "support the use of FFM scales in an adjunct role in clinical assessment" (p. 323).

Cross-Cultural Considerations

With versions in over 40 languages, the NEO inventories are among the most widely used psychological tests in the world. Published versions, complete with manuals and local normative information, are available in Bulgarian, Croatian, Czech/Slovak, Danish, Dutch, Finnish, French, German, Hebrew, Japanese, Korean, Lithuanian, Norwegian, Polish, Portuguese, Romanian, Russian, Spanish, Turkish, and British English. Chinese, Hindi, Arabic, Italian, and many other versions are available from the publisher by license (usually without normative information).

When psychological measures are translated and used in a new cultural context, it cannot be assumed that their meaning has been retained. The characteristics assessed may not exist in the new culture, or the items may not validly assess them. Some evidence of construct validity must be offered for each new translation. In the case of the NEO-PI-R, the most straightforward criterion of construct validity is found in factor replicability. A valid measure of anxiety ought to load on the same general factor as measures of depression and vulnerability; recovery of the Neuroticism (N) factor is thus a form of evidence that meaning has been retained. Demonstrations of factor replicability for the NEO-PI-R have been published in dozens of languages, for both self-reports (McCrae & Allik, 2002) and observer ratings (McCrae et al., 2005a). In addition, cross-cultural evidence of construct validity has been demonstrated in meaningful patterns of correlates, including cross-observer agreement (McCrae et al., 2004). The quality of data varies across translations and cultures, and in some cases further adaptation and refinement is clearly needed, but the NEO inventories appear to be promising research and clinical tools anywhere.

Use of any validated NEO translation within a culture seems appropriate. Much more controversial is the comparison of scores across cultures (e.g., Poortinga, van de Vijver, & van Hemert, 2002). The effect of translation may be to make items more easy or difficult; different cultures may have different self-presentational styles; frames of reference may vary; acquiescence or

extreme responding may introduce systematic cultural biases. All of these are threats to what is known as *scalar equivalence*, which is a prerequisite to meaningful cross-cultural comparisons. McCrae and colleagues (2005b) have argued that if cross-cultural comparisons yield meaningful results, the data must have shown at least rough scalar equivalence, and they have offered evidence of such meaningful results. For example, cultures scoring high in Power Distance (a cultural pattern in which people show authoritarian deference to those of higher status) have individuals who, on average, score low on NEO-PI-R Openness to Experience (O) (McCrae et al., 2005b).

The merits and limitations of this argument are perhaps of little interest to clinicians, but they have an important practical application. If McCrae and colleagues are correct, then scalar equivalence for well-constructed personality tests is the rule, not the exception; and if this is so, then raw scores from anywhere in the world are comparable. In particular, one could use American norms to interpret the NEO-PI-R profile of a client from Singapore or Zimbabwe—provided one recalls that the client is being compared to Americans. Because Americans (on average) are more extraverted than most people in the world, most people would appear relatively introverted when judged by American norms, even though they might be more extraverted than their compatriots. Where local norms are available, they are preferable—so long, once again, as one recalls that the client is being compared to the local group.

An instrument that works in Sweden, Burkina Faso, and Indonesia is likely to work well in minority groups in North America. The NEO inventories have been used effectively to assess personality in Chinese Canadians (McCrae et al., 1998), African Americans (Terracciano, Merritt, Zonderman, & Evans, 2003), and Hispanics (Benet-Martínez & John, 1998). Simakhodskaya (2000) used a Russian translation to study acculturation in Russian emigrants to the United States; Moua (2006) studied the structure of personality in Hmong Americans.

Current Controversies

The most controversial issue in the clinical use of the NEO inventories has always been the role of validity scales (Ben-Porath & Waller, 1992). Psychometricians have known for decades that questionnaire measures are subject to a variety of biases that threaten their validity. Among these are response styles including acquiescence, nay-saying, and extreme responding; faking, including both positive and negative impression management; and random responding, either with a mixed pattern of answers or with a single repeated response. Most clinical instruments, including the MMPI and the PAI, have extensive validity scales to detect and correct for these kinds of biases. The NEO inventories do not.

The NEO-PI-3 does include some checks on protocol validity. At the bottom of the answer sheet, a statement and two questions are presented: "I have tried to answer all of these questions honestly and accurately," "Have you responded to all of the statements?" and "Have you entered your responses in the correct areas?" Respondents who strongly disagree or disagree with the first statement, and those who say *no* to the last, are considered to have invalid data. Protocols are not scored if more than 40 items are missing. In the computer version, strings of repetitive responses are noted, and protocols with more than 6 consecutive *strongly disagree*s, 9 *disagree*s, 10 *neutral*s, 14 *agree*s, or 10 *strongly agree*s are considered invalid, because longer strings were never found in a large, cooperative sample. (When using the hand-scored version, a visual sweep of the answer sheet can often spot suspicious response patterns.)

Carter and colleagues (2001) examined the stability of NEO-PI-R scores in a sample of 301 opioid-dependent outpatients. In this drug-abusing sample, a large number (71) of protocols were deemed invalid by these rules. The four-month retest correlations for the valid protocols were .72, .68, .74, .72, and .71 for Neuroticism (N), Extraversion (E), Openness to Experience (O), Agreeableness (A), and Conscientiousness (C), respectively; the corresponding values for the invalid protocols were .48, .48, .46, .57, and .38. In a sample of 500 adolescents with valid protocols on the NEO-PI-3, coefficient alphas for the five domains ranged from .87 to .95; in a sample of 36 adolescents with invalid protocols, they ranged from .75 to .90 (McCrae, Costa, et al., 2005). Both these studies show that the validity rules successfully distinguish more-valid protocols from less-valid ones. But they also show that there is still valid information in "invalid" protocols. Clinicians should be reluctant to discard any assessment, although some assessments should be interpreted with particular caution.

The computer-scored version also counts the number of items to which the respondent has answered *agree* or *strongly agree*. Fewer than one in one hundred cooperative volunteers agreed with more than 150 items; larger counts can be viewed as evidence of acquiescent responding. Counts lower than 50 are similarly viewed as evidence of nay-saying. However, these counts are used only to caution the interpreter, not to invalidate the data, because NEO scales are balanced, with roughly equal numbers of positively- and negatively-keyed items, and thus the net effect of acquiescent responding is limited.

Most conspicuously absent from the NEO inventories are validity scales that can assess social desirability, defensiveness, faking good, or malingering. There is no question that respondents can give false responses to the NEO items; faking studies clearly show that (Paulhus, Bruce, & Trapnell, 1995). In principle, high scores on a scale designed to measure good

qualities might be a tip-off to socially desirable responding, but it might also be an honest assessment from a person with desirable traits. Screening out such people would be counterproductive, and controlling for scores on such a scale might actually lower validity (McCrae et al., 1989).

In an effort to make the NEO-PI-R more consistent with common clinical practice, Schinka et al. (1997) selected NEO-PI-R items to create validity scales to assess positive presentation management (PPM), negative presentation management (NPM), and inconsistency (INC). These scales related in the expected way to PAI validity scales (Schinka et al., 1997) and distinguished genuine patients from students instructed to fake (Berry et al., 2001). However, we found no evidence in support of their use in volunteer samples (Costa & McCrae, 1997; Piedmont et al., 2000). Yang et al. (2000) examined the correspondence of psychiatric patients' self-reports and their spouses' ratings of them and found that PPM moderated cross-observer validity for Neuroticism (N), but not for any of the other factors; NPM showed no significant differences. Morey, Quigley, and colleagues (2002) used a multimethod design in a large clinical sample and concluded that "attempts to correct NEO-PI-R profiles through the use of scales like PPM or NPM are likely to decrease rather than increase validity" (p. 596). Scoring for the research validity scales is available from their first author (J. A. Schinka), and clinicians who wish to use them may do so. However, we do not recommend them.

In principle, no set of validity scales, however sophisticated, can guarantee the accuracy of results. Imagine that a client simply decides to fool the clinician by describing not himself or herself, but, say, John Philip Sousa. If the client makes a conscientious attempt to describe Sousa's personality, there will be no evidence of malingering or positive presentation management or random responding—yet the resulting personality profile will be utterly invalid.

It is ironic that people who are skeptical of substantive scales are eager to believe that their accuracy can be detected by the use of another scale. The fact is that clinicians are often called upon to make life-altering decisions based on fallible data, and it is not surprising that they would cling to methods that promise guidance. Unfortunately, the evidence in support of validity scales is weak.

What, then, should clinicians do? First, they can be aware that the evidence in support of substantive scales from well-validated instruments like the NEO inventories is strong: Most of the time, assessments from psychotherapy clients will be reasonably accurate. Second, they can encourage honest and accurate responding by establishing rapport with the client, explaining the purpose and utility of the assessment, assuring confidentiality, and perhaps promising feedback. Third, they can take note of the

unobtrusive validity indicators that the NEO-PI-3 offers, such as the checks for random responding and acquiescence, and weigh their reliance on the data accordingly. Fourth, they can compare results from the NEO inventories with other information from the client's life, medical, and legal histories, and from the behavior of the client in therapy. Fifth, they can take advantage of the knowledge of significant others, who may provide a more objective portrait of the client, using validated observer-rating forms. Sixth, they can recognize that all assessments are tentative and subject to revision as more information is gathered over the course of therapy.

Clinical Case

Costa and Piedmont (2003) presented the case of Madeline G, a young Native American woman who, after a troubled childhood, emerged as a successful attorney noted for defending the rights of her people. At the time she volunteered to be a case study, she was living with a common-law husband who provided ratings on Form R of the NEO-PI-R. Soon afterward, their relationship ended, and she entered a long period of depressed affect. She had not reestablished a relationship three years later.

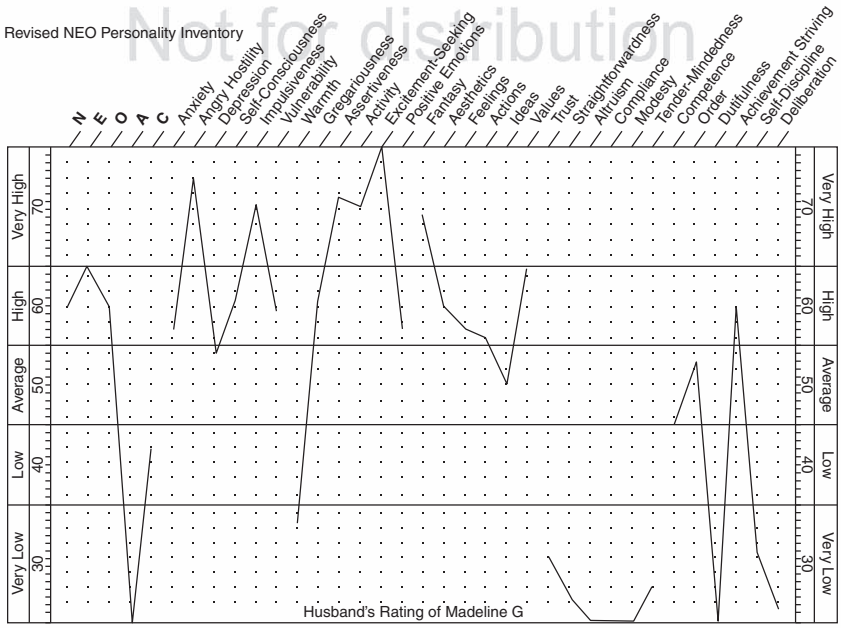

Figure 6.1 Revised NEO Personality Inventory

Figure 6.1 shows Madeline G's NEO-PI-R profile, based on her husband's ratings of her and using combined-sex norms (i.e., comparing her to adult men and women). Because this profile was generated by the NEO Software System, the more precise factor scores are given instead of domain scores. There is considerable within-domain scatter, which complicates the interpretation of factor scores. For example, most extraverts are high in E1: Warmth, and overall, Madeline G is clearly an extravert. Yet her score on Warmth is very low. In such cases, the facet scores provide the more accurate description, and one should characterize her as an extravert who lacks interpersonal warmth.

This case was selected to illustrate the interpretation of a NEO-PI-R profile and to show the potential utility of an observer-rating version of the instrument for clinical assessment. Below are excerpts from the NEO Software System Interpretive Report that describe the profile and some of its implications. The Clinical Hypotheses section is included, although normally it is only appropriate when the individual is a client in psychotherapy. For a more complete treatment of this case, see Costa and Piedmont (2003), who interpret a joint profile of Madeline's self-report and her husband's rating of her. Note, however, that within-gender norms were used in that interpretation.

Global Description of Personality: The Five Factors

The most distinctive feature of this individual's personality is her standing on the factor of Agreeableness. People who score in this range are antagonistic and tend to be brusque or even rude in dealing with others. They are generally suspicious of other people and skeptical of others' ideas and opinions. They can be callous in their feelings. Their attitudes are tough-minded in most situations. They prefer competition to cooperation, and express hostile feelings directly with little hesitation. People might describe them as relatively stubborn, critical, manipulative, or selfish. (Although antagonistic people are generally not well-liked by others, they are often respected for their critical independence, and their emotional toughness and competitiveness can be assets in many social and business roles. [Recall that Madeline G is a lawyer.])

This person is described as being high in Extraversion. Such people enjoy the company of others and the stimulation of social interaction. They like parties and may be group leaders. They have a fairly high level of energy and tend to be cheerful and optimistic. Those who know such people would describe them as active and sociable.

Next, consider the individual's level of Openness. High scorers like her are interested in experience for its own sake. They enjoy novelty and variety. They are sensitive to their own feelings and have a greater than average ability to recognize the emotions of others. They have a high appreciation of

beauty in art and nature. They are willing to consider new ideas and values, and may be somewhat unconventional in their own views. Peers rate such people as original and curious.

This person is described as being high in Neuroticism. Individuals scoring in this range are likely to experience a moderately high level of negative emotion and occasional episodes of psychological distress. They are somewhat sensitive and moody, and are probably dissatisfied with several aspects of their lives. They are rather low in self-esteem and somewhat insecure. Friends and neighbors of such individuals might characterize them as worrying or overly emotional in comparison with the average person. (It is important to recall that Neuroticism is a dimension of normal personality, and high Neuroticism scores in themselves do not imply that the individual is suffering from any psychological disorder.)

Finally, the individual is rated in the low range in Conscientiousness. Women who score in this range have a fairly low need for achievement and tend not to organize their time well. They usually lack self-discipline and are disposed to put pleasure before business. They have a relaxed attitude toward their responsibilities and obligations. Raters describe such people as relatively unreliable and careless.

Detailed Interpretation: Facets of N, E, O, A, and C

Each of the five factors encompasses a number of more specific traits, or facets. The NEO-PI-R measures six facets in each of the five factors. An examination of the facet scores provides a more detailed picture of the distinctive way that these factors are seen in this person.

Neuroticism. This individual is perceived as being anxious, generally apprehensive, and prone to worry. She often feels frustrated, irritable, and angry at others, but she has only the occasional periods of unhappiness that most people experience. Embarrassment or shyness when dealing with people, especially strangers, is often a problem for her. She is described as being poor at controlling her impulses and desires and she is unable to handle stress well.

Extraversion. This person is rated as being somewhat formal and distant in her relationships with others, but she usually enjoys large and noisy crowds or parties. She is seen as being forceful and dominant, preferring to be a group leader rather than a follower. The individual is described as having a high level of energy and likes to keep active and busy. Excitement, stimulation, and thrills have great appeal to her, and she frequently experiences strong feelings of happiness and joy.

Openness. In experiential style, this individual is described as being generally open. She has a vivid imagination and an active fantasy life. She is particularly responsive to beauty as found in music, art, poetry, or nature,

and her feelings and emotional reactions are varied and important to her. She enjoys new and different activities and has a high need for variety in her life. She has a moderate level of intellectual curiosity and she is generally liberal in her social, political, and moral beliefs [as shown in her defense of the rights of Native Americans].

Agreeableness. According to the rater, this person tends to be cynical, skeptical, and suspicious, and has a low opinion of human nature. She is described as being willing at times to flatter or trick people into doing what she wants, and she tends to put her own needs and interests before others'. This individual can be very competitive and is ready to fight for her views if necessary. She is described as quite proud of herself and her accomplishments, and happy to take credit for them. Compared to other people, she is hard-headed and tough-minded, and her social and political attitudes reflect her pragmatic realism.

Conscientiousness. This individual is perceived as being reasonably efficient and generally sensible and rational in making decisions. She is described as moderately neat, punctual, and well organized, but she is sometimes less dependable and reliable and more likely to bend the rules than she should be. She has a high aspiration level and strives for excellence in whatever she does. She finds it difficult to make herself do what she should, and tends to quit when tasks become too difficult. She is occasionally hasty or impetuous and sometimes acts without considering all the consequences.

Personality Correlates: Some Possible Implications

Research has shown that the scales of the NEO-PI-R are related to a wide variety of psychosocial variables. These correlates suggest possible implications of the personality profile, because individuals who score high on a trait are also likely to score high on measures of the trait's correlates.

The following information is intended to give a sense of how this individual might function in a number of areas. It is not, however, a substitute for direct measurement. If, for example, there is a primary interest in medical complaints, an inventory of medical complaints should be administered in addition to the NEO-PI-R.

Coping and defenses. In coping with the stresses of everyday life, this individual is described as being likely to react with ineffective responses, such as hostile reactions toward others, self-blame, or escapist fantasies. She is more likely than most adults to use humor and less likely to use faith in responding to threats, losses, and challenges. In addition, she is somewhat more likely to use positive thinking and direct action in dealing with problems. Her general defensive style can be characterized as maladaptive and self-defeating. She is more likely to present a defensive facade of superiority

than to be self-sacrificing. She may use such defense mechanisms as acting out and projection.

Somatic complaints. This individual may be somewhat oversensitive in monitoring and responding to physical problems and illnesses. She may sometimes exaggerate medical problems.

Psychological well-being. Although her mood and satisfaction with various aspects of her life will vary with the circumstances, in the long run this individual is likely to feel both joys and sorrows frequently and be moderately happy overall. Because she is open to experience, her moods may be more intense and varied than those of the average woman.

Cognitive processes. This individual is likely to be more complex and differentiated in her thoughts, values, and moral judgments than others of her level of intelligence and education. She would also probably score higher on measures of ego development. Because she is open to experience, this individual is likely to perform better than average on tests of divergent thinking ability; that is, she can generate fluent, flexible, and original solutions to many problems. She may be considered creative in her work or hobbies.

Interpersonal characteristics. Many theories propose a circular arrangement of interpersonal traits around the axes of Love and Status. Within such systems, this person would likely be described as arrogant, calculating, gregarious, sociable, and especially dominant and assured. Her traits are associated with high standing on the interpersonal dimension of Status.

Needs and motives. Research in personality has identified a widely used list of psychological needs. Individuals differ in the degree to which these needs characterize their motivational structure. This individual is likely to show high levels of the following needs: achievement, affiliation, aggression, change, dominance, exhibition (attention), play, sentience (enjoyment of sensuous and aesthetic experiences), succorance (support and sympathy), and understanding (intellectual stimulation). This individual is likely to show low levels of the following needs: abasement, cognitive structure, endurance (persistence), harm avoidance (avoiding danger), and nurturance.

Clinical Hypotheses: Axis II Disorders and Treatment Implications

The NEO-PI-R is a measure of personality traits, not psychopathology symptoms, but it is useful in clinical practice because personality profiles can suggest hypotheses about the disorders to which patients are prone and their responses to various kinds of therapy. This section of the NEO-PI-R Interpretive Report is intended for use in clinical populations only. The hypotheses it offers should be accepted only when they are supported by other corroborating evidence.

Psychiatric diagnoses occur in men and women with different frequencies, and diagnoses are given according to uniform criteria. For that reason,

information in this section of the Interpretive Report is based on Combined Sex norms.

Axis II disorders. Personality traits are most directly relevant to the assessment of personality disorders coded on Axis II of the DSM-IV. A patient may have a personality disorder in addition to an Axis I disorder, and may meet criteria for more than one personality disorder. Certain diagnoses are more common among individuals with particular personality profiles; this section calls attention to diagnoses that are likely (or unlikely) to apply.

Borderline Personality Disorder. The most common personality disorder in clinical practice is Borderline, and the mean NEO-PI-R profile of a group of patients diagnosed as having Borderline Personality Disorder provides a basis for evaluating the patient. Profile agreement between the patient and this mean profile is higher than 90% of subjects in the normative sample, suggesting that the patient may have Borderline features or a Borderline Personality Disorder.

Other personality disorders. Personality disorders can be conceptually characterized by a prototypic profile of NEO-PI-R facets that are consistent with the definition of the disorder and its associated features. The coefficient of profile agreement can be used to assess the overall similarity of the patient's personality to other DSM-IV personality disorder prototypes.

The patient's scores on N1: Anxiety, N2: Angry Hostility, E1: Warmth, E2: Gregariousness, E6: Positive Emotions, O2: Aesthetics, O3: Feelings, A1: Trust, A2: Straightforwardness, A4: Compliance, A5: Modesty, A6: Tender-Mindedness, and C1: Competence suggest the possibility of a Paranoid Personality Disorder. Paranoid Personality Disorder is rare in clinical practice; the patient's coefficient of profile agreement is higher than 99% of the subjects' in the normative sample.

The patient's score on N1: Anxiety, N3: Depression, N4: Self-Consciousness, N6: Vulnerability, E1: Warmth, E2: Gregariousness, O1: Fantasy, O3: Feelings, O5: Ideas, O6: Values, and A1: Trust suggest the possibility of a Schizotypal Personality Disorder. The patient's coefficient of profile agreement is higher than 95% of subjects' in the normative sample.

The patient's scores on N1: Anxiety, N2: Angry Hostility, N3: Depression, N5: Impulsiveness, E1: Warmth, E5: Excitement Seeking, A2: Straightforwardness, A3: Altruism, A4: Compliance, A6: Tender-Mindedness, C3: Dutifulness, C5: Self-Discipline, and C6: Deliberation suggest the possibility of an Antisocial Personality Disorder. The patient's coefficient of profile agreement is higher than 95% of subjects' in the normative sample.

The patient's scores on N2: Angry Hostility, N4: Self-Consciousness, N6: Vulnerability, E1: Warmth, E2: Gregariousness, E4: Activity, E5: Excitement Seeking, E6: Positive Emotions, O1: Fantasy, O3: Feelings, O4: Actions, O5: Ideas, A1: Trust, A2: Straightforwardness, A3: Altruism, C1: Competence,

and C5: Self-Discipline suggest the possibility of a Histrionic Personality Disorder. Histrionic Personality Disorder is relatively common in clinical practice; the patient's coefficient of profile agreement is higher than 90% of subjects' in the normative sample.

The patient's scores on N2: Angry Hostility, N3: Depression, N4: Self-Consciousness, O1: Fantasy, A2: Straightforwardness, A4: Compliance, A5: Modesty, and A6: Tender-Mindedness suggest the possibility of a Narcissistic Personality Disorder. Narcissistic Personality Disorder is relatively common in clinical practice; the patient's coefficient of profile agreement is higher than 90% of the subjects' in the normative sample.

It is unlikely that the patient has Schizoid Personality Disorder, Avoidant Personality Disorder, or Dependent Personality Disorder because the patient's coefficients of profile agreement are lower than 50% of the subjects' in the normative sample.

Treatment implications. Like most individuals in psychotherapy, this patient is high in Neuroticism. She is likely to experience a variety of negative emotions and to be distressed by many problems, and mood regulation may be an important treatment focus. Very high Neuroticism scores are associated with a poor prognosis and treatment goals should be appropriately modest.

Because she is extraverted, this patient finds it easy to talk about her problems, and enjoys interacting with others. She is likely to respond well to forms of psychotherapy that emphasize verbal and social interactions, such as psychoanalysis and group therapy.

This patient is open to experience, probably including the novel experience of psychotherapy. She tends to be introspective and psychologically-minded, and will probably be willing to try a variety of psychotherapeutic techniques. Free association, dream interpretation, and imaging techniques are likely to be congenial. Focusing on concrete solutions to problems may be more difficult for extremely open individuals.

The patient scores low on Agreeableness. She is therefore likely to be skeptical and antagonistic in psychotherapy, and reluctant to establish a treatment alliance until the therapist has demonstrated his or her skill and knowledge. Individuals with extremely low levels of Agreeableness are unlikely to seek treatment voluntarily, and may terminate treatment early.

Because the patient is low in Conscientiousness, she may lack the determination to work on the task of psychotherapy. She may be late for appointments and may have excuses for not having completed homework assignments. Some evidence suggests that individuals low in Conscientiousness have poorer treatment outcomes, and the therapist may need to make extra efforts to motivate the patient and structure the process of psychotherapy.

Stability of the Profile

Research suggests that the individual's personality profile is likely to be stable throughout adulthood. Barring catastrophic stress, major illness, or therapeutic intervention, this description will probably serve as a fair guide even in old age.

Questions to Ponder

How much confidence would you place in this informant rating as a basis for understanding the client and her problems? If a self-report was not available, what steps would you take to increase your confidence? The low Agreeableness (A) and Conscientiousness (C) scores of this client suggest that there will be resistance to therapy. What are the client's strengths, and how could you use them to engage the client in psychotherapy? Which kinds of psychotherapy would you select for Madeline G; which would you avoid?

Summary

The NEO inventories were originally developed at a time when "normal" and "abnormal" were thought to represent categorically distinct forms of

Key Points to Remember

- The NEO inventories operationalize the scientifically rigorous Five-Factor Model.
- The NEO-PI-R and NEO-PI-3 provide detailed information on 30 facets; the brief NEO-FFI-3 gives an overview of the five factors; both are suitable for ages 18 and up.
- Both self-report and observer rating versions are available, and studies show convergence as well as different perspectives.
- The NEO-PI-3, which is more readable, is suitable for ages 12 and up.
- The NEO Software System administers, scores, and interprets NEO inventories.
- NEO-PI-3 and NEO-PI-R facet scales predict *DSM* personality disorders and can alert clinicians to likely problems in living.
- NEO inventories are used around the world in over 40 authorized translations; they are appropriate for minority and ethnic groups in North America.
- Unlike most clinical measures, the NEO inventories avoid the use of validity scales because their utility is suspect.
- Personality feedback can be offered in a brief summary or in a more extended computer report.
- NEO inventories facilitate the use of informant reports as substitutes for or supplements to self-reports in clinical practice.
- Assessment with the NEO-PI-R can help clinicians develop empathy, identify strengths and weaknesses, anticipate the course of therapy, and select optimal treatment methods.

psychological functioning. As a result, the use of the NEO inventories in clinical practice was initially a matter of some controversy (Ben-Porath & Waller, 1992). Now, in large part because of research on the FFM, it is widely recognized that personality traits characterize all people and that the general traits assessed by the NEO inventories are not only relevant to but essential for an understanding of psychological functioning in clinical populations. The NEO-PI-R and NEO-PI-3, in particular, have become a standard part of clinical assessment (McCrae, Harwood, & Kelly, 2011). Informant ratings on Form R of the instrument are so far underutilized by clinicians but have great promise as a new tool for routine assessment (Singer, 2005).

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Multiple Choice Questions

1. For which population is the self-report Form S of the NEO-PI-R unsuitable?
   A. Acutely depressed clients.
   B. Adolescents younger than 18.
   C. Hmong-Americans.
   D. Demented patients.
2. Correlations between Form S and Form R of the NEO-PI-R show that
   A. Cross-observer agreement is substantial but not perfect.
   B. Agreement is found only in individualistic cultures, not collectivistic cultures like China.
   C. Self-reports are more flattering than observer ratings.
   D. Only observable traits, like Extraversion, show cross-observer agreement.
3. The NEO-PI-3 is a modification of the NEO-PI-R that
   A. Is shorter.
   B. Is more readable.
   C. Assesses only the 3 clinically-relevant factors.
   D. Is for use only by adolescents.
4. Which of the following is *not* provided by the Computer Interpretive Report?
   A. A description of the client's personality traits.
   B. Clinical hypotheses about possible personality disorders.
   C. DSM-IV diagnoses.
   D. Indicators of protocol validity.
5. Cross-cultural studies show that
   A. The FFM structure of personality is universal.
   B. The NEO-PI-R must be administered in the client's native language.
   C. Americans are more introverted than Asians.
   D. Scalar equivalence is lost in translation.
6. The NEO-PI-R does not have social desirability scales because
   A. They were developed by Schinka et al.
   B. Their use threatens the treatment alliance.
   C. There is little evidence that they work as intended.
   D. The instrument is already too long.

7. The observer rating Form R is especially useful
   A. When the client is mentally incapacitated.
   B. As a supplement to Form S.
   C. When there is reason to believe self-reports would be deliberately distorted.
   D. All the above.
8. Feedback on personality scores
   A. Is appropriate only for normal volunteers.
   B. Must be at a very broad and superficial level.
   C. Can be an important part of therapy.
   D. Has no role in couples therapy.
9. Research on the clinical use of the NEO Inventories shows that
   A. Personality traits are related to Axis II disorders, but not Axis I disorders.
   B. The NEO-PI-R adds nothing to standard clinical assessments.
   C. Attention deficit/hyperactivity disorder is chiefly predicted by low Openness.
   D. High Conscientiousness predicts increases in manic symptoms in bipolar disorder patients.
10. NEO-PI-R scores are helpful to the clinician in
    A. Identifying strengths as well as weaknesses.
    B. Developing empathy.
    C. Selecting the optimal form of treatment.
    D. All the above.

Essay Questions

1. Questionnaires like the NEO-PI-R are subject to conscious distortion and bias. What can the clinician do to optimize the accuracy of test results when using such instruments?
   [Response ought to include the following: (a) validity indicators should be considered, but not necessarily used to discard protocols; (b) self-reports can be supplemented by observer ratings from an informed and impartial observer; (c) the clinician should encourage the cooperation of the client by explaining the need for accurate assessments, ensuring confidentiality, and perhaps offering feedback; (d) the accuracy of all assessments should be considered and reconsidered in light of interactions with the client and all other available information.]
2. At your first session with a new client, the NEO-PI-R suggests that her most distinctive traits are high O and low E. How do you anticipate that your interactions with the client will go, and what does this information suggest about the best approaches to therapy?
   [Response should include (a) it may take a few sessions for the client to warm up to the therapist; (b) structured therapies may be preferred over open-ended talking; (c) novel and imaginative forms of therapy may intrigue the client; (d) depending on the specific problems associated with low E, the client might benefit from assertiveness or other social skills training.]