

The Place of the FFM in Personality Psychology

Robert R. McCrae

Baltimore, Maryland

For readers not familiar with the history of Jack Block and the Five-Factor Model (FFM), it may help to put the target article in perspective. In 1995, Block published his long-awaited (and, by some, dreaded) critique of the FFM in *Psychological Bulletin*. It was widely read—Google Scholar lists more than 700 citations—and was followed by a second critique 5 years later (Block, 2001). However, neither of these articles persuaded the scientific community to abandon the FFM (John, Naumann, & Soto, 2008), because in the past 15 years supportive data from many disciplines—including developmental psychology (Kohnstamm, Halverson, Mervielde, & Havill, 1998), psychopathology (Clark & Livesley, 2002), and behavior genetics (Yamagata et al., 2006)—and from samples around the world (Schmitt et al., 2007; Terracciano et al., 2005) have supported the model's utility. Block's efforts to halt the FFM "bandwagon" (Block, 1995, p. 209) failed.

But the past 15 years have also seen greater efforts to understand the FFM as a structural model of traits and as an element in the functioning personality system. These efforts surely owe something to Block's prodding; one hopes that his last contribution to this debate will continue to stimulate creative thinking and rigorous research in these areas.

Although Block raises an extraordinarily wide range of issues in the target article, I believe that most of them can be understood in terms of three basic contentions: (a) The methods used to discover and confirm the FFM structure are deficient, (b) the FFM does not exhaust the range of important individual differences, and (c) the FFM does not adequately account for the dynamic processes that shape behavior and experience on an ongoing basis. I argue that his first point is anachronistic—the FFM has now proven itself despite any early deficiencies—but that his second and third points are legitimate, and help define the place of the FFM in personality psychology as a whole.

Discovery and Verification of the FFM Structure

If, as the story goes, Newton had discovered the law of universal gravitation by watching an apple fall, we

would not now question that law because the initial sample of matter was small and unrepresentative, and its motion was crudely quantified. In the same way, the fact that McCrae and Costa (1985) first encountered the FFM in analyses of English-language trait adjectives administered to highly educated laypersons is irrelevant to an assessment of the FFM today. It has now been found in a wide variety of languages (McCrae, Terracciano, & 78 Members of the Personality Profiles of Cultures Project, 2005), in many different instruments (McCrae, 1989), and in broadly representative samples (Costa et al., 2007; Löckenhoff et al., 2008).

Block (this issue) seems particularly concerned with the potential inadequacies of lay assessments of personality, whether self-reports or observer ratings. It is certainly the case that both of these methods are subject to biases and limitations, although agreement across them—despite their limitations—is strong evidence for the consensual validation of FFM traits (McCrae et al., 2004). When he was preparing his first critique (Block, 1995), it was perhaps reasonable to doubt that the factors derived from lay ratings of natural language terms would match those found when panels of experts assessed personality with scientific tools. Lanning's (1994) study, however, should have resolved that doubt. Lanning factored ratings of nearly 1,000 targets made by from five to eight trained psychologists using Block's own instrument—the California Adult Q-Sort (CAQ; Block, 1961)—to quantify personality.

I agree with Block (this issue) that the Lanning (1994) study certainly deserves greater attention. Lanning's conclusion, in brief, was that "the 5 personality factors are important yet not exhaustive in accounting for common factor variance in the CAQ" (p. 151). Using a variety of statistical criteria, he examined from 5 to 15 factors (from the 100 CAQ items). The first 5 factors accounted for 54% of the total variance, with only an additional 16% added by the next 10 factors together. Lanning interpreted the largest factors as Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness, and reported correlations (of factor weights) from .62 to .88 with factors previously reported by McCrae, Costa, and Busch (1986) in their analyses of self-reports on the CAQ.¹ These findings

¹For the record, and as stated in the original article (McCrae et al., 1986), respondents completed the CAQ during a visit to the

demonstrate, first, that most of the variance in Block's CAQ is captured by the FFM factors and, second, that personality judgments by professional psychologists have essentially the same structure as those of laypersons. (I return in the next section to Lanning's other point: The five factors do not exhaust valid variance in personality.)

Block asks for evidence of the FFM from techniques other than factor analysis. Factor analysis is widely used precisely because it is designed to look for structure among groups of variables. However, some alternative methods have been used, and have indeed yielded the FFM. An inverse factor analysis (i.e., an analysis of persons rather than variables) of CAQ data from more than 1,500 self-sorts showed the same five factors as are found in conventional factor analysis (McCrae, Terracciano, Costa, & Ozer, 2006). In another study, lay judges (unfamiliar with the FFM) were given 30 adjectives and asked to divide them into groups of related traits—in effect, they were asked to conduct an intuitive cluster analysis (Sneed, McCrae, & Funder, 1998). Most judges approximated the FFM rather well.

I suspect Block would object that that study was “rigged”: The 30 adjectives were preselected to be clear markers of the five factors. A better test of the comprehensiveness of the FFM would employ variables selected by researchers with other perspectives. In this respect, perhaps the strongest test of the FFM was reported by Markon, Krueger, and Watson (2005), who used meta-analysis to assemble a synthetic correlation matrix that included variables from the three-factor model of Eysenck (Eysenck & Eysenck, 1975), the seven-factor model of Cloninger (Cloninger, Przybeck, Svrakic, & Wetzel, 1994), Tellegen's (1982) normal personality traits, and Livesley and Jackson's (in press) maladaptive personality traits, as well as the FFM (Costa & McCrae, 1992). Markon and colleagues examined a series of factor structures but found that a five-factor solution was suggested by parallel analysis and by replication with factors found in a second analysis including different measures. These five factors clearly corresponded to the FFM and were strongly marked by the five domain scales of the NEO Inventories.

The Scope of the FFM

Just as *stable* does not mean *immutable* (Costa & McCrae, 2006), *comprehensive* does not mean *exhaustive*. It is worth considering exactly how “large in scope

Gerontology Research Center, under the supervision of a psychology technician. Incidentally, the 30° hand rotation of the Extraversion and Agreeableness factors in that study was subsequently supported by Varimax rotations in Lanning's (1994) expert data and in a later and larger sample of self-sorts (McCrae et al., 2006).

or content” (Morris, 1976, p. 274)—a dictionary definition of *comprehensive*—the FFM is. Block (this issue) takes pains to point out variables he thinks lie beyond the range of the FFM, such as physical attractiveness, principled reasoning, and manipulateness. In one respect he is correct: The FFM is not, and could never be, an exhaustive catalogue of individual differences; people differ in myriad ways that are potentially of interest to personality psychologists. Figure 1 sketches a simple taxonomy of individual differences that may help clarify the scope of the FFM.

At the broadest level, we can distinguish psychological variables from extrapsychological variables. The latter include sex, age, race, health status, physical attributes and attractiveness, athletic ability, wealth, social status, nationality, and so on. Such variables are crucially important to any individual's life, but they are biomedical or sociocultural rather than strictly psychological in their origins and essence. Of course, these variables are related to psychological variables, including the FFM, in various ways. Age and gender affect trait levels (McCrae et al., 2005); personality traits affect health habits and ultimately longevity (Terracciano & Costa, 2004; Weiss & Costa, 2005); wealth affects the *attribution* of personality traits (Fiske, Cuddy, Glick, & Xu, 2002). Most psychologists, however, would consider these variables causes or correlates of personality traits, not traits themselves.

In the language of Five-Factor Theory (McCrae & Costa, 2008b), psychological individual differences can be subdivided into *adaptations* and *tendencies*. Adaptations are concrete, contextualized characteristics that are acquired in a particular time and place. Mastery of chess, fondness for Thai cuisine, loyalty to one's alma mater are such variables. Like extrapsychological variables, adaptations may be personally or socially important—international organizations track individual differences in chess prowess—and they often are shaped by personality traits: More open individuals are more likely to try foreign foods. But they are not, in themselves, traits, and one would not expect them to be explained or subsumed by the FFM.

Tendencies refer to more basic, abstract ways of living that are part of human nature, and thus found in all cultures and at all times. Traditionally, they have been divided into *abilities*, of which general intelligence, *g*, is the broadest measure, and *dispositions*. (I concur with Block, this issue, that intelligence should be distinguished from Openness, although they are modestly correlated.) Operationally, the distinctive feature of abilities is that their tests, unlike personality measures, have correct answers. If, like Cattell (Cattell, Eber, & Tatsuoka, 1970), one includes intelligence among personality traits, then the domain of the personality sphere corresponds to *tendencies*. However, I believe that most psychologists implicitly identify personality

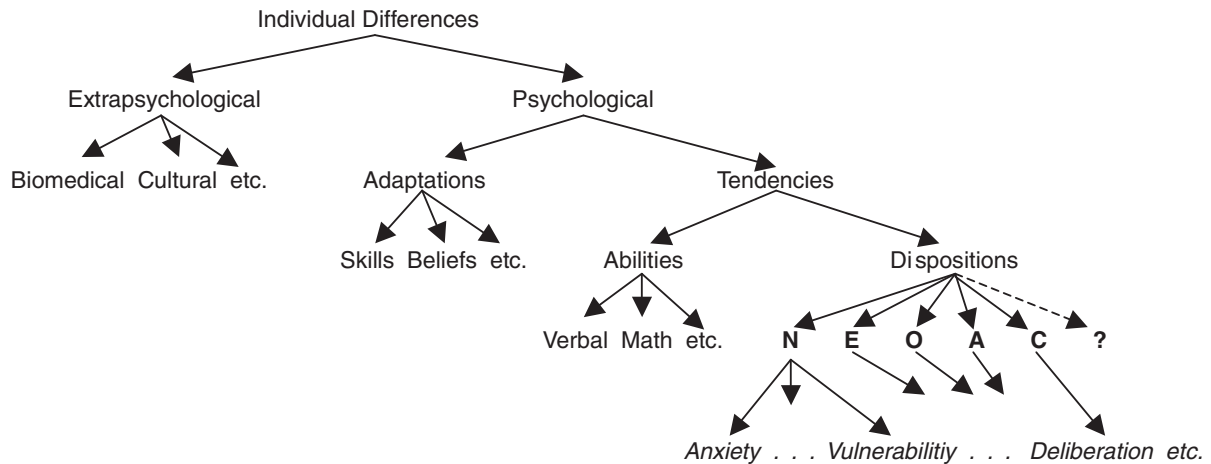


Figure 1. Sketch of a taxonomy of individual differences.

traits more narrowly with *dispositions*. Even those who identify the fifth lexical factor as Intellect (e.g., Goldberg, 1992) do not propose assessing it with an intelligence test.

Dispositions themselves are hierarchically organized, with broad traits (or factors, or domains) at a higher level, and narrow and specific traits (or facets) at a lower level. In Figure 1 I have illustrated the lower level with examples from the NEO Inventories (McCrae & Costa, in press), although I do not claim that this is the only specification of narrow personality traits.

With this taxonomy in place, we can return to the question of the comprehensiveness of the FFM. It should be clear immediately that the FFM does not purport to be a comprehensive taxonomy of individual differences, but only of dispositions, that is, personality traits. Within this taxon, the claim that the FFM is comprehensive does not mean that the five factors themselves exhaust all trait variance, only that they summarize the variance *common to* groups of specific traits (cf. O'Connor, 2002).

Facet-level traits contain two kinds of valid variance: common and specific. Anxiety and vulnerability, for example, are correlated, and both are related to other facets such as angry hostility and self-consciousness. What these traits have in common, what accounts for their covariation, is Neuroticism. However, if anxiety and vulnerability were nothing more than interchangeable markers of Neuroticism, there would be no purpose in assessing both. In fact, they are distinguishable traits, each also including some valid specific variance. Statistically, the specific variance can be examined by creating residual scores from which the five broad factors have been partialled. McCrae and Costa (1992; see also Costa & McCrae, 2008) showed cross-observer agreement on residuals for NEO facet

scales, as Lanning (1994) did for CAQ items. Jang, McCrae, Angleitner, Riemann, and Livesley (1998) showed that residuals were reliable and heritable, and other studies have shown that facet scales have incremental validity over the five factors in the prediction of behaviors (Paunonen & Ashton, 2001) and psychopathology (Reynolds & Clark, 2001).

This is one good reason to distinguish the hierarchical FFM, defined by both factors and facets, from the *Big Five*. The latter refers to five broad variables, and I agree with Block (and Lanning, 1994) that these five variables themselves do not exhaust valid personality trait variance. When researchers control for measures of the Big Five to demonstrate the incremental validity of their constructs (e.g., Stillman et al., 2010), they have not yet shown that their measures contribute beyond the FFM, because the FFM also includes facet-level traits.

From the taxonomy presented in Figure 1, two questions remain about the comprehensiveness of the FFM. The first is whether additional factors are needed at the level of the Big Five. This is indicated in Figure 1 by a question mark. Piedmont (1999) made a case for spirituality, but some aspects of spirituality are related to Openness (McCrae, Herbst, & Costa, 2001; Saroglou, 2010), and other aspects, particularly spiritual practices such as meditation, may better be regarded as adaptations than as tendencies. Ashton and colleagues (2004) argued that when natural language adjectives are factored, there is often evidence for an Honesty/Humility factor as well as an Agreeableness factor; but these two are combined in the FFM Agreeableness factor.² Cheung and colleagues (2001) have

²Block cites Paunonen and Jackson (2000) as claiming that *honest and ethical* and *manipulative and sly* are traits missing from the lexical Big Five. They are, however, assessed by the Straightforward-

proposed a sixth, interpersonal relatedness factor, but it might be explained as a result of acquiescent responding (McCrae et al., 2001); when five-factor solutions are examined they show that the interpersonal relatedness scales are all related to familiar FFM factors (McCrae & Costa, 2008b). Masculinity/femininity can have various meanings, some of which, like instrumentality versus expressiveness (Bem, 1974), fit well within the FFM. However, Lippa's (2005) gender diagnosticity, based chiefly on masculine versus feminine interests, is a possible sixth factor. The interests themselves (e.g., in mechanics or flower arranging) would certainly be classified in Figure 1 as adaptations, but they might be related to a more abstract disposition. Or perhaps, because these indicators of gender diagnosticity seem unusual as personality traits, *masculinity/femininity* should be added as another subclass of tendencies, alongside abilities and dispositions. For now, the five factors of the FFM are clearly necessary, and perhaps sufficient, at this level of the hierarchy.

At the lowest level of the taxonomy, the facet level, there are several possible issues. Claiming additional factors at the level of the Big Five might imply that there are sets of facets that do not appear in common personality inventories (Markon et al., 2005) or natural language adjectives, but that should be added to our list of personality traits. I argued earlier that no strong case has yet been made for that. A more limited and plausible claim is that there are trait *isolates*: Specific dispositions unrelated to either the five factors or any other trait.³ For example, Lanning (1994) reported that CAQ Item 89, "compares self to others," has no substantial loading (>.35) on any of the FFM factors or on his CAQ Factors VI to VIII. Conceivably, this is an important trait that is omitted by the FFM. A fully exhaustive account of personality traits would need to identify all such trait isolates and document their causes and correlates.

Finally, questions remain about how best to facet the familiar five factors. In principle, the FFM encompasses all specific personality traits related to one or more of the five factors: All the traits assessed by the scales in Markon and colleagues' (2005) analysis, by (most of) the items in the CAQ, by thousands of trait descriptive adjectives. Pragmatically, however, psychologists would like to have a manageable number of facet-level traits that are nonredundant, personally important, and collectively "large in scope."

Currently, the most widely used system of facets (e.g., McCrae, 2009; Terracciano et al., 2005) are those of the NEO Inventories. Those facets were identified

rationally and confirmed through item factor analyses (e.g., Costa, McCrae, & Dye, 1991). In making their selection of facets, Block (this issue) comments that Costa and McCrae "appear to have relied on their own subjective understandings of the personality literature as supplemented by their own dyadic decisions" (p. 14). This, I suppose, is a fair characterization of the process, as long as the reader recognizes that the key phrase here is "the personality literature." Costa and McCrae certainly did not invent the constructs of anxiety or assertiveness or achievement striving. Instead, they considered a broad range of concepts that had evolved across decades of research and theorizing in personality psychology (see Costa & McCrae, 1980, 1995; Costa et al., 1991).

Roberts and colleagues (Roberts, Bogg, Walton, Chernyshenko, & Stark, 2004; Roberts, Chernyshenko, Stark, & Goldberg, 2005) have argued that the definition of facets should be strictly empirical, circumventing the subjective judgments of individual researchers. Unfortunately, the Conscientiousness facets they derived from lexical analyses did not directly match those they derived from analyses of questionnaires (McCrae & Costa, 2008a); to date, there is no consistent, purely empirical basis for identifying facets. The 30 NEO facets are not likely to be the ideal specification of lower level traits, but for now they are a serviceable one, with known reliability, validity, and utility (McCrae & Costa, in press).

The Study of Personality Processes

The title of my commentary alludes to a famous critique of the FFM that predates Block's. In 1992, McAdams argued that the FFM might be a useful taxonomy of traits, but that there was more to personality than traits. McAdams and colleagues (McAdams, 1996; McAdams & Pals, 2006) later expanded this insight to develop a broad framework for conceptualizing and studying personality. McCrae and Costa (1996, 2008b) also offered a scheme—Five-Factor Theory (FFT)—that put the FFM into the context of a functioning personality system. I agree with Block (this issue) that the FFM itself is atheoretical, a static and descriptive model of trait structure. But I believe many of Block's criticisms can be answered from the broader perspective of FFT.

In brief, FFT states that personality is a system situated between biological and social-cultural inputs and that its major components are basic tendencies (especially the FFM) and characteristic adaptations (habits, attitudes, roles, etc.)—the distinction employed in Figure 1. The operation of personality occurs chiefly through two kinds of processes: (a) over time, traits interact with the environment to create characteristic adaptations, and (b) at any given moment, character-

ness facet of the NEO Inventories, which is a definer of the FFM Agreeableness factor.

³Linguists use the term *isolate* to refer to languages such as Korean that cannot be classified into any known language family. Clearly, some isolates merit considerable attention.

istic adaptations interact with the environment to produce behaviors and experiences. For example, an extravert may (a) learn how to use Internet technologies to broaden her social contacts; once learned, she (b) employs these skills to chat, blog, and send tweets. Block (2001) took some notice of FFT in his second critique but was not much impressed, stating that “no sense is provided of the specific dynamics of personality” (p. 105). Perhaps if we had labeled process (a) as *accommodation* and process (b) as *assimilation* (for that, in essence, is what they are) our theory would have had more resonance for Block.

Block (this issue) is concerned that the FFM does not consider the consequences of traits as they function in daily life, and he distinguishes between cumulative and differential scales. I find these terms confusing, but it appears that Block wishes to make the claim that the adaptive value of traits may be curvilinear: Both high and low scores on FFM dimensions may be maladaptive. That is a common view among students of personality disorders, which are sometimes viewed as extreme and inflexible traits. Costa and McCrae (2005) took a somewhat different view: They argued that traits in themselves are neither adaptive nor maladaptive but that they can sometimes lead to the development of characteristic maladaptations and associated problems in living. The particular problems to which people are prone depend on their trait levels, and both high and low scorers have characteristic problems (Widiger, Costa, & McCrae, 2002). For example, individuals who score high on Agreeableness may be gullible and fall into dependent relationships in which they are exploited; those who score low on Agreeableness may alienate their acquaintances through rude and condescending behavior.

Note, however, that trait levels in themselves are not necessarily maladaptive: Many highly agreeable people find marital bliss, and some very disagreeable people manage to get themselves elected president of the United States (McCrae, Yang, et al., 2001). Rather than create double-barreled scales that confound the assessment of traits with their adaptive evaluation, it seems better to assess these separately and use FFT to understand how they are related.

Block (this issue) seconds Loevinger’s (1994) view that the FFM fails to address the crucially important issue of conscience, which Block describes as “principled concern by the individual with what is right and what is wrong” that requires a “developed inner life” (p. 13). From the perspective of FFT, such a highly evolved conscience is a characteristic adaptation, most likely to emerge in individuals who are concerned with philosophical questions—that is, high in Openness (Lonky, Kaus, & Roodin, 1984; McCrae & Costa, 1980). Those who are also high in Neuroticism (like Marcus Aurelius; see Crook, 1993; McCrae, 1999) are likely to be plagued by feelings of guilt when they

compare their actions to their ethical principles; those who are also high in Conscientiousness (like Horatio Nelson; see Costa & McCrae, 1998) are likely to put their principled beliefs into practice. Conscience is not itself a part of the FFM but an understanding of conscience and its role in the life of the individual requires a consideration of FFM traits.

Conscience is a good example of another phenomenon that Block touches on: The joint or interactive effects of traits. As he says, “It is the complex *interplay* of the various personality dimensions . . . (conjoined with the situational context) that truly expresses the nature of an individual” (p. 6). I would not dispute that claim. Openness, Neuroticism, and Conscientiousness all contribute to the origin and operation of conscience.⁴ In case studies of individuals, a skilled interpreter shows how traits interweave. Horatio Nelson, for example, occasionally disobeyed orders of battle (Vincent, 2003). This may seem strange conduct for one usually cited as a paragon of dutifulness, but Nelson was sufficiently high in Openness to decide for himself where his duty lay. His higher loyalty was to victory for the British, and he was low enough in modesty to assume he knew better than the admirals how to win a battle at sea (usually he was right).

Moving from an idiographic account to a nomothetic treatment of the interplay of factors poses problems of complexity. Even at the level of the five factors, there are 10 pairs, 10 triplets, and 5 quarduplets of factors that might need to be considered together; the number of combinations of 30 facets (435 pairs, 4,060 triplets, etc.) is staggering. However, Costa and Piedmont (2003) have taken a step in this direction by introducing NEO Style Graphs that call attention to particular combinations of the 10 pairs of factors relevant to specific areas of life. For example, both Openness and Conscientiousness affect educational attitudes and behaviors, and in combination they define four Styles of Learning. People with these styles are labeled—in lay language, to facilitate feedback—Good Students (O+, C+), whose intellectual interests and strong motivation may make them particularly suited for independent study; By-the-Bookers (O-, C+), who follow instructions and stick to assigned tasks; Reluctant Scholars (O-, C-), who may need special incentives, because they lack both intrinsic interest and natural self-discipline; and Dreamers (O+, C-), who drift from one fascinating topic to another but may not master any of them. Of course, if these styles are to be used in educational settings, research will be needed to demonstrate that the conceptual mappings have pragmatic utility (Pashler, McDaniel, Rohrer, & Bjork, 2008).

⁴Agreeableness, too, may be involved in preferring ethical principles of mercy and forgiveness over those of justice.

Research will always be needed. I believe one of the things Block found most disturbing about the FFM was the notion that it was The Answer to all the questions of personality psychology. Of course it is not; it is at best what Norman (1963) hoped for: an adequate taxonomy of personality traits. Block was exquisitely sensitive to the nuances, complexities, and temporal evolution of human personality. I hope that the FFM and FFT can be useful tools in the kind of intense and continuing exploration of lives through time he would endorse.

Note

Address correspondence to Robert R. McCrae, 809 Evesham Avenue, Baltimore, MD 21212, USA. E-mail: RRMcCrae@gmail.com

References

- Ashton, M. C., Lee, K., Perugini, M., Szarota, P., De Vries, R. E., Di Blass, L., et al. (2004). A six-factor structure of personality descriptive adjectives: Solutions from psycholexical studies in seven languages. *Journal of Personality and Social Psychology, 86*, 356–366.
- Bem, S. L. (1974). The measurement of psychological androgyny. *Journal of Consulting and Clinical Psychology, 42*, 115–162.
- Block, J. (1961). *The Q-sort method in personality assessment and psychiatric research*. Springfield, IL: Thomas.
- Block, J. (1995). A contrarian view of the five-factor approach to personality description. *Psychological Bulletin, 117*, 187–215.
- Block, J. (2001). Millennial contrarianism: The five-factor approach to personality description 5 years later. *Journal of Research in Personality, 35*, 98–107.
- Cattell, R. B., Eber, H. W., & Tatsuoka, M. M. (1970). *The handbook for the Sixteen Personality Factor Questionnaire*. Champaign, IL: Institute for Personality and Ability Testing.
- Cheung, F. M., Leung, K., Zhang, J.-X., Sun, H.-F., Gan, Y.-Q., Song, W.-Z., et al. (2001). Indigenous Chinese personality constructs: Is the Five-Factor Model complete? *Journal of Cross-Cultural Psychology, 32*, 407–433.
- Clark, L. A., & Livesley, W. J. (2002). Two approaches to identifying dimensions of personality disorder: Convergence on the Five-Factor Model. In P. T. Costa, Jr. & T. A. Widiger (Eds.), *Personality disorders and the Five-Factor Model of personality* (2nd ed., pp. 161–176). Washington, DC: American Psychological Association.
- Cloninger, C. R., Przybeck, T. R., Svrakic, D. M., & Wetzel, R. D. (1994). *The Temperament and Character Inventory (TCI): A guide to its development and use*. St. Louis, MO: Author.
- Costa, P. T., Jr., & McCrae, R. R. (1980). Still stable after all these years: Personality as a key to some issues in adulthood and old age. In P. B. Baltes & O. G. Brim, Jr. (Eds.), *Life span development and behavior* (Vol. 3, pp. 65–102). New York: Academic Press.
- Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.
- Costa, P. T., Jr., & McCrae, R. R. (1995). Domains and facets: Hierarchical personality assessment using the Revised NEO Personality Inventory. *Journal of Personality Assessment, 64*, 21–50.
- Costa, P. T., Jr., & McCrae, R. R. (1998). Six approaches to the explanation of facet-level traits: Examples from Conscientiousness. *European Journal of Personality, 12*, 117–134.
- Costa, P. T., Jr., & McCrae, R. R. (2005). A Five-Factor Model perspective on personality disorders. In S. Strack (Ed.), *Handbook of personality and psychopathology* (pp. 257–270). Hoboken, NJ: Wiley.
- Costa, P. T., Jr., & McCrae, R. R. (2006). Age changes in personality and their origins: Comment on Roberts, Walton, & Viechtbauer (2006). *Psychological Bulletin, 132*, 26–28.
- Costa, P. T., Jr., & McCrae, R. R. (2008). The Revised NEO Personality Inventory (NEO-PI-R). In G. Boyle, G. Matthews, & D. Saklofske (Eds.), *Sage handbook of personality theory and assessment* (Vol. 2, pp. 179–198). Los Angeles, CA: Sage Publications.
- Costa, P. T., Jr., McCrae, R. R., & Dye, D. A. (1991). Facet scales for Agreeableness and Conscientiousness: A revision of the NEO Personality Inventory. *Personality and Individual Differences, 12*, 887–898.
- Costa, P. T., Jr., & Piedmont, R. L. (2003). Multivariate assessment: NEO-PI-R profiles of Madeline G. In J. S. Wiggins (Ed.), *Paradigms of personality assessment* (pp. 262–280). New York: Guilford.
- Costa, P. T., Jr., Terracciano, A., Uda, M., Vacca, L., Mameli, C., Pilia, G., et al. (2007). Personality traits in Sardinia: Testing founder population effects on trait means and variances. *Behavior Genetics, 37*, 376–387.
- Crook, J. A. (1993). Marcus Aurelius. In *The new encyclopedia Britannica* (Vol. 7, pp. 828–829). Chicago: Encyclopedia Britannica.
- Eysenck, H. J., & Eysenck, S. B. G. (1975). *Manual of the Eysenck Personality Questionnaire*. San Diego, CA: EdITS.
- Fiske, S. T., Cuddy, A. J. C., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology, 82*, 878–902.
- Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological Assessment, 4*, 26–42.
- Jang, K. L., McCrae, R. R., Angleitner, A., Riemann, R., & Livesley, W. J. (1998). Heritability of facet-level traits in a cross-cultural twin sample: Support for a hierarchical model of personality. *Journal of Personality and Social Psychology, 74*, 1556–1565.
- John, O. P., Naumann, L., & Soto, C. J. (2008). Paradigm shift to the integrative Big Five taxonomy: Discovery, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed., pp. 114–158). New York: Guilford.
- Kohnstamm, G. A., Halverson, C. F., Jr., Mervielde, I., & Havill, V. L. (Eds.). (1998). *Parental descriptions of child personality: Developmental antecedents of the Big Five?* Mahwah, NJ: Erlbaum.
- Lanning, K. (1994). Dimensionality of observer ratings on the California Adult Q-Set. *Journal of Personality and Social Psychology, 67*, 151–160.
- Lippa, R. A. (2005). *Gender, nature, and nurture* (2nd ed.). Mahwah, NJ: Erlbaum.
- Livesley, W. J., & Jackson, D. N. (in press). *Manual for the Dimensional Assessment of Personality Pathology*. Port Huron, MI: Sigma Press.
- Löckenhoff, C. E., Terracciano, A., Bienvu, O. J., Particiu, N. S., Nestadt, G., McCrae, R. R., et al. (2008). Ethnicity, education, and the temporal stability of personality traits in the East Baltimore Epidemiologic Catchment Area study. *Journal of Research in Personality, 42*, 577–598.
- Loevinger, J. (1994). Has psychology lost its conscience? *Journal of Personality Assessment, 62*, 2–8.

- Lonky, E., Kaus, C. R., & Roodin, P. A. (1984). Life experience and mode of coping: Relation to moral judgment in adulthood. *Developmental Psychology, 20*, 1159–1167.
- Markon, K. E., Krueger, R. F., & Watson, D. (2005). Delineating the structure of normal and abnormal personality: An integrative hierarchical approach. *Journal of Personality and Social Psychology, 88*, 139–157.
- McAdams, D. P. (1992). The Five-Factor Model in personality: A critical appraisal. *Journal of Personality, 60*, 329–361.
- McAdams, D. P. (1996). Personality, modernity, and the storied self: A contemporary framework for studying persons. *Psychological Inquiry, 7*, 295–321.
- McAdams, D. P., & Pals, J. L. (2006). A new Big Five: Fundamental principles for an integrative science of personality. *American Psychologist, 61*, 204–217.
- McCrae, R. R. (1989). Why I advocate the Five-Factor Model: Joint analyses of the NEO-PI and other instruments. In D. M. Buss & N. Cantor (Eds.), *Personality psychology: Recent trends and emerging directions* (pp. 237–245). New York: Springer-Verlag.
- McCrae, R. R. (1999). Mainstream personality psychology and the study of religion. *Journal of Personality, 67*, 1209–1218.
- McCrae, R. R. (2009). Personality profiles of cultures: Patterns of ethos. *European Journal of Personality, 23*, 205–227.
- McCrae, R. R., & Costa, P. T., Jr. (1980). Openness to experience and ego level in Loevinger's sentence completion test: Dispositional contributions to developmental models of personality. *Journal of Personality and Social Psychology, 39*, 1179–1190.
- McCrae, R. R., & Costa, P. T., Jr. (1985). Updating Norman's "adequate taxonomy": Intelligence and personality dimensions in natural language and in questionnaires. *Journal of Personality and Social Psychology, 49*, 710–721.
- McCrae, R. R., & Costa, P. T., Jr. (1992). Discriminant validity of NEO-PI-R facets. *Educational and Psychological Measurement, 52*, 229–237.
- McCrae, R. R., & Costa, P. T., Jr. (1996). Toward a new generation of personality theories: Theoretical contexts for the Five-Factor Model. In J. S. Wiggins (Ed.), *The Five-Factor Model of personality: Theoretical perspectives* (pp. 51–87). New York: Guilford.
- McCrae, R. R., & Costa, P. T., Jr. (2008a). Empirical and theoretical status of the Five-Factor Model of personality traits. In G. Boyle, G. Matthews, & D. Saklofske (Eds.), *Sage handbook of personality theory and assessment* (Vol. 1, pp. 273–294). Los Angeles, CA: Sage Publications.
- McCrae, R. R., & Costa, P. T., Jr. (2008b). The Five-Factor Theory of personality. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed., pp. 159–181). New York: Guilford.
- McCrae, R. R., & Costa, P. T., Jr. (in press). *Professional manual for the NEO Inventories: NEO-PI-3, NEO-PI-R, and NEO-FFI-3*. Odessa, FL: Psychological Assessment Resources.
- McCrae, R. R., Costa, P. T., Jr., & Busch, C. M. (1986). Evaluating comprehensiveness in personality systems: The California Q-Set and the Five-Factor Model. *Journal of Personality, 54*, 430–446.
- McCrae, R. R., Costa, P. T., Jr., Martin, T. A., Oryol, V. E., Rukavishnikov, A. A., Senin, I. G., et al. (2004). Consensual validation of personality traits across cultures. *Journal of Research in Personality, 38*, 179–201.
- McCrae, R. R., Herbst, J. H., & Costa, P. T., Jr. (2001). Effects of acquiescence on personality factor structures. In R. Riemann, F. Ostendorf, & F. Spinath (Eds.), *Personality and temperament: Genetics, evolution, and structure* (pp. 217–231). Berlin, Germany: Pabst Science.
- McCrae, R. R., Terracciano, A., Costa, P. T., Jr., & Ozer, D. J. (2006). Person-factors in the California Adult Q-Set: Closing the door on personality trait types? *European Journal of Personality, 20*, 29–44.
- McCrae, R. R., Terracciano, A., & 78 Members of the Personality Profiles of Cultures Project. (2005). Universal features of personality traits from the observer's perspective: Data from 50 cultures. *Journal of Personality and Social Psychology, 88*, 547–561.
- McCrae, R. R., Yang, J., Costa, P. T., Jr., Dai, X., Yao, S., Cai, T., et al. (2001). Personality profiles and the prediction of categorical personality disorders. *Journal of Personality, 69*, 121–145.
- Morris, W. (1976). *The American heritage dictionary of the English language*. Boston: Houghton Mifflin.
- Norman, W. T. (1963). Toward an adequate taxonomy of personality attributes: Replicated factor structure in peer nomination personality ratings. *Journal of Abnormal and Social Psychology, 66*, 574–583.
- O'Connor, B. P. (2002). A quantitative review of the comprehensiveness of the Five-Factor Model in relation to popular personality inventories. *Assessment, 9*, 188–203.
- Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008). Learning styles: Concepts and evidence. *Psychological Science in the Public Interest, 9*, 106–119.
- Paunonen, S. V., & Ashton, M. C. (2001). Big Five factors and facets and the prediction of behavior. *Journal of Personality and Social Psychology, 81*, 524–539.
- Paunonen, S. V., & Jackson, D. N. (2000). What is beyond the Big Five? Plenty! *Journal of Personality, 68*, 821–835.
- Piedmont, R. L. (1999). Does spirituality represent the sixth factor of personality? Spiritual transcendence and the Five-Factor Model. *Journal of Personality, 67*, 985–1013.
- Reynolds, S. K., & Clark, L. A. (2001). Predicting dimensions of personality disorder from domains and facets of the Five-Factor Model. *Journal of Personality, 69*, 199–222.
- Roberts, B., Bogg, T., Walton, K. E., Chernyshenko, O. S., & Stark, S. E. (2004). A lexical investigation of the lower-order structure of Conscientiousness. *Journal of Research in Personality, 38*, 164–178.
- Roberts, B. W., Chernyshenko, O. S., Stark, S. E., & Goldberg, L. R. (2005). The structure of Conscientiousness: An empirical investigation based on seven major personality questionnaires. *Personnel Psychology, 58*, 103–139.
- Saroglou, V. (2010). Religiousness as a cultural adaptation of basic traits: A Five-Factor Model perspective. *Personality and Social Psychology Review, 14*, 108–125.
- Schmitt, D. P., Allik, J., McCrae, R. R., Benet-Martínez, V., Alcalay, L., Ault, L., et al. (2007). The geographic distribution of Big Five personality traits: Patterns and profiles of human self-description across 56 nations. *Journal of Cross-Cultural Psychology, 38*, 173–212.
- Sneed, C. D., McCrae, R. R., & Funder, D. C. (1998). Lay conceptions of the Five-Factor Model and its indicators. *Personality and Social Psychology Bulletin, 24*, 115–126.
- Stillman, T. F., Baumeister, R. F., Vohs, K. D., Lambert, N. M., Fincham, F. D., & Brewer, L. W. (2010). Personal philosophy and personnel achievement: Belief in free will predicts better job performance. *Social Psychological and Personality Science, 1*, 43–50.
- Tellegen, A. (1982). *Brief manual for the Multidimensional Personality Questionnaire*. Unpublished manuscript. Minneapolis, MD: University of Minnesota.
- Terracciano, A., Abdel-Khalak, A. M., Adam, N., Adamová, L., Ahn, C.-k., Ahn, H.-n., et al. (2005). National character does not reflect mean personality trait levels in 49 cultures. *Science, 310*, 96–100.
- Terracciano, A., & Costa, P. T., Jr. (2004). Smoking and the Five-Factor Model of personality. *Addiction, 99*, 472–481.
- Vincent, E. (2003). *Nelson: Love and fame*. New Haven, CT: Yale University Press.

COMMENTARIES

- Weiss, A., & Costa, P. T., Jr. (2005). Personality predictors of cardiovascular disease and all-cause mortality. *Psychosomatic Medicine*, *67*, 715–723.
- Widiger, T. A., Costa, P. T., Jr., & McCrae, R. R. (2002). A proposal for Axis II: Diagnosing personality disorders using the Five-Factor Model. In P. T. Costa, Jr. & T. A. Widiger (Eds.), *Personality disorders and the Five-Factor Model of personality* (2nd ed., pp. 431–456). Washington, DC: American Psychological Association.
- Yamagata, S., Suzuki, A., Ando, J., Ono, Y., Kijima, N., Yoshimura, K., et al. (2006). Is the genetic structure of human personality universal? A cross-cultural twin study from North America, Europe, and Asia. *Journal of Personality and Social Psychology*, *90*, 987–998.

Copyright of Psychological Inquiry is the property of Taylor & Francis Ltd and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.