
Lay Conceptions of the Five-Factor Model and Its Indicators

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The five-factor model (FFM) of personality is implicit in lay conceptions of personality; this research sought to examine laypersons' explicit grasp of the model. In one study, undergraduates (N = 233) were given definitions of the five factors and asked to identify adjectives known to be associated with each. In a second study, the rated diagnosticity of behaviors in three contexts was compared with their actual correlation with self-reported and acquaintance-rated personality factors. In the final study, undergraduates (N = 76) grouped 30 adjectives into clusters of traits. Results suggest that most laypersons can easily grasp the nature of the factors and their behavioral manifestations and can spontaneously recognize their grouping when provided with clear exemplars.

Understanding personality is a fundamental social skill, and human beings have a wealth of knowledge about personality traits and their covariation. Although they may not be able to articulate a formal model of personality trait structure, laypersons apparently know a good deal about which traits go together. They are able, for example, to estimate the likelihood that an individual will have Trait A when told that he or she has Trait B (Hakel, 1969), and they seem to rely on this implicit understanding when making personality ratings of strangers (Passini & Norman, 1966).

Although more simplified structures are sometimes seen (Peabody, 1989), the implicit personality theory inferred from such studies usually resembles the Big Five or five-factor model (FFM) of trait structure proposed by personality researchers (Digman, 1990; McCrae & John, 1992). That fact was once used to support the argument that personality traits were mere cognitive fictions

(D'Andrade, 1965; Shweder & D'Andrade, 1980). The weight of evidence now suggests that traits exist and that implicit personality theory is better regarded as knowledge—a more or less accurate reflection of the structure of traits themselves (Borkenau, 1992; Funder & Sneed, 1993).

It would probably be fruitless to ask respondents to tell us directly what their conception of personality structure is. Organizing the mass of information on associations between individual traits into a compact structure is too difficult a conceptual task; indeed, explicit discovery of the FFM required decades of labor by personality psychologists and high-speed computers. It is possible, however, that individuals may be able to recognize the FFM if prompted by a small number of good exemplars. Given the terms *curious*, *talkative*, *imaginative*, *outgoing*, *original*, and *energetic*, for example, would the typical layperson perceive two clusters of related terms?

This question is of interest in part because personality psychologists are themselves human beings who inescapably bring their implicit personality theories into their professional work. In 1989, McCrae claimed that “once recognized, these five constructs appeared obvious, almost inevitable” (p. 237), but it has subsequently become

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clear that the FFM is not intuitively compelling to many psychologists (e.g., Block, 1995). Perhaps individual differences in implicit personality structure—if they exist—could account for different evaluations of the FFM.

Although different researchers use somewhat different labels, the factors are commonly known as Neuroticism (*N*), Extraversion (*E*), Openness (*O*), Agreeableness (*A*), and Conscientiousness (*C*). Of these, the least well understood is *O*, which has been called Culture (Norman, 1963), Intellect (Goldberg, 1990), Imagination (Saucier, 1992), and Openness to Experience (McCrae & Costa, 1985). An entire issue of the *European Journal of Personality* (De Raad & Van Heck, 1994) was devoted to the interpretation of this factor, without achieving much consensus. The difficulty may lie in the breadth of the factor and the relatively weak intercorrelation of its component traits (McCrae, 1993-1994), in the choice of factor labels, or in some inherent conceptual complexity that makes the construct difficult to grasp.

There is intriguing evidence that lay perceivers also have particular difficulty with this factor. Funder and Sneed (1993) reported that subjects could accurately identify behaviors associated with *N*, *E*, *A*, and *C* but not *O*. Despite being given a definition that stressed curiosity and unconventionality, lay perceivers "seemed to have other ideas about Openness, preferring to characterize it by behaviors . . . that involve a more social, interpersonal openness" (Funder & Sneed, 1993, p. 485). Funder and Sneed speculated that the label *Openness* might be the source of the problem.

In this article, we examine lay conceptions of the FFM in three studies. The first study asks if lay perceivers can grasp formal definitions of the factors that comprise the FFM; if so, they should be able to identify relevant trait adjectives. The second study, a partial replication of Funder and Sneed (1993), asks whether lay perceivers understand the concrete behaviors associated with defined factors; their judged associations are compared with observed correlations between behaviors and personality factors. The third study asks whether subjects can spontaneously generate clusters of adjectives that define the FFM, given 30 known markers of the factors. In the third study, analyses are conducted at both the group and the individual levels. Together, these studies provide information on how laypersons explicitly understand personality, especially openness to experience.

STUDY 1

The research tradition from which the FFM emerged emphasizes human rationality (McCrae & Costa, 1996). The meaning of adjective factors is determined, at least in the first place, by rational interpretation of the adjectives

themselves, and this practice presumes that lay respondents attend to and understand the meaning of the words. Whether they would also understand the constructs abstracted from groups of adjectives is another matter. John (1989) demonstrated such consensual understanding of the factors in highly trained subjects. He reviewed a series of studies on the FFM with nine students and then asked them to place each of the 300 items of Gough and Heilbrun's (1983) Adjective Check List (ACL) into one of the Big Five categories or a residual category. A total of 90% to 100% of the judges agreed on the placement of 112 items, indicating substantial agreement both across studies of the FFM and across trained judges.

In Study 1, we provided brief definitions of the factors to lay judges and asked if they could identify relevant adjectives. Because the adjectives chosen were a subset of the 112 items John's (1989) judges agreed on, this should have been a relatively simple task if nonpsychologists can form accurate conceptions of the FFM on the basis of one-paragraph descriptions. To test the hypothesis that confusions over the *O* factor were due to the factor label, a series of alternative labels was used.

Method

Subjects. Students (84 males, 149 females) from the University of California, Riverside, participated to fulfill a partial requirement for an introductory psychology course. The subjects' ages ranged from 17 to 43 ($M = 19$). The ethnic background of the subjects were 42.7% Asian, 35.3% White, 11.6% Latino, 3.9% African American, and 6.5% self-reporting as other. Most subjects were native English speakers, and all spoke English well enough to attend an English-language university.

Procedures. Nine separate groups of subjects ($ns = 24$ to 31) rated 30 trait adjectives as indicators of one (and only one) of the Big Five personality traits. For each group, the assigned factor was labeled and briefly explained using the definitions given in the NEO-PI manual (Costa & McCrae, 1985, p. 2). Subjects were then asked to rate each trait adjective as an indicator of the assigned factor on a scale from 6 (*is an excellent indicator of [the factor]*) to -6 (*is an excellent indicator of low [factor]*). These values were subsequently divided by 6, yielding scores between 1 and -1. Five different groups rated adjectives with respect to *O*; they were all given identical definitions of the factor, but different labels were used: *Openness to Experience*, *Openness*, *Intellect*, *Imagination*, and *Culture*. The adjectives were presented from each of the five factors in rotating order. The 30 adjectives rated were a subset of John's (1989) 112, selected by McCrae and John (1992) as clear exemplars of the factors.

TABLE 1: Mean Ratings From Nine Groups of the Indicateness of Each Trait for an Assigned Factor, Study 1

Adjective	Assigned Factor								
	<i>N</i>	<i>E</i>	<i>O^a</i>	<i>O^b</i>	<i>O^c</i>	<i>O^d</i>	<i>O^e</i>	<i>A</i>	<i>C</i>
Neuroticism									
Anxious	.68								
Self-pitying	.74	-.48			-.45		-.41		-.66
Tense	.78	-.57	-.46	-.49	-.41				
Touchy	.40								
Unstable	.75				-.47		-.47	-.49	-.70
Worrying	.75						-.42		
Extraversion									
Active	-.56	.79	.67	.64	.73	.63	.63	.44	.67
Assertive		.62	.45	.41	.65	.42	.50		.67
Energetic	-.52	.89	.62	.63	.70	.63	.54	.49	.65
Enthusiastic	-.57	.90	.64	.67	.68	.65	.59	.61	.62
Outgoing	-.62	.93	.81	.76	.59	.70	.65	.54	.57
Talkative	-.55	.90	.61	.69	.49	.55	.43		.40
Openness									
Artistic			.54	.52	.79	.74	.76		
Curious		.51	.71	.61	.77	.85	.74		
Imaginative			.71	.49	.81	.91	.67		
Insightful			.47		.55	.63	.64		.53
Original			.50	.44	.62	.55	.67		
Wide interests	-.42	.64	.84	.69	.86	.84	.80	.46	.59
Agreeableness									
Appreciative	-.58		.58	.49	.48		.52	.72	
Forgiving								.66	
Generous			.47	.47				.70	
Kind	-.44		.43					.73	
Sympathetic							.53	.71	
Trusting			.42	.40			.41	.68	.43
Conscientiousness									
Efficient	-.45				.53		.41		.81
Organized	-.48								.86
Planful									.78
Reliable	-.52							.64	.86
Responsible					.43			.43	.88
Thorough									.78

NOTE: *N*s = 24 to 31. All values greater than .40 in absolute magnitude are reported; the largest value in each row is in bold. *N* = Neuroticism; *E* = Extraversion; *O* = Openness; *A* = Agreeableness; *C* = Conscientiousness.

a. Openness to Experience.

b. Openness.

c. Intellect.

d. Imagination.

e. Culture.

Results and Discussion

Table 1 lists the 30 adjectives; each column represents the mean ratings of a single group. From one perspective, the data confirm the intelligibility to laypersons of the factor labels and definitions: In 29 of the 30 cases—the exception being *assertive*—the adjective had its highest rating on the factor to which it empirically belongs.¹ People clearly understand that *outgoing* is a good indicator of *E* and that *imaginative* is a good indicator of *O*.

Evidence for the ability of lay judges to discriminate among the five factors is not so clear. It appears from Table 1 that adjectives expressing *E* are considered to be indicative of the desirable poles of all five factors. This

problem appears to be particularly marked with respect to *O*. A comparison of column values shows that five of the *N* and *E* items and all six of the *A* and *C* items are among the six adjectives rated highest for that factor; by contrast, only 17 of the 30 highest rated indicators of *O* are taken from among the *O* adjectives; the rest are *E* adjectives. As in Funder and Sneed (1993), lay perceivers appear to believe that Openness to Experience implies social activity. However, the problem does not appear to be solely due to the term *Openness* in the factor label; confusions occurred with all five alternative labels for *O*.

Scale labels and brief definitions cannot be expected fully to communicate complex psychological constructs

(McCrae & Costa, 1995b). Nevertheless, it appears that the definitions provided were sufficient in this case to give lay judges a general idea of the five factors. Adjectives empirically known to be related to the factors were judged to be highly indicative of the factor in almost every case. However, lay judges consistently erred in supposing that adjectives related to *E* were also indicative of the desirable pole of each of the other factors: Emotionally stable, open, agreeable, and conscientious people were presumed to be extraverted. In comparison with the normative FFM, lay conceptions lack discriminant validity.

STUDY 2

Study 2 serves as a partial replication and extension of Funder and Sneed (1993). The purpose of that study was to examine the lay perceivers' ratings of overt behaviors as indicators of the five factors of personality, the degree to which strangers used those behaviors to make personality judgments, and the degree to which the behaviors are actually associated with personality. The purpose of the current study is to examine lay perceivers' understanding of the FFM by asking them to identify overt behaviors that reflect the dimensions of the FFM. The accuracy of their judgments is assessed by comparing their ratings of the diagnosticity of behaviors for personality factors with observed correlations of behaviors with personality. In Funder and Sneed, the five factors were derived from acquaintance ratings on the California Q-Set (CQ) (Block, 1961/1978). In the current study, the five factors were assessed from both self-reports and acquaintance ratings on two instruments—the CQ and the NEO-PI (Costa & McCrae, 1985). The data for this study were drawn from a newer and larger data set (the Riverside Accuracy Project). To date, two articles (concerning self-esteem and interjudge agreement, respectively) have been published from the newer data set (Blackman & Funder, 1996; Funder, Kolar, & Blackman, 1995).

Method

Subjects. This study included three categories of participants (targets, acquaintances, and coders) as well as the group of judges described in Study 1. The behaviors of 158 undergraduate students (targets) from the University of California, Riverside, 79 of each sex, were videotaped in three interactions; the targets later provided self-reports of their personality. Ratings of their behavior were averaged across the four coders. Two acquaintances provided personality descriptions of the targets, and these descriptions were averaged. Finally, to provide information on lay perceptions of personality and behavior, the undergraduates described in Study 1

rated 64 overt behaviors as indicators of the traits associated with the FFM.

Videotaped interactions and coding. Targets were recruited by flyers and classroom announcements. They were asked to engage in a total of three videotaped interactions with a stranger. An experimenter escorted targets to a room containing a couch with a TV camera aimed at the couch in plain view. The subjects were instructed by the experimenter to sit on the couch and told that they were to be videotaped for 5 min while they got acquainted (the unstructured interaction). The experimenter then turned on the camera and left the room. After 5 min, the experimenter returned to the room and ended that interaction. In the next interaction, the experimenter instructed the targets to sit at a table and cooperatively build a toy model while being videotaped (the cooperative interaction). Finally, the targets played a game of Simon against each other for a \$1 prize (the competitive interaction).

The videotaped behaviors of the targets were coded by four trained undergraduate research assistants with a revised version of the Behavioral Q-Sort (BQ) (see Funder & Colvin, 1991). The revised BQ is a set of 64 cards on which behaviors are listed (e.g., "Expresses sympathy to partner," "Is reserved and unexpressive" (see Table 2) that were chosen because they are overt, molar, and likely to be exhibited by the targets in the interactions. The coders were asked to provide descriptions of the targets' behavior by viewing the videotaped interaction and placing the cards in a forced-choice distribution from *not characteristic* to *highly characteristic* of the target. All codings were independent; no coder rated the same subject more than once. The criteria for the independent codings also included the stipulation that the coder could not rate the target's partner in any videotaped interaction. Interrater Q-correlations were examined to ensure reliability. Each coder's description had to correlate at least .30 with two other coders' description and no lower than .20 with the remaining coder's description. When those criteria were not met, the coder was required to view the videotape again and make a new coding. In a few instances, a coder had to be replaced.

Ratings of the subjects' behaviors were derived from three situations. For the purposes of these analyses, we were interested in developing an average of their behavior across all situations. Cross-situational correlations were computed for all 64 BQ items across the three interactions. Items that did not show any significant cross-situational correlation (Items 1-3, 15, 17, 25, 34, 35, 39, 40, 46-48, 53, 55, 59, and 60) were considered unreliable and eliminated from further analysis. The remaining 47 items were aggregated across the three interac-

TABLE 2: Correlations Between Subjects' Neuroticism Scores and Ratings of Their Behaviors, and Mean Ratings of BQ Items as Indicators of Neuroticism, Study 2

BQ Item	Self		Acquaintance		Diagnosticity
	CQ (n = 154)	NEO (n = 150)	CQ (n = 137)	NEO (n = 129)	
Positively rated BQ items					
23. Shows physical signs of tension or anxiety.	.13	.06	-.06	-.05	4.75
22. Expresses insecurity.	.18*	.17*	.01	.08	4.60
45. Says negative things about self.	.11	.14	.11	.18*	4.40
14. Exhibits an awkward interpersonal style.	.17*	.12	-.05	-.04	4.05
37. Behaves in a fearful or timid manner.	.15	.14	-.02	.08	3.90
32. Acts irritated.	.14	.15	.10	.12	3.90
51. Gives up when faced with obstacles.	.14	.16	.15	.12	3.70
27. Seeks reassurance from partner(s).	-.02	.09	.03	.10	3.35
9. Is reserved and unexpressive.	.14	.08	-.14	-.05	3.10
18. Talks at, rather than with, partner(s).	.10	.03	.08	.03	2.80
20. Expresses criticism.	.16*	.16*	.19*	.12	2.35
62. Speaks quickly.	.05	.04	.12	-.02	2.30
41. Keeps partner(s) at a distance.	.12	.07	-.03	.01	2.20
58. Speaks sarcastically.	.03	.06	.07	.02	2.15
61. Seems detached from the interaction.	.14	.10	-.06	.01	1.90
28. Exhibits condescending behavior.	.02	-.08	-.11	-.05	1.55
56. Competes with partner(s).	.02	.07	-.05	.03	1.00
12. Is physically animated.	-.04	-.06	.10	.00	0.80
6. Dominates the interaction.	.00	-.07	.04	.05	0.60
30. Seeks advice from partner(s).	.06	.08	-.01	.10	0.55
19. Expresses agreement frequently.	-.01	-.04	-.08	-.09	0.50
36. Is unusual or unconventional in appearance.	.09	.09	.02	-.05	0.30
52. Behaves in a stereotypical manner.	.03	.01	-.06	.04	0.20
64. Partner(s) seek(s) advice from subject.	.09	.00	-.08	-.03	0.00
Negatively rated BQ items					
7. Appears to be relaxed.	-.13	-.07	-.13	-.12	-5.60
43. Seems to enjoy the interaction.	-.17*	-.14	-.04	-.15	-4.90
28. Exhibits social skills.	.02	-.08	-.11	-.05	-4.70
33. Expresses warmth.	-.04	-.01	-.03	-.05	-4.05
54. Speaks fluently.	-.14	-.14	-.15	.00	-3.85
50. Behaves in a cheerful manner.	-.09	-.06	.05	.03	-3.80
29. Seems likable.	-.17*	-.11	-.16	-.10	-3.60
21. Is talkative.	-.16*	-.08	.07	.01	-3.60
26. Initiates humor.	-.22*	-.11	.01	-.10	-3.55
44. Says or does interesting things about self.	-.20*	-.11	.03	-.15	-3.50
11. Smiles frequently.	.00	-.02	.05	.08	-3.30
16. Shows high enthusiasm.	-.08	-.07	.17*	.03	-3.25
4. Seems interested in what the partner(s) has to say.	-.09	.02	-.12	-.06	-3.25
13. Seems to like partner(s).	-.17*	-.09	-.13	-.13	-3.10
42. Shows interest in intellectual matters.	.11	.07	-.10	-.03	-2.95
63. Acts playful.	-.21*	-.10	.06	.00	-2.90
10. Laughs frequently.	-.04	.01	.05	.10	-2.35
38. Is expressive in face, voice, or gestures.	-.06	-.04	.13	.06	-2.25
49. Expresses sexual interest.	-.12	-.12	-.05	-.04	-1.60
31. Appears to regard self as physically attractive.	.01	-.04	-.04	.16	-1.20
5. Tries to control the interaction.	.06	.00	.04	.05	-1.00
57. Speaks in loud voice.	-.02	-.07	.06	-.11	-0.50
24. Exhibits a high degree of intelligence.	.08	-.01	-.23*	-.18*	-0.40

NOTE: BQ = Behavioral Q-Sort; CQ = California Q-Set.

* $p < .05$.

tions. For example, the analyses concerning BQ Item 5, "tries to control the interaction," use the aggregate of the targets' behaviors from the unstructured, cooperative, and competitive interactions with the stranger.

Personality assessments. The targets were asked to recruit two acquaintances to participate in this study. The acquaintances rated the targets' personalities using the CQ and Form R of the NEO-PI (see Funder et al., 1995,

TABLE 3: Correlations Between Subjects' Extraversion Scores and Ratings of Their Behaviors, and Mean Ratings of BQ Items as Indicators of Extraversion, Study 2

BQ Item	Self		Acquaintance		Diagnosticity
	CQ (n= 154)	NEO (n= 150)	CQ (n= 137)	NEO (n= 129)	
Positively rated BQ items					
16. Shows high enthusiasm.	.26**	.26**	.24*	.21*	5.00
21. Is talkative.	.32**	.29**	.27**	.23*	4.92
8. Exhibits social skills.	.31**	.31**	.25**	.22*	4.75
50. Behaves in a cheerful manner.	.18*	.21*	.24*	.18*	4.29
43. Seems to enjoy the interaction.	.20*	.20*	.35**	.25**	4.21
26. Initiates humor.	.26**	.30**	.12	.10	4.21
54. Speaks fluently.	.16*	.21*	.13	.06	4.13
38. Is expressive in face, voice, or gestures.	.25**	.26**	.23*	.15	4.13
63. Acts playful.	.26**	.23**	.26**	.24*	3.92
7. Appears to be relaxed.	.13	.18*	.09	.04	3.83
29. Seems likable.	.08	.08	.22*	.11	3.71
44. Says or does interesting things about self.	.18*	.24**	.11	.11	3.29
6. Dominates the interaction.	.21*	.20*	.13	.10	3.25
12. Is physically animated.	.18*	.19*	.15	.17	3.04
13. Seems to like partner(s).	.07	.10	.28**	.23*	2.96
33. Expresses warmth.	.06	.04	.14	.05	2.75
11. Smiles frequently.	.03	.08	.06	-.01	2.75
5. Tries to control the interaction.	.16*	.16	.14	.10	2.67
Negatively rated BQ items					
9. Is reserved and unexpressive.	-.35**	-.29**	-.24**	-.23*	-4.67
14. Exhibits an awkward interpersonal style.	-.38**	-.33**	-.28**	-.24*	-4.50
37. Behaves in a fearful or timid manner.	-.31**	-.31**	-.21*	-.19*	-4.46
61. Seems detached from the interaction.	-.29**	-.27**	-.30**	-.25**	-4.13
22. Expresses insecurity.	-.31**	-.38**	-.27**	-.18*	-3.92
23. Shows physical signs of tension or anxiety.	-.30**	-.32**	-.14	-.10	-3.71
41. Keeps partner(s) at a distance.	-.26**	-.23**	-.28**	-.27**	-2.75
45. Says negative things about self.	-.13	-.24**	-.28**	-.09	-2.71
51. Gives up when faced with obstacles.	-.22*	-.25**	-.33**	-.20*	-2.67

NOTE: BQ = Behavioral Q-Sort; CQ = California Q-Set.

* $p < .05$. ** $p < .01$.

for details); the two ratings were averaged for both instruments. The targets also provided self-ratings using the CQ and Form S of the NEO-PI. A description of the CQ and the procedure for deriving the five factors from it is given in Funder and Sneed (1993). The NEO-PI is a 180-item inventory with scales to assess each of the five factors (Costa & McCrae, 1985). In the present sample, the cross-instrument validities for the five factors ranged from .41 in self-reported *C* to .67 in acquaintance-rated *N*; the cross-method validities ranged from .25 in CQ *C* to .53 in NEO-PI *E*, $ns = 144$ to 171, $ps < .01$.

Subjective diagnosticity ratings. As described in Study 1, separate groups of judges ($ns = 24$ to 31) rated the BQ items as indicators of one of the five factors on a scale from -6 to 6. Of the five groups that made ratings for *O*, only ratings from the group that used the label *Openness to Experience* were used in these analyses (additional analyses showed that the other labels for *O* led to similar results). The reliability (alpha) of the composite ratings

was uniformly high: *N* (.96), *E* (.97), *O* (.93), *A* (.96), and *C* (.94). These ratings represent the judges' subjective beliefs about how diagnostic each behavior would be for the factor they rated; they can also be regarded as hypotheses about the correlations between coded BQ items and personality scores.

Results and Discussion

The correlations between the coded ratings of the targets' behaviors and their personality descriptions are presented in the second to fifth columns of Tables 2 through 6 for *N*, *E*, *O*, *A*, and *C*, respectively. The mean diagnosticity ratings of the BQ items as indicators of personality are presented in the sixth column of these tables. Presented in the top half of Table 2 are the BQ items that received positive subjective diagnosticity ratings for *N* in descending order. The items that received negative ratings are presented in the bottom portion of the table. The entire set of 47 items are shown in Table 2.

TABLE 4: Correlations Between Subjects' Openness Scores and Ratings of Their Behaviors, and Mean Ratings of BQ Items as Indicators of Openness, Study 2

<i>BQ Item</i>	<i>Self</i>		<i>Acquaintance</i>		<i>Diagnosticity</i>
	<i>CQ</i> (<i>n</i> = 154)	<i>NEO</i> (<i>n</i> = 150)	<i>CQ</i> (<i>n</i> = 137)	<i>NEO</i> (<i>n</i> = 129)	
Positively rated BQ items					
4. Seems interested in what the partner(s) has to say.	-.05	.01	-.01	-.01	3.88
16. Shows high enthusiasm.	.10	.09	.04	.05	3.76
13. Seems to like partner(s).	.00	.00	.01	.00	3.33
43. Seems to enjoy the interaction.	.08	.18*	.04	.06	3.32
21. Is talkative.	.12	.11	.02	.08	3.12
54. Speaks fluently.	.18*	.23*	.19*	.14	3.08
26. Initiates humor.	.17*	.18*	.17*	.06	3.08
8. Exhibits social skills.	.15	.18*	.10	.07	2.96
38. Is expressive in face, voice, or gestures.	.18*	.15	.17*	.05	2.80
29. Seems likable.	-.06	-.01	.03	-.04	2.72
7. Appears to be relaxed.	.13	.26**	.08	.10	2.72
44. Says or does interesting things about self.	.12	.11	.12	-.08	2.52
Negatively rated BQ items					
9. Is reserved and unexpressive.	-.19*	-.13	-.06	-.08	-3.24
14. Exhibits an awkward interpersonal style.	-.18*	-.19*	-.11	-.15	-2.92
18. Talks at, rather than with, partner(s).	-.08	-.02	-.12	-.08	-2.68
32. Acts irritated.	-.06	-.11	-.02	-.05	-2.60
22. Expresses insecurity.	-.16*	-.28**	-.22*	-.17	-2.56

NOTE: BQ = Behavioral Q-Sort; CQ = California Q-Set.

* $p < .05$. ** $p < .01$.**TABLE 5: Correlations Between Subjects' Agreeableness Scores and Ratings of Their Behaviors, and Mean Ratings of BQ Items as Indicators of Agreeableness, Study 2**

<i>BQ Item</i>	<i>Self</i>		<i>Acquaintance</i>		<i>Diagnosticity</i>
	<i>CQ</i> (<i>n</i> = 154)	<i>NEO</i> (<i>n</i> = 150)	<i>CQ</i> (<i>n</i> = 137)	<i>NEO</i> (<i>n</i> = 129)	
Positively rated BQ items					
8. Exhibits social skills.	.08	.11	-.05	.05	4.87
11. Smiles frequently.	.19*	.10	.11	.05	4.39
26. Initiates humor.	.06	.12	-.02	.05	3.87
50. Behaves in a cheerful manner.	.24*	.20*	.14	.15	3.83
33. Expresses warmth.	.18*	.16	.16	.13	3.78
7. Appears to be relaxed.	-.01	.05	-.10	.02	3.74
13. Seems to like partner(s).	.21*	.11	.08	.14	3.57
29. Seems likable.	.22*	.16*	.10	.09	3.48
16. Shows high enthusiasm.	.03	.07	-.05	-.04	3.48
4. Seems interested in what the partner(s) has to say.	.23*	.12	.11	.17	3.48
54. Speaks fluently.	-.02	.06	-.02	-.07	3.39
10. Laughs frequently.	.17*	.08	.13	.02	3.26
44. Says or does interesting things about self.	.07	.02	.02	.11	3.22
19. Expresses agreement frequently.	.13	.14	.17*	.13	3.17
43. Seems to enjoy the interaction.	.17*	.13	.05	.14	3.09
21. Is talkative.	.03	.02	-.01	-.03	2.91
42. Shows interest in intellectual matters.	.01	.08	.08	.00	2.74
63. Acts playful.	.16*	.12	.07	.06	2.65
38. Is expressive in face, voice, or gestures.	.09	.14	-.03	-.01	2.65
Negatively rated BQ items					
18. Talks at, rather than with, partner(s).	-.14	-.07	-.10	.02	-3.61
32. Acts irritated.	-.22*	-.19*	-.10	-.16	-2.83
9. Is reserved and unexpressive.	-.07	-.11	.02	.01	-2.83

NOTE: BQ = Behavioral Q-Sort; CQ = California Q-Set.

* $p < .05$.

TABLE 6: Correlations Between Subjects' Conscientiousness Scores and Ratings of Their Behaviors, and Mean Ratings of BQ Items as Indicators of Conscientiousness, Study 2

<i>BQ Item</i>	<i>Self</i>		<i>Acquaintance</i>		<i>Diagnosticity</i>
	<i>CQ</i> (<i>n</i> = 154)	<i>NEO</i> (<i>n</i> = 150)	<i>CQ</i> (<i>n</i> = 137)	<i>NEO</i> (<i>n</i> = 129)	
Positively rated BQ items					
54. Speaks fluently and expresses ideas well.	.09	.10	.07	.15	3.87
16. Shows high enthusiasm and a high energy level.	.03	.08	−.26**	−.04	3.57
8. Exhibits social skills.	.19*	.11	−.08	.13	3.48
4. Seems interested in what the partner(s) has to say.	.12	−.07	.21*	.08	3.30
43. Seems to enjoy the interaction.	.09	−.01	−.01	.01	3.26
42. Shows interest in intellectual or cognitive matters.	−.06	−.03	.12	.08	3.13
26. Initiates humor.	.14	.09	−.18*	−.03	3.04
21. Is talkative. (As observed in this situation.)	.13	.11	−.17*	.06	2.78
33. Expresses warmth.	.08	.03	.12	.22*	2.61
44. Says or does interesting things about self.	.06	−.01	−.15	−.15	2.57
6. Dominates the interaction.	−.01	.17*	−.15	.08	2.57
29. Seems likable.	.08	−.04	.11	.02	2.52
Negatively rated BQ item					
14. Exhibits an awkward interpersonal style.	−.13	−.10	.21*	−.07	−3.13

NOTE: BQ = Behavioral Q-Sort; CQ = California Q-Set.

* $p < .05$. ** $p < .01$.

For the remaining tables, only the BQ items that received mean diagnosticity ratings on the applicable trait of greater than 2.50 in absolute magnitude are presented.

The second to fifth columns of Tables 2 through 6 report the observed relations between rated behavior and personality as measured by four different instruments. On first glance, the correlations may seem unimpressive: Most are small, and many fail to reach statistical significance. In part, this may be due to the fact that all the interactions involve the same pair of targets, whose behavior may be more a function of their dyadic interaction than their individual personalities. But a more careful analysis shows that meaningful personality/behavior links are shown. Considering all 940 personality/behavior correlations (many of which are not reported in Tables 2 through 6), 193 reach conventional levels of significance, in which only 47 would be expected by chance. Although the absolute magnitudes of the correlations are small, they generally make substantive sense: High *N* targets express insecurity; high *E* targets are talkative; high *O* targets speak fluently; high *A* targets are cheerful; and high *C* targets are energetic. The largest correlations are found for *E*, the factor most relevant to interaction with strangers and best represented in the behaviors of the BQ, which was developed to code these kinds of interactions.

But Tables 2 through 6 contain more information than the asterisks convey. If the nonsignificant correlations are generally in the expected direction, that would provide further evidence of the effects of personality on behavior. It is possible to use more of the personality/behavior information in the present study by correlating

the columns. To check the consistency of the four alternative measures of each factor, rank order correlations were computed between each pair of columns of correlations (e.g., in Table 2, between column 2, self CQ ratings of *N*, and column 5, acquaintance NEO ratings of *N*). Six such correlations can be computed for each factor; the median values were .54 for *N*, .89 for *E*, .76 for *O*, .73 for *A*, and .29 for *C* (individual correlations are available from the first author). For the first four, it is clear that personality/behavior correlations are very similar regardless of the method of assessing personality. The low value for *C* suggests somewhat unreliable relations with behavior, due either to weaknesses in some of the measures of *C* or to the limited relevance of *C* for this set of behaviors.

How well do lay perceivers understand these links between personality and behavior? That can be estimated by calculating correlation coefficients between the mean diagnosticity rating (column 6) and the observed correlations (columns 2 through 5) for each factor. These correlations, shown in Table 7, are based on all 47 behaviors and correspond to the second row of Table 6 found in Funder and Sneed (1993).²

When self-reports are used as the source of personality assessments, there are uniformly strong correlations between lay intuitions and observed trait/behavior correlations. When acquaintance ratings are used, a rather weaker pattern of associations is observed, although nine of the correlations are in the right direction and eight of them are statistically significant.³ Recall that large correlations mean only that the rank order of the mean diagnosticity judgments and the observed correla-

TABLE 7: Correlations Between Personality/Behavior Associations and Lay Ratings of Diagnosticity Across 47 Behaviors, Study 2

	<i>Neuroticism</i>	<i>Extraversion</i>	<i>Openness</i>	<i>Agreeableness</i>	<i>Conscientiousness</i>
Self					
CQ	.83***	.93***	.65***	.69***	.60***
NEO-PI	.80***	.94***	.69***	.75***	.64***
Acquaintances					
CQ	.22	.90***	.58***	.35*	-.36*
NEO-PI	.45**	.85***	.50**	.39**	.31*

NOTE: CQ = California Q-Set.

* $p < .05$. ** $p < .01$. *** $p < .001$.

tions are very similar; certainly, these data do not mean that individual judges can predict specific behaviors well from knowledge of personality traits.

Funder and Sneed (1993) used acquaintance ratings on the CQ as the sole source of personality assessments and found agreement between lay hypotheses and observed correlations for *N*, *E*, *A*, and *C*. The third row of Table 7 reports parallel data that only partially replicate the earlier findings: *E* and *A* are again significant, but so is *O*; instead, *N*, which is nonsignificant, and *C*, which has a significant negative correlation, are the problematic dimensions in the present study. Considered together, however, the weight of the evidence from both studies suggests that lay judges have a reasonably good idea of which behaviors are associated with each of the five factors, or, said another way, they are capable of grasping the FFM constructs through brief definitions.

STUDY 3

Study 3 is a somewhat more demanding conceptual task: Instead of being given definitions of the factors, subjects were asked to form their own constructs by sorting adjectives into groups of related terms. In the forced-sort condition, subjects were instructed to sort the 30 traits described in Study 1 into five categories, each with six traits. In the free-sort condition, a different group of subjects was instructed to form as many categories as they needed to group the traits.

Sort data can be represented in a co-occurrence matrix, each cell of which contains the proportion of the time two adjectives were placed in the same category by a subject. Factor analysis of the matrix can be interpreted as revealing the underlying dimensions along which subjects sorted adjectives.

Note, however, that factor analysis of the co-occurrence matrix is a group-level analysis. Data are pooled across all sorters, and the factors thus represent in effect collective wisdom on the structure of traits, not necessarily the explicit theory of any single rater. Some raters might have an explicit theory best represented as a six-factor model or a three-factor model; perhaps it is only when

averaged over many raters that the robust factors of the FFM appear.

But sort data can also be analyzed at an individual level. In the fixed-sort condition, the number of factors is predetermined, but it is possible to ask whether individual sorters created categories corresponding to the empirical groupings—whether, for example, they had a conception of a dimension corresponding to *N* or *C* or *E*. In the free-sort condition, it is also possible to determine whether five categories seemed necessary or sufficient for sorting these adjectives.

Method

Subjects. An additional 76 students (44 female) from the University of California, Riverside, participated to fulfill a partial requirement for an introductory psychology course. The subjects' ages ranged from 17 to 27 ($M = 19$). The ethnic background of the subjects were 54.7% Asian, 28% White, 6.7% African American, 2.7% Latino, and 8% self-reporting as other. One subject did not report demographic information. They were randomly assigned to forced-sort ($n = 41$) or free-sort ($n = 35$) conditions.

Procedure. Subjects in the forced-sort condition were instructed to group the 30 trait adjectives used in Study 1 into five categories, with six traits to be placed into each category. This group of subjects read the following instructions:

People often use trait adjectives to describe themselves and their acquaintances, and some traits seem to go together. For example, people who are strong are usually also healthy, and people who are rich are often famous. You are about to be given 30 cards, each card listing one trait adjective. The cards are in random order. Please read through all the cards at least twice, and then sort them into five groups of related traits, each with six cards. Try to form groups such that people who have one of the traits in the groups are also likely to have the other traits.

The subjects in the free-sort condition were give similar instructions, except that they were told to place as

many cards into a group and to form as many groups as they thought necessary. To ensure that results were not due to prior familiarity with the FFM, subjects were asked in a debriefing, "Are you familiar with the Big Five personality traits?" If the subject responded yes, she or he was asked to list them. Only six subjects claimed familiarity with the Big Five, and none of them could list the names of the five factors.

Results and Discussion

Group analyses. Co-occurrence matrices for the forced- and free-sort conditions were analyzed separately. In the former, the first six eigenvalues were 5.97, 5.12, 4.89, 4.23, 4.06, and 0.86, providing unequivocal evidence that five factors should be retained. After varimax rotation, all traits loaded on the intended factor, with loadings ranging from .74 to .98. The largest secondary loading was .22 for *trusting* on the *C* factor. Results from the free-sort condition were only slightly less clear. Again, eigenvalues showed a precipitous drop after five factors, and all adjectives loaded on the intended factor, with loadings ranging from .45 to .93. The largest secondary loading was .37 for *wide interests* on the *E* factor.

Previous studies of implicit personality theory (e.g., Hakel, 1969) have shown that the FFM can be found when subjects are asked to estimate the likelihood of co-occurrence of pairs of traits. In this study, we required that subjects consider the full range of traits at one time and explicitly synthesize their associations into an organization of traits. Once again, the FFM was found. The strength of the factors and clarity of the solution are consistent with previous studies of internal structure (Peabody, 1989). These results, however, do not speak to the explicit personality theories of individual sorters; instead, they demonstrate that the collective wisdom of a group of sorters on the structure of trait adjectives can be summarized by the dimensions of the FFM.

Individual analyses. Table 8 reports the percentage of subjects whose groupings were consistent with the known associations among traits in the FFM. The top panel of the table gives results for the forced-sort condition. A subject can be said to have identified a factor if he or she created a category composed mostly of adjectives from that factor. The table shows the percentage of subjects who placed all six, at least five, and at least four of the adjectives from a single factor into one category. These data show, for example, that over two thirds (68.3%) of the subjects correctly grouped all six adjectives that define the *N* factor, whereas less than half did so for the *E*, *O*, and *A* factors. Using the more liberal criterion of a simple majority of items, the final column suggests that each of the factors is approximated by most subjects.

TABLE 8: Percentage of Subjects Creating Categories Consistent With the Five-Factor Model, Study 3

Condition	Number of Adjectives Assigned to Category		
	Six	At Least Five	At Least Four
Forced sort			
Neuroticism	68.3	87.8	95.1
Extraversion	43.9	75.6	87.8
Openness	41.5	70.8	87.9
Agreeableness	43.9	73.2	90.3
Conscientiousness	51.2	73.2	87.8
Free sort			
Neuroticism	25.7	45.7	74.3
Extraversion	22.9	48.6	68.6
Openness	17.1	34.2	57.1
Agreeableness	45.7	51.4	69.1
Conscientiousness	40.0	48.6	68.6

In the free-sort condition, the subjects were asked to sort the adjectives into as many categories as they thought were needed. One subject (2.9%) used 3 categories, 12 (34.3%) used 5 categories, 15 (42.9%) used 6 to 8 categories, and 7 (20.0%) used 9 to 15 categories. Given these traits to sort, most subjects spontaneously grouped them into about five categories, but many found it possible to make finer distinctions. Although Peabody (1989) reported that some individuals are "broad" judges who tended to collapse the five factors into three, only a single subject in the present study used fewer than five categories.

The bottom panel of Table 8 addresses the nature of the categories formed. In the free-sort condition, determining when a category matched one of the FFM factors was complex, because subjects could place any number of items in a category. A subject might, for example, have created a 12-member category including all six *E* and all six *O* items. Such a category would lack discriminant validity. Our decision rules were, therefore, as follows: The second column reports the percentage of subjects who grouped all six adjectives together with no more than two adjectives from other factors. The third column reports the percentage who grouped at least five traits from a factor with up to two traits from other factors, and the fourth column reports the percentage who placed at least four adjectives from a factor in a category together with no more than two traits from other factors. By that last criterion, 13 of the subjects reproduced all five factors of the FFM.

A comparison of the top and bottom panels of Table 8 shows that the largest percentage of agreements with the FFM are found for the forced-sort condition. Over 87% of the subjects in this condition grouped items into the appropriate factor across all traits. Smaller percentages are found in the free-sort condition. However, even in that condition, the last column shows that a majority of

the subjects grouped the traits in accordance with their empirical covariation. Of the subjects (including 1 subject from the free-sort condition), 13 placed all 30 of the items in the correct factor.

Particularly in the free-sort condition, it appears that *O* is the most difficult factor for laypersons to identify. Study 1 suggested that lay perceivers may confuse *O* with *E*, and there is some additional evidence of that in the present study. We counted the number of instances in which an *O* adjective was misclassified into a cluster that could be identified as one of the other four factors. Most of these misclassifications assigned the *O* adjective to an *E* cluster in both forced-sort (15 of 28 instances) and free-sort (9 of 17 instances) conditions. Despite these occasional confusions of *O* with *E*, the data suggest that laypersons generally have accurate conceptions of *O*.

In this study, we selected six clear definers of one pole of each of the five factors and asked subjects to cluster them into covarying traits. In the fixed condition, we further specified the number of traits per cluster. Given this guidance, subjects performed very well in reproducing the intended FFM groupings. When lay judges were not informed about the number of categories they were to make—like factor analysts who have not yet determined the correct number of factors to extract—their match to the FFM was less good. Other variations in study design, such as varying the number of markers per factor, increasing the total number of adjectives, or including both positive and negative markers, would probably also have increased the difficulty of the task and reduced agreement with the FFM.

Study 3's sorting task, especially in the forced-sort condition, is relatively highly structured, and it is of some interest to compare results from a minimally structured design recently employed by Schiller, Tellegen, and Evens (1995). They asked 12 volunteers to generate their own sets of personality descriptors and rate a large number of acquaintances. Factors from intraindividual factor analyses were interpreted by a pool of judges in terms of resemblance to FFM factors. All 12 subjects produced a factor interpretable as *A*, all but 1 produced an *E* factor, and all but 2 produced *N* and *C* factors. In that study, three forms of the *O* factor were distinguished (Openness, Intellect, and Unconventionality); 10 of the 12 volunteers produced a factor resembling at least one of these forms of *O*. As in the present study, patterns of covariation in these idiographic analyses were generally consistent with the structure of the FFM.

GENERAL DISCUSSION

Psychologists have long known that the FFM is somehow implicit in laypersons' understanding of traits. To some extent, this may reflect an encoding in language

itself: Semantic similarities imply overlapping behaviors and covarying traits (Borkenau, 1992). To some extent, implicit personality theory may reflect personal knowledge, as individuals draw on their own social experience to make predictions about people. Whether it is a cultural or a personal construction or both, implicit personality theory seems to be a relatively accurate reflection of the objective covariation of personality traits (McCrae & John, 1992).

The present article was concerned with the extent to which implicit conceptions of personality could be explicitly articulated by laypersons. Studies 1 and 2 showed that given a brief definition of a trait dimension, undergraduates as a group could accurately identify associated adjectives and behaviors. Study 3 asked if individual judges could spontaneously generate the factors of the FFM by clustering adjectives. Given the hint that five clusters were needed, most subjects reproduced the empirically known groupings. Even without that hint, many did (cf. Schiller et al., 1995). It appears that the dimensions of the FFM are, in fact, rather transparent.

There are, however, some systematic mismatches between the factors as represented in implicit personality theories and as found in the empirical literature. As Study 1 showed, lay raters—or at least these undergraduates—were prone to attribute extraverted characteristics to individuals with any desirable personality trait. In explaining the FFM to laypersons (and perhaps to psychologists), it may be useful to stress the relative independence of the other factors from *E*: People can be calm without being cheerful, inquisitive without being enthusiastic, courteous without being sociable, hardworking without being lively. Understanding these distinctions should promote a clearer grasp of the FFM and, indeed, perhaps of personality itself.

As in some previous research (Funder & Sneed, 1993), *O* appeared to be less easily comprehended than the other factors. In both Studies 1 and 3, *O* was often confounded with *E*. This may perhaps be due to real overlap between the constructs: The *O* and *E* domain scales of the NEO-PI-R are positively correlated ($r = .40$, $N = 1,000$, $p < .001$) (Costa & McCrae, 1992). Alternatively, it may reflect an evaluative artifact, because both these factors are strongly related to measures of positive valence (McCrae & Costa, 1995a).

Yet, even *O* was comprehensible to most participants in this study. Study 3 showed that more than half of the sample spontaneously formed a category of *O*-related adjectives in the free-sort condition, and almost all did so in the fixed-sort condition. Further, Study 2 showed that lay raters understood which behaviors were most relevant to the *O* factor, whether *O* was assessed by the CQ or the NEO-PI, by self-report or acquaintance rating.

All five factors appear to be important aspects of lay conceptions of personality.

NOTES

1. An ANOVA on each row of the table using Tukey's studentized range test for post hoc comparisons showed that the mean rating for the intended factor was significantly ($p < .05$) higher than that for any of the other four factors in 28 cases. The exceptions were *assertive* and *insightful*. Although *insightful* had its highest rating for Culture, one of the alternative definitions of *O*, that rating was not significantly higher than its rating for *C*.

2. Because correlation coefficients are not invariant over reflection of variables, we also calculated congruence coefficients (Wrigley & Neuhaus, 1955), which are invariant, between the personality/behavior correlations and the diagnosticity ratings. These values were slightly smaller than the correlations in Table 7 (mean difference = .04) but showed the same pattern.

3. This analysis was repeated using all 64 BQ items. The same pattern of results was found, except that in the analyses using acquaintances' CQ ratings, the correlation for *N* was significant ($r = .32$, $p < .05$) and the correlation for *C* was not ($r = -.20$, *ns*).

REFERENCES

- Blackman, M. C., & Funder, D. C. (1996). Self-esteem as viewed from the outside: A peer and gender perspective. *Journal of Social Behavior and Personality*, 11, 115-126.
- Block, J. (1978). *The Q-sort method in personality assessment and psychiatric research*. Palo Alto, CA: Consulting Psychologists. (Original work published 1961)
- Block, J. (1995). A contrarian view of the five-factor approach to personality description. *Psychological Bulletin*, 117, 187-215.
- Borkenau, P. (1992). Implicit personality theory and the five-factor model. *Journal of Personality*, 60, 295-327.
- Costa, P. T. Jr., & McCrae, R. R. (1985). *The NEO Personality Inventory manual*. Odessa, FL: Psychological Assessment Resources.
- 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.
- D'Andrade, R. G. (1965). Trait psychology and componential analysis. *American Anthropologist*, 67, 215-228.
- De Raad, B., & Van Heck, G. L. (1994). The fifth of the Big Five [Special issue]. *European Journal of Personality*, 8(4).
- Digman, J. M. (1990). Personality structure: emergence of the five-factor model. *Annual Review of Psychology*, 41, 417-440.
- Funder, D. C., & Colvin, C. R. (1991). Explorations in behavioral consistency: Properties of persons, situations, and behaviors. *Journal of Personality and Social Psychology*, 60, 773-794.
- Funder, D. C., Kolar, D. C., & Blackman, M. C. (1995). Agreement among judges of personality: Interpersonal relations, similarity, and acquaintanceship. *Journal of Personality & Social Psychology*, 69, 656-672.
- Funder, D. C., & Sneed, C. D. (1993). Behavioral manifestations of personality: An ecological approach to judgment accuracy. *Journal of Personality and Social Psychology*, 64, 470-490.
- Goldberg, L. R. (1990). An alternative "description of personality": the Big-Five factor structure. *Journal of Personality & Social Psychology*, 59, 1216-1229.
- Gough, H. G., & Heilbrun, A. B. Jr. (1983). *Adjective Check List manual*. Palo Alto, CA: Consulting Psychologist.
- Hakel, M. D. (1969). Significance of personality theories for personality research and theory. *Proceedings of the 77th Annual Convention of the American Psychological Association*, 4, 403-406.
- John, O. P. (1989). Towards a taxonomy of personality descriptors. In D. M. Buss & N. Cantor (Eds.), *Personality psychology: Recent trends and emerging directions* (pp. 261-271). New York: Springer-Verlag.
- McCrae, R. R. (1989). Why I advocate the five-factor model: Joint analysis 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. (1993-1994). Openness to experience as a basic dimension of personality. *Imagination, Cognition & Personality*, 13, 39-55.
- McCrae, R. R., & Costa, P. T. Jr. (1985). Openness to experience. In R. Hogan & W. H. Jones (Eds.), *Perspectives in personality* (Vol. 1, pp. 145-172). Greenwich, CT: JAI.
- McCrae, R. R., & Costa, P. T. Jr. (1995a). Positive and negative valence within the five-factor model. *Journal of Research in Personality*, 29, 443-460.
- McCrae, R. R., & Costa, P. T. Jr. (1995b). Trait explanations in personality psychology. *European Journal of Personality*, 9, 231-252.
- 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., & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality*, 60, 175-215.
- Norman, W. T. (1963). Toward and adequate taxonomy of personality attributes: Replicated factor structure in peer nomination personality ratings. *Journal of Abnormal and Social Psychology*, 66, 574-583.
- Passini, F. T., & Norman, W. T. (1966). A universal conception of personality structure? *Journal of Personality and Social Psychology*, 4, 44-49.
- Peabody, D. (1989, June). *Internal structure: The perceived relation among traits*. Paper presented at the First International Workshop on Personality Language, Groningen, the Netherlands.
- Saucier, G. (1992). Openness versus intellect: Much ado about nothing? *European Journal of Personality*, 6, 381-386.
- Schiller, R., Tellegen, A., & Evens, J. (1995). An idiographic and nomothetic study of personality description. In J. N. Butcher & C. D. Spielberger (Eds.), *Advances in personality assessment* (Vol. 10, pp. 1-23). New York: Lawrence Erlbaum.
- Shweder, R. A., & D'Andrade, R. G. (1980). The systematic distortion hypothesis. *New Directions for Methodology of Social and Behavioral Sciences*, 4, 37-58.
- Wrigley, C. S., & Neuhaus, J. O. (1955). The matching of two sets of factors. *American Psychologist*, 10, 418-419.

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