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CHAPTER 31

CONCEPTIONS AND CORRELATES OF OPENNESS TO EXPERIENCE

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Personality traits are normally defined as dimensions of individual difference, and they are often first recognized by noting groups of individuals who are conspicuously different. Much of personality psychology has been devoted to an attempt to understand psychopathology, because phobics, hypochondriacs, and suicides are so distressingly different from the rest of us.

Artists and poets form another group long held to be different, if not deviant. They are remarkable for their specific artistic talents, but they are also characterized by a set of mental, emotional, and attitudinal characteristics that set them apart (MacKinnon, 1962). Think of Leonardo da Vinci, of Beethoven, or of Whitman: They are all dreamers with keen imaginations, seeing possibilities that others miss. They are sensitive and passionate, with a wide and subtle range of emotional reactions. They are adventurous, bored by familiar sights, and stifled by routine. They have an insatiable curiosity, as if they retained into adulthood the child's wonder at the world. And they are unorthodox, free-thinking, and prone to flout convention.

As neurotics can be used as exemplars of high scorers on the dimension of Neuroticism, so artists can be considered prime examples of individuals high in Openness to Experience. Few people have the gifts needed to be a creative artist, but many people have the dispositions. Indeed, recent research suggests that Openness to Experience is one of the fundamental dimensions of personality (McCrae,

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1993–1994, 1994), relevant not only to an understanding of the artistic temperament, but also to such diverse issues as social attitudes, hypnotizability, career changes, and moral reasoning. And although it is convenient to use the artist as an exemplar of Openness and to refer to “open” and “closed” individuals, it must be remembered that Openness refers to a continuum of individual differences in processing experience, and that the majority of people are intermediate in Openness.

In this chapter we review the empirical literature on Openness as a fundamental dimension of personality, but our major focus is on the conceptualization of Openness. We will argue that Openness cannot be understood as the culture that is acquired through education or good breeding, nor as intellect or any other cognitive ability. Instead, we will suggest that Openness must be viewed in both structural and motivational terms. Openness is seen in the breadth, depth, and permeability of consciousness, and in the recurrent need to enlarge and examine experience.

A caution to the reader is in order: The concept of Openness appears to be unusually difficult to grasp. Among personality psychologists, it is the most controversial of the five basic factors of personality (McCrae & John, 1992), and lay raters appear to have preconceptions about Openness that are inconsistent with psychological definitions (Funder & Sneed, 1993). But data provide abundant support for the construct, and an increasing number of psychologists have adopted it (e.g., John, 1990). Here is a construct that must be approached with an open mind and a willingness to learn new ways of thinking about people.

I. OPENNESS AS A BASIC DIMENSION OF PERSONALITY

Isolated parts of the broad domain of Openness have long been recognized in psychology. Authoritarianism (Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950/1969) was once a major research topic for personality psychologists; exploratory behavior has been a fixture of animal research since the 1950s (Berlyne, 1955); Rogers' (1961) theory of psychotherapy was based on generating conditions to enhance openness to feelings; private self-consciousness (Fenigstein, Scheier, & Buss, 1975) has recently attracted much attention. However, these traits have rarely been seen as aspects of a broader and more basic dimension of Openness. A few researchers have pointed to such a dimension, although with somewhat different labels. There appear to have been four relatively independent discoveries of the dimension we call Openness.

1. Working from Cattell's (1946) distillation of the personality sphere as represented in natural language traits and in psychological tests, Fiske (1949) and later Tupes and Christal (1961/1992) and Norman (1963) reported five robust factors which have come to be called the Big Five (John, Angleitner, & Ostendorf, 1988) and form the basis of the five-factor model of personality (McCrae & Costa, 1987). The fifth factor was called *Culture* by both Tupes and Christal and Norman; Fiske

had also considered the label *Cultured* before adopting the phrase *Inquiring Intellect*. As typically construed within the Big Five tradition, this factor is focused on intelligence or intellectual activity, but includes cultural sophistication and imagination. Goldberg (1981) found a similar factor in his analyses of English language adjectives and called it *Intellect*; Hogan (1986), strongly influenced by Big Five research, included a measure of *Intellectance* in his personality inventory.

2. Tellegen and Atkinson (1974) began with an analysis of measures which had been empirically linked to hypnotic susceptibility. In a joint analysis with measures of ego resiliency and control, they found three replicable factors which they interpreted as Stability (the opposite pole of Neuroticism), Introversion (versus Extraversion), and “openness to absorbing and self-altering experiences,” or Absorption; only Absorption was related to hypnotic susceptibility. The Absorption factor was defined by scales measuring reality absorption, fantasy absorption, dissociation, devotion-trust, autonomy, and openness to experience. Tellegen and Atkinson explicitly noted the breadth of their Absorption factor: “it exemplifies the combination of *substantive divergence* and *structural convergence* that is suggestive of a major dimension” (p. 273), and they described cognitive and motivational-affective components. They concluded that Absorption was best interpreted as a capacity for absorbed and self-altering attention, found in peak and mystical experiences, hypnosis, and artistic creativity.

3. Coan (1974) was concerned with what he called the *optimal personality*, and he examined characteristics identified in a wide range of personality theories. He drew upon the work of Fitzgerald (1966) to measure the scope of awareness. Fitzgerald had been concerned with questionnaire assessment of the psychoanalytic concept of regression in service of the ego (Kris, 1952), and many of his items concerned regressive behavior and experience. Coan added other questions with a less pathological cast and found a general factor of openness in an analysis of the items. Coan reported that his Experience Inventory items were correlated with “measures that suggest emotional sensitivity, aesthetic interests, liberalism, and independence” and “a certain intellectual and emotional flexibility” (pp. 80–81). Because both Fitzgerald (1966) and Tellegen and Atkinson (1974) had drawn on the earlier work of Ås, O’Hara, and Munger (1962), these research lines are not strictly independent. It is noteworthy, however, that Tellegen and Atkinson focused on the depth and intensity of attention, whereas Coan was impressed by the scope of awareness in Open individuals.

4. Looking for age differences in personality structure, Costa and McCrae (1976) clustered the scales of the Sixteen Personality Factor Questionnaire (16PF; Cattell, Eber, & Tatsuoka, 1970). In addition to Neuroticism and Extraversion clusters, they found that scales B (intelligence), I (tender-mindedness), M (imagination), and Q1 (liberal thinking) formed a loose cluster in some age groups. They interpreted this cluster as Openness to Experience, and continued research on the dimension using a modification of Coan’s scales. An Experience Inventory (EI; Costa & McCrae, 1978) was created to measure Openness in the areas of fantasy, aesthetics, feelings, actions, ideas, and values. When jointly factored with 16PF

scales, a reasonably clear Openness factor was found, defined by 16PF B, M, and Q1 scales and Experience Inventory Fantasy, Aesthetics, Actions, Ideas, and Values scales. The EI scales were revised and ultimately incorporated in the Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992a), a questionnaire measure of the five-factor model. Factor analytic studies of the NEO-PI-R (Costa & McCrae, 1992b; Costa, McCrae, & Dye, 1991) show that the six Openness scales consistently define a separate factor in men and women, in young adults and old, and in self-reports and observer ratings.

Because the total NEO-PI Openness score is significantly and substantially related to Tellegen and Atkinson's Absorption, Goldberg's Intellect, and Norman's Culture (McCrae & Costa, 1985a), it appears that the lexical tradition and the ego regression traditions have converged in the identification of a broad and basic dimension of personality. Other studies of the five-factor model have also supported this conclusion. For example, when the 100 items of Block's (1961) California Q-Set (CQS) were factored, one of the five factors contrasted "Values intellectual matters," "Rebellious, non-conforming," and "Unusual thought processes" with "Favors conservative values," "Judges in conventional terms," and "Uncomfortable with complexities"; this factor correlated .62 with NEO-PI Openness scores (McCrae, Costa, & Busch, 1986). Similarly, Amelang and Borkenau (1982) found a factor they called *Unabhängigkeit der Meinungsbildung* (Independence of Judgment) in analyses of questionnaires and adjectives in a German sample. A wealth of more specific correlates of Openness have been identified; some of these are summarized in Table I (see also McCrae, 1993–1994).

II. TRADITIONAL CONCEPTIONS OF OPENNESS

Convergence on an empirical level has not been matched by convergence on a conceptual level. Indeed, there is not even widespread agreement on the label to use for this dimension (Saucier, 1992). Goldberg (1981) and Digman and Inouye (1986) preferred the term *Intellect*; Norman (1963) used *Culture*; and the corresponding factor (McCrae & Costa, 1989b) is identified as *Sensation versus Intuition* in the Myers–Briggs Type Indicator (MBTI; Myers & McCaulley, 1985). It is understandably difficult to sum up one of the broadest constructs in personality psychology in a single word, but the choice of labels is important. As Digman (1987) pointed out, researchers like Guilford, Eysenck, and Cattell assumed that intellectual interests were a reflection of intelligence and could best be measured by intelligence tests. Measures of the disposition of Openness were thus relatively neglected by these influential factorists.

The term *Openness to Experience* has its disadvantages, too. Especially when abbreviated as *Openness*, it may suggest the rather different trait of interpersonal openness or self-disclosure (Jourard, 1964). Openness may also suggest a passive or uncritical receptivity, which is clearly inappropriate. Open people actively seek

TABLE I

Selected Correlates of Self-reports on the NEO Personality Inventory (NEO-PI) Openness Scale in Baltimore Longitudinal Study of Aging Samples

Criterion	<i>N</i>	<i>r</i>
Observer ratings		
Spouse-rated NEO-PI Openness	144	.60
Mean peer-rated NEO-PI Openness	213	.60
CQS items		
Aesthetically reactive	254	.40
Skilled in play and humor	254	.33
Judges in conventional terms	254	-.41
Favors conservative values	254	-.40
Bipolar Adjective Scales		
Uncurious–Curious	375	.30
Uncreative–Creative	375	.34
Imperceptive–Perceptive	375	.29
Simple–Complex	375	.35
SDS Occupations		
Anthropologist	275	.36
Author	275	.43
Journalist	275	.38
Sculptor/sculptress	275	.31
Revised CPI Scales ^a		
Social Presence	348	.42
Empathy	348	.43
Achievement via Independence	348	.41
Flexibility	348	.42
PRF Needs		
Change	296	.40
Sentience	296	.55
Understanding	296	.54
ACL Creative Personality Scale	310	.46
GZTS Thoughtfulness	275	.35
MBTI Sensation–Intuition	468	.73
Haan Coping Scales		
Intellectuality	348	.45
Logical Analysis	348	.48
Regression in Service of the Ego	348	.34
Suppression	348	-.12
Sensation Seeking Scales V		
Thrill and Adventure Seeking	312	.34
Experience Seeking	312	.55
Disinhibition of Impulses	312	.28
Boredom Susceptibility	312	.20

Note. All $ps < .05$. CQS, California Q-Set; CPI, California Psychological Inventory; PRF, Personality Research Form; GZTS, Guilford–Zimmerman Temperament Survey; MBTI, Myers–Briggs Type Indicator; SDS, Self-Directed Search. (Data adapted from Costa & McCrae, 1988a, 1988b; Costa, McCrae, & Holland, 1984; McCrae, 1987, 1990; McCrae & Costa, 1985b, 1987; McCrae, Costa, & Busch, 1986; McCrae, Costa, & Piedmont, 1993).

^a Correlations are with Openness factor scores.

out experience and are apt to be particularly reflective and thoughtful about the ideas they encounter.

Whatever label we select will be insufficient to communicate the construct fully. For that we must rely on exemplars, like artists and poets; on an analysis of the elements or facets that combine to form the broad domain (cf. Briggs, 1989); and on a network of empirical correlates and outcomes associated with high or low standing on the dimension. In addition, however, it would be useful to have a conceptual definition, a theory of openness, that can help explain why people differ in Openness. Let us turn now to a consideration of some possible ways of construing Openness.

A. Openness as Culture

The term *Culture* was selected by Tupes and Christal (1961/1992) because it seemed to sum up the elements "intellectual, cultured," "esthetically fastidious," "imaginative," and "polished," in contrast to "boorish," "practical, logical," and "clumsy, awkward." Given these definers, the label seems apt; they have a peculiarly high-brow cast that suggests that the dimension may reflect differences in social class and breeding. If this characterization had been confirmed by subsequent research, the topic of Openness would perhaps have belonged in a handbook of sociology, not personality psychology. However, Tupes and Christal reported that this was the least clear of the five factors in their analyses, and subsequent studies have suggested that the elements of polish and sophistication are far less central to the dimension than intellectual and aesthetic interests and imagination (McCrae, 1990; McCrae & Costa, 1987; Peabody & Goldberg, 1989).

The label *Culture* suggests that this aspect of personality is the result of education—particularly the liberal education that has long been the central ideal of Western universities. Among the distinctive elements of this approach are exposure to a broad range of ideas, cultivation of both arts and sciences, and encouragement of a critical attitude with regard to accepted values and assumptions. Clearly, a liberal education will be most congenial to those who are by disposition open to experience.

The extent to which a liberal education is indeed broadening is an empirical question; there is some evidence in support of this premise (e.g., Webster, Freedman, & Heist, 1962). But education itself probably plays only a minor role in the development of Openness. In a national survey of nearly 10,000 men and women over the age of 35, a short scale measuring Openness showed only a modest correlation with years of education, $r = .28$, $p < .001$ (Costa et al., 1986). Education was neither necessary nor sufficient for Openness. About one-third of respondents with an eighth-grade education or less scored above the median on Openness; conversely, about one-third of respondents with some college education scored below the median. Individuals who are open without having had the benefits of formal education may be culturally unsophisticated—they may be deeply moved by the verses on greeting cards—but from a psychological perspective, they are open nonetheless.

Conversely, highly educated individuals may show the trappings of culture (attending museums, lectures, and concerts) without a deep appreciation of the experiences these events provide.

Formal education, of course, is not the only source of culture; family influences might also be important in modeling and encouraging breadth of interest and tolerant attitudes. As Rogerians might expect, loving and lenient parents tend to have children who are higher in Openness, but the association is very modest in magnitude (McCrae & Costa, 1988). By contrast, there was evidence of a strong heritable component of Openness in a study of adult Swedish twins (Bergeman et al., 1993), and Tellegen and his colleagues (1988) reported similar findings for Absorption in an American sample. These studies suggest that it may be wise to reverse the causal interpretation of the association of education with Openness: The intellectual interests of open men and women may lead them to seek higher levels of education.

B. Openness as Cognitive Ability

Perhaps the most popular alternative label for the dimension we have called Openness to Experience is some form of the word *Intellect*, which is defined as “the ability to learn and reason . . . [and the] capacity for knowledge and understanding” (Morris, 1976, p. 682). This definition suggests that the trait domain under consideration is best viewed as a set of cognitive abilities. Studies of trait adjectives show that such terms as *intelligent*, *perceptive*, *knowledgeable*, and *analytical* are among the definers of the factor—indeed, they are the chief definers in some studies (Angleitner & Ostendorf, 1989; Goldberg, 1989). The interest that open individuals have in a wide range of experiences might be understood as the result of their facility in handling information; certainly intellectual interests tend to follow abilities. Further, studies have shown that Openness, alone of the five factors, is positively related to psychometric measures of intelligence and other cognitive abilities (e.g., McCrae, 1987). The heritability of Openness might be explained by the heritability of intelligence. Psychologists have spent more time and effort studying intelligence than any other trait; by adopting the term *Intellect*, personality psychologists could claim this vast literature as their own. Openness could be construed as intelligence itself, or, as Cattell suggested, as the reflection of intelligence in the personality sphere.

Despite these temptations, there are five reasons to reject the label *Intellect* and the interpretation it suggests:

1. Factor analytic studies of natural language adjectives are inconclusive and suggest that rated intelligence may mark not one but two factors. As in all factor analyses, the nature of the factors depends chiefly on the variables included. Researchers like Borgatta (1964), convinced a priori of the interpretation of the factor as intelligence, included markers reflecting this interpretation (*intelligent*, *rational* and *logical*, *clear minded*, *alert*, *mature*). Researchers with a broader conception of

the factor included variables such as *imaginative*, *prefer variety*, *original*, and *artistic*, and found a correspondingly different factor (e.g., McCrae & Costa, 1985b). One way to avoid the possible biases of variable selection is to attempt to obtain a representative sample of adjectives. Goldberg's (1989) work in this regard has led him to a factor he characterizes as Intellect; Peabody's (1987) analyses of semantic similarity judgments recovered a factor he identified as Openness to Experience. Both these efforts were based on the assumption that the English language adequately represents all important personality traits in single adjectives, but that assumption has been questioned (McCrae, 1990). For example, the phrase "prefers variety," which corresponds to the widely researched trait of novelty-seeking or need for variety (Maddi & Berne, 1964), apparently has no counterpart in natural language adjectives.

Further, studies that include ability terms like *intelligent* typically find that these items have substantial secondary loadings on the Conscientiousness factor. Table II confirms this by showing loadings for variables related to rated intelligence on both Openness and Conscientiousness factors. Rated intelligence appears to be related to both factors in peer ratings, self-reports, and semantic similarity judgments. Conceptually, this is perfectly reasonable. Individuals may be considered intelligent for either (or both) of two reasons: they may be intellectually curious, imaginative, and inventive, or they may be efficient, well-organized, competent, and careful in their work. From this perspective, the label *Intellect* is too broad, because it encompasses and confounds aspects of two basically independent domains.

2. In another respect, *Intellect* is too narrow a label. Even if we include intellectual interests along with intellectual abilities, the range of phenomena known empirically to correlate with Openness would hardly be suggested by the term. Who would guess that individuals high in a factor labeled Intellect would be more easily hypnotized (Tellegen & Atkinson, 1974), more variable in mood (Wessman & Ricks, 1966), or more "skilled in play and humor" (cf. Table I)?

Open people are not only *able* to grasp new ideas, they *enjoy* doing so. The merely intelligent tend to have highly developed interests in specialized fields in which they excel; open people have a wide and ever-increasing range of interests. Further, these interests extend beyond intellectual pursuits. Open people want to taste different food, to see new sights, to reconsider their values, to develop elaborate fantasies. Cognitive abilities may in some degree facilitate this exploration of the world, but they are neither necessary nor sufficient for it.

Need for variety, tolerance of ambiguity, and preference for complexity all represent motivational aspects of Openness. In addition, open people can be characterized by their nontraditional attitudes, their rich and complex emotional lives, and their behavioral flexibility. Like the other four basic dimensions of personality, Openness is a broad constellation of traits with cognitive, affective, and behavioral manifestations. It cannot be reduced to a single underlying ability.

3. The empirical association of Openness with psychometric measures of intelligence is too weak to imply equivalence between the two constructs (McCrae,

TABLE II

Loadings of Rated Intelligence Variables on Openness and Conscientiousness Factors in Selected Studies

Study	N	Factor	
		Openness	Conscientiousness
Norman (1963)			
Sample C ratings	215	74	47
Sample D ratings	241	84	10
Borgatta (1964)			
Female ratings	315	25	60
Male ratings	144	63	25
Conley (1985)			
Female self-reports	189	—	63
Male self-reports	189	—	25
McCrae & Costa (1985b, 1987)			
Self-reports	498	<40	44
Peer ratings	738	41	44
Peabody (1987)			
Internal analyses	—	66	54
Goldberg (1989)			
Self-reports (Table 6)	192	51	19
Self-reports (Table 7)	95	66	14
Self-reports (Table 8)	95	36	35
Self-reports (Table 9)	157	42	33
Self-reports, Study 6	215	59	18
Self-reports, Study 7	175	45	21
Median		51	33

Note. Decimal points are omitted. Conley (1985) did not report an Openness factor. Peabody's (1987) data are based on similarity judgments made by four raters.

1993–1994). In a sample of men from the BLSA, correlations of .22 and .20 were found between NEO-PI Openness and WAIS Vocabulary and Total Army Alpha scores, respectively; further, when measures of personality and cognitive ability are factored jointly, six factors, not five, are recovered, with measured intelligence forming a distinct factor (McCrae, 1994; McCrae & Costa, 1985a, 1985b). The average participant in the BLSA receives high scores on measures of IQ, and somewhat larger correlations would probably be seen in unselected samples. But given the reliability of psychometric measures, even correlations of .30 or .40 would mean that most of the valid variance in intelligence is *not* related to Openness to Experience.

The one form of cognitive ability that does show somewhat stronger correlations with Openness is divergent thinking (McCrae, 1987). Correlations around .40 were consistently seen between a total divergent thinking score and a variety of

self-report and rating measures of Openness. We should not, however, discount the possibility that high scores on such tests may reflect motivational features of open people rather than ability: Curious and imaginative people may become more involved in tasks that require flexible and fluent thought. In any case, if an ability interpretation of Openness were to be advanced, Creativity would make a better label than Intellect.

The identification of Openness with Intellect may also be misleading with regard to assessment, because it suggests that Openness might be measured by psychometric tests. Given the relative reliabilities and validities of cognitive tests versus self-report questionnaires or ratings, this is a tempting alternative, and historically it has been extremely influential. Cattell, for example, included a measure of intelligence in his 16PF instead of asking questions about intellect. Eysenck (1991) also considered that this domain was adequately covered by cognitive measures. Of course, if Openness were equivalent to intelligence, this would be an appropriate decision. To the extent that Openness is something else, this approach ensures an incomplete assessment of personality.

Figure 1 summarizes the relations between Openness, Intellect, Intelligence, and Conscientiousness described in the preceding sections. Both the breadth and

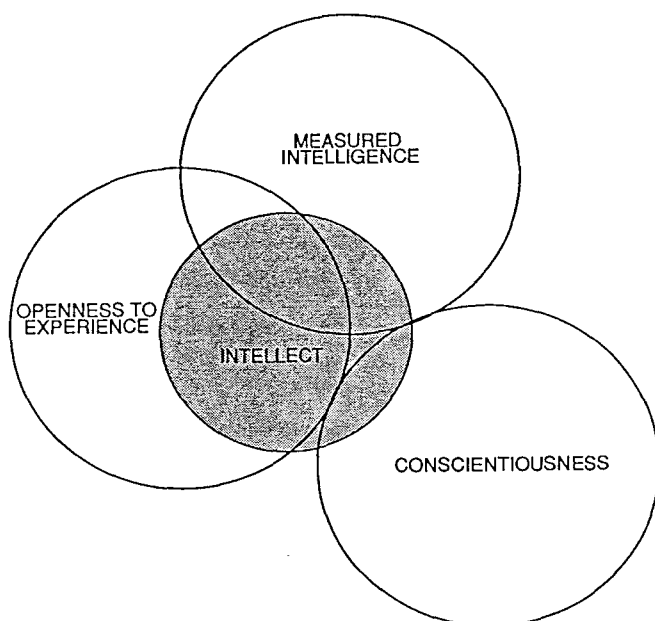


FIGURE 1 Schematic representation of relations among Openness to Experience, Measured Intelligence, Conscientiousness, and Intellect. Both Openness and Intellect are modestly related to Measured Intelligence. Some aspects of Intellect (*perceptive, curious*) are shared with Openness; others (*logical, foresighted*) are shared with Conscientiousness. Many elements in Openness (*liberal, adventurous, empathic*) are not included in Intellect.

the relatively greater independence of the Openness construct suggest its superiority to Intellect as a basic dimension of personality.

4. But there are also other, pragmatic reasons for preferring the term *Openness*. Intellect and Openness have very different evaluative connotations. Individuals who are closed to experience would probably accept this designation; they are content to be down-to-earth and may be proud of their traditionalism. By contrast, no one wants to be called *stupid*. The highly evaluative term Intellect presents difficulties when feedback on personality is provided, as in client-centered assessment (Costa & McCrae, 1989; McReynolds, 1985). It may also suggest to psychologists that Openness is superior to Closedness. In fact, there are many advantages—both to the individual and to society—to being closed to experience. Both innovation and conservation are necessary processes in any culture and any individual life.

5. Finally, the identification of Openness with Intellect effectively short circuits research on personality and intelligence. No one is likely to do research on the question of whether Intellect contributes to the development of intelligence, but if we distinguish Openness from intelligence, we can ask whether the former affects or is affected by the latter—a question that might have profound consequences for developmental and educational psychology. The heuristic value of distinguishing such concepts is seen in the work of Welsh (1975) on the related constructs of *origence* and *intellectence*.

On empirical, conceptual, and heuristic grounds, then, it seems that Openness is a better label for this factor than Intellect. This phrasing also spares us some empirical embarrassments. For example, open individuals frequently entertain ideas that we would not readily associate with intelligence. Epstein (Epstein & Meier, 1989) has developed a scale measuring “beliefs in esoteric and dubious phenomena, such as astrology and the existence of ghosts” (p. 51). In a college sample, this Esoteric Thinking scale was substantially correlated with NEO-PI Openness, $r = .47$, $N = 59$, $p < .001$. It is far easier to see these beliefs as an outcome of open-mindedness than as a reflection of intelligence.

III. ALTERNATIVE CONCEPTIONS: STRUCTURAL AND MOTIVATIONAL

A. Openness as Psychic Structure

As the consensual validation of Openness ratings across observers demonstrates, Openness is rather easily inferred from observable speech and behavior (McCrae & Costa, 1989a). But fundamentally Openness is a matter of inner experience, a mental phenomenon related to the scope of awareness or the depth and intensity of consciousness. It is therefore not surprising that much of the conceptual basis of this dimension comes from the work of dynamic psychologists, such as Adorno et al. (1950/1969), Kris (1952), and Rogers (1961), for whom the concept of consciousness was central.

As Coan (1974) noted, psychoanalysts have typically focused on psychopathology and on the restrictions in awareness brought about by the defensive processes of repression. A particular causal sequence is suggested by this model: intrapsychic conflicts lead to repression, which leads to limitations in the scope of awareness. Removing the conflicts should thus increase openness. This view is close to the one held by Rogers (1961), who viewed Openness as an outcome and reflection of mental health. Appealing as this formulation may be to both psychoanalysts and humanistic psychologists, it has two significant problems. First, Openness is unrelated to Neuroticism and most measures of mental health, meaning that poorly adjusted individuals are as likely to be open as are well-adjusted individuals (McCrae & Costa, 1985a). Second, it is difficult to explain the generality and pervasiveness of Openness from this perspective. In most psychoanalytic thought, defense mechanisms operate on specific conflicts or anxieties. It is understandable that an early trauma might leave a particular blind spot, but why should it also lead to conservative political views and indifference to art and beauty?

A more plausible dynamic model can be inferred from the writings of Frenkel-Brunswick in *The Authoritarian Personality* (Adorno et al., 1950/1969). This book was an ambitious—perhaps too ambitious—attempt to integrate political philosophy, social attitude research, and dynamic personality theory. Certainly no one today would advocate the use of the F Scale as a measure of Openness to Experience, but there can be little doubt that the high scorers on the Ethnocentrism and F scales studied by Adorno et al. were closed to experience (although they were also probably highly antagonistic). The CQS definers of low Openness (McCrae et al., 1986) in particular show an uncanny resemblance to authoritarian features: *favours conservative values; judges in conventional terms; uncomfortable with complexities; moralistic; sex-role stereotyped behavior; and even productive* (one of the few desirable characteristics attributed to authoritarians). Conversely, Frenkel-Brunswick noted that “there seems to be a general tendency on the part of low scores [non-authoritarians] to expose themselves to broad experience—emotional, cognitive, and perceptual—even at the risk of having to modify [their] preconceived notions and of having to sustain conflicts” (p. 464). The hypothesis that Openness is inversely related to authoritarianism is supported by evidence that Altemeyer’s (1981) Right-Wing Authoritarianism scale is related to total NEO-PI-R Openness, $r = -.57$, and all its facets, $r_s = -.29$ to $-.63$, $N = 722$, $p < .001$ (Trapnell, 1994).

Frenkel-Brunswick interpreted her findings in terms of lower defensiveness on the part of open people, an ability to allow into consciousness unacceptable or undesirable impulses. It is the denial of these impulses and affects in authoritarians that leads to the development of prejudice, through the operation of projection and externalization. “The resultant break between the conscious and unconscious layers in the personality of the high scorers, as compared with the greater fluidity of transition and of intercommunication between the different personality strata in the low scorers, appears to have the greatest implications for their personality patterns” (p. 474).

However, Frenkel-Brunswik seems to have made a subtle but important distinction in the causal sequence envisioned. She did not suggest that authoritarians have more conflicts, but that they deal with conflicts in particular ways because of the structure of their consciousness. We might hypothesize that open men and women would intellectualize their conflicts, whereas closed men and women would repress or deny them. Projection may be used by closed individuals because they see the world simplistically in terms of good and bad, and it is easier to assume that others are bad and the self is good. Under this interpretation, authoritarianism (or closedness) is not the result of defense, but one of the determinants of the form of defense used. Repression and projection would then be seen not as causes of political conservatism and aesthetic insensitivity, but as correlates that share the same underlying cause: closedness to experience.

There is some empirical evidence for this position. Haan (1965) devised defense mechanism scales by empirically contrasting MMPI item responses of individuals clinically judged high or low in the use of various defenses; she created parallel coping mechanism scales from CPI items. Among the defense scales, Openness to Experience was positively related to Intellectualizing and negatively related to Denial (Costa, Zonderman, & McCrae, 1991). As Table I shows, Openness is also positively related to coping scales measuring Intellectuality and Logical Analysis, and negatively related to Suppression.

Table I shows that Openness is also related to Regression in Service of the Ego, a concept advanced by Kris (1952) to explain artistic creativity. Although described as a defense mechanism, it is clear that Regression in Service of the Ego is defined in structural rather than defensive terms. Kris suggested that some individuals can loosen the boundaries that separate mature, reality-oriented secondary process thinking from the prelogical, primary process thinking seen in dreams and psychotic delusions. This form of regression is adaptive, because primary process thinking is the source of creativity: the conventional associations between ideas and images are temporarily abandoned, leaving the mind free to try new associations. The artist then returns to secondary process thinking to select the useful products of this freer association and adapt them to the requirements of reality.

The consequences of permeable cognitive structures are not always adaptive. Hartmann, Russ, Oldfield, Siven, and Cooper (1987) studied chronic nightmare sufferers. They reported that their subjects were likely to be artists or students, and were described as being open, vulnerable, and defenseless "on the thin-boundary or permeable-boundary end of the continuum in all senses in which that term is used" (p. 56). (Hartmann, 1991, has gone on to develop his ideas about boundaries in the mind that provide a modern psychodynamic perspective on Openness.)

Similarly, recent studies have shown links between Openness and certain forms of cognitive aberration. West, Widiger, and Costa (1993) found that, among college students, NEO-PI-R Openness was associated with Perceptual Aberration and especially Magical Ideation scales (Chapman, Chapman, & Raulin, 1978; Eckblad & Chapman, 1983). Table III shows correlations of NEO-PI-R scales with measures of dissociation (Bernstein & Putnam's, 1986, DES; Riley's, 1988, QED)

TABLE III
Correlations between NEO-PI-R Openness
Scales and Measures of Dissociation and
Eccentric Perceptions

NEO-PI-R Scale	DES	QED	EP
O1: Fantasy	.37***	.58***	.42***
O2: Aesthetics	.24**	.32***	.47***
O3: Feelings	.22*	.33***	.30***
O4: Actions	.13	.14	.12
O5: Ideas	.15	.30***	.32***
O6: Values	-.04	.10	-.03
Total Openness	.30***	.49***	.47***

Note. $N = 127$. DES, Dissociative Experiences Scale; QED, Questionnaire of Experiences of Dissociation; EP, Eccentric Perceptions. Data cited by permission from D. Watson, J. Harrison, and A. K. Slack, 1993, [*Measures of dissociation and their relation to general traits of personality*]. Unpublished raw data, University of Iowa.

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

and eccentric perceptions as measured by the Schedule for Non-Adaptive and Adaptive Personality (Clark, 1993). Very open people appear to have some of the characteristics of schizotypal thinking; whether these are adaptive or maladaptive will probably depend on other aspects of personality and on the individual's social environment.

Perhaps the most highly developed version of the structural model of Openness is found in the work of Rokeach (1960), who argued that ideas, beliefs, and attitudes were structured differently in open and closed individuals. Highly dogmatic individuals were thought to have compartmentalized thinking in which inconsistent beliefs were isolated and discrepant information was summarily rejected. Individuals low in dogmatism were able to tolerate ambiguity and could gradually shift attitudes as the weight of evidence accumulated. Using Coan's Openness scale, Wyrick (1969) showed that open individuals in fact acknowledged more frequent revisions in attitudes than did closed individuals.

It appears that one useful and important way to characterize Openness is in terms of the structure of consciousness. Open individuals have access to more thoughts, feelings, and impulses in awareness, and can maintain many of these simultaneously. Tolerance of ambiguity, emotional ambivalence, and perceptual synesthesia are all hallmarks of the open person. The capacity for absorption, for deeply focused attention, may be a result of this structure. For the closed individual, ideas, feelings, and perceptions are relatively isolated and must compete for full

attention. For the open individual, all these elements may be simultaneously in awareness, providing a deeper and more intense experience.

B. Openness as Need for Experience

A structural account of Openness may be necessary, but it does not seem to be sufficient. Open people are not the passive recipients of a barrage of experiences they are unable to screen out; they actively seek out new and varied experiences. Openness involves motivation, needs for variety (Maddi & Berne, 1964), cognition (Osberg, 1987), sentience, and understanding (Jackson, 1984). This active pursuit of experience can be seen in all the facets of Openness. Closed individuals may have daydreams, but they are likely to be conventional and repetitive and serve the functions of escape from stress (McCrae, 1982) or mere wish fulfillment. The daydreams of open individuals are characterized by novelty and elaboration and are motivated by their intrinsic interest. The same is true for actions: Any reasonable adult (including some who are merely high in Agreeableness) would be willing to taste a new dish; the truly open go in quest of varied cuisines.

Fiske (1949) highlighted the active curiosity of open individuals by naming his corresponding factor *Inquiring Intellect*. Philosophical arguments are boring to closed individuals because they have no practical value; they are interesting to open people because they are intellectually challenging and because they may lead to new and surprising conclusions: Both the process of exploring and the novelty of discovery appeal to open people. Open individuals tend to endorse liberal political and social values (McCrae, in press) because questioning authority is a natural extension of their curiosity. The same willingness to pursue questions of value leads to higher moral development (Lonky, Kaus, & Roodin, 1984) and to the artist's bohemian rejection of convention.

Perhaps the clearest evidence of open individuals' need for experience per se is found in their appreciation of the arts. At least since Kant's *Critique of Judgment*, it has been generally recognized that the aesthetic experience is disinterested: There is no practical reason to be concerned with the fate of tragic heroes—no tangible benefit from listening to symphonies. The only function art serves is "to clarify, intensify, or otherwise enlarge our experience" (Canaday, 1980, p. 5), and this is the quintessential aim of open men and women.

Zuckerman's (1979, 1984) extensive research and theorizing on Sensation Seeking is surely relevant to an understanding of the motivational aspects of Openness. As Table I shows, all the Sensation Seeking scales are significantly related to Openness, particularly Experience Seeking. Zuckerman's (1984) suggestion that "novelty, in the absence of threat, may be rewarding through the activation of noradrenergic neurons" (p. 413), points to a possible neurochemical basis for Openness.

We have argued that open people are characterized both by a particular permeable structure of consciousness and by an active motivation to seek out the unfamiliar. It seems probable that the structure is the result of the motivation,

rather than vice versa. In the absence of a need for new experience, an open structure would not provide any clear advantage; indeed, it would expose the individual to distracting thoughts, troubling impulses, and cognitive inconsistencies (cf. Maddi, 1968). The need for experience provides an incentive to tolerate ambiguity and dissonance, just as an animal's exploratory drive may overcome its need for security. In both cases, the evolutionary function seems clear: Greater experience ultimately provides a basis for better adaptation.

IV. FURTHER RESEARCH AND APPLICATIONS

It may seem odd to assert that Openness is the least researched and least understood of the five fundamental dimensions of personality. After all, there have been decades of research on psychological defenses, authoritarianism, hypnosis, creativity, and the need for variety. However, these diverse lines of research have not been integrated by the conception of Openness as a fundamental domain of personality which is reflected in each. As a result, there has been little cross-fertilization of ideas and the literature has been fragmented. The power of the construct of Openness in interpreting these areas can be seen in the explanations it provides for unanticipated results. Without it, how would we explain the curious finding that private self-consciousness is related to belief in paranormal phenomena (Davies, 1985)? Or the fact that the MBTI Sensation scale is *negatively* related to Zuckerman's Sensation Seeking, $r = -.43$, $N = 170$, $p < .001$, in BLSA participants? Once we understand that each of these variables reflects an aspect of Openness, the associations are clear.

Personality psychology is poised for a new round of research on these topics, guided by the concept of Openness. New instruments (e.g., Costa & McCrae, 1992a; Trapnell & Wiggins, 1990) provide validated measures of Openness and some of its facets in both self-report and observer rating formats. Scales measuring related traits such as absorption and private self-consciousness can be used more intelligently if they are understood as aspects of a broader and more fundamental construct.

A. Some Research Questions

Openness is so important and pervasive a dimension of individual difference that it should figure routinely in the research of personality psychologists. Researchers in other fields can also benefit by including measures of Openness in their studies (McCrae, in press). Social psychologists should assess openness in research on attitude formation and change. Educational psychologists should consider Openness as a moderator variable in assessing the value of different teaching methods. Industrial and organizational psychologists should include measures of Openness in their personnel selection batteries. Behavioral geneticists should study its heritability (Bergeman et al., 1993), and health psychologists should investigate its role in health information seeking and behavior change. Cognitive psychologists should examine

the relation of Openness to field independence, cognitive complexity, and other cognitive styles (Tetlock, Peterson, & Berry, 1993).

In an earlier article (McCrae & Costa, 1985a), we argued that the future of Openness lay in the investigation of its effects across the life span in such areas as vocational career and family life. We know that open individuals have Artistic and Investigative interests (Costa, McCrae, & Holland, 1984) and that they make more midcareer shifts (McCrae & Costa, 1985a). There are characterizations of rigid and flexible managers (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964) that suggest how variations in Openness might be seen in organizational settings. But much remains to be learned about how Openness influences career paths, job satisfaction, and retirement planning. Similarly, we know little about the effects of Openness on the course of intimate and personal relationships. We know that Openness is stable in adulthood (Costa & McCrae, 1988a), so we should be able to approach many of these questions through retrospective studies; every prospective longitudinal study should certainly include baseline measures of Openness.

B. Applications in Psychiatry and Clinical Psychology

Personality traits have always been considered important for the diagnosis of psychiatric disorders, and extreme and maladaptive variants of some aspects of personality are classified as personality disorders in DSM-IV (American Psychiatric Association, 1994). Wiggins and Pincus (1989) have shown that scales measuring these disorders can be understood in terms of the five-factor model. Histrionics, for example, are extremely high in Extraversion; Avoidants are high in Neuroticism and low in Extraversion.

None of the DSM-IV personality disorders is uniquely associated with Openness, but a careful consideration of diagnostic criteria shows that aspects of Openness are relevant to several disorders (Costa & Widiger, 1994). The restricted affect of Schizoids, the self-aggrandizing fantasy of Narcissists, and the behavioral rigidity of Compulsives are all significant clinical features that may well be related to Openness. In his reconceptualization of personality disorders, Millon (1986) has suggested that each disorder is characterized by a particular intrapsychic structure, and as we have seen, Openness is a major determinant of psychic structure.

However, Openness has a history of being overlooked, and it is also worthwhile to consider that there may be personality disorders not identified in DSM-IV which represent pathological forms of Openness. Some individuals are so rigid in their adherence to tradition and so unwilling to accept change that they are unable to adapt to inevitable social changes. When combined with very low levels of Agreeableness, this closedness may take on an antisocial character. It is also possible that excessively high levels of Openness (particularly in the absence of comparably high levels of intelligence and Conscientiousness) may constitute a personality disorder. Such individuals may be so easily drawn to each new idea or belief that they are unable to form a coherent and integrated life structure.

Even where Openness is not relevant to the diagnosis of a psychiatric disorder, it may have important implications for psychotherapy (Miller, 1991). Open individuals may be more receptive to the idea of therapy itself and more tolerant of imaginative forms of therapy, such as Gestalt or hypnotherapy. Closed individuals are more likely to prefer concrete and practical suggestions. Biofeedback and directive therapies may prove more successful with them.

We began by suggesting that artists can be seen as exemplars of Openness, just as neurotics are exemplars of Neuroticism. People, however, are not one-dimensional exemplars; they are individuals who vary on at least five dimensions of personality. People who consult psychologists and psychiatrists about their problems bring more than these problems to the therapy; they also bring other dispositions that shape their lives and condition their responses to therapy. Individuals who are imaginative, sensitive, empathic, flexible, inquisitive, and tolerant will respond quite differently from those who are practical, down-to-earth, rigid, and dogmatic. Clinicians need to take Openness into account in designing the appropriate treatment for each client.

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