Openness to Experience

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Abstract

Openness to experience is best understood as a multifaceted personality trait that covers a wide range of behavioral inclinations, attitudes, and interests associated with seeking for novelty and variety. Openness and its narrow traits (e.g., intellect, culture) are meaningfully linked to intelligence, academic achievement, creativity, social/political attitudes, religiosity/spirituality, subjective and psychological well-being, and work outcomes, which are discussed in detail.

Background, Definition, and Measurement

Openness to experience (in short, openness) is most commonly recognized as one of the Big Five personality dimensions and is associated with adjectives such as 'intelligent,' 'original,' 'curious,' 'broad-minded,' 'artistically sensitive,' and 'introspective.' Until recently, empirical research involving openness has been rather fragmented, mainly due to discord regarding its exact conceptualization and measurement. The divergence in definitions is perhaps best reflected in the often imbalanced contents of frequently used personality inventories that emphasize either the intellectual *or* nonintellectual aspects of openness, but rarely both. Recent personality literature addressed this imbalance by adopting a dual label for this construct, 'openness/intellect.' Most notably, DeYoung et al. (2007) factor analyzed the Abridged Big Five Circumplex measure from the International Personality Item Pool (AB5C-IPIP) and the Revised NEO Personality Inventory (NEO-PI-R), and identified two aspects (i.e., traits at the intermediate level of specificity), which were labeled as openness and intellect. However, in order to avoid any confusion around the fact that 'openness' can be used as both an aspect of openness to experience and as a shorter name for the general openness to experience construct, this article refers to these two aspects of openness to experience as *culture* and *intellect*, respectively.

Recently, Woo et al. (2014a) introduced a three-level structural model of openness to experience (http://www1.psych.purdue.edu/~sewoo/openness.php). This model was derived from a factor analysis of 36 existing measures of openness-related scales, which yielded six facets: *intellectual efficiency* (i.e., processing novel stimuli quickly, remembering information, being knowledgeable and intellectual), *ingenuity* (i.e., mental agility in manipulating ideas or concepts, refining existing information, creating something entirely new), *curiosity* (i.e., being inquisitive, perceptive, desiring to learn about scientific principals and related topics), *aesthetics* (i.e., appreciating various forms of art, open to aesthetic experiences), *tolerance* (i.e., enjoying learning about different cultures, attending cultural events, befriending people from other cultures, immersing oneself in a foreign culture when traveling), and *depth* (i.e., desiring to gain insight into self/world and to self-improve, discussing philosophy, self-reflecting, meditating).

According to Woo et al.'s (2014a) model, openness is a broad, multifaceted construct that embodies how one typically deals with novel stimuli. The narrower traits of openness encapsulate more specific behavioral patterns adopted by individuals that describe *how* people seek out, process, and manipulate novel stimuli. Novel stimuli can appear in either an 'encoded' form (e.g., symbols and equations used in scientific theories and models) or a 'raw,' preprocessed (e.g., shapes, colors, tastes, and people) form. Accordingly, Woo et al. categorized the six openness facets into two aspects, 'openness to intellectual stimulation' of encoded stimuli (or *intellect*, in short) and 'openness to cultural experience' or raw stimuli (or *culture*, in short). In further support of this, they presented a confirmatory factor analysis result that a model with the six facets and the two aspects of openness fit the data best. Woo et al. (2014a) also introduced a measure specifically designed to capture their theoretical model, which has been validated across three distinct samples from the United States and China.

Other Models of Lower-Level Openness Structure

In their renowned lexical study, Saucier and Ostendorf (1999) factor analyzed adjectives judged to be associated with openness, and identified three facets: imagination, intellect, and perceptiveness. The imagination facet had the highest loading on the openness factor and was marked by adjectives such as creative, inventive, clever, and innovative. The types of adjectives that loaded on their intellect facet described an individual who was intelligent, analytical, and knowledgeable. Lastly, the perceptiveness facet, which had the lowest loading on openness, was marked by adjectives such as perceptive, insightful, and foresighted. Based on the content of their facets, Saucier and Ostendorf's analysis provided a facet-level structure associated almost exclusively with intellectual functioning (e.g., inventive, analytical, insightful). While extremely illuminating, this methodology was unable to capture the vitally important experiential facets of openness that we now know compose the culture aspect of the construct.

Questionnaire-based studies, on the other hand, tend to reveal a much broader configuration of the openness construct. Costa and McCrae's (1992) NEO-PI-R is a good example. Its openness measure consists of six subscales (or facets): fantasy, aesthetics, feelings, actions, ideas, and values, which are based on their theoretical perspective of highly open people as being "imaginative, sensitive to art and beauty, emotionally

differentiated, behaviorally flexible, intellectually curious, and liberal in values" (McCrae and Sutin, 2009: p. 258). One of the strengths of this taxonomy is that it more accurately captures the domain of the multifaceted nature of openness, however, this taxonomy is limited because it was developed primarily based on the authors' intuitions rather than on a thorough, empirical and theoretical basis. As noted by Costa et al. (1991), they identified six facets for each dimension of the Big Five "not because each is naturally divisible into six parts, but because at least six distinctions were suggested by the literature, and more than six scales would tax the user's ability to learn and remember the facets," (p. 888).

On the other hand, openness facets of the Abridged Big Five Circumplex scales from the International Personality item Pool (AB5C-IPIP; Goldberg, 1999) had a clear theoretical rationale in their derivation. Each facet of the AB5C-IPIP was intended to represent a combination of two 'pure,' lexically derived Big Five factors (Hofstee et al., 1992). The assumption was that, by exhausting every possible 2-factor combination of the Big Five factors one would produce the most comprehensive range of Big Five facet-level traits. As a result of this pairing, the AB5C-IPIP contains nine openness subscales: intellect, ingenuity, reflection, competence, quickness, introspection, creativity, imagination, and depth (readers interested in the actual items of these scales may refer to http://ipip.ori.org/newAB5CKey.htm). Although a compelling methodology, we note that the AB5C approach was largely based on the notion that the core of 'Factor V,' a neutral label for openness within the lexical tradition, is 'creative mentality' (Johnson, 1994: p. 311). This inevitably biased these nine facets toward the construct's intellectual side, while essentially ignoring the cultural and artistic side of openness, as well as the vast range of stimuli associated with it.

Hough and Ones (2001) took yet another approach by consulting subject-matter experts to develop the openness of taxonomy. By aggregating opinions of experts, they proposed six openness 'working taxons' (complexity, culture/artistic, creativity/innovation, change/variety, curiosity/breadth, and intellect) and further listed some of the existing scales they believed to be associated with each taxon. The advantage of this approach is that it likely reflected a diverse range of researchers' experiences, and therefore a more balanced view of openness. The limitation of this approach may be that it is difficult to check for redundancies or to estimate the degree of relations between each proposed facet in a quantifiable, systematic manner.

Lastly, using a critical incidents sorting methodology, followed by theoretical discussions among subject-matter experts and subsequent meta-analytic investigation, Connelly et al. (2014a) identified four 'true' facets of openness: aestheticism, openness to sensation, nontraditionalism, and introspection. In addition, they also found four compound traits that were thought to be a result of both openness and other Big Five personality factors: thrill-seeking and variety-seeking were identified as reflective of high levels of openness and extraversion, and low conscientiousness; openness to emotions and innovation were identified as reflective of high levels of openness, extraversion, and emotional stability. Their final list of openness facets did not include certain constructs that represent curiosity and/or typical intellectual engagement, which was attributed to the fact that the subject-matter experts who participated in the theoretical sorting process did not see that they could be distinguished from the global openness trait. The authors noted, however, that including such constructs within the construct of openness is crucial, and as such, measures specifically designed to capture such facets are necessary.

Relationships with Other Constructs

Intelligence

It is widely recognized that individuals high in openness tend to seek intellectual stimulation and activities, behaviors which encourage further development of intelligence. Consistent with this, many empirical studies have found robust, positive correlations between measures of openness and cognitive abilities. Moving beyond the relationship between broad level openness and intelligence and taking into account their lower-level structures allows for a more nuanced understanding of how these two constructs are related. Past research that considered lower-level openness traits has suggested that the intellect aspect is primarily responsible for the relationship between openness and intelligence (e.g., DeYoung et al., 2014). This notion is directly supported by a recent discovery that measures of intellect were significantly associated with measures of *g*, verbal and nonverbal ability, whereas measures of culture (which DeYoung refers to as 'openness') were only associated with verbal ability measures (DeYoung et al., 2014).

Academic Achievement

In addition to general intelligence, openness has also been repeatedly linked to other various indicators of success in academic settings. Research shows that openness is positively related to factors such as deeper approaches to learning, intrinsic motivation to succeed in college, investigative and artistic interests, college GPA, primary school grades, SAT verbal section scores, as well as higher levels of educational attainment. However, recent research has suggested that the magnitude of correlation between openness (as a broad trait) and academic performance is often fairly modest, at best.

Further, researchers are not in agreement about the underlying psychological mechanisms by which openness influences academic success. One possible argument is that the positive predictive relationship between openness and academic success can simply be attributed to the conceptual overlap between the intellect aspect and intelligence. In line with this, Heaven and Ciarrochi (2012) found that openness to experience predicted increased academic achievement, but only for those who were high in intelligence. Some even argue that the intellect aspect of openness simply reflects intelligence, and that intelligence should be considered a part of personality (e.g., DeYoung, 2014).

Creativity (*see* Personality and Creativity)

Openness has shown consistent overlap with creativity-related constructs. Woo et al.'s (2014a) facet-level taxonomy of openness includes ingenuity as one of the openness facets, which was linked to high scores on Goldberg et al.'s (2006)

IPIP Creativity scale and other measures of creative personality. In line with this finding, previous empirical research has established a positive relationship between openness and creativity (e.g., Dollinger et al., 2004; Feist, 1998; Kaufman et al., 2009; McCrae, 1987; Nusbaum and Silvia, 2011). These studies considered creativity in contexts such as organizations, workgroups, academia, art, and science, as well as in various forms such as creative accomplishments, creative behaviors and/or performance, creative/divergent thinking, and self-ratings of creativity.

The culture and intellect aspects appear to have differential relationships with creativity-related constructs. For example, DeYoung (2013) posited that culture (which he called 'openness') would be more strongly associated with artistic creativity and intellect would be more strongly associated with scientific creativity. Similarly, Nusbaum and Silvia's (2011) study found that culture predicted creativity but intellect did not, when the assessment was geared toward artistic creativity. These findings echo previous research showing that the aesthetics facet of openness (a facet within the culture aspect) had the strongest relationship with artistic creativity whereas the ideas and values facets (facets within the intellect aspect) had the strongest relationships with scientific creativity (Perrine and Brodersen, 2005).

Political and Social Attitudes

Openness is the only Big Five personality factor that has consistently and uniquely predicted political orientation, with higher scores significantly associated with a stronger endorsement of liberalism. Liberals' "preference for social change and equality reflects and reinforces motivational needs for openness, creativity, novelty, and rebelliousness" (Carney et al., 2008: p. 817). Open individuals also tend to express less support for a government restricting civil liberties of prisoners and violating their human rights (Swami et al., 2012).

Beyond linking openness with specific social and political orientation, Mondak and Halperin (2008) found that people with high levels of openness also tend to possess more political interest and knowledge, engage in political conversations more actively, be more outspoken about their political beliefs, and have high levels of internal political efficacy (i.e., perceived understanding of government systems).

Religiosity and Spirituality

McCrae (1999) once noted that openness seems to be the most relevant personality trait to the topic of religion. In general, openness and its facets appear to be differentially associated with religiosity and spirituality.

With respect to the linkage to religiosity, some studies have found that liberal and fundamentalist Protestants were significantly different from each other on their level of openness (i.e., liberals higher on openness than fundamentalists; Streyffeler and McNally, 1998), and that individuals with high openness are less likely to endorse religious fundamentalism in general (Williamson et al., 2010). Also, Dollinger et al. (1996) found that those high in openness were less likely to value *salvation* and more likely to value *self-direction*. However, this research is somewhat mixed with a few studies not finding significant correlations between measures of openness and religious orientations (e.g., Robbins et al., 2010), while other studies have found significant relationships (e.g., Streyffeler and McNally, 1998), suggesting that more systematic research is needed.

While the exact relationship between openness and religiosity is mixed, research suggests that openness does tend to be positively correlated with spirituality. Duriez et al. (2004) found that openness was related to a tendency to deal with religion in a symbolic (as opposed to a literal) way, but was largely unrelated to a tendency to accept the existence of a transcendent reality (which is characteristic of the modern definition of spirituality). Further, based on a sample of 256 students studying education in a southern area of Spain, Saroglou and Munoz-Garcia (2008) found that openness facets were differentially related to religiosity and spirituality. While spirituality and religiosity were negatively correlated with openness to actions, spirituality was positively correlated with the values, feelings, aesthetics, and fantasy facets, whereas religiosity was negatively correlated with the ideas facet. A recent meta-analysis by Saroglou (2010) adds much needed clarity to this topic: he found that while openness was unrelated to subjective religiosity it was positively related to spirituality and faith maturity, and negatively to religious fundamentalism.

Subjective (and Psychological) Well-being

There seems to be lack of consensus on how openness relates to subjective well-being. Some researchers have argued that openness to experience is a 'double-edged sword' that predisposes individuals to feel both negative and positive emotions more intensely and to experience more positive and negative emotional states (McCrae and Costa, 1991; Gonzalez-Gutierrez et al., 2005). However, a meta-analysis by DeNeve and Cooper (1998) did not find strong support for this idea; it was revealed that openness was (positively) correlated with positive affect but not significantly related to negative affect. After a decade, during which numerous studies were published in the realm of positive psychology, Steel et al. (2008) sought to update and extend the findings from DeNeve and Cooper's (1998) meta-analysis. Steel et al. (2008) showed that openness generally had a smaller correlation with subjective well-being than the other Big Five personality factors, but was positively correlated with happiness (mean $r = 0.13$), positive affect (mean $r = 0.20$), and quality of life (mean $r = 0.16$), while being largely uncorrelated with negative affect.

Another line of psychological research of well-being proposed the construct of psychological well-being. Compared to subjective well-being, psychological well-being draws more heavily upon existential issues around basic life challenges and human development (Ryff, 1985). Schmutte and Ryff's (1997) study of midlife adults found that openness significantly predicted self-reported personal growth (defined as "a sense of continued growth and development as an individual" (p. 551)), which is conceptualized as one of the major domains of human functioning, thus contributing to one's psychological well-being. Further, Keyes et al. (2002) found that those with higher levels of *psychological* well-being than *subjective* well-being tended to have higher levels of openness. Based on these findings, Keyes et al. (2002) suggested that highly open individuals'

emphasis on personal growth may come with a cost regarding negative feelings and evaluations of life.

Work Outcomes

As described earlier, openness is positively associated with cognitive abilities, creativity and innovation, curiosity/willingness to learn, and adaptability to change; it seems intuitive that openness should predict individuals' effectiveness in the workplace. Surprisingly, however, relatively little evidence has been accumulated for the validity of openness in predicting job performance in general (e.g., Barrick and Mount, 1991).

Some have attributed the lack of evidence for openness' predictive validity to conceptual and measurement issues in previous research (see the Section Background, Definition, and Measurement for a detailed discussion of this issue). Given the multifaceted nature of openness, researchers proposed that a more detailed, nuanced investigation of the openness construct and its narrow traits may yield a better understanding of its relationship with job performance (Paunonen and Ashton, 2001; Woo et al., 2014b).

Woo et al. (2014b) suggest that as the measurement specificity of openness increases (i.e., from general, aspect, to facet), stronger correlations tend to exist between the components of intellect and the outcome variables. For example, at the facet level of the intellect aspect, the ingenuity facet had the strongest association with task performance, the intellectual efficiency facet predicted turnover, and the ingenuity facet predicted leadership effectiveness and adaptive performance. However, no such relationships were found for other facets, or at the broader levels of the openness construct, demonstrating the importance of the lower-level structure of the intellect aspect.

Others have proposed that openness may only predict certain types of performance/work outcomes, and that such prediction may be further moderated by situational factors (e.g., Tett and Burnett, 2003). In line with this, studies have found that open individuals perform better in jobs that encourage new behaviors and ideas (Bing and Lounsbury, 2000), as well as in jobs which value innovation and creativity (Pace and Brannick, 2010). Additionally, people higher in openness adjust more rapidly to cross-cultural settings (Lievens et al., 2003; Shaffer et al., 2006) and jobs that have changing and diverse work environments (LePine et al., 2000). Thus, supporting the possibility that a thorough understanding of the effects of openness may require an understanding of the situational factors that are present within an individual's work environment.

On the other hand, high levels of openness may not always be a good thing. For example, some research has suggested that highly open individuals may be more prone to quitting their job than others. Zimmerman's (2008) meta-analysis showed that openness was positively related to voluntary turnover, even after controlling for prior intention to quit. Similarly, Woo's (2011) study on 'hobo syndrome' suggested that those with high levels of openness are more likely to have an attitudinal and behavioral tendency to quit (and change) jobs more frequently compared to others (i.e., display frequent quitting behavior accompanied with positive attitudes toward quitting). All in all, these findings suggest that openness likely has complex relationships with workplace outcomes.

See also: Personality Assessment: Overview; Personality and Religion; Personality, Trait Models of; Political Psychology; Spirituality; Subjective Wellbeing, Psychology of.

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