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Openness to Experience

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Abstract

As one of the five major personality traits, openness to experience has been established as a fundamental factor of personality. Yet its history, and what it constitutes, has not always been clear. This becomes obvious when observing how the label has changed over the decades: from *Inquiring Intellect* to *Intelligence* to *Culture* until finally the consensus of *Openness to Experience*. This final connotation denotes people who are flexible and receptive to all experiential possibilities. It is this flexibility that perhaps most defines open people and enables them to be creative, establish complex worldviews, and probe the depths of human experience. Therefore, open people not only *see* more possibilities but also *engage* with them. This chapter starts with a brief review of the history of openness to experience that leads into contemporary conceptualizations. It then moves on to discussing research on the trait's associations with cognitive, perceptual, and behavioral outcomes. Finally, specific emphasis is placed on types of experience and how these may vary depending on people's characteristics of openness to experience.

Keywords

Openness to experience · Creativity · Cognition · Perception · Curiosity

Definition and History

Openness to experience is a broad and complex trait whose definition has been contentiously debated over the years. The origins of openness to experience can be traced back to Cattell (1947), who used an intelligence test and natural language descriptor ratings to derive primary factors of personality. Of these factors, he found three that resemble contemporary aspects of openness to experience: Intelligence, Imaginative Emotionality, and Bohemian Intellectualism. Performing a similar study, Fiske (1949) identified five recurring factors with the fourth factor being labeled, "Inquiring Intellect," denoting characteristics that emphasized intellectual curiosity (see chapter "▶ Curiosity"). Later factor analytic studies found that these intellectual characteristics tended to associate with more "culturally refined" qualities such as autonomy and appreciation for aesthetics, leading to a label of "Culture" (Norman 1963; Tupes and Christal 1961/1992).

Since these seminal studies, the conceptualization of openness to experience has continued to

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expand with studies examining English language adjectives (Goldberg 1981) and behavioral correlates such as hypnotic susceptibility (Tellegen and Atkinson 1974). The culmination of these works formed a consensus label of "Openness to Experience" (Costa and McCrae 1976; Rogers 1954). Costa and McCrae (1978) led this consensus by elaborating on the trait's structural definitions and establishing a broader agreement on the trait's conceptualization (McCrae and Costa 1997). Encompassing this broader definition, open people were described as having "[flexible] boundaries in concepts, beliefs, perceptions, and hypotheses" (Rogers 1954, p. 254) and by "[their] breadth, depth, and permeability of consciousness [(see chapter "▶ Consciousness")], and [their] recurrent need to enlarge and examine experience" (McCrae and Costa 1997, p. 826).

More recent perspectives are centered around these definitions, which is reflected in contemporary self-report inventories. McCrae and Costa's own inventory, the NEO-PI-3 (McCrae et al. 2005), was designed to capture the breadth of the trait using six lower-order facets: actions (openness to new experiences on a practical level), aesthetics (appreciation of art and nature; see chapter "▶ Aesthetics"), fantasy (receptivity to the inner world of imagination; see chapter "▶ Imagination"), feelings (openness to inner feelings and emotions; see chapter "▶ Emotion"), ideas (intellectual curiosity), and values (readiness to reexamine one's own values and those of authority figures). Another notable inventory is DeYoung et al. (2007) Big Five Aspects Scale, which breaks openness to experience into two aspects: Openness and Intellect. The Openness aspect (hereafter referred to as Experiencing; Connelly et al. 2014) denotes engagement with aesthetic and perceptual experiences, while the Intellect aspect denotes engagement with semantic and intellectual information. These aspects represent higher-order summaries of the NEO-PI-3's facets, reflecting separate but related dimensions of openness to experience.

Although a broader consensus has been established in the conceptualization and assessment of openness to experience, there still remains some debate about the taxonomy of the trait – that is, the number and type of characteristics that make up the trait. Connelly et al. (2014) examined this issue using a top-down theoretical sort and meta-analytic approach to identify "core" components of openness to experience that were solely related to openness to experience and "compound" components that were related to openness to experience and other traits. In their study, they identified eleven components: four core (aestheticism, openness to sensations, nontraditionalism, and introspection) and seven compound (openness to emotions, innovation, variety-seeking, fantasy, tolerance, autonomy, and thrill-seeking).

Similarly, Christensen et al. (2019) examined this issue using a bottom-up network analytic approach to identify components from four different openness to experience inventories. They found ten components (aesthetic appreciation, diversity, fantasy, imaginative, intellectual curiosity, intellectual interests, nontraditionalism, openness to emotions, self-assessed intelligence, and variety-seeking), which largely corresponded with Connelly and colleagues' findings. When taken together, these studies provide a fruitful framework for developing new measures of openness to experience that comprehensively represent its contemporary taxonomy.

Outcomes Related to Openness to Experience

The breadth of characteristics encompassed by openness to experience are associated with nearly every faculty of human psychology – from cognition and memory to perception and emotion to behavioral and psychopathological functioning. Before discussing some of these outcomes, it is important to make clear *who* openness to experience refers to. Although it is common to say that individual people possess openness to experience, it is more appropriate to say that openness to experience is a common dimension of personality that represents "a category for classifying functionally equivalent forms of behavior in a general population of people" (Allport 1961, p. 340). Therefore, when referring to open people, this

reference is for a population of people that are higher on characteristics of openness to experience relative to other populations rather than an individual person.

The most researched outcomes of openness to experience are related to cognition. More than any other trait, openness to experience is defined by cognitive characteristics (Zillig et al. 2002). This is perhaps not surprising given the trait's early links to intelligence, including intelligence being considered a part of the trait (Cattell 1947). Beyond intelligence, open people's most notable attribute is their tendency to be creative (Oleynick et al. 2017). This association is found in nearly every measure of creativity: divergent thinking (Silvia et al. 2008; see chapter "▶ Divergent Thinking"), creative self-efficacy (Karwowski and Lebuda 2016; see chapter "▶ Creative Mindsets"), creative hobbies (Conner and Silvia 2015), and creative achievements (Kaufman et al. 2016).

One common cognitive thread underlying both creativity and openness to experience is their neural architecture. Both phenomena have been shown to be associated with the functional connectivity between cognitive control (lateral prefrontal and anterior inferior parietal regions) and default mode networks (a set of cortical midline, medial temporal, and posterior inferior parietal regions; Beaty et al. 2015, 2018). These networks are thought to support executive and associative memory processes, respectively. Further evidence of this cognitive link has been demonstrated in studies examining the associative structure of memory. Both creative and open people are shown to have more interconnected and flexible associations between concepts in their semantic memory, which may allow them to be more cognitively flexible (Christensen et al. 2018; Kenett et al. 2014). Therefore, open people may think and reason about the world differently than less open people.

Open people may not only think about the world differently but also perceive the world differently. There is growing evidence that open people have different reactions to sensory and perceptual stimulus. Early work in this area has focused on *aesthetic chills* or the experience of goose bumps and shivers in response to the arts, which has been denoted as "a universal marker of openness to experience" (McCrae 2007). Open people seem to experience aesthetic chills more often in response to art (Nusbaum and Silvia 2011) and music (Silvia and Nusbaum 2011) than less open people. Awe (see chapter "▶ Awe") is another experience open people often have in response to aesthetic appreciation (e.g., nature and music; Silvia et al. 2015), including being more likely to feel like crying during music that produces awe experiences (Cotter et al. 2018). This seems to suggest that open people often experience a broad range of emotions. This is supported by research demonstrating that open people experience mixed emotional states (i.e., concurrent feelings of positive and negative affect) more often than less open people (Barford and Smillie 2016).

These mixed emotional states sometimes occur with appraisals of visual art, indicating that there's a connection between cognitive and perceptual processes (Barford et al. 2018). More recent work has demonstrated that open people's perceptual processing may differ at low levels, suggesting these emotional states may start from the bottom-up (Antinori et al. 2017). Antinori et al. (2017) examined the phenomenon of *binocular rivalry* – when visual perception alternates between stimuli and neither stimuli are fully suppressed – in relation to personality. They found that open people reported experiencing more binocular rivalry, meaning that open people were more prone to combining perceptual information at a basic level.

This finding is consistent with evidence indicating that open people tend to have a "leakier" filter for preconscious information, which is often referred to as *latent inhibition* (Peterson et al. 2002). Open people are shown to have decreased latent inhibition, meaning they are less likely to ignore stimuli previously experienced as irrelevant, thereby increasing the range of associations for stimuli. These overinclusive associations may come at a cost: seeing meaningful patterns and associations when there are none. This phenomenon is known as *apophenia* and is a prominent feature of psychosis, particularly with positive

symptoms of schizophrenia-spectrum disorders (i.e., symptoms that are present that are usually not). Given this connection between openness to experience and overinclusive associations, it is not surprising that there is a positive association between openness to experience and *positive schizotypy* (subclinical to clinical traits of positive schizophrenia-spectrum symptoms; Kemp et al. in press).

In DeYoung et al. (2012) Openness/Intellect simplex model, apophenia is at the extreme end of the Openness (Experiencing) aspect. More recent research has expanded on this view, positing a unified framework that places the Experiencing aspect on the same continuum with psychoticism and apophenia (from typical personality variation to psychopathology; Blain et al. 2020). This framework is supported by neurological evidence demonstrating that the shared variance between Experiencing and Psychoticism is linked to increased network coherence in the default mode network and decreased coherence in the cognitive control network (Blain et al. in press). This suggests that those who are on the extreme end of the Experiencing continuum may be more psychosis prone.

Possibility and Types of Experience

In this brief review on the outcomes of openness to experience, it should hopefully be clear that open people's experiences represent a spectrum of cognitive, perceptual, and behavioral possibilities. It is necessary to reiterate that these findings likely do not apply to every individual high on openness to experience but is more representative of the population of highly open people. For individual people, the trait may manifest as types of openness to experience rather than the breadth of the trait.

Take the example of a classic openness to experience archetype: The artist. Kaufman et al. (2016) found that high achieving people in the arts domain tended to be higher on the Experiencing aspect of openness to experience than the Intellect aspect. Certainly, some artists may be more intellectual than others but what characterizes most artists is that they engage with aesthetic and perceptual experiences (DeYoung et al. 2012; see chapters "▶ Possible in Performance and Performing Arts", "▶ Possible in Visual Arts", and "▶ The Possible in Music"). Similarly, they found that high achieving people in the sciences domain tended to be higher on the Intellect aspect of openness to experience than the Experiencing. Once again, some scientists may be more aesthetically inclined than others but they are most notably characterized by their engagement with intellectual experiences (DeYoung et al. 2012).

One type of experience that is scarcely measured in contemporary openness to experience inventories is an openness to sociocultural experiences (but see McCrae 1996 and Woo et al. 2014). In Christensen et al.'s (2019) openness to experience network, they found evidence of an Open-Mindedness aspect, which was defined as "a receptiveness toward others' ideas, values, beliefs, lifestyles, and culture" (p. 10). There is good reason to suspect that this is an important part of openness to experience types as these people may be more open to cross-cultural experiences such as trying new foods or engaging in local traditions (McCrae 1996; McCrae et al. 2005; Woo et al. 2014). There is some evidence to suggest that having cross-cultural experiences, such as studying abroad in college, may increase people's openness to experience (Martin et al. 2015).

These examples indicate that the types of experiences that people are open to facilitate different types of possibilities. Being open to other cultures, for example, may facilitate perspective-taking (see chapter "▶ Perspective-taking") and empathy (see chapter "▶ Empathy") for those living in different parts of the world. Without that openness, a person could remain closed-off to considering others' circumstances and their worldview may not change. A sense of humor (see chapter "▶ Humor") is another example: What is a sense of humor without the openness to entertain conflicting worldviews or maintain incompatible social and semantic scripts (Attardo 1994)? Thus, a tendency to be open to an

experience is a prerequisite for exploring its possibilities.

Across different types of experience, there are likely common motivational factors, such as curiosity, that contribute to seeking out new possibilities (Kashdan et al. 2018). Indeed, a drive to explore the unknown is fundamental to openness to experience (DeYoung 2013). One person might seek out complex and abstract artwork because it provides an opportunity for personal growth, while another person might be driven towards scientific discovery because they want to know the unknown (Kashdan et al. 2018). When it comes to exploring types of experience, specific characteristics of the trait (e.g., NEO-PI-3 facets) may better explain who is driven towards what (Mõttus 2016). Therefore, future research on openness to experience should consider what components of the trait are contributing to the types of experiences and outcomes under study.

Summary

Openness to experience is a complex trait that represents the breadth of human experience. Its definition has become better realized over the years with contemporary models arriving at a clearer consensus. From this consensus, it is apparent that openness to experience captures an openness for all types of human experience: cognitive, perceptual, behavioral, and even sociocultural. Open people not only see the world differently but engage with it differently. Importantly, not all open people are alike, each having their specific drives and motivations for distinct types of experience. Through these different types of experience, open people engage with the unknown and explore the edges of the possible.

Cross-References

- ▶ Aesthetics
- ▶ Awe
- ▶ Consciousness
- ▶ Creative Mindsets
- ▶ Curiosity
- ▶ Divergent Thinking
- ▶ Emotions
- ▶ Empathy
- ▶ Humor
- ▶ Imagination
- ▶ Perspective-Taking
- ▶ Possible in Performance and Performing Arts
- ▶ Possible in Visual Arts
- ▶ The Possible in Music

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