



Creativity and the Big Two model of personality: plasticity and stability

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The general conclusion from recent research on the Big Two dimensions of human personality — Plasticity (extraversion and openness) and Stability (neuroticism, agreeableness, and conscientiousness) — show that Plasticity has a more robust and stronger association with creativity than Stability. More specifically, people who are high in plasticity and low in stability may be most likely to exhibit creative thought and behavior. Moreover, current research in neuroscience, genetics and neurochemistry of behavior each suggest biological mechanisms for how these personality qualities lower thresholds for creative thought and behavior.

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Introduction

How a person responds to a new situation or problem says a lot about his or her personality. Some people are comfortable and thrive and seek out novelty; others are distressed and withdraw when confronted with new situations. Creativity involves responding to new situations and problems with original and meaningful thought or behavior. The essence of personality is the relative uniqueness of a person's thought and behavior. Personality differences therefore offer powerful answers to why some people are more creative in their thought and behavior than others.

As I have been arguing for years, personality traits function to lower thresholds for behaving such that people who are uniquely high on a particular trait have more sensitive thresholds for behavior consistent with that trait [1]. Recent advances in both personality theory and research have suggested a promising higher order model of personality that has restructured my thinking about

how personality and creativity influence one another. The theoretical advance is known as the Big Two and the empirical advances involve genetics, neuroscience, neurochemistry, traits, and motivation. In this article, I review the origin and structure of the Big Two Model of personality and tie it to the known empirical results of how personality relates to and makes creative thought and behavior more (or less) likely. I end by reviewing evidence for the biological mechanisms tying personality and creativity together.

Origins and definition of the Big Two model of personality

The so-called Big Five Model or Five Factor Model of personality has dominated the field of personality psychology since the 1980s [2]. The five factors are Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C). Briefly, neuroticism is comprised of dispositions toward negative affect such as anxiety, stress, depression, and guilt. Extraversion is the tendency to enjoy stimulating social activities, seek out stimulating experiences, and to be confident and leader-oriented in group settings. Openness to experience involves the tendency to be curious and open to new experiences and ideas, and to be flexible in both behavior and thought. Agreeableness is the disposition to be warm, caring, and empathetic in social relationships. Conscientiousness is comprised on the dispositions to control one's impulses, be detail oriented and careful, and to prefer order to disorder. A primary claim of Big Five theorists is these five dimensions are both independent (orthogonal) to one another and the highest level in the hierarchy of personality.

Both of these assumptions, however, have been challenged in the last decade or two. The core problem is the five personality dimensions do not seem to be completely independent of each other and hence are not the highest level in the hierarchy of personality. Beginning with Digman's work and furthered by DeYoung, Peterson, and Higgins, three of the five dimensions consistently cohere together (N, A, C) to form a higher-order factor, and the other two (E & O) form a second higher-order factor [3,4]. Hence, these scholars argue for a Big Two (sometimes referred to as the Huge Two) [3–6]. Being made of up emotional stability, agreeableness, and conscientiousness, Stability at its core involves the dispositions toward coping with stress and negative emotions, conforming to social norms, being warm and friendly in one's social relationships, and being

careful and controlling of one's impulses. Plasticity, being comprised of openness to experiences and extraversion, involves dispositions toward exploration, flexibility, adapting to novel situations, questioning social norms, seeking out stimulating experiences, and having a tendency to experience positive emotions.

Creativity and personality: plasticity and stability

Over the last 20 years, I have put forth a functional model of personality and creativity, in which I argue that biological, cognitive, motivational, and social traits lower the thresholds of creative thought and behavior [1,7,8]. In this article I adapt my model to the current Big Two model of personality. The main advantages of the Big Two model are it clusters openness and extraversion (Plasticity) on one dimension and neuroticism, agreeableness, and conscientiousness (Stability) on the other and it maps more readily onto biological models of personality.

The general conclusion from research on plasticity and stability and creativity is that Plasticity has a more robust and stronger association with creativity than Stability. Silvia and colleagues were the first to tie creativity in to the Big Two model of personality, with Plasticity being a stronger predictor of creativity than Stability [9]. Following in their footsteps Karwowski and Lebeda elaborated and elucidated the empirical and theoretical connections between the Big Two model of personality and creativity (more specifically, creative self-beliefs) [10**]. In their meta-analytic path analysis, Karwowski and Lebeda reported path coefficients of .71 between Plasticity and creative self-beliefs and $-.23$ between stability and creative self-beliefs. These results suggest the interaction of those high in plasticity and low in stability may be most likely to exhibit creative thought and behavior, an interaction supported by Silvia and colleagues [9]. Puryear, Kettler, and Rinn also reported a much stronger effect size for plasticity than stability on a meta-analytic review of 96 studies [11**]. Finally, Fürst, Ghisletta, and Lubart used a slightly more complex model of the Big Two and distinguished the generation of idea phase from the selection of idea phase of the creative process and found that the Big Two (Plasticity and Stability) together predicted idea generation better than it did idea selection and evaluation [12].

Plasticity

Most research on personality and creativity has not explicitly examined the Big Two but rather the Big Five. Easily the strongest and most robust relationship between personality and creativity is the openness to experience dimension, with those highest in openness being the most creative [9,10**,11**,13,14,15,16,17*,18,19]. When one examines the behavioral dispositions of the highly open person—curiosity, preference for novel experiences, imaginative, intelligent, aesthetic sensitivity,

flexibility of thought and behavior—then its strong association with creative behavior is quite clear and even obvious.

The second subcomponent of stability, namely extraversion, is consistently correlated with creativity but not quite as strongly as openness. In particular, the confidence and excitement-seeking components are positively related to creative thought and achievement [10**,11**,19,20,21*,22]. Kandler and colleagues, for example, found positive relationships with extraversion and evaluated (self and other) measures of creativity, and weaker relationships extraversion and figural tests of creativity [21*].

One possible reason for the somewhat smaller and less consistent relationships between creativity and extraversion probably stems from the fact that one aspect of extraversion (excitement seeking and confidence) is more positively associated with creative thought, whereas the other aspect (sociability) is negatively related [23*,24,25].

Stability

As suggested by Silvia and colleagues as well as Karwowski and Lebeda, Stability is negatively related to creativity, but its effect size is relatively small [9,10**]. The specific subcomponents of stability are generally negatively related to creativity, namely emotional stability, conscientiousness, and agreeableness. In other words, creative people in general are less emotionally stable and more prone to anxiety and stress, less conscientious, and more hostile (less agreeable) than less creative people.

Studies examining the specific subcomponents of the Big Two have confirmed the relatively small and somewhat inconsistent associations with creative thought and behavior.

Emotional stability (including ego-strength) interacts with domain of creativity—that is, there is a negative relationship in social science students and a positive relationship in architectural students [18]. Not only is the relationship domain specific but it may also be culturally specific. In many Western cultures there is a null, small or negative relationship between conscientiousness and creativity, whereas in Chinese college students conscientiousness had a moderate and positive relationship with creativity [26,27].

The relationship between hostility (low agreeableness) and creativity appears to be a complex and non-linear one. Hunter and Cushenbery, for example, found that disagreeableness was only positively related to creativity when the social context was antagonistic toward novel solutions [28]. In other words, only in hostile environments being hostile and disagreeable may facilitate creative thought and behavior. Moreover, recent research

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