



Personality types and scholarly creativity in undergraduate students: The mediating roles of creative styles



Ming-Zhong Wang^{a,1}, Wu Chen^{c,d,1}, Chen Zhang^a, Xue-Li Deng^{b,*}

^a School of Educational Science, Qufu Normal University, Qufu 273165, China

^b School of History and Culture, Huazhong Normal University, Wuhan 430079, China

^c School of Marxism, Wuhan University, Wuhan 430079, China

^d Institute of Developmental and Educational Psychology, Wuhan University, Wuhan 430072, China

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ABSTRACT

Guided by an integrative model of Jung's personality type theory, Kirton's adaption-innovation theory, and Kaufman's creativity domain theory, this study examined the mediating role of creative styles in the association between personality types and scholarly creativity in undergraduate students. 495 undergraduate students (305 girls, mean age = 19.55 years) completed questionnaires on personality types, creative styles and scholarly creativity. Results indicated that the innovative creative style was positively associated with Extroversion and Perceiving personality types, and negatively associated with Feeling type. The innovative creative style, but not the adaptive creative style, was positively associated with scholarly creativity. Furthermore, Extroversion and Perceiving types were positively and indirectly associated with scholarly creativity completely through the mediator of innovative creative style, whereas Feeling type was negatively and indirectly associated with scholarly creativity partially through the mediator of innovative creative style. This study enhances our understanding of the ways in which personality types could affect undergraduates' scholarly creativity. These findings suggest that undergraduate students of different personality types tend to perform creative work in different creative styles, further influencing how much scholarly creativity they could demonstrate.

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1. Introduction

1.1. Scholarly creativity

As one specific domain of creativity, academic or scholarly creativity has captivated the interest of many researchers (Kaufman, 2012; Torrance & Goff, 1990). Academic creativity is defined as a student's way of thinking about, learning, and producing information in school courses such as science and mathematics (Torrance & Goff, 1990). It is thought to involve creative analysis (Kaufman, 2012) as well as divergent thinking (Torrance & Goff, 1990), a skill that has traditionally been regarded as the primary element of creativity (Aljughaiman & Mowrer-Reynolds, 2005).

Many educators try to foster students' creativity. With the aim of promoting our understanding of the factors influencing scholarly creativity, this study tested the relationship between personality types and scholarly creativity in undergraduate students, with special attention to the mediating roles of different creative styles in this relationship.

1.2. Distinctions between creative styles and creativity

For a long period, researchers held that creative feats could only be achieved by special creative persons who were capable of unique and rare ways of creation or problem solving. However, psychologists have gradually rejected this notion and focused greater attention on understanding and cultivating creativity in all individuals (Keller, Lavish, & Brown, 2007; Ward, Smith, & Finke, 1999). With this notable change, researchers began to consider the creative styles adopted by individuals to facilitate creative work in their everyday lives (Keller et al., 2007). Cognitive psychologists realized that individuals differed in their style of interaction with the environment and the ways they solved the same problems (Houtz et al., 2003; Sternberg, 1997; Sternberg & Grigorenko, 1997). Accordingly, creative styles appeared as a significant topic in research on creativity (Houtz et al., 2003). Researchers mainly examined how people displayed their creativity rather than how much creativity they had or demonstrated.

Adaption-innovation may be the most researched dimension of creative styles (Kirton, 1976). It has often been regarded as a cognitive preference involved in tasks such as creative problem solving or decision making, and it is conceptualized as a continuum with adaptors and innovators at each end (Gelade, 2002). Adaptors typically approach problems in ways that adhere to the orthodox expectations of their fellow group members. They are organized and predictable, resourceful

* Corresponding author.

E-mail address: xuelitao328@126.com (X.-L. Deng).

¹ These two authors contributed equally to the study. They should be regarded as joint first authors.

and efficient, and stable and orderly (Houtz et al., 2003; Selby, Treffinger, Isaksen, & Powers, 1993). By contrast, innovators display less attention to convention and consensus, and tend to solve problems in ways that violate the existing orthodoxy (Gelade, 2002). They are energetic and spontaneous, individualistic and independent, and original and insightful (Houtz et al., 2003).

Beyond unidimensionally conceptualizing adaption-innovation as a style preference for an innovator or an adaptor, researchers established three factors based on Kirton Adaption-Innovation Inventory (Bagozzi & Foxall, 1995). The factor of *sufficiency of originality* assesses a preference for generating novel ideas and a preference for change rather than stability (Foxall & Hackett, 1992; Taylor, 1989). In contrast, the *rule conformity* factor measures a predilection for working within established conventions. Finally, the *efficiency* factor measures a predilection for just a few or inclusive ideas. The first two dimensions typically represent the innovative and adaptive creative styles, respectively. In this study, we used these two factors of the Kirton Adaption-Innovation Inventory to examine the roles of the innovative and adaptive creative styles in the association between personality types and scholarly creativity in undergraduate students.

1.3. Personality types and scholarly creativity

Creative individuals tend to show a profile of creative personality characteristics (Eysenck, 1997; Houtz et al., 2003). They are generally more energetic, autonomous, and independent in judgment (Gelade, 2002). In research on the creative personality, these personality traits are often conceptualized in terms of Jung's personality theory. Jung focused on six personality types, including Extroversion or Introversion, Feeling or Thinking, and Intuition or Sensing (Cheng, Kim, & Hull, 2010). Later, Myers and Myers (1980) enriched Jung's personality type framework by adding another dichotomy (i.e., Perceiving or Judging). Among the eight personality types, Extroversion, Feeling, Intuition and Perceiving have often been the focus in research on the creative personality (Cheng et al., 2010), and these four personality types were differentially associated with individuals' creative performance. Next, we reviewed past research supporting that the four personality traits were differentially associated with individuals' creative performance.

First, the relationship between extroversion and creativity appears to be complex. Some researchers offered evidence for a positive relationship (Aguilar-Alonso, 1996; Furnham & Nederstrom, 2010; Stavridou & Furnham, 1996), whereas others supported a negative relationship (Feist, 1998). Second, similar patterns existed for the relationship of Thinking/Feeling to creativity. Jacobson (1993) found the Thinking type to be most typical of creative managers while Buchanan and Taylor (1986) indicated that professional psychodramatists were characterized as the Feeling type. Third, researchers have been in relative agreement concerning the positive relations of intuition (Bastick, 1982; Wolfradt & Pretz, 2001) and perceiving (Jacobson, 1993) to creativity. It would not be surprising to find that these results might vary based on the type of creativity being studied. In the current study, we are specifically focused on how the four personality types are related to scholarly creativity.

1.4. Creative styles as mediators between personality types and scholarly creativity

Researchers have suggested that various creative styles are associated both with personality and with self-perceived creative capacity (Keller et al., 2007). Gelade (2002) found that among the scales on the NEO-PI-R, a commonly used self-report measure of personality, the scale representing Openness to Experience was substantially and positively correlated with the innovative creative style assessed by the Kirton Adaption-Innovation Inventory (KAI), whereas Conscientiousness was substantially and negatively associated with the innovative style. Gelade's (2002) research also showed that innovators generally

scored higher on Extroversion than adaptors, Neuroticism was weakly associated with the innovative style assessed by the KAI score, and Agreeableness had no significant correlations with the innovative style.

Using other personality instruments such as the Myers-Briggs Type Indicator (Briggs & Myers, 1976), a measure based on Jung's theory, researchers found that individuals who preferred to solve problems by creating new frameworks (i.e., innovators) demonstrated a personality style that was more external and intuitive, in contrast to adaptors who preferred to solve problems within established frameworks (Houtz et al., 2003; Keller et al., 2007). Inspired by these findings, we examined the relationship between Jung's four personality types and scholarly creativity in undergraduate students.

Researchers have proposed that specific personality characteristics may shape particular creative styles that further influence creative behaviors and self-perceived creativity (Houtz et al., 2003). Therefore, it could be reasonably inferred that Jung's four personality types should influence how undergraduate students perform creatively in the academic area (i.e., creative styles), in turn affecting their academic or scholarly creativity (see Fig. 1).

Based on evidence of the relations among personality types, creative styles and creative capacity, we hypothesized that, (a) Jung's four personality types would be differentially associated with the adaptive or the innovative style; (b) The innovative style would be more closely related with scholarly creativity than the adaptive style; and (c) The two creative styles would mediate the effect of personality types on college students' academic creativity.

2. Method

2.1. Participants

Participants were 495 undergraduate students (305 females and 190 males) in their first or second year of an undergraduate education program, aged from 17 to 22 years (mean age = 19.55 years, $SD = 0.97$). We received approval to conduct the investigation from the Ethical Committee for Scientific Research in our university. Students completed the questionnaires on a website designed to "gather information concerning their learning activities."

2.2. Measures

2.2.1. Personality types

Jung's personality types were assessed using the Keirsey Temperament Sorter II (Kelly & Jugovic, 2001). It consisted of 70 forced-choice items. We used dimensional personality trait scores to measure each of the four supposed "personality types": Extroversion (e.g., "Waiting in line, I often chat with others rather than stick to business."), Feeling (e.g., "If I must disappoint someone I am usually warm and considerate rather than frank and straightforward."), Intuition (e.g., "It is easier for me to identify with others than to put others to good use."), and Perceiving (e.g., "I am inclined to be more leisurely than hurried."). These four scores were widely examined in relevant studies (Cheng et al., 2010) and have satisfactory internal reliability for Extroversion ($\alpha = 0.81$), Feeling ($\alpha = 0.73$), Intuition ($\alpha = 0.77$) and Perceiving ($\alpha = 0.72$) in the current research.

2.2.2. Creative styles

The Kirton Adaption-Innovation Inventory (Bagozzi & Foxall, 1995) was used to assess two creative styles. It was comprised of 32 items and required the respondent to indicate on a five-point scale (1 = very hard, 5 = very easy) how difficult it was for him or her to maintain adaptive or innovative behaviors. For the purpose of our study, we used rule conformity (e.g., "I hold back ideas until they are obviously needed.") and sufficiency of originality (e.g., "I like to vary set routines at a moment's notice.") scales, to represent the adaptive and the innovative

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