



Thinking styles: Distinct from personality?

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ABSTRACT

This research examined whether thinking styles are distinct from or they are part of personality traits. Nine hundred and twenty-six students responded to measures of thinking styles, personality traits, and career decision-making self-efficacy. The results revealed that personality traits only explained a small part of variance in thinking styles, thinking styles uniquely contributed to career decision-making self-efficacy beyond personality traits, and that the malleability of thinking styles and personality traits differed. The findings suggested that thinking styles are distinct from, rather than subordinate to, personality traits.

1. Introduction

According to Zhang and Sternberg (2005), intellectual style (termed “styles” hereafter for brevity), defined as people’s preference for processing information and dealing with tasks, encompasses a wide range of style constructs, such as field dependence/independence (Witkin, 1962), learning approaches (Biggs, 1978), adaption-innovation styles (Kirton, 1961, 1976), and thinking style (Sternberg, 1997). Although the field of styles has a long history of eight decades, the advancement of styles research is still impeded by some controversial issues. One important issue is styles’ relationship with personality: whether intellectual styles are distinct from or they are part of personality traits. The answer to this question would directly matter to the value of intellectual styles as a unique construct.

Some scholars argued that styles are subordinate to personality (e.g., Jackson & Lawty-Jones, 1996; von Wittich & Antonakis, 2011), whereas other scholars insisted that personality and styles are distinct constructs and they respectively have unique contributions to the understanding of individual differences (e.g., Li & Armstrong, 2015; Zhang, 2006). From an empirical perspective, the relationship between personality and styles can be understood from three lines of research: (1) research that examines the extent of overlap between personality and styles; (2) research that reveals the unique contributions of styles to other outcome variables beyond personality; and (3) research that compares the difference in changeability between personality and thinking styles.

1.1. To what extent styles are related to personality?

The first line of research examined the correlation between styles and personality or the percentages of styles explained by personality, results from which have shown the discriminant validity of styles. For example, Chamorro-Premuzic and Furnham (2009) summarized seven studies and found several consistent associations between learning approaches and personality. The extent of these overlaps varied from low ($r = 0.1–0.3$) to moderate ($r = 0.3–0.5$). As another example, only the extraversion personality trait was found to be significantly (to a moderate degree) associated with learning styles defined by Kolb (1976) (Li & Armstrong, 2015). In a more recent study, field-dependence/independence (FDI) was not related with personality traits at all (Xie, 2015). However, other studies showed more overlaps between styles and personality traits. For example, von Wittich and Antonakis (2011) found that personality traits accounted for 67% of the variance in the adaption-innovation (KAI) styles specified by Kirton (1961, 1976). The associations between personality types (Myers & McCaulley, 1988; also considered as a style model) and personality traits were also strong, especially between the extraversion-introversion dimension in Myers and McCaulley’s (1988) personality types and the extraversion personality trait ($r = 0.65–0.71$) (Furnham, 1996; Furnham, Dissou, Sloan, & Chamorro-Premuzic, 2007; Tobacyk, Livingston, & Robbins, 2008).

The inconsistent findings are partially due to the different style constructs examined in different studies (Chamorro-Premuzic & Furnham, 2009). Grigorenko and Sternberg (1995) classified various style models into three traditions: cognition-centered, personality-centered, and activity-centered. From this conceptual perspective, personality-centered styles would be closer to personality than cognition-

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centered styles and activity-centered styles. To some extent, the previous findings supported this assumption. The activity-centered styles, such as Biggs' (1978) learning approaches and Kolb's (1976) learning styles, had only low to moderate overlap with personality. The cognition-centered styles, such as Witkin's (1962) field dependence/independence, had no or low overlap with personality, while the strongest overlaps between personality and styles were found in personality-centered styles, such as the personality types defined by Myers and McCaulley (1988) and the KAI styles specified by Kirton (1961, 1976). Studies based on a more comprehensive style model that includes all of the aforementioned three traditions should deepen our understanding of the relationship between styles and personality. Therefore, the model of thinking styles (also known as the theory of mental self-government; Sternberg, 1997)—the most recent and comprehensive style model was selected as the theoretical foundation in the present research. Unlike binary models of styles (e.g., Witkin's field-dependence/independence; Kirton's adaption-innovation styles), the model of thinking styles contains 13 thinking styles falling along five dimensions: functions (legislative, executive, judicial), forms (global, local), levels (liberal, conservative), scopes (hierarchical, monarchic, oligarchic, anarchic), and leanings (internal, external) (see the detailed description of thinking styles in Appendix). Based on the delineation of how people vary in their relative preference for each of the 13 thinking styles, this model allows for a comprehensive profile of individual differences in styles. Furthermore, thinking styles are neither intelligence nor personality, but rather, are the interface between the two constructs, and they could be applied in not only academic activities but also non-academic contexts (Grigorenko & Sternberg, 1995). In this way, the model of thinking styles concerns all of the three traditions (i.e., cognition-centered, personality-centered, and activity-centered) claimed by Grigorenko and Sternberg (1995).

Regarding the relationship between thinking styles and personality, Zhang and her colleagues (Zhang, 2002a, 2002b, 2006; Zhang & Huang, 2001) conducted a series of studies showing that personality traits had a weak to moderate correlation with thinking styles, and the variance in thinking styles that could be explained by personality traits was < 35%. Most of these studies adopted correlations or ordinary least squares (OLS) regressions to analyze the relationships between thinking styles and personality traits. However, von Wittich and Antonakis (2011) argued that correlations and OLS regressions tend to underestimate the overlap between variables because these analysis procedures do not take measurement errors into account. More rigorous data analysis methods, such as errors-in variables (EIV) least squares regression models, should be used to avoid attenuating coefficient estimation.

1.2. Do styles contribute uniquely to other outcome variables beyond personality?

The second line of research indicates the incremental validity of styles by showing the unique explanatory power of styles for other outcome variables beyond personality. For example, it was found that personality styles as assessed by the Myers-Briggs Type Indicator (MBTI, Myers & McCaulley, 1988) explained about five additional percent of the variance in divergent thinking after nearly 10% of the variance was explained by the Big Five personality traits (Furnham, Crump, Batey, & Chamorro-Premuzic, 2009). Some studies also found that learning approaches uniquely contributed to academic performance beyond personality traits and intelligence (Chamorro-Premuzic & Furnham, 2008; Rosander & Bäckström, 2012). However, there are also inconsistent results. For example, von Wittich and Antonakis (2011) found that the KAI styles did not significantly contribute to leadership beyond the contribution of personality traits. Regarding thinking styles, there is only one study (W. Fan, Zhang, & Watkins, 2010) that examined the predictive power of thinking styles for academic achievement after controlling for personality traits and academic

motive. The results showed that thinking styles explained additional 10–32% of the variance in academic performance beyond personality and academic motive.

Compared with the amount of research examining the discriminant validity of styles, that investigating the incremental validity of styles is much less. Furthermore, the findings in these limited studies are also inconsistent. Therefore, further studies should be conducted to examine the incremental validity of thinking styles, especially with non-academic outcomes, which could provide a more comprehensive understanding of the unique contributions of thinking styles in explaining individual differences in performance. In the present study, the incremental validity of styles was examined through the analysis of unique statistical contributions of thinking styles to career decision-making self-efficacy (CDSE) beyond personality traits. CDSE is defined as one's beliefs about how well he/she can perform on career choice tasks (Taylor & Betz, 1983). CDSE has been proven to be an important predictor for one's career performance (Choi et al., 2012). Meanwhile, the preparation for career development is a major issue that university students have to deal with because they are just about to begin their career (J. Fan, 2016). Furthermore, studies have found a close relationship between thinking styles and CDSE (J. Fan, 2016) and a significant relationship between personality and CDSE (Hartman & Betz, 2007), respectively. It is reasonable to put thinking styles and personality into one regression model to identify the amount of variance in CDSE that can be explained by styles beyond personality.

1.3. Do styles and personality differ in the terms of changeability?

In the dispute over the relationship between styles and personality, some scholars believed that styles and personality differ in the nature in that styles are more changeable than personality (e.g., Chamorro-Premuzic & Furnham, 2009; Zhang & Sternberg, 2005). So, the third line of research that contributed to differentiating styles from personality is contrasting the level of the malleability of personality with that of styles. After an extensive review, Zhang (2013) found that, although only several style models were involved in longitudinal studies of style malleability, findings from the existing studies essentially suggested that styles are changeable. In terms of thinking styles, Sternberg (1997) has argued that thinking styles are stable, but can be partially socialized. Four experiments that provided empirical evidence for the malleability of thinking styles by exploring if teachers' interpersonal styles (Yu, 2012), instructional modes (W. Fan, 2012) or teaching styles (Lau, 2014; Tai, 2012) would make a difference in students' thinking styles. Although the directions of change in some thinking styles were unexpected, all of the four studies showed that thinking style changed to some extent over 13–32 weeks. Nevertheless, it is hard to determine whether or not styles and personality traits differ in malleability without directly comparing them.

1.4. The present research

Based on the research gaps identified above, the present research examined the relationships between thinking styles and personality traits from three perspectives. First, regarding the discriminant validity of thinking styles, EIV regressions were conducted with control variables to estimate the overlap between thinking styles and personality traits. Second, the incremental validity of thinking styles was examined through the unique statistical contributions of thinking styles to career decision-making self-efficacy (CDSE) beyond personality traits. Third, to provide more compelling evidence for clarifying the difference in malleability between personality and styles, the present study directly compared the participants' change of personality and that of thinking styles over one year.

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