



Anxiety and thinking styles

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ABSTRACT

The primary objective of this study was to examine the predictive power of thinking styles for anxiety. Three hundred and seventy-eight university students from mainland China responded to the State-Trait Anxiety Inventory and the Thinking Styles Inventory-Revised II. Results showed that, in general, creativity-generating styles (also known as Type I styles) and the external style (a preference for working with others as opposed to working alone) were negatively related to anxiety, whereas the conservative style was positively related to anxiety. Moreover, the hierarchical style (one of the Type I styles) and the external style negatively predicted anxiety beyond sex, whereas the conservative style did so positively. Implications of these findings are discussed in relation to university students, faculty members, and university senior managers.

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1. Introduction

Although human anxiety has a history for as long as the existence of human beings, it was not until the late 1950s when psychologists began scientific investigations into the anxiety construct. There have been many insightful definitions of anxiety. For example, Beck (1972) defined anxiety as an unpleasant emotional reaction to imagined or real dangers, accompanied by such negative emotional discharge as fright, nervousness, or tension. Similarly, Lazarus and Averill (1972) considered anxiety as an emotion triggered by the appraisal of threat. Despite these varying definitions of anxiety, two commonalities are shared by anxiety researchers. First, anxiety is a normal reaction to stress. Only when anxiety becomes excessive, does it become abnormal, evolving into a personality disorder known as anxiety disorder. Second, there are two types of anxiety: state-anxiety and trait-anxiety. State-anxiety is a transitory condition activated or aroused by the autonomic nervous system and it varies in intensity depending on the degree to which the circumstances are perceived as threatening. Trait-anxiety represents relatively stable individual differences in “anxiety proneness”, that is, a tendency to perceive stressful situation as dangerous or threatening.

Initially postulated by Cattell and Scheier (1961), the notion of state- and trait-anxiety was not systematically studied until the early 1970s when Spielberger and his colleagues constructed the first version of the State-Trait Anxiety Inventory (STAI, Spielberger, Gorsuch, & Lushene, 1970). The inventory was subsequently revised into the latest one (Spielberger, 1983) to achieve three objectives: (a) to better discriminate between feelings of anxiety and depression, (b) to enhance the psychometric properties of several

relatively weak items, and (c) to improve the factor structure of the trait-anxiety.

Since its publication, the STAI has been used in thousands of studies (Spielberger, 1983). Early studies were concerned primarily with the effects of anxiety on learning and performance (Bauermeister & Berlinger, 1974). Recently, there are an increasing number of investigations that examine anxiety against stress-related psychiatric and medical disorders (Karagözoglu, Masten, & Baloglu, 2005). Likewise, the STAI has also been used more frequently as an outcome measure in examining the relationship of biofeedback to various forms of treatment (Al-Darmaki, 2004). In general, this research suggests that higher levels of anxiety are related to lower levels of academic achievement and to more severe stress-related psychiatric and medical disorders. Furthermore, levels of anxiety can be reduced through training.

Nonetheless, studies examining the relationships of anxiety to some of the more general attributes (such as self-esteem and intellectual styles) are recent and rare (Cheung, 2006; De Jong, Merckelbach, & Nijman, 1995; Haycock, McCarthy, & Skay, 1998). These studies are important because findings of such studies have implications for the general population. The present study investigates the relationships of thinking styles, a specific style construct under the general term “intellectual styles”, to anxiety as measured by the latest version of the State-Trait Anxiety Inventory (Spielberger, 1983) among Chinese university students. Findings from this study will not only contribute to our knowledge about intellectual styles and anxiety but also have practical significance for educational practice.

1.1. Intellectual styles and their link to anxiety

Intellectual styles refer to people’s preferred ways of processing information (Zhang & Sternberg, 2005). It is an encompassing term for such constructs as cognitive styles, learning styles, hemispheric preferences, and thinking styles.

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Based on both conceptualization and empirical work, [Zhang and Sternberg \(2005, 2006\)](#) classified the major style constructs in the field into three types: Type I, Type II, and Type III styles. Type I intellectual styles (e.g., field-independent, reflective, and right-hemispheric styles) are creativity-generating and they denote higher levels of cognitive complexity. These styles are considered to possess more adaptive values because they are often highly associated with human attributes normally considered to be more desirable (e.g., open-mindedness and a better developed sense of identity). Type II styles (e.g., field-dependent, impulsive, and left-hemispheric styles) suggest a norm-favoring tendency and denote lower levels of cognitive complexity. These styles are regarded as having less adaptive values because they are more predictive of attributes that are typically considered less desirable (e.g., pessimism and a poorly integrated sense of self). Type III styles (e.g., internal and external styles) may manifest the characteristics of either Type I or Type II styles, depending on the stylistic demands of a specific task. Type III styles are value-differentiated because the adaptive values of these styles are more context-dependent.

One important reason for studying the relationships between anxiety and intellectual styles is the conceptual link perceived between the two constructs at two levels. First, both anxiety and intellectual styles have a strong cognitive component. According to [Eysenck \(1997\)](#), the same internal or external threat-related stimuli can be exaggerated by high-anxious individuals, but can be minimized by individuals who tend to repress their anxiety. Thus, individuals' levels of anxiety are in part a function of their perceptions (cognition) of the situations. Intellectual styles are cognitive because they represent people's preferred ways of processing information. Second, both constructs are relevant to personality traits. While anxiety has been researched as a normal personality disposition for decades, styles, as an individual-difference variable, are at the interface between abilities and personality ([Hashway, 1998](#)).

An equally important rationale for investigating the relationship between anxiety and styles rests upon the inadequacy in this research area. Among the few existing studies, findings are equivocal. For example, [Gadzella \(1999\)](#) found that compared with students who were prone to use the integrative style of thinking, students who had a preference for both the left- and right-hemispheric styles of thinking exhibited higher levels of anxiety. [De Jong et al. \(1995\)](#) found, however, that only the right-hemispheric style of thinking was correlated with higher levels of state-anxiety. [Linden's \(1973\)](#) study, on the other hand, suggested a negative correlation between field independence and test anxiety.

There could be many reasons for these contradictory findings. Two reasons, however, are the most plausible. First, the studies addressed different types of anxiety. For example, in reviewing studies of the relationship between anxiety and the reflective-impulsive styles ([Kagan, 1965](#)), [Messer \(1976\)](#) concluded that while anxiety over error is generally related to the reflective style, anxiety over competence is generally related to the impulsive style. Second, previous studies adopted styles measures criticized for having a narrow focus, assessing only one stylistic dimension with two polar terms such as field-dependent style versus field-independent style. The present study adopts a styles inventory that measures multiple dimensions of thinking styles. This inventory is based on Sternberg's theory of mental self-government.

1.2. The theory of mental self-government and its research

As one of the most recent theories of intellectual styles, [Sternberg's \(1997\)](#) theory of mental self-government has propelled much research interest. Sternberg contended that just as there are different ways of governing a society, there are different ways

that people use their abilities, that is, thinking styles. The theory describes 13 thinking styles (see [Sternberg, 1997](#) for a full description of the theory).

[Zhang and Sternberg \(2005\)](#) reconceptualized the 13 styles into three types. Historically, this classification of thinking styles is the foundation for that of the three types of intellectual styles introduced earlier. Therefore, the characteristics of each of the three types of thinking styles are embodied by those of intellectual styles. In the Appendix (see the end of the article), the main characteristics of each of the 13 thinking styles (grouped into three types) are highlighted.

Much empirical evidence has supported the validity of Sternberg's original theory as well as the reconceptualization of the three types of styles ([Betoret, 2007](#)). The most frequently used research tool is the Thinking Styles Inventory (TSI, [Sternberg & Wagner, 1992](#)) and the Thinking Styles Inventory-Revised (TSI-R, [Sternberg, Wagner, & Zhang, 2003](#)). This research (e.g., [He, 2005](#)) suggests that thinking styles vary as a function of both personal characteristics (e.g., age, grade level, and sex) and environmental characteristics (e.g., academic discipline). It has also indicated that, in general, Type I thinking styles are positively associated with attributes that communicate more adaptive values such as more advanced stages of identity development ([Zhang, 2008](#)) and healthy personality traits such as open-mindedness and conscientiousness ([Fjell & Walhovd, 2004](#)). However, the contributions of thinking styles to anxiety are yet to be examined.

1.3. Objectives and hypotheses

The present study has two objectives. The first is to test the psychometric properties of the State-Trait Anxiety Inventory ([Spielberger, 1983](#)) among mainland Chinese university students and to assess the reliability of the second revised version of the Thinking Styles Inventory (TSI-R2, [Sternberg, Wagner, & Zhang, 2007](#)). The second and more important objective is to investigate the predictive power of thinking styles for anxiety.

Based on the characteristics of the three types of styles and on the nature of anxiety as well as on previous findings relevant to thinking styles and anxiety, two hypotheses were made. First, state-anxiety and trait-anxiety can be differentiated. Because trait-anxiety is said to be more stable than state-anxiety and because thinking styles are relatively stable preferences in information processing, the statistical association between trait-anxiety and thinking styles should be stronger than that between state-anxiety and thinking styles. Second, with higher levels of tolerance for ambiguity and complexity, Type I thinking styles would be resistant to, and thus negatively contributory to anxiety. By contrast, with their main orientation being maintaining the status quo, Type II styles would be prone to higher levels of anxiety. Because Type III styles are more situation-dependent, the direction of Type III styles' contribution to anxiety was not specified.

2. Method

2.1. Participants

Recruited through class instructors (with whom the author happened to be acquainted) in a large comprehensive university in Shanghai, China, 378 (124 male and 254 female) students from 15 intact classes volunteered to participate in the study. With an average of 20 years, the students' ages ranged from 17 to 32 years. Among these students, there were 134 freshmen, 113 sophomores, and 131 juniors. Moreover, 200 students were majoring in Education and 178 in Management. Each respondent was given a small souvenir for participating in the study.

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