



## An examination of thinking style patterns as a function of thinking perspective profile

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### ABSTRACT

According to the theory of MindTime, the ability of human beings to dissociate from the present moment and engage in mental time travel gave rise to the development of three distinct thinking perspectives: Past, Present, and Future thinking, and the extent to which individuals utilize the three thinking perspectives, in combination, influences the types of task environments they prefer. In this study, we took a profile approach and examined the extent to which individuals manifest different patterns of thinking styles based on their thinking perspective profile. Six hundred and eighty-three graduate students enrolled in an on-line university participated in the study. Results supported our hypothesis: all univariate tests using profile as the grouping variable were statistically significant. Moreover, the pattern of statistically significant post hoc tests shows that individuals manifested different patterns of thinking styles depending on their thinking perspective profile. Our findings show the importance of taking a holistic approach when examining the combined influence Past, Present, and Future thinking on outcome variables of interest.

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### 1. Introduction

In recent years, there has been renewed interest in the study of intellectual styles in both academic and non-academic settings (see Zhang & Sternberg, 2005, 2006 for reviews of this literature). Intellectual style is a term that encompasses a variety of cognitive, learning, and thinking styles. *Cognitive style* refers generally to how individuals tend to process information; *learning style* refers generally to how individuals tend to learn new information; and *thinking style* refers generally to the preferred ways that individuals use the intellectual abilities they have (Zhang & Sternberg, 2005). One of the more popular taxonomies of thinking styles is Sternberg's (1988, 1997) model of mental governance. Sternberg proposed that people govern their minds in a manner analogous to the way that people govern societies. In contrast, Fortunato and Furey (2009), Furey (1994, 2010), Furey and Stevens (2004) proposed a model of individual differences – the theory of MindTime – based broadly on the evolutionary development of memory and cognition (e.g., Liberman & Trope, 1998; Suddendorf & Corballis, 1997, 2007; Trope & Liberman, 2003). In this study, we examine the extent to which individuals with different thinking perspective profiles

based on the theory of MindTime manifest different patterns of thinking styles based on Sternberg's model of mental governance.

#### 1.1. Mental time travel and Construal Level Theory

One of the hallmarks of human evolution was the development of the ability to mentally dissociate from the present moment thereby enabling the formation of secondary representations of real world objects as well as meta-representations of the relationships among secondary representations (Suddendorf & Corballis, 1997, 2007). Symbolic representations of objects and events and meta-representations are considered to be a product of the development of semantic and episodic memory systems (e.g., Tulving, 1985, 2002), which in turn, allowed for the evolution of several executive functions including mental time travel. Mental time travel has been defined as the ability to mentally project oneself forward and backward in time to imagine future possibilities and reconstruct past experiences and stored knowledge, respectively (Suddendorf & Corballis, 1997, 2007; Tulving, 1985). According to Construal Level Theory (CLT; Liberman & Trope, 1998; Trope & Liberman, 2003), the perceived proximity (i.e., temporal distance) of an imagined object or event in time influences the mental representations individuals form of those objects and events: the greater the temporal distance, the more individuals will form abstract versus concrete mental representations, classify objects into broad versus specific categories; form generalized superordinate goals rather than specific subordinate goals; and demonstrate cre-

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activity and insight versus analytical thinking. Moreover, according to CLT, cognition oriented toward distant versus near-term future events activates a “transfer-appropriate processing shift toward other tasks” (Förster, Friedman, & Liberman, 2004, p. 179). By adopting a distal temporal perspective, for example, a generalized cognitive orientation toward forming abstract mental representations of objects and events is facilitated, whereas by adopting a near-term temporal perspective, a generalized cognitive orientation toward forming concrete mental representations of objects and events is facilitated.

### 1.2. Theory of MindTime

Based partly on the above, Fortunato and Furey (2009), Fortunato and Furey (2010), Fortunato and Furey (2011), Furey (1994), Furey (2010), proposed that mental time travel and its corresponding semantic and episodic memory structures form the foundation for three distinct temporally located cognitive patternings, referred to as Past, Present, and Future thinking perspectives (Fortunato & Furey, 2009, 2010, 2011), and that variation exists in the extent to which individuals utilize the three thinking perspectives. In brief, Past thinking involves the formation of highly meaningful abstract mental representations of personal experiences and declarative knowledge stored in memory and occurs when individuals engage in reflective, contemplative thinking involving the reconstruction, analysis, and critical evaluation of information. Past thinking also involves the evaluation of pre-existing conceptual and social schemas as to their validity and relevance. Consequently, Past thinking often involves a resistance to change, but only to the extent that such change is perceived to be risky and unwarranted. Present thinking involves the formation of concrete, contextualized, goal-oriented mental representations of objects and events, and occurs when individuals engage in the organization of data, information, people, and events into pre-existing structures, the development of action plans based on that data, and the organization of resources needed to execute those plans. Future thinking involves the formation of abstract, idealized mental representations of future events and objects and occurs when individuals engage in open-ended, speculative, visionary thinking, creative problem solving, and the creative generation of infinite numbers of novel sequences. All three thinking perspectives exist because each had an important role in increasing the probability of biological and reproductive survival. With Past thinking, the risks associated with decision making and action can be minimized by drawing upon knowledge and experiences that have been shown to be previously successful. With Present thinking, the probability of obtaining desired outcomes can be maximized by structuring and controlling the environment efficiently. With Future thinking, the ability to flexibly anticipate, adapt to, and take advantage of ever-changing environmental conditions occurs.

According to the theory, variation exists in the extent to which individuals utilize the three thinking perspectives and the extent to which they do so, in combination, influences how they perceive and process information and interact with the world and others. For example, some individuals might be predisposed toward Future thinking, but not Past or Present thinking; some individuals might be predisposed toward Past and Present thinking, but not Future thinking; and some individuals might be predisposed toward utilizing all three thinking perspectives relatively equally. We posit that the degree to which individuals utilize each of the three thinking perspectives, in combination, will provide the greatest predictive validity when examining individuals' behavior, personality, and thinking style. Such a *profile* approach is not new and has been used with, for example, the MMPI2 (Burger & Kabacoff, 1994); the California Personality Inventory (McAllister, 1996); and the NEO (McCrae et al., 2001).

### 1.3. Sternberg's model of mental governance

Sternberg's (1988, 1997) model of mental governance is patterned, in part, after a tripartite form of government that includes three main branches: executive, legislative, and judicial. Just as some societies govern their people using the flexible interaction between executive, legislative, and judicial branches, Sternberg suggested that individuals govern their mental activity similarly. However, additional thinking styles exist based on how individuals approach the world (forms), are oriented toward abstractions or details (levels), are inwardly or outwardly focused (scopes), and approach rules (leanings). In 2001, Zhang proposed that the 13 thinking styles represent two broad categories of thinking styles: those involving creativity and complex (deep) information processing (Type I) and those involving simplistic (surface) information processing (Type II). Later, Zhang (2003) formalized a three-category taxonomy of thinking styles: Type I (legislative, judicial, hierarchical, global, and liberal), which involve abstract levels of cognitive processing, creativity, originality, flexibility, high levels of autonomy, and low degrees of structure; Type II (executive, local, monarchic, and conservative), which involve simple cognitive processing, conformity to existing methods and procedures, adherence to rules, and high levels of structure; and Type III (anarchic, oligarchic, internal, and external), which consist of characteristics of both Type I and Type II thinking styles depending on the specific demands of the task. See Table 1 for definitions of the 13 thinking styles.

### 1.4. Hypotheses

We hypothesize that profile differences will exist on all of the thinking style measures. Based on the definitions of Past, Present, and Future thinking and those of Sternberg's (1988) thinking styles, because Past and Future thinking both involve abstract thinking, we surmise that the influence of both Past and Future thinking should yield above average scores on Type I thinking styles. In addition, because Past and Present thinking both involve conformity to pre-existing structures, we surmise that the influence of both Past and Present thinking should yield above average scores on Type II thinking styles. Similarly, because Present thinking involves concrete, rather than abstract thinking, the influence of Present thinking should yield below average scores on Type I thinking styles, whereas because Future thinking involves open-ended, flexible, creative, and speculative thinking, the influence of Future thinking should yield below average scores on Type II thinking styles.

We present the above as suppositions rather than hypotheses because it is difficult to predict exactly how the three thinking perspectives will combine to influence the thinking styles that individuals manifest. For example, for individuals with a Past profile, the potential positive influence of Past thinking on Type I thinking styles may be attenuated by low scores on Future thinking, whereas the potential positive influence of Past thinking on Type II thinking styles may be attenuated by low scores on Present thinking. Thus, our examination of the differences between the thinking perspective profiles and individuals' thinking style patterns is largely exploratory.

## 2. Methods

### 2.1. Participants and procedure

Six hundred and eighty-eight graduate students enrolled in an on-line university participated in this research as partial fulfillment of a research requirement. However, five cases were deleted

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