



## Thinking styles of university deaf or hard of hearing students and hearing students



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### ABSTRACT

**Background and aims:** Although their university enrollment has increased dramatically over the past two decades, deaf or hard of hearing (DHH) students face great challenges and a tremendous environmental adjustment when entering a mainstream university. This study aims to facilitate DHH students' university success through exploring differences in thinking styles between DHH and hearing students from Art and Design academic disciplines in two universities in China.

**Methods and procedures:** The Thinking Styles Inventory-Revised II (TSI-R2) and its accommodated version were administered to 286 hearing and 256 DHH students, respectively. A demographic sheet was administered to all 542 participants.

**Outcomes and results:** Results show that DHH students tended to score significantly lower on Type I thinking styles (legislative and global), Type II executive style, and Type III external style than hearing students. In addition, differences in Type I styles (liberal and hierarchical) and Type II executive style between DHH and hearing students were significantly influenced by institution.

**Conclusions and implications:** The present research indicates that DHH and hearing students have significant differences in their thinking styles. This yields implications for the higher education of DHH students, and for deaf schools preparing DHH students for university entry.

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### What this paper adds:

This paper explores differences in thinking styles between DHH and hearing students from Art and Design academic disciplines in two universities in China. It validates the TSI-R2 and its accommodated version among hearing and DHH university students, respectively. It also shows significant differences in thinking styles between DHH and hearing students, and indicates that these differences are influenced by the institution (i.e., the learning/social higher education environment). Furthermore, it extends studies regarding intellectual styles of DHH students; provides partial empirical evidence for Zhang's (2013) argument regarding Hofstede's (1980) culture model; and enriches the TSI-R2 data bank. This paper discusses its

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limitations in relation to the participants as well as the adopted inventory, implications for higher education of DHH students and deaf schools preparing DHH students for university entry, and recommendations for future research.

## 1. Introduction

Although their university enrollment has increased dramatically over the past two decades, deaf or hard of hearing (DHH) students face a tremendous environmental adjustment when entering a mainstream university (Lukomski, 2007; Stinson, Liu, Saur, & Long, 1996), including such problems as a high dropout rate (Boutin, 2008), increased incidence of depression (Finley, 2013), and loneliness (Lukomski, 2007).

Three major approaches have been adopted to facilitate DHH students' university success: the ability approach (emphasizing maximal performance and stability) (e.g., Stinson & Walter, 1997); the personality approach (emphasizing typical performance and stability) (e.g., Jambor & Elliott, 2005); and, the intellectual style approach (e.g., Richardson, Barnes, & Fleming, 2004). According to Cronbach (1960), maximal performance refers to what an individual is capable of doing, while typical performance refers to what an individual is willing (or prefers) to do. The focus of this paper is on facilitating DHH students' university success through comparing their intellectual styles with those of hearing students.

### 1.1. Intellectual styles and their importance

To the authors' best knowledge, the earliest study of styles can be traced to Allport (1937), who introduced "styles of life" as ways of describing distinctive personality types or types of behavior. Since then, styles have been studied from different perspectives. For example, conceptualized as a subset of personality types and as intelligence. These different points of view have yielded numerous definitions, and in turn led to inconsistency and confusion (Leonard, Scholl, & Kowalski, 1999). In fact, the style field has been consistently criticized, not only for its definitions, but also for such issues as its various tests and lack of theory (e.g., Coffield, Eccleston, Hall, Meagher, & Mosely, 2004; Peterson, Rayner, & Armstrong, 2009). Despite these criticisms, styles are still considered to be valuable and to play an important role in individuals' developmental outcomes (see details in Peterson et al., 2009). It should be noted that Peterson et al., 2009 is based on a survey of academics who are in the European Learning Style Information Network, so they are very likely to be in favor of the style approach.

In recent years, Zhang and Sternberg (2005) have reconceptualized various style labels (e.g., cognitive styles, learning styles, and thinking styles) using the general term 'intellectual styles,' which they define as individuals' preferred ways of processing information and dealing with tasks. For the sake of brevity, 'intellectual styles/style' will be hereafter referred to as 'styles/style'.

Zhang and Sternberg (2005), incorporating the main existing style models (e.g., Biggs' (1978) learning approaches, Holland's (1973) career personality types, and Sternberg's (1997) thinking styles), posited a threefold model in which intellectual styles are classified into three types: Type I, Type II, and Type III. Type I styles are characterized by a preference for tasks with a lower degree of structure, that can be processed in more complex and creative ways, and that allow to be performed in individuals' own way. Type II styles are characterized by a preference for tasks that have a higher level of structure, that call for simpler and more conventional ways of processing, and that demand more respect for authority. Type III styles can "manifest the characteristics of both Type I and II styles, depending on the style demands of a specific task and on an individual's level of interest in the task" (Zhang & Sternberg, 2005; p.36).

The extant literature demonstrates that styles significantly predict different aspects of hearing students' development (Zhang & Sternberg, 2009), including psychosocial (Zhang, 2002a) and cognitive development (Zhang, 2002b). Type I styles are often associated with more desirable human attributes, and Type II styles with less desirable (Zhang & Sternberg, 2009).

Intellectual styles also play an important role in DHH students' developmental outcomes. For example, studies have shown that field independent (Type I style) DHH students perform better than field dependent (Type II style) ones on multiple-choice tests (Davey & LaSasso, 1985), and that reflective (Type I style) DHH students show better reading performance than impulsive (Type II style) ones (Moores, Weiss, & Goodwin, 1973). As another example, Cheng, Zhang, and Hu (2016) found that DHH students with Type I thinking styles tend to have greater university self-efficacy than those with Type II thinking styles.

Furthermore, previous studies have indicated that intellectual styles are malleable among both hearing and DHH students. For instance, Fan, J. (2013) identified that Chinese hearing students score higher on Type I styles and lower on Type II styles after studying at university for one academic year. Cheng and Zhang (2015) confirmed Fan's (2013) findings, and also found that Chinese DHH students manifest increased use of both Type I and Type II styles after one year of university study.

As aforementioned, styles are important predictors for both hearing and DHH students' development in various domains, and are characterized by typical performance and degrees of malleability. These findings make studies modeled on the intellectual style approach more valuable and attractive than those taking either the ability or personality approach. Thus, it is worthwhile to extend studies on DHH students' intellectual styles through exploring and understanding the differences in styles between DHH students and hearing students.

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