BO 博士 SHI
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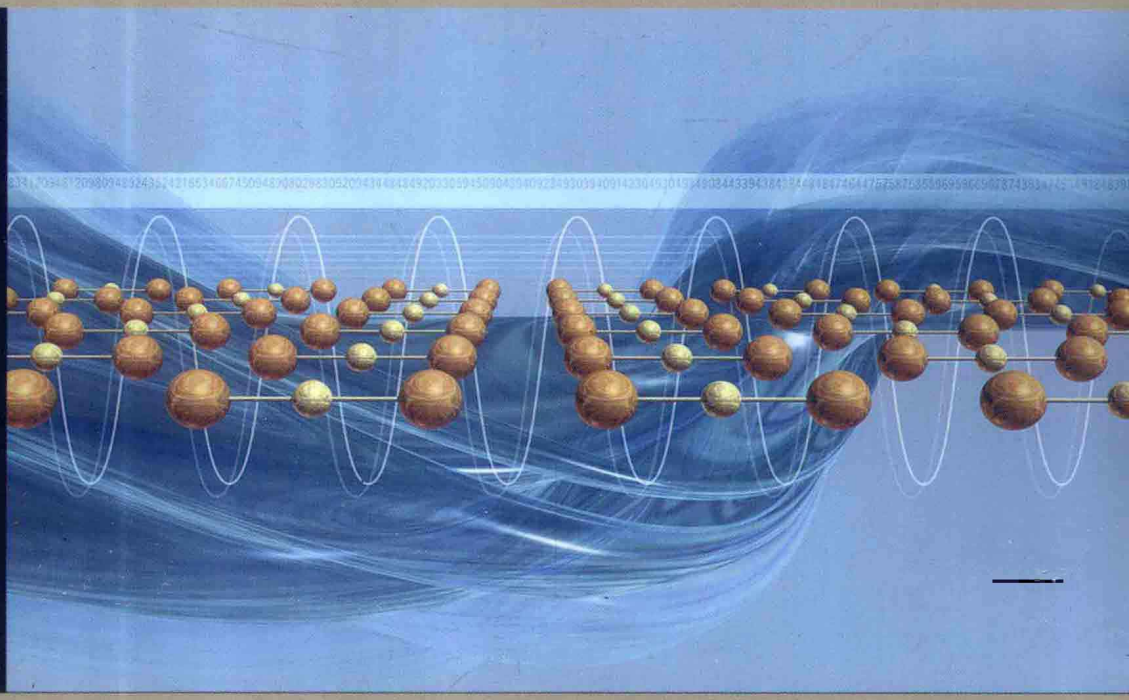
INTELLECTUAL STYLES AMONG CHINESE UNIVERSITY STUDENTS

中国大学生的智力风格

Fan Weiqiao（范为桥）



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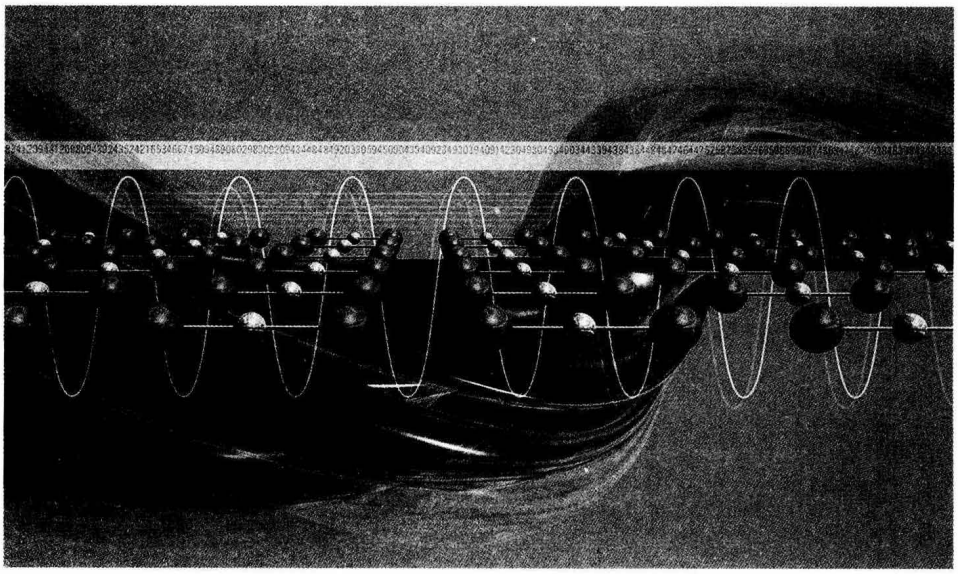

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内 容 简 介

本书是作者对自己近年来研究中国大学生智力风格结果的总结。在教育心理学范畴内，智力风格的研究起源于对智力与人格不能很好解释与预测学生学业成绩的反思。不同学者从各自的视角出发，提出了各种风格理论，试图改善对学生学业成绩的理解，促进学生更好地学习。由于心理学特殊的历史沿革，在智力风格领域内，针对中国人群的专门研究比较少见。本书在充分总结前人研究的基础上，以发展的视角比较了中国大学生人群的智力风格在超媒体学习环境与传统学习环境中的发展特点及其对大学生学业成绩的贡献。本书还总结了该研究结果的理论与实践价值，并对未来研究方向给出了充分的展望。

本书可以作为智力风格与教育心理学相关领域研究工作者的参考读物，也对高等学校学生进行心理学研究英语论文写作训练有帮助。

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Fan Weiqiao

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Preface

Traditionally, psychological variables such as intelligence/ability, personality, achievement motivation, and attitudes towards learning are used to explain students' academic achievement. However, these variables could not fully explain why students learn and achieve differently. Since the late 1930s, the style construct (recently termed as "intellectual style" that encompasses the meaning of all style constructs such as cognitive style, learning style, and thinking style) has been introduced to enhance our understanding of individual differences in learning and performance.

This book is the first that describes changes in thinking styles as well as the relationship between thinking styles and academic achievement among Chinese students who were learning in traditional and hypermedia instructional environments. This book is significant in at least four major ways:

First, work shown in this book can improve our understanding of the nature of intellectual styles as it relates to style malleability. Second, work described in this book can demonstrate whether or not thinking styles can significantly contribute to academic achievement beyond ability, personality, and achievement motivation, especially in a hypermedia learning environment. Third, the research addresses the issue of whether or not a hypermedia environment is an all-style learning environment, and whether or not it has obvious advantages over a traditional environment in terms of teaching and learning. Finally,

research findings illustrated in this book also have practical implications for classroom teaching and learning and for designing and developing hypermedia instructional systems.

Li-fang Zhang
The University of Hong Kong

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Chapter 1 Introduction

Helping students to achieve better learning outcomes has long been an important topic in the fields of educational psychology and educational technology. Student learning is not only a kind of educational outcome, but also a developing and enriching process of psychological development and knowledge building. Explaining students' learning processes and performance in terms of their psychological background has always been, and will continue to be, an important issue. From the 1950s to the 1970s, studies on intellectual styles (such as cognitive, learning, and thinking styles) went through an unparalleled period of popularity in terms of both theoretical studies and practical applications. There are several reasons for this popularity. One of the reasons for this interest was that cognitive and psychometric perspectives of human ability (e.g., traditional achievement and ability tests), personality, and motivation had not provided adequate explanations for students' learning (Renzulli & Dai, 2001; Zhang & Sternberg, 1998). The concept of intellectual styles has become well established in the literature of psychology (Ausubel & Ausubel, 1966; Hogan, 1980; Sternberg & Lubart, 1992; Witkin, 1964; Zhang & Sternberg, 2005). The term intellectual style refers to the preferred ways in which individuals approach their environments or utilize the abilities they have (Hogan, 1980; Messick, 1984; Riding & Cheema, 1991; Sternberg & Grigorenko, 1997; Tennant, 1988; Witkin, Oltman, Raskin & Karp, 1971; Zhang & Sternberg, 2005). Intellectual styles have been widely adopted to describe the marked differences in performance shown by people as they think,

learn, teach, or rather, process and use information and carry out various tasks. In the fields of education and psychology, the factor of intellectual style has often been employed, together with ability, personality traits, and achievement motivation, to explain, predict, and improve students' academic achievement. For instance, many researchers (e.g., Cafferty, 1981; Chang, 1988; Saracho, 2003) have argued that teachers should modify their instructions to suit students' styles, or that students might match their styles with their teachers. Although this seemed to be a good idea, attempts to make it work were largely unsuccessful in the 1970s (Chall, 2000; Denzine, n.d.). The failure of this approach and the proliferation of style variables, often poorly measured, were major reasons for the discrediting of "intellectual styles" in the 1980s.

In the early 1990s, some researchers tried to rejuvenate work in the domain of intellectual styles. The work of Sternberg is particularly relevant to the present book. Sternberg (1988, 1994, 1997) proposed a general theory of intellectual styles, the Theory of Mental Self-Government, which focuses on people's thinking styles. According to Sternberg (1997) and Zhang and Sternberg (2005), the Theory of Mental Self-Government possesses three major characteristics which make it superior to other style theories. First, the specifics of thinking styles fall along five dimensions, rather than along one, a feature which is beneficial to evaluating a respondent more comprehensively. Second, thinking styles are perceived as falling along continua rather than as being dichotomous. Third, the Theory of Mental Self-Government allows a profile of styles for each person, rather than only the identification of a single style (see also Zhang, 2000b, 2000c).

In addition, since the 1990s, educational technology, especially various types of e-learning, has played an increasingly important role in teaching and learning (Chan & van Aalst, 2004; Clark & Mayer, 2003; Ely & Minor, 1994; Yan, Hao, Hobbs, & Wen, 2003). Because of the complexity of e-learning and consequently the diversity in understanding e-learning, there exist various ways of defining e-learning (e.g., Huffaker & Calvert, 2003; Mayer, 2003). However, the central characteristics of e-learning are very stable: (1) various

technologies, especially media for delivering or recording information (e.g., computer, cable TV, Internet, Intranet, or other related means); (ii) various forms (e.g., virtual learning, online learning, distance learning, and web-based learning); and (iii) various components (e.g., e-book, e-dictionary, e-classroom, and e-homework; Mayer, 2003; Yan, Hao, Hobbs, & Wen, 2003). Learning that takes place in a hypermedia environment is one popular kind of e-learning nowadays. What's more, this study focuses on hypermedia-based learning.

There are lots of studies and good reviews in the literature on the topic of hypermedia-based teaching and learning (e.g., Ayersman, 1996; Burton, Moore, & Holmes, 1995; Liao, 1999; Liu & Reed, 1994; Tergan, 1997a). However, advances in technology have outpaced our understanding of the relationships between intellectual styles and students' learning in hypermedia instructional environments. We also have little knowledge about changes in students' styles and how students' styles develop in such environments. Consequently, it is unclear what styles are most effective in a hypermedia environment. Furthermore, the effectiveness of different modes of e-learning, such as hypermedia learning and web-based learning, is also disputed both in theory and practice. For instance, while some researchers have suggested that these newer modes of learning possess certain advantages over learning in traditional instructional environments (e.g., Azevedo & Cromley, 2004; Barrett, 1988; Liao, 1999), other researchers have argued that using e-learning such as hypermedia often leads to very little learning (e.g., Dillon & Gabbard, 1998; Shapiro & Niederhauser, 2004). It is therefore important to test the application of current theories of educational psychology and technology by conducting empirical studies which compare intellectual styles in hypermedia and traditional instructional environments. Such an investigation is the core of the longitudinal experimental study reported in this book: a comparison of changes in thinking styles and thinking styles' effects on academic achievement, based on Sternberg's (1988, 1994, 1997) style model, in a hypermedia instructional environment with those in a traditional instructional environment.

1.1 Why should we examine this issue

As an individual-difference variable, intellectual style is considered by a number of theorists to be an influential factor in student learning, sometimes beyond the influence of ability, personality, and motivation (e.g., Drysdale, Ross, & Schulz, 2001; Saracho, 1984; Zhang & Sternberg, 2001). Intellectual styles have been explored by psychologists for a long time, and the origins of studies of intellectual styles can be traced back to the ideas of individual differences in the classical Greek literature (Vernon, 1973) and some works of Confucius (Li, 1985). Galton's (1883) analysis of human faculty, James' (1890) conception of individual differences, Jung's (1923) theory of psychological types, and the work on perception and recall by Bartlett (1932) have all contributed to the style construct in modern psychology.

The beginning of modern research on intellectual styles may be considered as having started with Allport's (1937) idea of "life-styles" (Rayner & Riding, 1997). Since the 1950s psychologists proposed many theoretical models of intellectual styles and explored the nature of cognitive, learning, and thinking styles and their effects on learning performance in both academic and non-academic settings, especially in traditional learning environments (see Bieri, 1971; Goldstein & Blackman, 1978; Kogan & Saarni, 1990; Rayner & Riding, 1997; Sternberg & Grigorenko, 1997; Vernon, 1973; Witkin & Goodenough, 1981; Zhang, 2005b, 2006). However, there are two problems behind the apparent productiveness of academic studies in this area.

First, the literature reports many quantitative studies on intellectual styles which support the view that intellectual styles are socialized and state-like (e.g., Mshelia & Lapidus, 1990; Petty & Haltman, 1991; Zhang & Sterneberg, 2001). However, there are virtually no strong empirical longitudinal data which explore whether or not students' styles are changeable (e.g., Zhang & Sternberg, 2005), especially in a hypermedia learning environment and in the

Chinese cultural context. Many scholars (e.g., Vernon, 1963; Rayner & Riding, 1997) have criticized some theories of intellectual styles (e.g., Witkin's theory) for being built upon limited research evidence. Sternberg and Grigorenko (1997) also suggested that there is a need to investigate "the extent to which styles change over time and even in particular situations."(p. 706) In other words, longitudinal studies are needed which may well produce evidence of the likelihood and extent of changes in intellectual styles in different teaching/learning environments (Bishop-Clark, 1995).

Second, concerning the relationships between intellectual styles and students' academic achievement, although it has been fully examined in traditional learning contexts, this issue needs to be further investigated in various e-learning circumstances such as hypermedia or web-based contexts. Those empirical studies which have been conducted in e-learning contexts employed research designs with serious limitations (Astleitner & Leutner, 1995; Liao, 1999), such as insufficient sample sizes, insufficient length of teaching/learning periods, non-standardized instruments (e.g., instructive, not constructive), and lack of experimental controls. Thus, some studies did not obtain significant results. For instance, some meta-analyses indicated that the effect sizes of these studies were reduced when the experimental treatment lasted for a longer period of time (Clark, 1983; Liao, 1999). Moreover, even though these studies explored the use of intellectual styles in the context of e-learning such as hypermedia situations, they only used "old" intellectual style theories such as Witkin's (1964) Field Dependent-Field Independent Theory and Kolb's (1976) Model of Experiential Learning Styles. However, a thorough understanding of the intellectual style construct in learning environments requires an examination of other major kinds of styles based on sound experimental designs and an investigation into learning in nontraditional instructional environments (e.g., different e-learning circumstances). In particular, as has been mentioned, Sternberg's (1988, 1994, 1997) Mental Self-Government Theory possesses several features which make it superior to other style theories, but it has not yet been applied to hypermedia learning environments, especially in the Chinese cultural context.

In traditional teaching and learning situations, thinking styles based on