10

Teaching for successful intellectual styles

Li-fang Zhang
UNIVERSITY OF HONG KONG

Introduction

Intellectual styles, an encompassing term for such constructs as cognitive style, learning style, thinking style, and teaching style, refer to people’s preferred ways of processing information and dealing with tasks. In Zhang and Sternberg’s (2005) *Threefold Model of Intellectual Styles*, all existing styles documented in the literature are classified into three types: Type I, Type II, and Type III (see the Appendix for examples of Type I and Type II styles). Type I intellectual styles denote preferences for tasks that provide low degrees of structure, that require individuals to process information in a more complex way, and that allow originality and high degrees of freedom to do things in one’s own way. These preferences correspond to those often expressed by highly creative individuals or groups. Type II intellectual styles suggest preferences for tasks that are structured, that allow individuals to process information in a more simplistic way, and that require conformity to traditional ways of doing things and high levels of respect for authority. These preferences are consistent with those frequently observed in people with less creative potential. Type III styles may manifest the characteristics of either Type I or Type II styles, depending on the stylistic demands of a specific situation. In this chapter, people who tend to a wider repertoire of intellectual styles, including Type II and Type III styles, apart from Type I styles, are said to possess successful intellectual styles.

The major goal of this chapter is to address two related questions: Can successful intellectual styles be taught? If so, how can they be fostered routinely as opposed to merely being cultivated in the “laboratories”?

The chapter is divided into four parts. The first introduces two long-standing controversial issues in the field of intellectual styles: style value and style malleability. The second part underscores major empirical evidence suggesting that Type I intellectual styles are more adaptive than are Type II styles. The third part highlights experimental studies that demonstrated the feasibility of cultivating Type I intellectual styles. The fourth and final part draws conclusions and proposes ways of teaching for successful intellectual styles on a routine basis.

Style value and style malleability

The field of intellectual styles has been challenged by several long-standing controversies concerning the nature of intellectual styles, most noticeably, style value, style malleability, and style...
overlap (e.g., Zhang & Sternberg, 2005). Style value pertains to the dispute about whether or not some styles are more adaptive than are others. Style malleability concerns the classic debate over nature versus nurture – that is, whether styles are inborn traits, thus non-modifiable, or they represent states, thus modifiable. Finally, style overlap has to do with the question of whether styles are distinct constructs, or are simply akin constructs carrying different labels. The theme of this chapter concerns style value and style malleability. Therefore, these two issues are given further elaboration.

**Style value**

Are some styles better than others? Do some styles deserve more efforts to be developed than others? These questions concern the issue of style value.

Over the years, a number of scholars have alluded to this issue, with some taking a clear stance in favor of styles’ being value laden, and others expressing their changing view from styles’ being value differentiated to styles’ being value laden. In the case of those holding the belief that styles are value laden, for example, Kogan (1980) commented that the field-dependence/independence construct (FDI, one of the most intensively researched style constructs) is not “quite as value free as Witkin would have liked it to be” (p. 597). Kogan (1980) pointed out that while field-independent individuals perform better than do field-dependent ones on the standard indicators of the FDI construct, the alleged compensating strengths of field-dependent individuals in the interpersonal sphere had yet to be demonstrated. Subsequently, using convincing examples that ranged from the domain of performance to deliberate training of styles, Kogan (1989) asserted that styles were not and never had been value free. Similarly, Shipman (1989) argued that one of the most fascinating aspects of the style concept is that it was “intended to characterize the ‘how’ rather than the ‘how much’ of cognition . . . Nevertheless, with some styles, one pole is explicitly more valued than another, while with others, no particular value preference is noted” (p. 6).

Other scholars have gone through a change of heart in their views about the issue of style value. For example, in defining thinking styles, Sternberg (1996) noted that “styles are not ‘better’ or ‘worse’” (p. 347). Over the years, however, Sternberg has developed a new perspective on the issue of style value. Zhang and Sternberg (2005) contended that Type I intellectual styles are more adaptive than are Type II intellectual styles (see also Zhang & Sternberg, 2006). In the past several years, the argument that Type I intellectual styles are more adaptive than are Type II styles has been endorsed by some scholars (e.g., Kaufman & Baer, 2009), but not by others (e.g., Jablokow & Kirton, 2009).

**Style malleability**

The issue of style malleability has been one of the most contended ones in the field of styles (Zhang, 2013). Scholars began their dispute over style malleability within the context of defining various style constructs. Although all of the definitions recognize styles as people’s preferred ways of processing information, they differ in a fundamental way. That is, some depict styles as a “characteristic mode or way of manifesting cognitive and/or affective phenomena” (Royce, 1973, p.178), denoting that styles are stable traits, whereas others portray styles as being socialized and teachable (Sternberg, 1997).

Over the years, however, confidence in the modifiability of intellectual styles has been expressed in various ways. For example, Henson and Borthwick (1984) argued: “Since it is readily recognized that the majority of humans are capable of changing, both teaching and learning styles can therefore be manipulated” (p. 6). That is to say, both teaching and learning
styles can be modified. Sharma and Kolb (2011) alluded to the modifiability of intellectual styles in stating: “The learning style concept in the ELT (Experiential Learning Theory) is different in that learning style is not conceived as a fixed trait but a dynamic state” (p. 60).

Zhang (2013) presented the first comprehensive and systematic review of the then-existing literature on the malleability of intellectual styles. By critically analyzing research findings obtained from both cross-sectional and longitudinal research conducted worldwide over more than seven decades, Zhang (2013) demonstrated that intellectual styles can be changed through both socialization and training.

Research evidence: the adaptive type I styles

A large body of literature suggests that intellectual styles can play significant roles in both students’ learning and development and teachers’ educational practice (Evans & Waring, 2009). It further indicates that Type I styles are generally more desirable than are Type II styles (Zhang & Sternberg, 2009). In this part, some key research evidence is provided.

Type I styles in student learning and development

The adaptive nature of Type I styles has been demonstrated in different aspects of student learning and development. These aspects can be broadly classified into two domains: cognitive processes and developmental outcomes.

Type I intellectual styles in cognitive processes

The adaptive nature of Type I intellectual styles has been shown in research on the roles of styles in cognitive processes. For example, Fan and Zhang (2009) investigated how Chinese university students’ thinking styles would be related to their achievement motivation as assessed on the Achievement Motives Scale (Gjesme & Nygard, 1970). Results confirmed the prediction that Type I thinking styles would be positively contributory to achievement motivation to approach success – an achievement motivation that is considered to be more adaptive, but negatively to achievement motivation to avoid failure – an achievement motivation deemed to be maladaptive. At the same time, the findings lent partial support to the prediction that Type II thinking styles would be negatively related to achievement motivation to approach success. Similar findings have been obtained among Korean students (see Park, Park, & Choe, 2005).

The importance of intellectual styles has also been examined in relation to metacognition, a critical individual-difference variable in the learning process. Metacognition refers to an individual’s ability to reflect upon, understand, and control one’s learning (Schraw & Dennison, 1994). Previous investigations of metacognition have distinguished between two major components of metacognition: knowledge of cognition and regulation of cognition. Knowledge of cognition refers to how much learners know about themselves, their strategies, and situations under which these strategies are most useful. Regulation of cognition refers to how well learners plan, implement strategies, monitor, and evaluate their learning (Schraw & Dennison, 1994). When analyzing the data gathered through using the Thinking Styles Inventory – Revised II (Sternberg, Wagner, & Zhang, 2007), the Metacognitive Awareness Inventory (Schraw & Dennison, 1994), and the Self-rated Ability Scale (Zhang, 1996) from 424 university students in mainland China, Zhang (2010a) found that after students’ self-rated abilities were taken into account, three Type I thinking styles (hierarchical, liberal, and legislative) and one Type II style (executive) predicted
higher levels of metacognition. That is to say, Type I styles are more conducive to the use of metacognitive processes than are Type II styles.

As a final example, the adaptive nature of Type I styles has also been found when styles were tested against critical thinking disposition. Critical thinking disposition refers to one’s propensity for thinking critically. Mcdade (2000) studied the relationship between critical thinking as measured by the California Critical Thinking Disposition Inventory (Facione & Facione, 1992) and Jung’s (1923) construct of personality styles among 167 health professional students. Mcdade identified significant relationships of the intuition-thinking personality style to the inquisitive-ness and truth-seeking dispositions as well as to the total critical thinking disposition score. This finding is consistent with studies of the relationships between critical thinking and other intellectual style constructs such as field-dependent/independent styles (Bostic, 1989) and learning styles (Gadzella & Masten, 1998).

**Type I intellectual styles in student development**

In addition to their crucial functions in students’ cognitive processes, intellectual styles have been found to play an important role in student development. In this context, “student development” refers to the holistic development of students – their affective, cognitive, personality, social, vocational, psychosocial development, and so on (Baxter-Magolda, 2009).

Research on the relationships between intellectual styles and student development is abundant. In this literature, various individual style constructs have been involved, most noticeably, field dependence/independence (Witkin, 1948), impulsivity/reflectivity (Kagan, 1965), learning approach (Biggs, 1978), brain dominance (also known as mode of thinking, Torrance, 1988), and thinking style (Sternberg, 1988). Likewise, a wide range of student-developmental outcomes have been investigated. These include cognitive development, career development, emotional development, emotional intelligence, mental health, perceptions of parenting styles, personality traits, and psychosocial development (see Zhang & Sternberg, 2009 for details).

For example, various personality traits (e.g., the Big Five personality traits, anxiety, resilience, assertiveness, and locus of control) have been tested against the aforementioned style constructs. It was found that Type I intellectual styles (e.g., the field-independent style, reflective style, deep learning approach, holistic mode of thinking, and Type I thinking styles) were consistently related to personality traits that are conventionally deemed to be positive (e.g., higher levels of assertiveness, internal locus of control, optimism, conscientiousness, openness, and lower levels of anxiety). On the contrary, Type II styles (i.e., the field-dependent style, impulsive style, surface learning approach, analytic mode of thinking, and Type II thinking styles) were consistently associated with personality traits that are typically perceived to be maladaptive (e.g., lower levels of assertiveness, pessimism, external locus of control, neuroticism, and psychoticism; see Gebbia & Honigsfeld, 2012 for a summary).

As another example, Murphy and Janeke (2009) examined the relationship between the thinking styles defined in Sternberg’s (1988) theory of mental self-government and emotional intelligence as measured by the Schutte Self-Report Inventory (Schutte et al., 1998) among 309 university students in South Africa. The researchers concluded that students with higher levels of emotional intelligence tended to report more frequent use of Type I thinking styles.

As a final example, Zhang (2010b) conducted a series of three studies, investigating the predictive power of thinking styles (Sternberg, 1988) for psychosocial development as defined by the Eriksonian stages (Erikson, 1968) and assessed by the Measures of Psychosocial Development (Hawley, 1988). Across the three studies, research participants were 905 (381 male and 524
female) university students from Hong Kong and mainland China. Results showed that, in all three studies, Type I thinking styles positively contributed to psychosocial development and that Type II thinking styles did so negatively.

**Type I intellectual styles among teachers**

Not only do styles play an important role in students’ learning and development, but also they make a significant difference among teachers. In studying school and university teachers, researchers have obtained at least three types of research evidence demonstrating that Type I intellectual styles are more adaptive than are Type II styles.

The first type of evidence was obtained from studying the relationships of teachers’ teaching styles to situational characteristics and to their perceptions of their work environments. For example, in their study of in-service teachers in Hong Kong, Zhang and Sternberg (2002) identified that compared with their counterparts, those teachers who reported more work experience outside school settings, who reportedly adopted new teaching materials more frequently, and who indicated that they had received more professional training, tended to score significantly higher on the Type I teaching styles as evaluated by the *Thinking Styles in Teaching Inventory* (TSTI, Grigorenko & Sternberg, 1993). Similar findings have been obtained in Zhang’s (2007) study of high school teachers in mainland China.

The second type of research evidence is shown in the findings on the relationships between intellectual styles and personal attributes. For example, among 246 Chinese academics, Zhang (2009) investigated the predictive power of occupational stress for teaching approach (Trigwell, Prosser, & Taylor, 1994) – one of the intellectual style constructs. When the participants’ self-rated abilities were taken into consideration, the following statistically significant relationships were identified: 1) those who evaluated their rational cognitive resource more often tended to use the conceptual-change teaching approach, a more adaptive intellectual style; 2) those who perceived their training, education, skills, and experience as insufficient for their job requirements showed a strong dislike for using the conceptual-change teaching approach; and 3) those who felt more psychologically strained tended to use the information-transmission teaching approach – a less adaptive style.

Finally, the third type of research evidence pointing to the adaptive nature of Type I styles was ascertained from studies of the relationships between teachers’ intellectual styles and their teaching behaviors. For example, field-independent teachers tended to ask more reason-seeking questions, make more reliable judgments of students’ essays, and use more positive techniques for classroom management. They also tended to be less critical of, but more nurturing toward, students. However, the field-dependent teachers were less likely to use positive techniques for classroom management; they tended to be more critical of, but less nurturing toward, students; and their judgments of students’ essays were less reliable (Quinn, 1988). On a similar note, Pavlovich (1971) discovered that teachers higher on the reflective style had a propensity for praising and encouraging students and for accepting and adopting students’ ideas, whereas teachers scoring higher on the impulsive style tended to ask questions, lecture, and give directions. It was also found that more reflective teachers tended to cause students to change in a favorable direction and that more impulsive teachers tended to influence students in a more negative way.

To summarize, studies highlighted in this part revealed consistently that Type I styles are more adaptive than are Type II styles. Given this, it is natural that the development of Type I intellectual styles would be the desired outcome of styles training programs. In what follows, studies involving styles training are recapitulated.
Training for Type I intellectual styles

When reviewing the existing work on styles training, Zhang (2013) noted that though the amount of research on styles training could be considered rather moderate in view of the long history of the field of styles, there was sufficient evidence supporting the argument that intellectual styles can be taught. Zhang (2013) also pointed out that the training programs were almost exclusively designed to develop the more adaptive Type I styles among research participants. In this part, a general picture of the styles training literature is provided, followed by a presentation of sample studies.

Research on styles training: an overview

Modifying people’s styles has long been an interest of styles researchers. Kagan, Pearson, and Welch’s (1966) study was the first of the many studies (see Zhang, 2013 for details) that aimed at reducing impulsivity and improving reflectivity. This research on training for the reflective style was paralleled by investigations into the enhancement of field independence and the reduction of field dependence as defined by Witkin (1948). Indeed, throughout the 1970s and 1980s, the style models adopted in research on modifying styles were almost exclusively Kagan’s (1965) construct of reflectivity/impulsivity and Witkin’s construct of field dependence/independence. Beginning the late 1990s, experimental studies aiming at enhancing students’ deep approach to learning (also known as the meaning-oriented learning approach) based on several alternative models (e.g., Biggs, 1978; Entwistle, 1981) have been on the increase. More recently, a number of experimental studies have been conducted based on Sternberg’s (1988) thinking style construct.

Apart from the above, studies based on other style models (e.g., Kolb’s (1976) model of learning styles; Myers’s (1978) model of personality styles), though anecdotal, have also achieved success in fostering Type I styles. To date, hundreds of studies based on at least 10 style constructs have been conducted. With few exceptions, all studies have demonstrated the success of the training programs in cultivating Type I intellectual styles. Moreover, the majority of the studies also looked into research participants’ performance on either parallel tasks or generalization tasks in such domains as general intelligence, specific aspects of intelligence, academic achievement, affective development such as locus of control and self-concept, psychological well-being, as well as in-classroom behavior and social skills. Examining these parallel gains or performance on generalization tasks is important because the research findings can be used to enhance our understanding of the critical functions of intellectual styles in other domains of human performance.

Training for Type I intellectual styles: research evidence

This section provides evidence for the success of training for Type I intellectual styles. It does so by introducing sample studies based on three style constructs: field dependence/independence, learning approach, and thinking style – style constructs that are widely examined in studying the development of students’ Type I intellectual styles. Studies based on field dependence/independence were usually conducted among kindergarten and school children as well as among special populations. Moreover, these studies were conducted in varying cultural settings, including cultural contexts that are socially and economically underprivileged such as Guatemala, Sierra Leone, Nigeria, Zambia, as well as developed industrialized countries. On the other hand, studies based on learning approaches and thinking styles were
mostly conducted in higher education settings and they tended to be confined to developing and/or developed countries.

**Increasing the levels of field independence**

Training for the development of field independence became one of the major research efforts almost immediately after the construct of field dependence/independence was put forward. Earlier studies (those conducted between 1948 and 1965) that primarily involved such interventions as drug administration, electro-convulsive shock, and stress stemming from anticipated heart surgery proved to be failures in terms of showing any significant training effect. Nevertheless, findings from a number of studies of alcoholics conducted during the same period of time and results from more recent studies demonstrated that field independence can be fostered, and by implication, that field dependence can be reduced.

The relatively more recent studies contained various interventions, including cognitive modeling, meditation, musical rhythm training, stress management training, and depth-perception training. Such interventions have been proved to be largely effective in increasing people’s levels of field independence. In one study, Collings (1985) did an experiment with 52 elementary school students in a rural comprehensive school in the United Kingdom. Both the control group (n = 28) and the experimental group (n = 24) took science lessons for 12 weeks. While all 12 lessons for the control group were regular lessons that adopted the usual materials, for the experimental group, two-thirds of each lesson was a regular science lesson and one-third was conducted using training materials. The training materials (e.g., random pictures, pattern, shape in shape, word search) were designed to improve the cognitive restructuring aspect of field independence. Results showed that students in the experimental group not only outperformed the control group in the *Group Embedded Figures Test* (Witkin et al., 1971), but also demonstrated superiority in the development of formal operations on the basis of the Piagetian levels (Piaget, 1952).

It is worth noting that one of the major achievements of the field-independence training studies has been that these studies demonstrated that styles training can reduce the widely recognized gender gap in field dependence/independence – a gap that is consistently in favor of males: Males score significantly higher on field independence than do females. For example, Stericker and Le Vesconte (1982) conducted an experimental study among 83 introductory psychology students. Students in the experimental group received three one-hour training sessions in spatial tasks featured in three different tests. Results revealed that both male and female students in the training group performed considerably better on all tests of spatial character than did students in the control group. Furthermore, when female students in the experimental group were compared with males in the control group on the post-tests, the gender-related pre-test difference in favor of males faded away. That is to say, training can balance the differential prior exposure to spatial tasks between males and females (see Zhang, 2013 for other successful training programs).

**Developing the deep learning approach**

The construct of learning approach proposed by Biggs (1978) has stimulated over a dozen of experimental studies, all with the aim of fostering research participants’ deep learning approach. These studies were carried out in the higher education settings of several countries. In trying to foster the deep learning approach, each of the studies used an intervention that is educationally innovative in nature. These interventions include, for example, action learning–based course, case–based assessment, collaborative examination (featured by students’ active participation), and reflective learning.
Compared with studies aiming at developing other Type I intellectual styles, studies with the objective of developing the deep learning approach yielded the most conflicting findings, with some (e.g., Gordon & Debus, 2002) having achieved the objective of increasing the deep learning approach, others (e.g., Reid, Duvall, & Evans, 2005) having shown no statistical difference between treatment and control groups, and still others (e.g., Baeten, Dochy, & Struyven, 2008) having produced outcomes that were exactly opposite to what was expected.

The obtainment of non-significant and unexpected results, however, does not mean that it is impossible to cultivate the deep learning approach. One just has to realize that developing the deep learning approach may require persistent efforts because some factors may go against the development of the deep learning approach. In synthesizing the various factors possibly responsible for the failure of producing desired experimental outcomes (e.g., Baeten, Dochy, & Struyven, 2008), Zhang (2013) reached the conclusion that several factors in the educational innovations – all centered on building a constructivist learning environment – might have worked against students’ employing the deep learning approach. These factors include heavy workload, lack of clarity, lack of guidance and structure, and insufficient length of the experiments, among others.

**Cultivating Type I thinking styles**

Finally, as the most recent individual style model, Sternberg’s (1997) model on thinking styles has generated several doctoral research projects involving styles training (e.g., Fan, 2008; Tai, 2012). Again, all of these studies were intended to enhance students’ Type I styles, with some having been carried out in schools, and others at universities. Although the results from these studies did not always yield expected outcomes, they were very encouraging: not only did the studies show that students could change their styles in the desired direction when learning environments were designed appropriately, but also they resulted in parallel gains.

For example, Tai (2012) conducted an experimental research involving 13 teachers (six teaching in experimental groups and seven teaching control groups) teaching liberal studies courses to 683 ninth graders in 13 schools in Hong Kong. Although quantitative data suggested that students who were instructed in Type I teaching styles (i.e., experimental groups) did not always change their thinking styles in the anticipated direction immediately after the six-month experimental period, follow-up interviews with students indicated that students in control groups manifested more characteristics of Type II thinking styles, whereas students in the experimental groups showed more features of Type I thinking styles. Moreover, students in the experimental groups scored significantly higher on three of the six career interest scales in Holland’s (1994) Self-directed Search.

**Teaching for successful intellectual styles**

Collectively, the two preceding parts have demonstrated that Type I intellectual styles are more adaptive and that they can be taught. Then, the question is: What could teachers do to cultivate successful intellectual styles?

Recall that individuals who have the propensity for using a wide range of intellectual styles, especially for adopting Type I intellectual styles, are said to have successful intellectual styles. Bearing in mind this definition, one could argue that teaching for successful intellectual styles calls for two types of efforts. One is to allow for diverse intellectual styles, and the other is to cultivate Type I intellectual styles.

While teachers could certainly use some of the specific strategies for cultivating Type I intellectual styles as have been done successfully in the majority of the experimental studies,
including the aforementioned ones, it is much more important that teachers foster successful intellectual styles routinely in their educational practice. That is to say, fostering successful intellectual styles requires teachers to go far beyond relying on isolated efforts in the laboratories.

Then precisely, what does it mean to promote successful intellectual styles on a routine basis? Here are several suggestions:

To allow for diverse intellectual styles among students, teachers must be aware of the importance of providing students with choices at all times and in as many contexts as possible. These contexts may include, but are not limited to, classroom instructions, assessment of academic performance, and student-developmental programming and implementation. For example, within the context of classroom instructions, teachers could use diverse teaching styles to teach so that students with different learning styles would benefit from at least some parts of the teachers’ instructions. Likewise, if students are given the opportunities to choose their own projects within the context of assessments, they would likely shine through working on a project that is accommodating to their intellectual styles. As a final example, student-developmental programs that are designed and implemented with sensitivity to diverse intellectual styles would tend to be more effective than would otherwise.

However, cultivating successful intellectual styles in education requires more than just embracing diverse intellectual styles in the sense of accommodating students’ existing styles. A key component to fostering successful intellectual styles is to challenge students to develop the research-proven adaptive styles (often Type I intellectual styles) – styles that would be more beneficial to students in the long run. As has long been articulated by Piaget (1952), to achieve cognitive growth, individuals must be confronted with (and must work through) cognitive conflicts. In the domain of intellectual styles, this implies that to develop Type I styles, individuals need to be challenged or be given the opportunity to go beyond their “comfort zones.” Nevertheless, cognitive-developmental theorists (e.g., Perry, 1999) also cautioned that challenges must be accompanied by appropriate levels of support. In challenging students to develop the creativity-generating Type I intellectual styles, teachers could take diverse measures to provide students with support. For example, teachers could do so by allowing mistakes, allowing time to think creatively, encouraging questioning of assumptions, rewarding creative thinking, role-modeling creative thinking, allowing autonomy in learning, encouraging sensible risk-taking, just to name a few. At the same time, teachers could foster creativity-generating intellectual styles by empowering students to expose themselves to unfamiliar “territories,” engage themselves in tasks that require experimenting with new ideas, and to develop intrinsic motivation for what they do. Ultimately, these conscious efforts of cultivating creative thinking outside the “testing sessions” would become routine practices that naturally elicit the display of successful intellectual styles in everyday life.

It is, however, always easier said than done. Creative thinking, or in the context of the present chapter, successful intellectual styles, cannot be effectively acquired or cultivated without the support of the larger environment. Classroom teachers would not be able to do much to foster successful intellectual styles unless they genuinely feel that successful intellectual styles are encouraged. In fact, it would not be an overstatement to say that the cultivation of successful intellectual styles calls for the support of the broader educational and cultural systems. Namely, teaching for successful intellectual styles calls for the concerted efforts of all parties within an educational institution and beyond.

References

Li-fang Zhang


Teaching for successful intellectual styles


## Individual styles involved in the studies reviewed

<table>
<thead>
<tr>
<th>Style Construct</th>
<th>Individual Style</th>
<th>Key Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning approach</td>
<td>Surface&lt;sup&gt;I&lt;/sup&gt;</td>
<td>Reproduce what is taught to meet the minimum requirement</td>
</tr>
<tr>
<td></td>
<td>Deep&lt;sup&gt;II&lt;/sup&gt;</td>
<td>Gain a real understanding of what is learned</td>
</tr>
<tr>
<td>Career personality type</td>
<td>Artistic&lt;sup&gt;I&lt;/sup&gt;</td>
<td>Deal with tasks that provide opportunities to use imagination</td>
</tr>
<tr>
<td></td>
<td>Conventional&lt;sup&gt;II&lt;/sup&gt;</td>
<td>Work with data under well-structured situations</td>
</tr>
<tr>
<td>Mode of thinking</td>
<td>Holistic&lt;sup&gt;I&lt;/sup&gt;</td>
<td>Process information in an intuitive, Gestalt-type, and synthesized manner</td>
</tr>
<tr>
<td></td>
<td>Analytic&lt;sup&gt;II&lt;/sup&gt;</td>
<td>Process information in a piecemeal, analytical, and sequential manner</td>
</tr>
<tr>
<td>Personality style</td>
<td>Sensing&lt;sup&gt;II&lt;/sup&gt;</td>
<td>Rely primarily on concrete information provided by the five senses</td>
</tr>
<tr>
<td></td>
<td>Intuitive&lt;sup&gt;I&lt;/sup&gt;</td>
<td>Like to find general patterns and new ways of doing things</td>
</tr>
<tr>
<td></td>
<td>Judging&lt;sup&gt;II&lt;/sup&gt;</td>
<td>Prefer more structured learning environments</td>
</tr>
<tr>
<td></td>
<td>Perceiving&lt;sup&gt;I&lt;/sup&gt;</td>
<td>Prefer learning situations that are more free, open, and flexible</td>
</tr>
<tr>
<td>Conceptual tempo</td>
<td>Reflective&lt;sup&gt;I&lt;/sup&gt;</td>
<td>Tend to consider and reflect on alternative solution possibilities</td>
</tr>
<tr>
<td></td>
<td>Impulsive&lt;sup&gt;II&lt;/sup&gt;</td>
<td>Tend to respond impulsively without sufficient forethought</td>
</tr>
<tr>
<td>Psychological differentiation</td>
<td>Field independent</td>
<td>Tend to see objects or details as discrete from their backgrounds</td>
</tr>
<tr>
<td></td>
<td>Field dependent</td>
<td>Tend to be affected by the prevailing field or context</td>
</tr>
<tr>
<td>Thinking style</td>
<td>Legislative&lt;sup&gt;I&lt;/sup&gt;</td>
<td>Prefer to work on tasks that allow creativity and autonomy</td>
</tr>
<tr>
<td></td>
<td>Judicial&lt;sup&gt;II&lt;/sup&gt;</td>
<td>Prefer to work on tasks that allow for one’s evaluation</td>
</tr>
<tr>
<td></td>
<td>Hierarchical&lt;sup&gt;I&lt;/sup&gt;</td>
<td>Prefer to distribute attention to several tasks prioritized according to one’s valuing of the tasks</td>
</tr>
<tr>
<td></td>
<td>Global&lt;sup&gt;I&lt;/sup&gt;</td>
<td>Tend to pay more attention to the overall picture of an issue</td>
</tr>
<tr>
<td></td>
<td>Liberal&lt;sup&gt;II&lt;/sup&gt;</td>
<td>Prefer to work on tasks that involve novelty and ambiguity</td>
</tr>
<tr>
<td></td>
<td>Executive&lt;sup&gt;II&lt;/sup&gt;</td>
<td>Prefer to work on tasks with clear instructions and structures</td>
</tr>
<tr>
<td></td>
<td>Monarchic&lt;sup&gt;II&lt;/sup&gt;</td>
<td>Prefer to work on tasks that allow complete focus on one thing at a time</td>
</tr>
<tr>
<td></td>
<td>Local&lt;sup&gt;II&lt;/sup&gt;</td>
<td>Prefer to work on tasks that require working with concrete details</td>
</tr>
<tr>
<td></td>
<td>Conservative&lt;sup&gt;II&lt;/sup&gt;</td>
<td>Prefer to work on tasks that allow one to adhere to the existing rules and procedures</td>
</tr>
</tbody>
</table>

**Note**: <sup>I</sup> = Type I intellectual styles and <sup>II</sup> = Type II intellectual styles