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Learning Styles and Typologies of Cultural Differences:
A Theoretical and Empirical Comparison

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Abstract

This study presents the relationship between six typologies of cultural differences and the learning styles of Kolb's learning model. Several cross-cultural studies about learning styles indicate that learning styles may differ from one culture to another, but few studies have addressed the question of which culture is related to which learning style or ability. The present study concerns this inquiry. Exploration of this inquiry has been made in two parts. The first part investigates conceptual analogies and relationships between Kolb's model and the six cultural typologies in the domains of anthropology, cross-cultural management, and cross-cultural psychology. The second part focuses on the empirical results of six comparative studies about cross-cultural differences in learning styles in the past and discusses how six propositions generated from the first theoretical examination can reflect upon their past empirical results. Those two examinations suggest that particular culture, as categorized in those domains, relates to certain learning styles or abilities.

Introduction

Learning is a universal and essential human activity the world over. Yet each country never stops to explore and develop its own methods of learning in order to respond to the demands particular to its environments. Understandably, the continuity and development of a certain learning situation fitted to each country relates to the way in which learning styles vary among cultures. The perspective that there is a relationship between learning styles and culture is not new and has been discussed in scholarly research for a few decades.

Hays and Allinson (1988) suggest that the culture of a country may be one of the powerful socialization agents that have a great impact upon the development of learning styles. Hofstede (1997) argues that a country's culture shapes its peoples' preferred modes of learning through their socialization experiences. Pratt (1991) also claims that learning styles may be distinguishable across cultures according to his comparative study of self-conceptions between Chinese and Western societies. More recently, De Vita (2001) suggests that there is little room for doubt about cultural effects upon the development of learning styles. From her empirical study of an Israeli sample, Katz (1988) concludes that the transaction between culture and learning style is evident in the move to the active learning mode.

Learning styles may be related to cultures. However, a further inquiry then arises about which particular cultures are associated with which certain learning styles. For instance, is high context culture related to a particular learning style? Is individualism related to a particular learning abilities? With the exception of Hoppe's (1990) study and Auyeung and Sands' (1996) one, only few studies have discussed the relationship between a type of culture and learning styles. These studies, however, focused only on particular cultural typologies such as Hofstede's (1997) model. No one has yet ventured farther out to include the cultural perceptions of

anthropologists, like Edward T. Hall or Ruth Benedict; or considered the potential insight that could be gained by consulting the work of organizational analysts. The cultural typologies suited for linkages with learning styles are indeed much vaster than previously thought. This study embarks on an examination of the cultural views put forth in such theories and their potential and fecund relationship to learning styles and aims to link the differences among six cultural models and learning styles encompassed in Kolb's (1984) learning theory. Towards this end, this study concentrates on a theoretical and empirical comparative-analysis between the learning styles and six cultural typologies presented in three study areas: anthropology, cross-cultural management, and cross-cultural psychology.

Finally, I acknowledge that perspectives led by this study about connections between six cultural models and learning styles are not definitive but rather suggestive, and hopefully, that they may prove thought provoking. Each of the six cultural typologies as well as Kolb's model has their own unique variables, values, and attributes among distinct academic disciplines that are rooted into different various social phenomena such as communication patterns, cognitive styles, personal values, and learning styles. These variables may possess some similarities but remain distinct. Cognitive styles, for example, concern inherent modes of processing information (Claton & Murrell, 1987) and an underlying and somewhat permanent personality (Curry, 1987), while learning styles, in contrast, relate to a direct interplay between persons and learning environments (Curry, 1987).

Learning Styles and Learning Abilities

Learning involves the totality of human activities: feeling, reflecting, thinking, and doing (Kolb, 1984). Individuals are thought to develop specialized abilities and preferences for such activity. These specialized preferences are called learning style. Keefe (1979) illustrates that

learning styles refer to cognitive, affective, and physiological behaviors that perform as relatively stable indicators of how people perceive, interplay with, and respond to their environment in learning situations. Learning styles are defined as “individual consistencies in perception, memory, thinking, and judgment across any stimulus condition” (Curry, 2000, p.239).

Among learning theories, Kolb’s learning model has received special attention, especially relative to the examination of cross-cultural activities (Hoppe, 1990), and has been accepted broadly in management learning and education (Kaye, 2002). In the task of examining cross-cultural differences in learning styles and cross-cultural learning programs, Kolb’s model has been applied in the fields of cross-cultural and international studies (e.g., Hughes-Wiener, 1986; Katz, 1988; Hoppe, 1990; Yuen & Lee, 1994; Jackson, 1995; Auyeng & Sands, 1996; McMurray, 1998; Hayashi, 1999; Fridland, 2002; Yamazaki & Kayes, 2004; Barmeryer, 2004; etc.).

In Kolb’s model, the person is required to employ each of the four key learning abilities: concrete experience, abstract conceptualization, reflective observation, and active experimentation (Kolb, 1984). Concrete experience abilities focus on being involved in experiences and dealing with immediate human situations subjectively. The emphasis of concrete experience abilities is to use feeling and sensitivities to peoples’ feelings and values. Those with concrete experience abilities value interpersonal relations and are good at relating to people with an open-minded approach. In contrast, abstract conceptualization abilities call for applying logic, ideas, and concepts and are dialectically opposite to concrete experience abilities. These abilities are centered on thinking, analyzing, and building conceptual models. Those with abstract conceptualization skills are good at making systematic plans, manipulating abstract symbols, and using quantitative analysis.

Reflective observation abilities involve reflecting upon the meaning of ideas and

situations by carefully watching and listening. The focus of reflective observation is to employ reflective understanding to find out how and why things happen. Those with abilities for reflective observation are good at looking at things from various perspectives and imagining the meaning of situations and thoughts. In contrast, active experimentation abilities demand actively influencing people and changing situations and are dialectically opposite to reflective observation abilities. Active experimentation emphasizes the abilities to make practical applications and to be pragmatic with what works actually. Those with active experimentation abilities are willing to take actions and risks to get things done and seek to have responsibility for objectives and achievements.

The form of learning styles is a combination of four learning abilities: concrete experience, abstract conceptualization, reflective observation, and active experimentation (Kolb, 1984; Kolb & Fry, 1975). According to Kolb, there are four fundamental learning styles. The diverging learning style specializes in the two learning abilities of concrete experience and reflecting observation. In contrast, the converging learning style specializes in the two abilities of abstract conceptualization and active experimentation. The assimilating learning style specializes in the two abilities of abstract conceptualization and reflective observation. In contrast, finally, the accommodating learning style specializes in the two abilities of concrete experience and active experimentation. Figure 1 is described as Kolb's learning model.

Insert Figure 1 about here

Cultural Typologies in Anthropology

Anthropologists compare the modes of thoughts in a societal level of analysis and suggest

that the culturally dominant ways of thinking vary from one society to another. Here, the cultural typologies of Edward T. Hall and Ruth Benedict will be discussed concerning how each of these two typologies is conceptually related to learning abilities theorized in Kolb's model.

High-context vs. low-context cultures

Hall (1976) proposed a cultural classification of high-context culture and low-context culture, based on how in each individual identity rests on total communication frameworks. In high-context culture, surrounding situations, external physical environments, and non-verbal behaviors are important for its members to determine the meanings of messages conveyed in communication. Covert clues provided in these contexts make differences to the members and are used to search for a real meaning beyond verbal messages. Under these communication patterns, the members tend to be related to each other in relatively long lasting relationships. Japanese, Chinese, French, and Arabic countries belong to high context cultures.

'Here and now' experience of those who are embedded to proximate contexts is a key foundation for making communicative frameworks in high-context culture. In this sense, communication patterns in high-context culture are conceptually associated with the learning abilities of concrete experience. High-context culture requires its members to become sensitive to immediate environments through feelings. For their effective communication, its members need to be situated in a specific surrounding circumstance, which results in the production of tacit knowledge that serves to distinguish covert cues. This kind of knowledge relies on the concrete experience abilities (Kolb, 1984). In addition, interpersonal relationships are crucial in high-context culture. This trait is also congruent with the concrete experience abilities in which persons cherish interpersonal relationships. It would be reasonable to conclude that high context culture is associated with the concrete experience mode; therefore, its members tend to learn

through feeling in proximate contexts.

In low-context culture, surrounding situations, external physical environments, and non-verbal behaviors are relatively less crucial in generating and interpreting meanings, whereas explicit verbal messages are more important in communication (Hall, 1976). Most information is conveyed in explicit codes; thereby, explicit communicative styles in logical forms are valued to a high degree. Interpersonal relationships in low-context culture last for a relatively shorter period. The United States, Switzerland, and Germany represent low-context cultures.

Communication patterns of low context-culture are conceptually associated with the learning abilities of abstract conceptualization, to the extent that abstract and symbolic presentation in logical forms performs as central methods of communicating with others. In order to spell out messages clearly, its members are required to form socially communicable ideas and concepts in the abstract conceptualization mode. The members need to develop abilities for dealing with these coded ideas and concepts as communicative knowledge that is created through comprehension processes in the abstract conceptualization abilities. The communication patterns of low context culture focus less on interpersonal relationships while increasing emphasis on rationally detached analyses. These traits also agree with the characteristics of the abstract conceptualization mode. Low context culture would have conceptual similarities to the abstract conceptualization abilities; thus, those with low-context culture are likely to learn by logical thinking and analytical cognition. Accordingly, a general statement of Hall's cultural typologies related to learning abilities could be expressed as follows:

Proposition 1: Those with high context culture tend to learn through the abilities of concrete experience, whereas those with low context culture tend to learn through those of abstract conceptualization.

Shame vs. guilt cultures

Many cross-cultural researchers discuss a relationship between culture and emotion (Kitayama & Markus, 1994). Based on a comparative study between Japanese and Western societies, Benedict (1946) classified cultures using the particular emotions: shame and guilt. To the extent that emotions involve concrete experience in a specific event where persons are situated or behave themselves, shame and guilt cultures are seemingly associated with only the concrete experience abilities. Yet close examination of processes of eliciting shame and guilt emotions may make it possible to discriminate these two emotions according to different learning abilities within Kolb's model.

The culture of shame, whose emotion is a reaction to criticism of audience, is deeply embedded in external sanctions and environments for good behavior, and it places emphasis on outward standards of behavior (Benedict, 1946). Doi (1976) explains a further aspect of shame process, describing that shame originates in an individual's strong awareness of the outside world and requires the individual to feel intensely that others are watching him or her. In this sense, shame process heavily depends on individual immediate experience, along with an intense consciousness about surrounding audience and environments. Since concrete experience is a primal ability necessary to evoke shame emotion as an immediate psychological reaction about one's behavior, shame process is more associated with the concrete experience abilities. Moreover, examination of shame experience as a knowledge type will reinforce a perspective of the relationship between shame and the concrete experience abilities. Several researchers argue that shame experience is difficult to describe (Tangney, 1995; Frijida & Mesquita, 1994). We can deduce from this argument that shame experience is fundamentally involved with tacit knowledge acquired in the concrete experience abilities in that tacit knowledge is elusive and

hard to describe. Taken together, shame culture, where its members feel shame to a high degree, is strongly and conceptually related to the learning abilities of concrete experience.

Guilt culture relies on the development of an individual conscience that entails an absolute moral standard of society, and it stresses inner standards of behavior within the self rather than outer standards dependent on audience (Benedict, 1946). The developmental process of inner standards important to determine moral behavior must require individuals to use the abilities of reflective observation with deeply and internally reflecting upon why and how they behaved themselves. In this sense, guilt culture appears to focus on the depth of inner reflections upon ones' behaviors with the self. Supporting this conception is the idea that guilt process concerns a reflective understanding of an internal incompatibility between specific behaviors and established inner standards (Doi, 1979). Such an understanding imposes the use of internal verbal expression on individuals in the reflective observation abilities and evolves into internalized criticism that works with inner voice in the self-over and over (Emde & Oppenheim, 1995). Internalized criticism involves potently activating the reflective observation in guilt process. Consequently, the developmental process of inner standards and certain aspects of internalized criticism would enable us to conclude that guilt culture is conceptually related to the reflective observation abilities. Thus, the second proposition about the relationship between Benedict's shame and guilt cultural typology and learning abilities will be generated as follows:

Proposition 2: Those with shame culture tend to learn through the abilities of concrete experience, whereas those with guild culture tend to learn through those of reflective observation.

Cross-Cultural Management Literature

Cross-cultural management literature presents cultural differences in values, perceptions,

cognitions, and behaviors in organizational settings. This section will first deal with an examination of the relationship between Hofstede's cultural dimension of uncertainty avoidance and learning abilities. The second cultural typology to be explored within this field will be Hayashi's comparative cultural model of American and Japanese organizations.

Uncertainty Avoidance

Although there are criticisms about Hofstede's cultural dichotomized method of showing cultural differences: unjustifiable generalizations, ignorance of subtleties, and etc. (Clark, 2003), Hofstede's cultural model may be very influential upon international and cross-cultural management fields. Of his four cultural classifications, the dimension of uncertainty avoidance holds a conceptual relationship with learning abilities of Kolb's model (Hoppe, 1990). Hofstede (1997) defines uncertainty avoidance as "the extent to which the members of a culture feel threatened by uncertain or unknown situations" (p.113). Organizational members in strong uncertainty avoidance countries have a feeling of anxiety or fear when encountering unfamiliar risks, deviant ideas, or conflicts in their work place. Those members tend to take time for action until they acquire knowledge and information enough to reduce and resolve unclear and unstructured situations. In Kolb's model, those who prefer to use the abilities of reflective observation are likely to watch carefully and reflect upon their experience and observations. Because of this disposition, they relatively take time before actions and develop abilities of collecting information on various perspectives. Their main concern is about avoiding failure and errors, which could sacrifice their chances for successful performance. We could see that there exists a conceptual similarity between the strong uncertainty avoidance of Hofstede's cultural dimension and the learning abilities of reflective observation.

In contrast, organizational members in weak uncertainty avoidance countries tend to feel

less uncomfortable in unclear and unstructured circumstances and are more likely to take risks in unfamiliar situations where encountering deviant and innovative ideas and behavior with no rules (Hofstede, 1997). Achievement in their work place functions as a great motivational factor, and it encourages those members to take actions in either familiar or unfamiliar situations for their success. According to Kolb (1984), those with the active experimentation abilities learn through action taking, risk-taking, and practical application. The major concern of active learners is not about avoiding failure but rather about maximizing success (Kolb, 1984). It would be logical to state that the culture of weak uncertainty avoidance is involved with the development of the active experimentation. Accordingly, and with regard to Hofstede's cultural dimension, the following proposition will be produced.

Proposition 3: Those with strong uncertainty avoidance culture tend to learn through the abilities of reflective observation, whereas those with weak uncertainty avoidance culture tend to learn through those of active experimentation.

M-type organizations vs. O-type organizations

Hayashi (1999) proposes two cross-cultural organizational classifications: M-type organizations and O-type organizations. According to his typology, Western organizations are typical of the M-type while Japanese organizations are regarded as the O-type. M-type organizations possess clear job boundaries for any individual, section, and department level. Within these boundaries, each of the job descriptions and responsibilities is explicitly defined and spelled out using verbal expressions. It is assumed that its members can know their specified jobs and areas through analytical cognition that allows the members to make clear segmentation of the world with logic and words. Its members seem to be required to develop analytical cognition that is essentially rooted in the learning abilities of abstract

conceptualization. Additionally, Hayashi (1999) discusses how M-type organizations are more task-oriented and less people-oriented. These characteristics of M-type organizations conceptually match those of the abstract conceptualization abilities of learning.

In contrast, O-type organizations do not have explicit job boundaries and descriptions in their work place (Hayashi, 1999). Nevertheless, it is clear to such members what their assigned job areas and responsibilities are, based on job experiences in the organization where they share information through numerous formal and informal face-to-face channels. Concrete experience of their jobs and interpersonal relations makes a considerable difference in acquiring the proper knowledge to work well in the organization. In terms of cognition, O-type organizational members tend to perceive reality by analogue cognition that allows them not to segment the world but to see the world in simultaneous fashions as a whole (Hayashi, 1999). This characteristic of cognition is very similar to that of the concrete experience abilities in such a way that those persons see the world as wholeness by grasping experience through the apprehension process. Furthermore, because of the relatively close relationships between the members, O-type organizations are people-orientated rather than task-orientated. People orientation is an attribute of the concrete experience mode whose persons tend to prefer interpersonal and social issues to task issues. All of these characteristics of O-type organizations are congruent with those of the learning abilities of concrete experience. As a result, the forth proposition will be created as follows:

Proposition 4: Those of M-type organizational members tend to learn through the abstract conceptualization abilities, whereas those of O-type organizational members tend to learn through the concrete experience abilities.

Cross-Cultural Psychology

Cross-cultural psychology makes comparative studies of cognition, emotion, motivation, and behavior across cultures. In the domain of cross-cultural psychology, two cultural typologies may be theoretically associated with the learning abilities of Kolb's model. One typology focuses on culturally different self-construals of interdependent-self and independent-self presented and is discussed by Markus and Kitayama (1991), while the other is Witkin's (1976) cognitive style of field-dependent and field-independent.

Interdependent-self vs. independent-self

Markus and Kitayama (1991) examined the self-construal of different people across cultures and proposed interdependent-self and independent-self, each of whose attributes differs among cultures. Interdependent-self is represented as the self-construal of people in Asian, African, Latin American, and many southern European cultures, while independent-self is exemplified as the self-construal of those in American culture as well as many western European cultures (Markus & Kitayama, 1991). This cultural dimension of interdependent-self vs. independent-self may be analogous to that of collectivism vs. individualism as categorized by Triandis (1995) and Hofstede (1997).

Interdependent-self is viewed as connected to the surrounding social contexts where the self and others are concretely situated. Experience of interdependence with others makes people see themselves not as detached from the social context but as part of an encompassing social context with its concomitant personal relations. Because those with interdependent self have the strong sense of belongingness to social contexts and relationships, they are likely to perceive that relationship is "the functional unit of conscious reflection" (Markus & Kitayama, 1991, p.226). Since maintaining one's relationships and one's harmonious social behaviors make a difference in the social life of those with interdependent-self, interdependent-self persons are required to be

very sensitive to others' feelings and thinking and are likely to develop their capacity to acquire dense information about others and their selves in relation.

These characteristics of interdependent-self seem to be theoretically linked with two learning abilities within Kolb's model: the concrete experience and the reflective observation. People who exhibit their learning preference of the concrete experience abilities rely upon the tangible, felt qualities of here-and-now experience through sensory perception. Their immediate environments rather than universalistic conceptual symbols are so important to learning acquisition that concrete experience persons have a strong awareness of connectedness with the concrete external world including social contextual circumstances. Because the abilities of concrete experience are naturally strong in its sensitivity to others, those who prefer to learn using the concrete experience tend to develop interpersonal skills such as understanding the feelings and values of others. It could be reasonable to infer that people with interdependent-self are likely to express their learning preference of the concrete experience abilities.

In the learning abilities of reflective observation, people are required to watch and listen to others with great carefulness and to reflect upon their observations in their minds. They tend to spend time for reflection with subtle observations before taking actions and expressing themselves to others. With regard to learning skills, the reflective observation abilities entail developing the skill of information gathering from various resources (Boyatzis & Kolb, 1995). Those with interdependent-self are likely to base the relationship with others as a crucial and functional component of conscious reflection (Markus & Kitayama, 1991). These persons have a strong tendency to seek information about others' perception about the self in relation, which results in developing a dense, and important store of collected information in their mental capacity. This characteristic of ability development accords with that of the reflective

observation mode. Consequently, we could see that interdependent-self is conceptually related to the learning abilities of reflective observation.

In contrast, independent-self, the American and western European notion of self, is seen as an entity that contains important characteristic attributes and as that which is separate from context (Markus and Kitayama, 1991). There is a belief that people are inherently detached and distinct in American and many western European cultures where the cultural norm is to become independent from others and to express one's uniqueness. Although people with independent-self must be responsive to surrounding social circumstances, their social responsiveness arises relative to their need to determine the best way to display the inner attributes of the self.

For self-actualization and expressing one's uniqueness, independent-self involves the two learning abilities of abstract conceptualization and active experimentation. When showing their own ideas and thoughts as individual unique entities, such persons are required to put reliance upon clear concepts and distinct logic in their minds. Markus and Kitayama (1991) discuss how people with independent-self relatively rarely use context-free descriptions and abstract concepts such as psychological traits or attribute characterizations when expressing the self or others. They argue with Cousins (1989) that abstract or generalized characterizations are reflected into an assertion of being an independent individual whose nature is free from a concrete situation. This characteristic of independent-self, therefore, requires more focus be paid to the abstract conceptualization abilities rather than to the concrete experience ones.

To the extent that the expression of one's uniqueness and the achievement of self-actualization as characteristics of independent-self will not be completed without actual behaviors, independent-self is very importantly related to taking-actions with external environments where they can express their own thoughts. In this sense, there is little room to

doubt that expressing uniqueness and self-actualization entail taking actions in reality. Because persons of the active experimentation abilities are required to actively move to the outer world in order to test their ideas and thoughts that are created through the comprehension process, independent-self is clearly associated with the active experimentation abilities. Consequently the following proposition will be made regarding Markus and Kitayama's cultural typology in relation to Kolb's learning model.

Proposition 5: Those with interdependent-self tend to learn through the two abilities of concrete experience and reflective observation, whereas those with independent-self tend to learn through the other two abilities of abstract conceptualization and active experimentation.

Field-dependent and field-independent

Witkin's (1976, 1979) cognitive styles of field-dependent and field-independent have influence upon cross-cultural studies of psychological development across cultures (Goodenough, 1986). Witkin and his colleagues (1954) found that people's perception of the upright is consistently stable and represents part of their fundamental psychological makeup. The following discussion will show that Witkin's cognitive classification may be conceptually associated with the concrete experience and the abstract conceptualization abilities.

Field-dependent people are likely to depend on immediate contexts for solving problems and to comply with dominant properties of the field (Witkin, 1976, 1979; Goodenough, 1986). The less autonomous functioning of field-dependent people facilitates them to possess social and interpersonal orientations with great emotional openness in communication with others. The occupational choice of field-dependent people is oriented typically to the social in content and with interpersonal relations in which they develop interpersonal competencies. In Kolb's

learning model, persons with the concrete experience abilities fully open new experiences without bias, grasp figurative representation from immediate experiences, and connect themselves to the outer world. Such abilities involve social and interpersonal relationships.

In contrast, field-independent people have psychologically defined boundaries between their inner self and their outer self (Witkin, 1976, 1979). Segregation of the self from the field results in a greater determination of behavior from the internal self and a diminished reliance on external sources of guidance. The autonomous functioning of field-independent people enables them to rely on symbolic representations in their cognition. Field-independent people favor abstract activities that they are able to pursue on their own, develop cognitive restructuring skills, and are likely to have an impersonal orientation. Field-independent people seem to be related to the abstract conceptualization abilities of Kolb's model. Those with the abstract conceptualization mode rely upon abstract concepts and symbolic representation through logical and analytical cognition. They also tend to have more task orientations with dispassionate analyses than social and interpersonal orientations. Anderson (1988) illustrates that non-Western cultures are holistic, relational and field-dependent, while Western cultures are analytical and field-independent. Consequently, the sixth proposition will be generated as follows:

Proposition 6: Those with the field-dependent style tend to learn through the concrete experience abilities, whereas those with the field-independent style tend to learn through the abstract conceptualization abilities.

In sum, the theoretical examination as the first part of this study may make it possible to tell us that the investigated six typologies of cultural differences are conceptually related to the learning abilities of Kolb's model as shown in Table 1 and Figure 2.

Insert Table 1 and Figure 2 about here

Empirical Studies of Cross-cultural Learning Styles

Several past studies of learning styles across cultures provide us with their empirical, quantitative data that could be usefully reanalyzed to find out which learning style or ability is dominantly preferable in a certain country. In this study, I conducted a reanalysis of the quantitative data of Kolb's (1976, 1985, 1999) Learning Style Inventory (LSI) that were compiled by a variety of researchers over time, and in several different countries.

Learning Style Inventory

This inventory was invented to examine differences in individual learning styles conceptualized in Kolb's learning theory. As the popularity and usage of the LSI increases, debate has often occurred attacking the psychometric properties of the LSI (e.g., Freedman & Stumpt, 1980; Certo & Lamb, 1980; Loo, 1996). Mainemelis, Boyatzis, and Kolb (2002) discuss that the reliability of the LSI has been revised and improved with the possession of its strong face validity. The LSI also received very positive evaluation from undergraduate students because it helped to find ways of improving their own learning in different learning situations (Loo, 1999). Because of its usefulness and empirical reliability and validity in operation (Katz, 1986, 1988; Ferrell, 1983), cross-cultural researchers apply the LSI for learning style studies.

The LSI employs a forced-choice method by which to measure an individual learning orientation toward four learning abilities: the concrete experience (CE), the abstract conceptualization (AC), the reflective observation (RO), and the active experimentation (AE). The LSI is composed of 12 questions, each of which asks persons to complete a sentence by ranking four choices that correspond to the four learning abilities. The sum of a number on each

four abilities represents the degree of how much persons rely on each of such four different abilities of learning; that is, the greater the sum of the learning ability, the more they prefer to learn through it. Furthermore, the scores that are subtracted from one sum to the other in two opposite learning abilities describe a relative preferred way of learning. That is, the value of AC-CE represents a relative preference of person's learning that is more oriented to either the abstract conceptualization abilities or the concrete experience ones. The value of AE – RO also shows such a preference leaned more toward either the active experimentation abilities or the reflective observation ones. A combination of two values of AC-CE and AE-RO determines which of four learning styles persons prefer to use. The four learning styles, as discussed earlier, are the diverging, the assimilating, the converging, and the accommodating learning styles. According to the cut-off points of AC-CE and AE-RO as the LSI normative scores presented by Kolb (1999; Smith & Kolb, 1985), Figure 3 shows four learning styles.

 Insert Figure 3 about here

In order to discuss how the aforementioned propositions in the previous section are supported, I will primarily examine six comparative studies of learning style differences between countries or between cultures. Comparative studies may be able to tell us which country or culture is related to which learning style. A reanalysis of their LSI data that I conducted will also provide useful information about these discussed learning styles and make it possible to find out to what extent such countries are related to certain learning styles or abilities respectively.

The result of one cross-cultural, learning-style analysis, however, may be precisely incomparable with that of another cross-cultural, learning-style study because of different

demographic characteristics or because of the different ways of describing results of learning styles measured by the LSI. Moreover, it should be noted that some countries like the U.S. or Singapore discussed in this study hold diverse cultures, multiple races, and various ethnicities; thus, the LSI data from those countries may generate questions about how those data are correctly representative of their entire countries. In addition, the members of other cultures produced their scores on a test that was designed to examine learning styles of American learners on American normative scores. Yet, analyses of the results of the past comparative learning-style studies across cultures provide valuable insights and suggest that certain learning styles within one country tend to be developed in learning environments that are influenced by its particular culture. The following presentation focused on the empirical LSI results of six comparative studies of learning style difference with discussion of how these empirical results are reflected in the investigated cultural typologies.

Japanese and American learning styles

Comparative studies of Japanese and American learning styles may enable us to verify Propositions 1 to 6. The aforementioned cultural investigators in the six cultural typologies exemplify Japanese culture as one extreme pole in their cultural dimensions: that is, high-context culture, shame culture, strong uncertainty avoidance, O-type organizations, the interdependent-self, and the field-dependent style. American culture as the other extreme pole is contrasted with Japanese one as elucidated in the cultural typologies: low-context culture, guilt culture, weak uncertainty avoidance, M-type organizations, the independent-self, and the field-independent. The theoretical examination in the first part of this study generated the propositions that the former cultural types are associated with the concrete experience and the reflective observation, the combination of which leads to the diverging learning style. With the exception of guilt

culture, learning abilities common to the latter cultural typologies could be defined as those utilizing the abstract conceptualization and the active experimentation, the combination of which makes the converging learning style. One comparative study concerns learning style differences between Japanese and Americans.

Yamazaki and Kayes (2005) examined cultural differences in learning styles between Japanese managers (N=267) and American ones (N=126), both of who work for Japanese multinational corporations operated in the US. Results of their study revealed the significant difference in their learning styles ($t=-6.59$, $p<0.001$ as of AC-CE; $t=-3.23$, $p<0.001$ as of AE-RO). It is surmised that Japanese managers are more concrete and reflective, whereas American managers are more abstract and active. Their study shows that Japanese managers are linked with the diverging learning style and American managers lie in the converging learning style.

Furthermore, Yamazaki and Kayes' results of Japanese learning styles appear to be congruent with the results of McMurray's (1998) study about the learning styles of 160 Japanese undergraduate students with Economics and Science majors. He found that the learning preferences of Japanese subjects were very stable during two consecutive semesters and highly skewed toward the concrete experience and the reflective observation such as: 39% of the total students were inclined to the concrete experience, 36% to the reflective observation, 15% to the abstract conceptualization, and 10% to the active experimentation. I conducted a statistical reanalysis of his results using a chi-square test of the goodness of fit. Results of the chi-square test also revealed that there is a significant bias toward the concrete experience and the reflective observation ($\chi^2=41.00$, $N=160$, $df=3$, $p<0.001$).

In light of American managers' learning styles, several studies in the field of management learning may also be harmonized with their results, indicating that American

managers and MBA students are inclined towards the abstract conceptualization and the active experimentation (Kolb & Fry, 1975; Boyatzis & Mainemelis, 2000). Boyatzis and Mainemelis (2001) found that 607 full-time MBAs of an American graduate school are very abstract and somewhat reflective but that 679 part-time MBA students are further shifted to abstract and active learning abilities, who are categorized as the converging learning style. Table 2 and Figure 4 show the LSI data discussed about Japanese and American learning styles.

 Insert Table 2 & Figure 4 about here

The results of this Japanese learning tendency are socially reflected into Japanese norms and cultures such as; *amae*: that is, interdependence with people (Doi, 1979), the intuitive mode (Nugent, 1981), the gold of silence (Hayashi, 1999), and in the values of caution, deliberation, and silence (Linowes, 1993). The view that American learning styles are, in contrast, oriented towards the abstract conceptualization and the active experimentation is congruent with the general perspective that the American world traditionally values the rational mode of thought that concerns analysis, logic, and reasoning (Nugent, 1981; Hall, 1976; Hayashi, 1999) as well as the active mode exemplified in the self-actualization (Markus & Kitayama, 1991). This contrast also appears in the form of organizational control discussed by Ouchi (1981). He illustrates that Japanese organizations employ implicit control systems with a holistic method, whereas American organizations apply explicit control systems with a mechanical, segmented process.

Taken together, Japanese and American learning style tendencies may be hypothetically deducted from the conceptual similarity between those cultural typologies and Kolb's model. The reanalysis of those results appears to positively support Propositions 1 (high vs. low context

cultures), 2 (only shame culture), 3 (strong vs. weak uncertainty avoidances), 4 (O-type vs. M-type organizations), 5 (interdependent-self vs. independent-self cultures), and 6 (field-dependent vs. field-independent styles).

Regarding guilt culture, Proposition 2: those with guilt culture tend to learn through the reflective observation, might not, be in fact, seemingly supported, if American culture is categorized as guilt culture. This shows complexity in relationships between cultures and learning styles. American cultures may hold opposed learning preferences characterized within the investigated cultural typologies: that is, guilt culture involves the reflective observation but independent-self and weak uncertainty avoidance cultures relate to the active experimentation.

Finally, it should be noted that because personality types, educational majors, career choice, and functional job roles affect the development of learning styles (Kolb, 1984), different samples may produce different results of learning-style studies to that extent that those elements may possibly be substantially influential to accentuate particular learning styles.

Chinese and American learning styles

Chinese culture also appears to be highly contrasted with American culture. Examination of these two cultures may enable us to investigate Propositions 1 (high vs. low context cultures), 2 (only shame culture), 3 (strong vs. weak uncertainty avoidances), 5 (interdependent-self vs. independent-self cultures), and 6 (field-dependent vs. field-independent styles).

Fridland (2002) examined learning style differences between Chinese (N=100) and American (N=105) teachers in 12-K work settings. She reported Chinese learning style distribution: 42% of the diverging style, 28% of the assimilating one, 18% of the converging one, and 12% of the accommodating one, and presented American learning style distribution: 31% of the diverging style, 27% of the assimilating one, 18% of the converging one, and 26% of the

accommodating one. Results of her study using a chi-square analysis comparing the two distributions indicate that the difference from four learning-style distributions between Chinese and American does not reach significance ($p=0.07$). This value, however, is enough to state that Chinese learning styles are marginally different from American ones.

Furthermore, residual examination of my reanalysis about the LSI data illustrates that Chinese learning styles are distributed more at the diverging style (standardized residual = 1.0) and less at the accommodating one (s.r.= -1.6), while American learning styles stay more at the accommodating style (s.r.= 1.6) and less at the diverging one (s.r.= -1.0). Standard residuals range of the other learning styles range from -0.1 to 0.1. Because the difference in learning abilities between the diverging and the accommodating styles lies in the reflective and active learning dimension, it would be reasonable to say that Chinese are oriented toward more the reflective observation and less the active experimentation, while Americans' learning orientations are quite opposite to Chinese ones. Additionally, we could see few variations in learning preferences of the concrete experience and the abstract conceptualization between the Chinese and American samples of her study.

Consequently, this perspective suggests supporting Proposition 2 in part (shame culture), Proposition 3 (strong vs. weak uncertainty avoidance), and Proposition 5 in part (interdependent-self vs. independent-self in relation to the reflective and active learning abilities). Table 3 and Figure 4 shows the LSI data of Fridland's study.

Insert Table 3 and Figure 4 about here

French, German, and Quebec learning styles

According to Hall (1976), France is a high-context culture, while Germany is a low-context culture. Quebecois culture may be much closer to French than German because of her historical background including languages. Independent vs. interdependent-self cultures, that is, individual vs. collectivism, may not so differentiate between French and German culture in accordance with Hofstede's (1997) study; but uncertainty avoidance enables us to see more a difference between them. His study reports that France lies in strong uncertainty avoidance, while Germany FR is relatively weak uncertainty avoidance. We could verify Propositions 1 and 3 generated in the earlier theoretical discussion. Proposition 1 states that those with high context culture tend to learn through the concrete experience, while those with low context culture tend to learn through the abstract conceptualization. Proposition 3 states that those with strong uncertainty avoidance culture tend to learn through the reflective observation, while those with weak uncertainty avoidance culture tend to learn through the active experimentation.

Barmeyer's (2004) cross-cultural study is involved with the investigation of these two propositions. He examined learning styles of 132 French students, 98 German students, and 123 Quebecois students in business administration and found that French and Quebecois students are significantly more concrete than German students ($p < 0.001$); German students are significantly more abstract than those two students ($p < 0.01$); German students are significantly more active than are they ($p < 0.05$); there is no statistical difference in the reflective observation among them.

Moreover, focusing on the learning-style distribution of French, German, Quebec students: 28.0%, 12.2%, 25.2% as of the diverging style; 34.1%, 42.9%, 38.2% as of the assimilating style; 16.7%, 32.7%, 14.6% as of the converging style; 21.2%, 12.2%, 22.0% as of the accommodating style respectively, I reanalyzed about the distribution scores from his study employing a chi-square test for crosstabulation of four learning styles and three cultures as

shown in Table 4. Results of the chi-square test suggest that the learning styles are dependent on the cultures in the crosstabulation ($\chi^2=21.5$, $df=6$, $p<0.01$). Furthermore, I conducted a one-sample chi-square test about French students. Results of the one-sample chi-square test revealed that French students are significantly skewed toward the assimilating and the diverging styles ($N=132$, $\chi^2=9.27$, $df=3$, $p<0.05$), indicating that they relatively tend to use the reflective observation that is the common learning ability within those two learning styles. Accordingly, it would be reasonable to say that the results of Barmeyer's study support Proposition 1 (high vs. low context culture) and a part in Proposition 2 (only weak uncertainty avoidance). The results of the chi-square test of French students suggest that weak uncertainty avoidance may be linked with the reflective observation. Table 4 and Figure 5 summarizes the LSI results from his study.

 Insert Table 4 and Figure 5 about here

Australian, Hong Kong, and Taiwanese learning styles

Proposition 5 states that those with interdependent-self tend to learn through the concrete experience and the reflective observation, whereas those with independent-self tend to learn through the abstract conceptualization and the active experimentation. The study of Auyeung and Sands (1996) relates to this proposition. They tested the hypotheses that individualistic culture is more linked with the active experimentation, while collective culture is more associated with the reflective observation. In their study, the researchers analyzed the sample data from a total of 303 Australian accounting students: 125 students of Queensland university and 178 ones of Griffith university, whose country is representative of individualism (the independent-self); and 172 accounting students from Hong Kong and 157 Taiwanese accounting

students, whose countries are considered Chinese collective (the interdependent-self) culture. Their results illustrated that students from Chinese cultures are significantly more reflective and abstract and less active and concrete than are the Australian students. Auyeung and Sands statistically substantiated their hypothesis, suggesting that their study will positively but partly support Proposition 5 that the interdependent-self is more connected with the reflective observation whereas the independent-self is more related to the active experimentation.

With regard to the concrete and abstract dimension, the result of Auyeung and Sands may generate an argument against the proposition that the interdependent-self is linked to the concrete experience while the independent-self is associated with the abstract conceptualization showed that the Chinese cultural students are more abstract than are the Australian learners. This result of the Chinese culture, especially Hong Kong, might reflect upon an educational system concentrating on developing in mathematical skill and knowledge, which are directly connected to the abstract conceptualization. Mathematical performance of junior high school students of Hong Kong was ranked as one of the highest positions in 41 countries (OECD, 2004). In addition, Confucian ethics, which is rooted into the Chinese culture, concern the logical abstraction from human experiences and requires for predictions and hypotheses (Yuen & Lee, 1994). Yuen and Lee's study about learning styles of 1,032 Singaporean undergraduates in various majors showed that the students' preferred way of learning is heavy leaned toward the abstract conceptualization. They discuss this phenomenon with Confucian ethics. Although Singapore has more diverse cultures than Hong Kong and Taiwan, it is interesting to know that those three countries are so close in the index of Hofstede's (1997) individualism and collectivism cultural dimension. Social cultural systems and contexts might have a substantial effect upon developmental processes of the concreteness and abstraction learning abilities in

interdependent-self culture (collectivistic culture). Table 3 and Figure 4 summarize the LSI results of Auyeung and Sands' study including Yuen and Lee's one.

 Insert Table 3 and Figure 4 about here

Uncertainty avoidance and learning styles

Proposition 3 shows that persons with strong uncertainty avoidance culture tend to learn through the reflective observation, while those with weak uncertainty avoidance culture tend to learn through the active experimentation. Hoppe's (1990) study concerns this proposition. By using a sample of 1,544 adults from 19 countries: the U.S., Turkey, and 17 European countries that are shown in Table 6, he examined the relationship between strong-weak uncertainty avoidance and the reflective-active learning abilities, and found that the reflective observation is more linked with strong uncertainty avoidance, whereas the active experimentation is more related to weak uncertainty avoidance ($p < 0.05$). The results of Hoppe's study are thought to be congruent with those of Barmeyer's (2004) comparative examination and positively support Proposition 3. Table 6 describes the results of his examination.

 Insert Table 6 about here

Field Dependent vs. Independent Cultures and Learning Styles

Proposition 6 states that those with the field-dependent style tend to learn using the concrete experience, whereas those with the field-independent style tend to learn using the abstract conceptualization. Murphy (1993) tested the relationship between Kolb's learning

model and Witkin's cognitive styles with 199 registered nurses, and found that the result of Group Embedded Figures Test, a measure of the field dependence/independence dimension, is negatively correlated with the concrete experience abilities ($p < 0.05$) and positively associated with the abstract conceptualization abilities ($p < 0.05$). It is suggested that field-dependence is related to the concrete experience abilities, while field-independence is connected with the abstract conceptualization abilities. Her examination positively supports the perspective that Witkin's cognitive styles are associated with the two learning abilities of abstract conceptualization and concrete experience in described in Proposition 6.

Conclusion

The unique insights and theories of the cultural researchers and Kolb pointed the way to my own fundamental revelations about relationships between cultural differences and learning styles. My theoretical examination first attempted to connect the differences among their six cultural typologies with Kolb's model. Secondly, I reanalyzed the LSI data presented in the six comparative studies in the past in order to discuss how the generated propositions are supported.

Quite obviously the number of the six cross-cultural comparative studies is not sufficient to fully understand the relationship between cultural differences and learning styles. Moreover, due to the method that I used in the second part, all of the six propositions did not consistently and clearly receive supports from the investigated comparative studies. Nevertheless, this study might throw a light on perspectives of which culture is related to which learning ability or style. As promising research for verifications of the propositions, hypothetico-deductive methods should follow with sound instruments in which to measure the investigated cultural dimensions.

Finally, interplay between people and the world shapes learning styles at five levels: psychological types, educational specialization, professional career, current job, and adaptive

competencies (Kolb, 1984; Kolb, Boyatzis, & Mainemelis, 2001). The consequence of this study may be to indicate that the culture of the country around a people may be the sixth level of interplay between the people and the world in a positive way. This suggestion is meant to emphasize that the culture of country must necessarily be considered as a crucial factor so that we can understand individual learning styles with integration, especially when they are examined in a country categorized as at least one of the six cultural typologies. A close examination between the cultural component and the other five levels of factors will give us valuable insight into how individual learning styles are shaped and developed in a particular culture.

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Table 1. Conceptual relationships between six cultural typologies and learning abilities

<div style="text-align: center;">Learning abilities</div> <div style="text-align: left;">Researchers</div>	Concrete Experience "Feeling" (CE)	Abstract Conceptualization "Thinking" (AC)	Reflective Observation "Reflecting" (RO)	Active Experimentation "Acting" (AE)
Hall	High context culture	Low context culture		
Benedict	Shame culture		Guilt culture	
Hofstede			Strong Uncertainty avoidance	Weak Uncertainty avoidance
Hayashi	O-type organization	M-type organization		
Markus & Kitayama	Interdependent-self (Collectivism)	Independent-self (Individualism)	Interdependent-self (Collectivism)	Independent-self (Individualism)
Witkin	Field-dependent	Field-independent		

Table 2. Japanese and American learning styles

<u>Yamazaki & Kayes (2005)</u>		<u>N</u>	<u>AC-CE</u>	<u>AE-RO</u>	<u>Learning styles</u>		
Japanese managers in US	267		0.2	3.3	Diverging		
American managers in US	126		8.5	7.3	Converging		
	<u>t</u>		-6.59***	-3.23***			
<u>McMurray (1998)</u>			<u>CE</u>	<u>AC</u>	<u>RO</u>	<u>AE</u>	<u>Learning styles</u>
Japanese students in Japan	160		39%	36%	15%	10%	Diverging
	<u>χ^2</u>		41.00***				
	<u>df</u>		3				
<u>Boyatzis & Mainemelis (2001)</u>			<u>AC-CE</u>	<u>AE-RO</u>	<u>Learning styles</u>		
Full-time MBAs in US	607		7.5	4.8	Assimilating		
Part-time MBAs in US	679		11.0	6.9	Converging		

***= $p < 0.001$

A chi-square test of McMurray was conducted for the reanalysis in this study.

Table 3. Chinese and American learning styles

<u>Fridland (2003)</u>	<u>N</u>	<u>Diverging</u>	<u>Assimilating</u>	<u>Converging</u>	<u>Accommodating</u>
Chinese teachers in China	100	42%	28%	18%	12%
<u>standardized residuals</u>		1.0	0.1	0.1	-1.6
American teachers in US	105	31%	27%	18%	26%
<u>standardized residuals</u>		-1.0	-0.1	-0.1	1.6

<u>χ^2</u>		7.00			
<u>significance level</u>		0.07			
<u>df</u>		3			

A chi-square test and residual examination were conducted for the reanalysis in this study.

Table 4. French, German, and Quebec learning styles

<u>Barmeier (2004)</u>	<u>N</u>	<u>CE</u>	<u>RO</u>	<u>AC</u>	<u>AE</u>		
French students in France	132	28.17	28.67	32.24	30.92		
German students in German	98	22.49	29.59	35.09	32.83		
Quebec students in Canada (Montreal)	123	27.21	29.77	32.40	30.62		
<u>significance</u>		p<0.001	p>0.05	p<0.01	p<0.05		
		<u>Diverging</u>	<u>Assimilating</u>	<u>Converging</u>	<u>Accommodating</u>	One-sample chi-square	
						χ^2	<u>df</u>
French students in France	132	28.0%	34.1%	16.7%	21.2%	21.5**	3
<u>standardized residuals</u>		1.3	-0.7	-0.9	0.6		
German students in German	98	12.2%	42.9%	32.7%	12.2%	9.32*	3
<u>standardized residuals</u>		-2.2	0.8	2.7	-1.5		
Quebec students in Canada (Montreal)	123	25.2%	38.2%	14.6%	22.0%	14.3**	3
<u>standardized residuals</u>		0.6	0.0	-1.4	0.8		
		χ^2	for crosstabulation		21.25**		
		<u>df</u>			6		

**=p<0.01, *=p<0.5

Chi-square tests were conducted for reanalyses in this study.

Values of AC-CE and those of AE-RO were calculated based on the four scores of CE, AC, RO, and AE.

Table 5. Australian, Hong Kong, and Taiwanese learning styles

Auyeung & Sands (1996)	<u>N</u>	<u>AC-CE</u>	<u>AE-RO</u>	<u>Learning styles</u>
Australian students of Queensland university	125	2.24	3.66	Diverging
Australian students of Griffith university	178	2.04	4.03	Diverging
Chinese students in Honk Kong	172	4.60	-4.35	Assimilating
Chinese students in Taiwan	157	4.41	-2.66	Assimilating
	<u>F</u>	9.51**	72.86**	
	<u>df</u>	3, 628	3, 628	
Yuen & Lee (1994)				
Singaporean undergraduates in Singapore	1,032	8.57	-0.44	Assimilating

**=p<0.01

Learning styles shown in this table are determined according to Kolb's (1999; Smith & Kolb, 1985) cut-off point scores.

Table 6. Uncertainty avoidance and learning styles

<u>Hoppe (1990)</u>	<u>RO</u>	<u>AE-RO</u>
Uncertainty Avoidance (1,544 adults of 19 countries)	0.51*	-0.49*

*= $p < 0.05$

Nineteen countries are, Austria, Belgium, Denmark, Finland, France, Germany FR, Great Britain, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, U.S.A., and M
 The larger the number in RO, the more strong uncertainty avoidance is related to reflective observ
 The smaller the number in AE-RO, the more strong uncertainty avoidance is positively related to
 reflective observation and negatively related to active experimentation.

Table 7. Field-dependent/independent and learning styles

<u>Murphy (1993)</u>	<u>CE</u>	<u>RO</u>	<u>AC</u>	<u>AE</u>	<u>AC-CE</u>	<u>AE-RO</u>
<u>Group Embedded Figures Test</u> (199 registered nurses)	-0.15*	-0.04	0.16*	0.03	0.18 ⁺	0.04

*=p<0.05, +=p<0.10

Negative numbers relate to field-dependent, while positive numbers relate to field-independent.

In Murphy's study, there is no indication about countries or cultures, but the research site of her study would be in the US.

Figure 1. Kolb's model: Learning styles and learning abilities

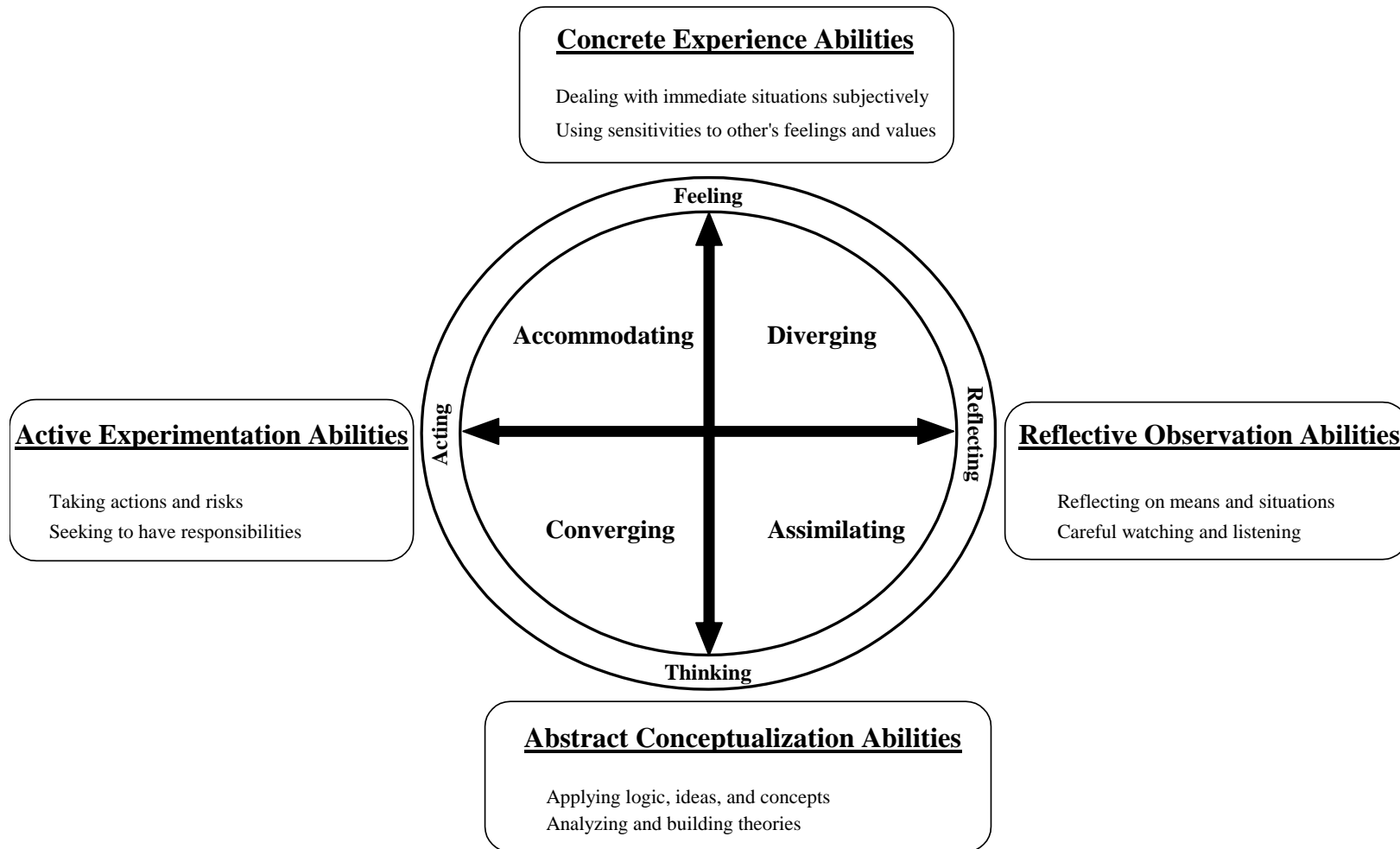


Figure 2. Conceptual relationships between six cultural typologies and learning abilities

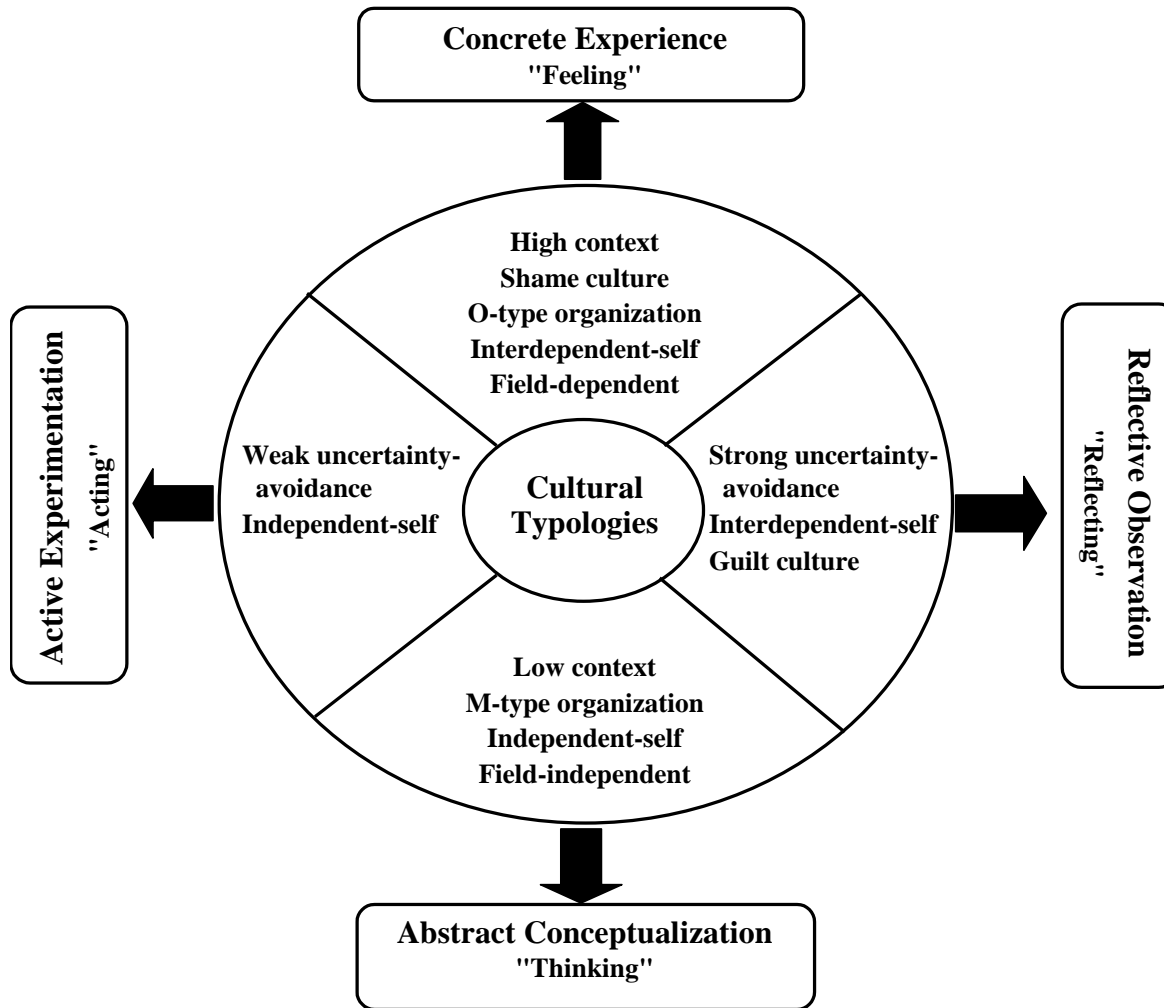


Figure 3. Four learning styles with the two cut-off points (AC-CE and AE-RO)

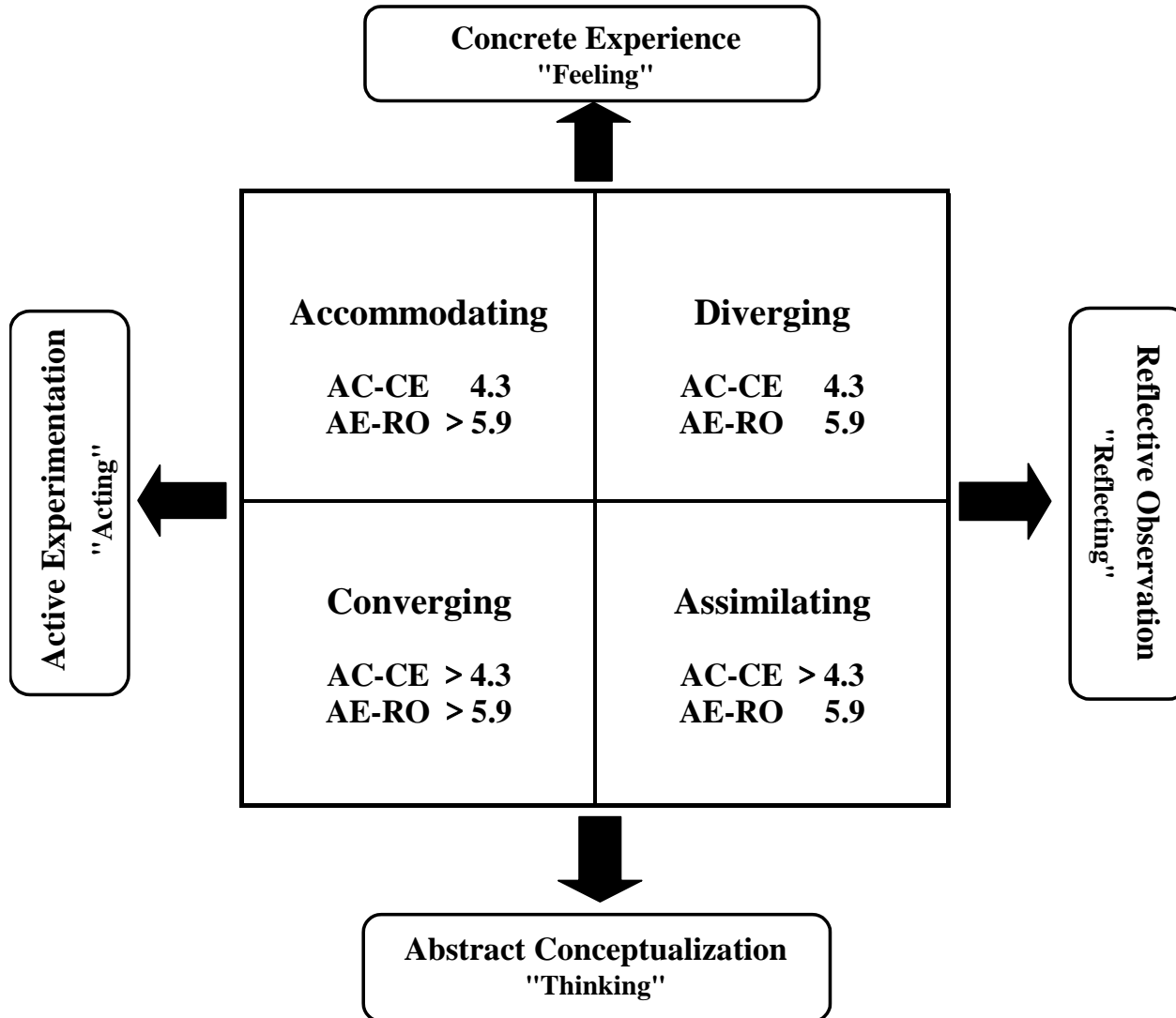


Figure 4. Japanese and American Learning Styles

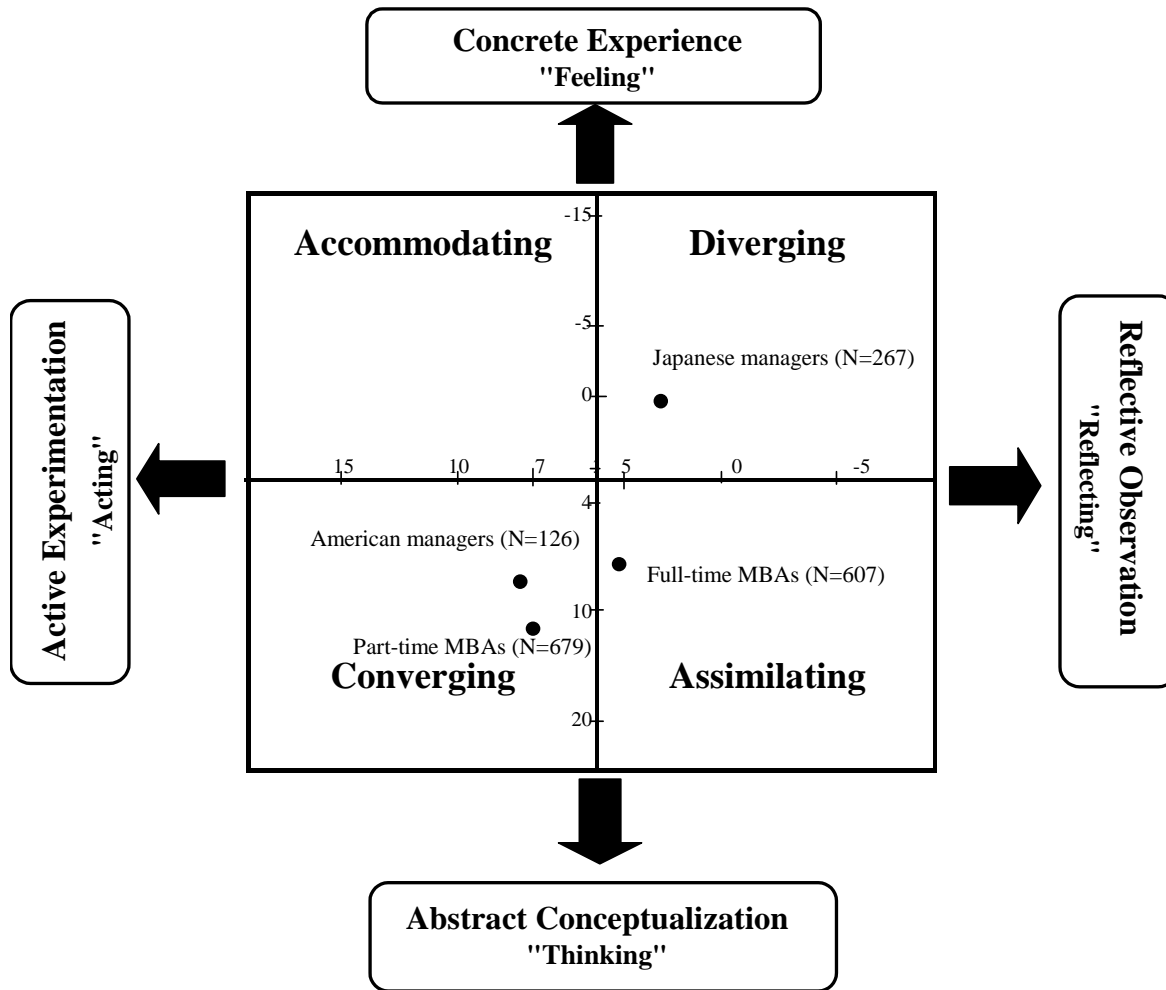


Figure 5. Chinese and American learning styles

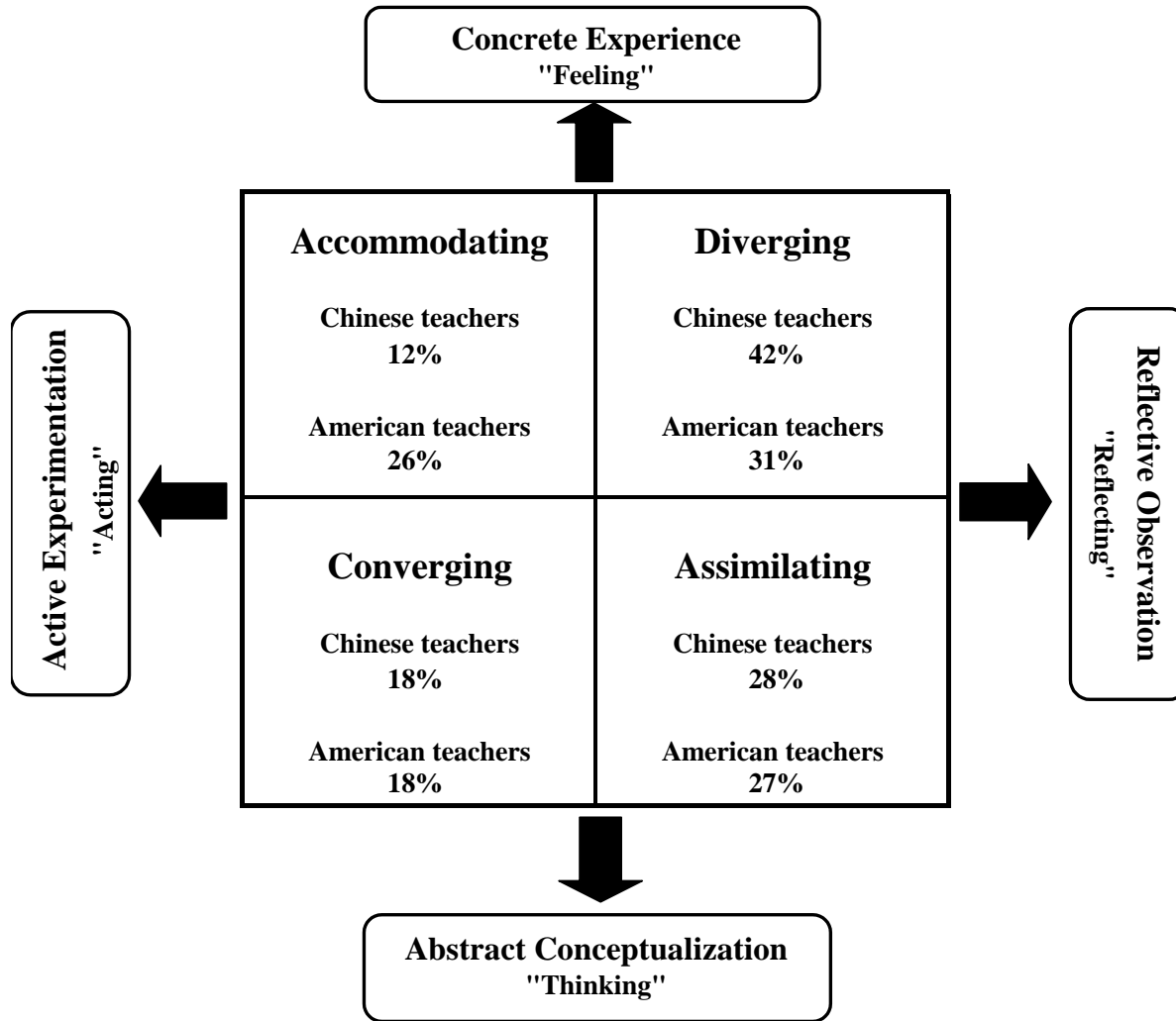


Figure 6. French, German, and Quebec learning styles

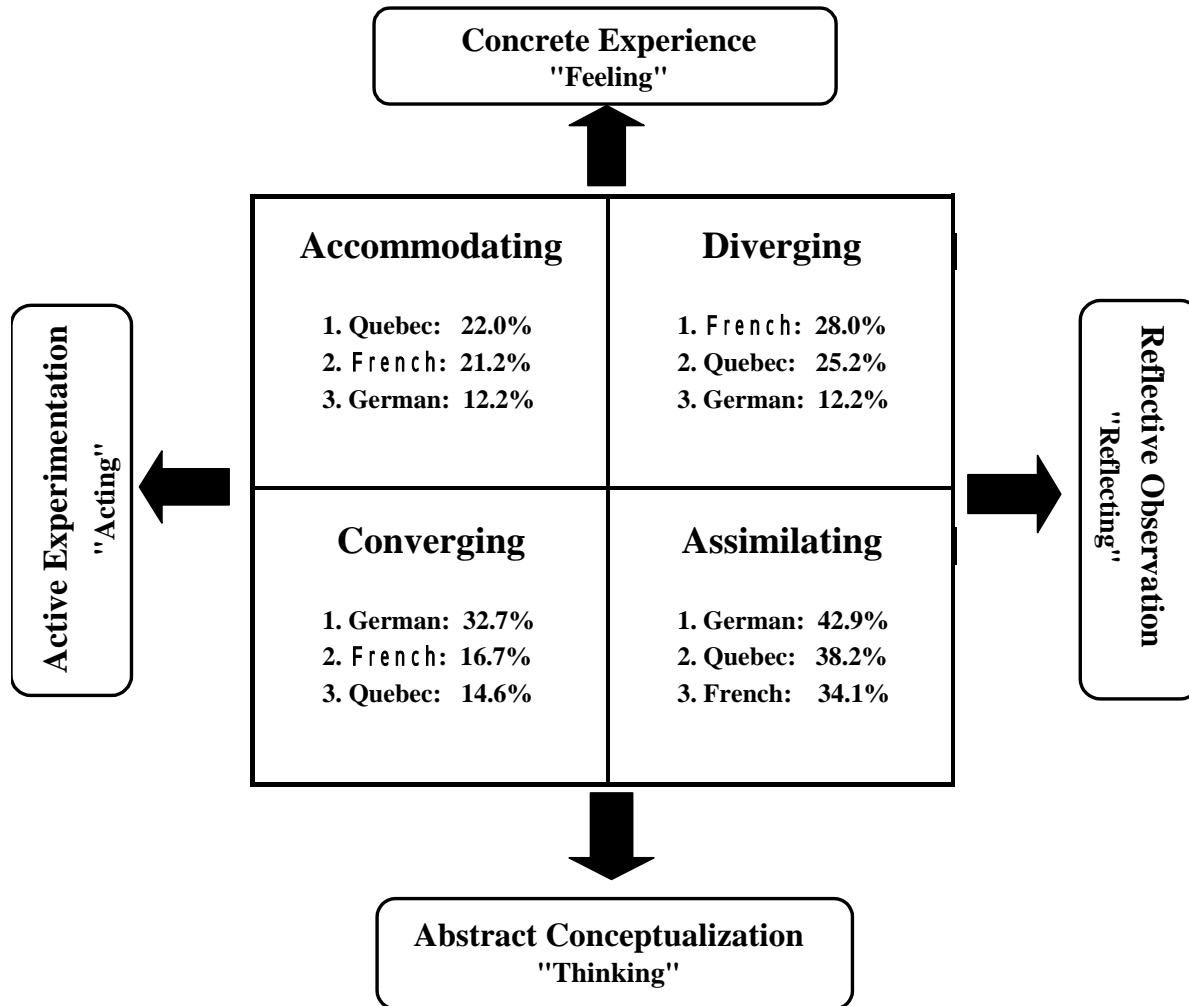


Figure 7. Australian, Honk Kong, and Taiwanese learning styles, including Singaporean

