**Embedded Selforganizing Systems**

# Learning Styles and Cultural Differences: A comparative study of cultural differences in Austrian and Mongolian Students

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*Abstract*— **This study shows the relationship between the types of cultural differences and learning styles of Kolb's learning model. Although several cross-cultural studies on learning styles suggest that learning styles may differ from one culture to another, the question of which cultures are associated with which learning styles and abilities has been less explored. This study focuses on the empirical findings of comparative studies on past cross-cultural differences in learning styles, and considers how the propositions generated by the theory tests may reflect their past empirical findings. This research shows that culture is associated with specific learning styles and abilities**

*Keywords— Cultural values, PDI, IDV, MAS, UAI, LTO, high/low context, learning style and ability.*

## I. INTRODUCTION

Around the world, learning is a universal and crucial human activity. However, each nation is always researching and creating its unique educational systems in order to meet the demands specific to its environment. It makes sense that the establishment and continuation of a specific learning environment appropriate for each nation would be related to the cultural diversity of learning methods.

According to Hofstede, a nation's culture affects its citizens' preferred learning styles through its socializing activities [1]. In addition, Pratt asserts that his comparison of self-perceptions in Chinese and Western communities suggests that learning styles may be different across cultural boundaries [2]. Katz draws the conclusion that the transition to an active learning mode is evidence of the interaction between culture and learning style from her empirical investigation of an Israeli sample [3].

Cultures and learning styles could be connected. For instance, is a certain learning style associated with high context culture? Does individuality have anything to do with specific learning styles? In order to connect the distinctions between the six cultural models and the learning styles covered by Kolb's learning theory, this study examines the cultural ideas advanced in such theories and their potential and fertile relationship to learning styles [4].

Austria and Mongolia differ on six cultural dimensions. Austrian cultural dimensions are low-Power Distance, high-UAI, high LTO, low context, monochronic, and affective/emotional. Mongolian cultural dimensions are high-Power Distance, low-UAI, low LTO, high context, polychronic and neutral [5-9].

In particular, the goals of this research are:

1. The cultural value dimensions of Mongolian and Austrian students are different.
2. What is the effect of cultural differences on the learning style of Austrian and Mongolian students?

## II. LITERATURE REVIEW

### A. Culture and Learning style

Each person has a unique manner of taking in information, processing it, and applying it to learning and problem-solving in everyday life. "Learning styles" refer to these unique cognitive skills that people develop over the course of a protracted socialization process. A person's unique, natural, and preferred approach to handling information and emotions in a certain (learning-)situation can be described as their learning style. This approach will affect the person's decisions and behaviors. Cultural differences in learning styles of students in Austria and Mongolia will be examined.

### B. Learning Styles and Learning Abilities

According to Kolb, learning encompasses all aspects of human activity, including feeling, reflecting, thinking, and acting/doing. It is believed that people acquire specific abilities and preferences for certain kinds of activities [4]. We refer to these particular tendencies as learning styles. According to Keefe, learning styles are cognitive, affective, and physiological patterns of behavior that serve as generally reliable markers of how individuals perceive, interact with, and react to their surroundings in learning circumstances [10].

The four essential learning abilities of concrete experience, abstract conceptualization, reflective observation, and active experimentation must all be used, according to Kolb's model [4]. Concrete experience abilities emphasize participation in experiences and subjectivity in coping with

urgent human circumstances. Utilizing sentiments and sensibilities to other people's feelings and values is the focus of concrete experiential abilities. People who are good at interacting to others and have concrete experience abilities cherish interpersonal relationships and do so in an open-minded manner. Conversely, to concrete experience abilities, abstract conceptualization abilities need the application of logic, ideas, and concepts. These abilities are mostly concerned with conceptual modeling, analysis, and thought. People who are adept in abstract symbol manipulation, methodical planning, and quantitative analysis have these talents.

Reflective observation abilities entail actively looking and listening while considering the implications of concepts and circumstances. In order to comprehend how and why things occur, reflective observation focuses on using reflective understanding. Reflective observers are adept at examining circumstances from many angles and inferring the intentions behind their opinions. Reflective abilities in observation are the antithesis of active experimentation abilities since they ask for actively influencing individuals and altering circumstances. Active experimentation places a strong emphasis on the capacity for making useful applications and being realistic with what actually works. People with active experimenting abilities are willing to act and take risks to accomplish goals and want ownership of accomplishments.

Four learning abilities—concrete experience, abstract conceptualization, reflective observation, and active experimentation—combine to generate learning styles [4, 11]. Kolb claims that there are four main types of learning styles. The two learning capacities of concrete experience and reflective observation are the focus of the divergent learning style. The abstract conceptualization and active experimenting abilities, in contrast, are the focus of the convergent learning style. The two abilities of reflection and abstract conceptualization are the focus of the assimilation learning style. Finally, the accommodating learning approach is more focused on the two abilities of concrete experience and active experimentation. The learning paradigm developed by Kolb is shown in Fig. 1.
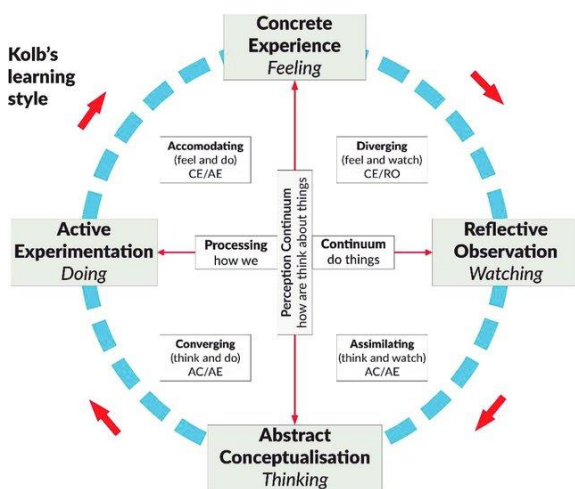


Fig. 1.     Kolb's model: Learning Styles and Learning Abilities

In sum, the theoretical examination of the learning styles and typologies of cultural differences 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 I and Fig. 2. [12].

TABLE I.     CONCEPTUAL RELATIONSHIPS BETWEEN SIX CULTURAL TYPOLOGIES AND LEARNING ABILITIES

| Researchers \ Learning abilities | 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 | | |
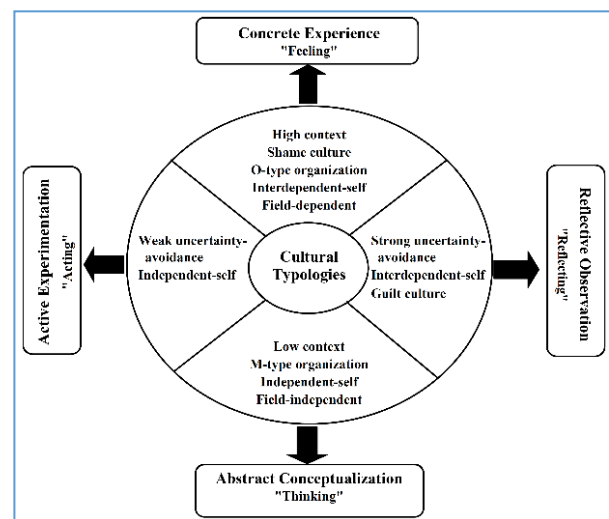


Fig. 2. Conceptual relationships between six cultural typologies and learning abilities

*Conceptual framework of the study and research hypotheses*

The model to measure in this study reflected the hypothesis of this study that aimed at determining the relationship between culture and learning style. The Research model can be seen in Fig. 3.



Fig. 3.   The Research model

*Research question and hypotheses*:

1. The cultural value dimensions of Mongolian and Austrian students are different.

2. What is the effect of cultural differences on the learning styles/abilities of Austrian and Mongolian students?
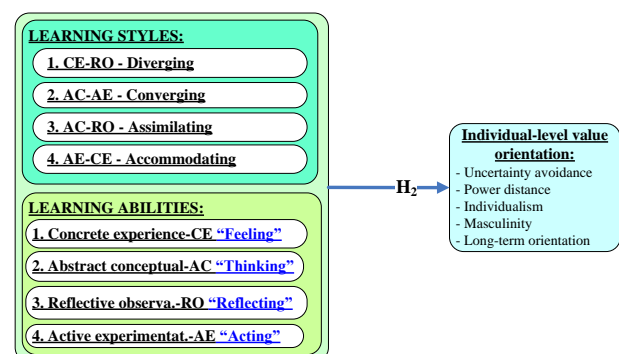
H2a: There are differences in the preferred learning styles/abilities of Austrian and Mongolian students.

H2b1: There is an effect of individual cultural values differences on learning style - Diverging.

H2b2: There is an effect of individual cultural values differences on learning style - Converging.

H2b3: There is an effect of individual cultural values differences on learning style - Assimilating.

H2b4: There is an effect of individual cultural values differences on learning style - Accommodating.

H2c1: There is an effect of individual cultural values differences on learning ability - CE "Feeling".

H2c2: There is an effect of individual cultural values differences on learning ability - AC "Thinking".

H2c3: There is an effect of individual cultural values differences on learning ability - RO "Reflecting/watching".

H2c4: There is an effect of individual cultural values differences on learning ability - AE "Acting".

### III. RESEARCH METHODOLOGY

Research design and sample

This study employed a questionnaire survey design and a quantitative approach. During the spring semester of 2022/2023, data were gathered from 253 students from Austrian (102) and Mongolian (151) universities. The participant demographics are shown in Table II.

The Mongolian University of Science and Technology has 20,000 students, and the School of Business Administration and Humanities has 1,000 students. A simple random sampling method was used to calculate the sample size, with a 95% confidence interval and an error limit of 7.4. The estimates are shown in the figure below and the sample size is defined as 150.

In 2021, 10,464 or 60% of bachelor's students were enrolled in the Business and Social Sciences prog-ram, 4,800 or 30% in Business Law, and 729 or 4% in Business and Economics. 129 students (1%) were enrolled in an individual bachelor's degree program at Vienna University of Economics and Business.

Simple random sampling method was used to calculate the sample size, with a 95% confidence interval and an error limit of 9.7. The estimates are shown in the figure below and the sample size is defined as 102.

TABLE II.　　DEMOGRAPHICS OF PARTICIPANTS

| Demographic variable | | Freq. (N) | % | Demographic variable | | Freq. (N) | % |
|---|---|---|---|---|---|---|---|
| Gender | Female | 183 | 72.3 | Degree | Bachelor | 244 | 96.4 |
| | Male | 69 | 27.3 | | Master | 9 | 3.6 |
| | Prefer not to tell | 1 | 0.4 | Nationality | Austrian | 77 | 30.4 |
| Age | 18-20 | 51 | 20.2 | | Mongolian | 151 | 59.7 |
| | 21-25 | 183 | 72.3 | | Bosnia | 3 | 1.2 |
| | 26-30 | 11 | 4.3 | | Netherlands Dutch | 1 | .4 |
| | 30-40 | 7 | 2.8 | | Turkic roots | 1 | .4 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 41 years and above | 1 | 0.4 | | Polish | 1 | .4 |
| Terms | 1-2 | 20 | 7.9 | | Croatian | 1 | .4 |
| | 3-4 | 88 | 34.8 | | German | 10 | 4.0 |
| | 5-6 | 88 | 34.8 | | Serbian | 2 | .8 |
| | 7-8 | 42 | 16.6 | | South Korea | 1 | .4 |
| | 8 higher | 15 | 5.9 | | Italian | 2 | .8 |
| Professional classification | Business economics | 72 | 28.5 | | Slovak | 2 | .8 |
| | Marketing | 84 | 33.2 | | Tajik | 1 | .4 |
| | HRM | 59 | 23.3 | | | | |
| | Finance | 19 | 7.5 | | | | |
| | InformSys Man | 10 | 4.0 | | | | |
| | Management | 9 | 3.6 | | | | |

*Research instrument*

The questionnaire was used by the researchers to gather information from participants. The questionnaire was divided into three sections: participant demographics, evaluation of individual-level value orientation, and the extent to which learning styles are preferred. The researchers created the first section, which included six variables: gender, age, terms, occupation, education, and nationality. The second section was taken from Hofstede [13]. There were 20 items total in individual-level value orientation along the five dimensions: Uncertainty Avoidance, Power Distance, Individualism, Masculinity, and Long-term Orientation. The third section consisted of the four phases of the learning cycle (CE, RO, AC, AE) and the four learning style types (converging, diverging, assimilating, accommodating) measured on a 5 - point Likert scale ranging from 1 for the 'least' way the respondent learns to 5 for how she/he learns 'best'.

*Validity and reliability test*

Cultural influences on learning style and abilities were analyzed using 20 dimensions with five factors, individual-level value orientation. The necessary analysis of the research model was performed using SPSS 22 program. Ten dimensions were reduced during the analysis, and the model was developed with 10 measures of 5 factors.

### IV. RESULT

*H1. The cultural value dimensions of Mongolian and Austrian students are different.*

The Kruskal Wallis test confirmed that all individual cultural values of Austrian and Mongolian students differ except the PDI1 dimension. As shown in Table III and Table IV.

TABLE III.　　DEMOGRAPHICS OF PARTICIPANTS

| Demo06. Nationality | | N | Mean Rank |
|---|---|---|---|
| PDIT1 | Austrian | 77 | 112.53 |
| | Mongolian | 151 | 115.51 |
| | Total | 228 | |
| PDIT2 | Austrian | 77 | 74.34 |
| | Mongolian | 151 | 134.98 |
| | Total | 228 | |
| IDVT1 | Austrian | 77 | 88.75 |
| | Mongolian | 151 | 127.63 |
| | Total | 228 | |
| IDVT2 | Austrian | 77 | 103.47 |
| | Mongolian | 151 | 120.13 |
| | Total | 228 | |
| MAST1 | Austrian | 77 | 95.64 |
| | Mongolian | 151 | 124.12 |
| | Total | 228 | |
| MAST2 | Austrian | 77 | 97.54 |
| | Mongolian | 151 | 123.15 |

| | | Total | 228 | |
|---|---|---|---|---|
| UAIT1 | | Austrian | 77 | 95.20 |
| | | Mongolian | 151 | 124.34 |
| | | Total | 228 | |
| UAIT2 | | Austrian | 77 | 78.19 |
| | | Mongolian | 151 | 133.01 |
| | | Total | 228 | |
| LTOT1 | | Austrian | 77 | 95.92 |
| | | Mongolian | 151 | 123.97 |
| | | Total | 228 | |
| LTOT2 | | Austrian | 77 | 100.72 |
| | | Mongolian | 151 | 121.53 |
| | | Total | 228 | |

TABLE IV. KRUSKAL-WALLIS TEST STATISTICS

| Test Statistics[a,b] | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PDIT1 | PDIT2 | IDVT1 | IDVT2 | MAST1 | MAST2 | UAIT1 | UAIT2 | LTOT1 | LTOT2 |
| Chi-Square | .105 | 44.269 | 18.171 | 3.340 | 9.626 | 7.785 | 10.312 | 35.554 | 9.453 | 5.175 |
| df | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Asymp. Sig. | .746 | .000 | .000 | .068 | .002 | .005 | .001 | .000 | .002 | .023 |

a. Kruskal Wallis Test
b. Grouping Variable: Demo06. Nationality

The researcher believes that the meaning of the word "power distance" is not clearly stated in question PDI1 of the research questionnaire, so the meaning of this question is not fully expressed. Therefore, without including the PDI1 question, the PDIG dimension was defined only by the PDI2 item.

The Kruskal Wallis test confirmed that all individual cultural value(general)s of Austrian and Mongolian students differ. As shown in Table V and Table VI. Therefore, there is a significant difference between the individual cultural values (general) of Austrian and Mongolian students.

TABLE V. KRUSKAL-WALLIS TEST RANKS

| Ranks | | | |
|---|---|---|---|
| Demo06. Nationality | | N | Mean Rank |
| PDIG | Austrian | 77 | 74.34 |
| | Mongolian | 151 | 134.98 |
| | Total | 228 | |
| IDVG | Austrian | 77 | 91.46 |
| | Mongolian | 151 | 126.25 |
| | Total | 228 | |
| MASG | Austrian | 77 | 93.47 |
| | Mongolian | 151 | 125.23 |
| | Total | 228 | |
| UAIG | Austrian | 77 | 83.62 |
| | Mongolian | 151 | 130.25 |
| | Total | 228 | |
| LTOG | Austrian | 77 | 94.49 |
| | Mongolian | 151 | 124.71 |
| | Total | 228 | |

*2. What is the effect of cultural differences on the learning styles/abilities of Austrian and Mongolian students?*

**H2a:** *There are differences in the preferred learning styles/abilities of Austrian and Mongolian students.*

The Kruskal Wallis test confirmed that there are only differences between Austrian students and Mongolian students in learning style - Diverging and learning ability - "Acting". As shown in Table VII and Table VIII.

TABLE VI. KRUSKAL-WALLIS TEST RANKS

| Demo06. Nationality | | N | Mean Rank |
|---|---|---|---|
| CE-RO Diverging | Austrian | 77 | 103.95 |
| | Mongolian | 151 | 119.88 |
| | Total | 228 | |
| AC-AE Converging | Austrian | 77 | 107.86 |
| | Mongolian | 151 | 117.88 |
| | Total | 228 | |
| AC-RO Assimilating | Austrian | 77 | 105.71 |
| | Mongolian | 151 | 118.98 |
| | Total | 228 | |
| AE-CE Accommodating | Austrian | 77 | 122.09 |
| | Mongolian | 151 | 110.63 |
| | Total | 228 | |
| Concrete experience -CE "Feeling" | Austrian | 77 | 110.72 |
| | Mongolian | 151 | 116.43 |
| | Total | 228 | |
| Abstract conceptualization - AC "Thinking" | Austrian | 77 | 111.13 |
| | Mongolian | 151 | 116.22 |
| | Total | 228 | |
| Reflective observation -RO "Reflecting/watching" | Austrian | 77 | 105.41 |
| | Mongolian | 151 | 119.14 |
| | Total | 228 | |
| Active experimentation -AE "Acting" | Austrian | 77 | 98.95 |
| | Mongolian | 151 | 122.43 |
| | Total | 228 | |

TABLE VII. KRUSKAL-WALLIS TEST STATISTICS

| Test Statistics a,b | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CE-RO Diverging | AC-AE Converging | AC-RO Assimilating | AE-CE Accommodating | Concrete experience – CE "Feeling" | Abstract conceptualization - AC "Thinking" | Reflective observation – RO "Reflecting" | Active experimentation - AE "Acting" |
| Chi-Square | 3.380 | 1.318 | 2.275 | 1.709 | .435 | .348 | 2.610 | 7.256 |
| df | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Asymp. Sig. | .066 | .251 | .131 | .191 | .509 | .555 | .106 | .007 |
| a. Kruskal Wallis Test | | | | | | | | |
| b. Grouping Variable: Demo06. Nationality | | | | | | | | |
| AUT | 3.47 | 3.62 | 3.10 | 3.51 | 3.64 | 3.53 | 3.61 | 3.34 |
| MGL | 3.72 | 3.79 | 3.27 | 3.31 | 3.68 | 3.57 | 3.82 | 3.64 |

Therefore, there is a significant difference between Austrian students and Mongolian students in learning style - Diverging and learning ability -"Acting". The H2a can be partially verified in the case.

Continuing this analysis, we analyzed whether individual cultural values influence each learning style and each learning ability.

**H2b1:** *There is an effect of individual cultural values differences on learning style - **Diverging***.

According to Table IX, the statistically significant effects on learning style - "Diverging" are uncertainty avoidance and masculinity (converse). However, no significant effects on learning style - "Diverging" are power distance, individualism, and long-term orientation. Therefore, H2b1-UAI and H2b1-MAS were supported, whereas H2b1-PDI, H2b1-IDV and H2b1-LTO were rejected.

TABLE VIII.            RESULT OF THE HYPOTHESIS H2B1.

| | LearnStyle10.1. CE-RO Diverging | | | |
|---|---|---|---|---|
| | Beta | t statistics | Sig. | Result |
| UAIG | .308 | 4.817 | .000 | Direct relationship |
| MASG | -.144 | -2.245 | .026 | Converse relationship |
| PDIG | .116c | 1.755 | .080 | No relationship |
| IDVG | -.079c | -1.087 | .278 | No relationship |
| LTOG | .118c | 1.725 | .086 | No relationship |

**H2b2:** *There is an effect of individual cultural values differences on learning style -* ***Converging.***

According to Table X, the statistically significant effects on learning style - "Converging" are uncertainty avoidance and masculinity. However, no significant effects on learning style - "Converging" are power distance, individualism, and long-term orientation. Therefore, H2b2-UAI and H2b2-MAS were supported, whereas H2b2-PDI, H2b2-IDV and H2b2-LTO were rejected.

TABLE IX.            RESULT OF THE HYPOTHESIS H2B2.

| | LearnStyle10.2. AC-AE Converging | | | |
|---|---|---|---|---|
| | Beta | t statistics | Sig. | Result |
| UAIG | .183 | 2.824 | .005 | Direct relationship |
| MASG | .137 | 2.115 | .035 | Direct relationship |
| PDIG | .091c | 1.353 | .177 | No relationship |
| IDVG | .059c | .801 | .424 | No relationship |
| LTOG | .038c | .554 | .580 | No relationship |

**H2b3:** *There is an effect of individual cultural values differences on learning style -* ***Assimilating***.

According to Table XI, the statistically significant effect on learning style - "Assimilating" is long-term orientation. However, no significant effects on learning style - "Assimilating" are power distance, individualism, masculinity and uncertainly avoidance. Therefore, H2b3-LTO was supported, whereas H2b1-PDI H2b1-IDV, H2b1-MAS and H2b1-UAI were rejected.

TABLE X.            RESULT OF THE HYPOTHESIS H2B3.

| | LearnStyle10.3. AC-RO Assimilating | | | |
|---|---|---|---|---|
| | Beta | t statistics | Sig. | Result |
| LTOG | .181 | 2.908 | .004 | Direct relationship |

| | PDIG | .017b | .252 | .801 | No relationship |
|---|---|---|---|---|---|
| | IDVG | .077b | 1.167 | .244 | No relationship |
| | MASG | .027b | .402 | .688 | No relationship |
| | UAIG | .061b | .892 | .373 | No relationship |

**H2b4:** *There is an effect of individual cultural values differences on learning style -* ***Accommodating.***

According to Table XII, no significant effects on learning style - "Accommodating" are all individual cultural values: power distance, individualism, masculinity, uncertainly avoidance, and long-term orientation.

TABLE XI.            RESULT OF THE HYPOTHESIS H2B4-1.

| | LearnStyle10.4. AE-CE Accommodating | | | |
|---|---|---|---|---|
| | Beta | t statistics | Sig. | Result |
| PDIG | .076 | 1.116 | .265 | No relationship |
| IDVG | -.100 | -1.292 | .198 | No relationship |
| MASG | .093 | 1.197 | .232 | No relationship |
| UAIG | .060 | .842 | .401 | No relationship |
| LTOG | .069 | .955 | .341 | No relationship |

Although Hall's "high/low context" culture value is not included in this research questionnaire, if Austria is considered as "low context" and Mongolia as "high context", the following results are obtained.

According to Table XIII, the statistically significant effects on learning style - "Accommodating" are long-term orientation and "High/Low context" (converse). However, no significant effects on learning style - "Accommodating" are power distance, individualism, masculinity and uncertainly avoidance. Therefore, H2b4-LTO and H2b4-High/Low context were supported, whereas H2b1-PDI H2b1-IDV, H2b1-MAS and H2b1-UAI were rejected.

TABLE XII.            RESULT OF THE HYPOTHESIS H2B4-2.

| | LearnStyle10.4. AE-CE Accommodating | | | |
|---|---|---|---|---|
| | Beta | t statistics | Sig. | Result |
| LTOG | .172 | 2.575 | .011 | Direct relationship |
| HighLowContext | -.132 | -1.974 | .050 | Converse relationship |
| PDIG | .036c | .467 | .641 | No relationship |
| IDVG | .021c | .287 | .774 | No relationship |
| MASG | .098c | 1.361 | .175 | No relationship |
| UAIG | .088c | 1.172 | .242 | No relationship |

**H2c1:** *There is an effect of individual cultural values differences on learning ability -* ***CE "Feeling".***

According to Table XIV, the statistically significant effect on learning ability - CE "Feeling" is uncertainty avoidance. However, no significant effects on learning ability - CE "Feeling" are power distance, individualism, masculinity, and

long-term orientation. Therefore, H2c1-$_{UAI}$ was supported, whereas H2c1-$_{PDI}$, H2c1-$_{IDV}$, H2c1-$_{MAS}$ and H2c1-$_{LTO}$ were rejected.

TABLE XIII.　　　RESULT OF THE HYPOTHESIS H2C1.

| | LearnAbilit11.1. Concrete experience -CE "Feeling" | | | |
| --- | --- | --- | --- | --- |
| | Beta | t statistics | Sig. | Result |
| UAIG | .215 | 3.495 | .001 | Direct relationship |
| PDIG | .035[b] | .546 | .586 | No relationship |
| IDVG | .042[b] | .646 | .519 | No relationship |
| MASG | .013[b] | .205 | .837 | No relationship |
| LTOG | -.029[b] | -.435 | .664 | No relationship |

***H2c2:*** *There is an effect of individual cultural values differences on learning ability -* ***AC "Thinking".***

According to Table XV, the statistically significant effect on learning ability - AC "Thinking" is uncertainty avoidance. However, no significant effects on learning ability - AC "Thinking" are power distance, individualism, masculinity, and long-term orientation. Therefore, H2c2-$_{UAI}$ was supported, whereas H2c2-$_{PDI}$, H2c2-$_{IDV}$, H2c2-$_{MAS}$ and H2c2-$_{LTO}$ were rejected.

TABLE XIV.　　　RESULT OF THE HYPOTHESIS H2C2.

| | LearnAbilit11.2. Abstract conceptualization -AC "Thinking" | | | |
| --- | --- | --- | --- | --- |
| | Beta | t statistics | Sig. | Result |
| UAIG | .221 | 3.587 | .000 | Direct relationship |
| PDIG | .071[b] | 1.106 | .270 | No relationship |
| IDVG | .048[b] | .736 | .463 | No relationship |
| MASG | .061[b] | .929 | .354 | No relationship |
| LTOG | .105[b] | 1.572 | .117 | No relationship |

***H2c3:*** *There is an effect of individual cultural values differences on learning ability -* ***RO "Reflecting/watching".***

According to Table XVI, the statistically significant effects on learning ability - RO "Reflecting/watching" are uncertainty avoidance and long-term orientation. However, no significant effects on learning ability - RO "Reflecting/watching" are power distance, individualism, and masculinity. Therefore, H2c3-$_{UAI}$ and H2c3-$_{LTO}$ were supported, whereas H2c3-$_{PDI}$, H2c3-$_{IDV}$, and H2c2-$_{MAS}$ were rejected.

TABLE XV.　　　RESULT OF THE HYPOTHESIS H2C3.

| | LearnAbilit11.3. Reflective observation -RO "Reflecting" | | | |
| --- | --- | --- | --- | --- |
| | Beta | t statistics | Sig. | Result |
| UAIG | .199 | 3.011 | .003 | Direct relationship |
| LTOG | .144 | 2.180 | .030 | Direct relationship |

| PDIG | .028[c] | .426 | .670 | No relationship |
| --- | --- | --- | --- | --- |
| IDVG | -.034[c] | -.517 | .606 | No relationship |
| MASG | -.040[c] | -.597 | .551 | No relationship |

***H2c4:*** *There is an effect of individual cultural values differences on learning ability -* ***AE "Acting".***

According to Table XVII, the statistically significant effects on learning ability - AE "Acting" are power distance and masculinity. However, no significant effects on learning ability - RO AE "Acting" are individualism, uncertainty avoidance, and long-term orientation. Therefore, H2c4-PDI and H2c4-MAS were supported, whereas, H2c4-IDV, H2c4-UAI and H2c4-LTO were rejected.

TABLE XVI.　　　RESULT OF THE HYPOTHESIS H2C4.

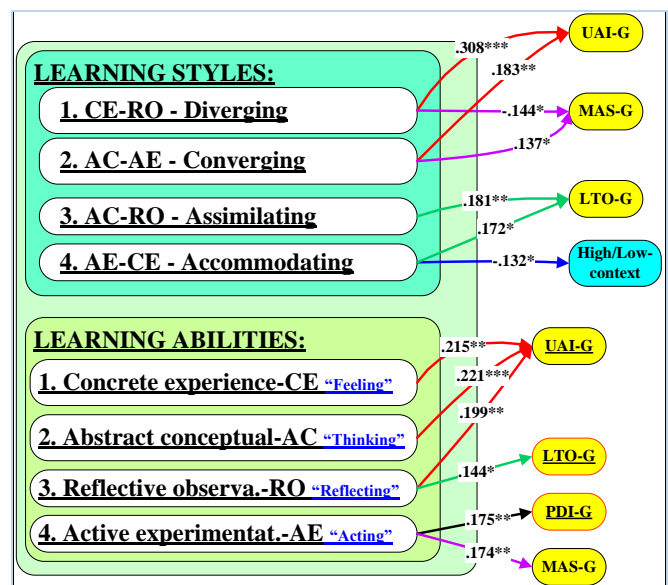| | LearnAbilit11.4. Active experimentation -AE "Acting" | | | |
| --- | --- | --- | --- | --- |
| | Beta | t statistics | Sig. | Result |
| PDIG | .175 | 2.671 | .008 | Direct relationship |
| MASG | .174 | 2.662 | .008 | Direct relationship |
| IDVG | .000[c] | .000 | 1.000 | No relationship |
| UAIG | .012[c] | .179 | .858 | No relationship |
| LTOG | .078[c] | 1.156 | .249 | No relationship |



Fig. 4.　Linear regression analysis of the research model

This study focuses on the empirical findings of comparative studies on past cross-cultural differences in learning styles, and considers how the propositions generated by the theory tests may reflect their past empirical findings. This research shows that culture is associated with specific learning styles and abilities (See Fig. 4).

## V.　CONCLUSIONS

It is clear that the continuity and development of specific learning situations appropriate for each country are related to

different cultural learning styles. Learning style and culture are interrelated. There are many studies that identify which cultures are associated with which learning styles. Does it depend on the student's learning ability? This study also aims to determine the relationship between culture and learning style.

There is a significant difference between the individual cultural values (general) of Austrian and Mongolian students.

According to Table XIV, the CE-Feeling learning ability has a weak direct and positive correlation with UAI, so Austrian students with strong UAI societies rated this ability the highest. However, according to Table XVII, the AE-Acting learning ability has a weak direct and positive correlation with PDI, so the Austrian students with weak PDI societies rated this ability the lowest.

For Mongolian students, observation and listening skills were rated the highest, and CE-RO Diverging style and AC-AE Converging style were rated the highest.

This research shows that culture is associated with specific learning styles and abilities.

## VI.   DISCUSSION

This is the uncommon study to examine the influence of culture on learning style that controls for some of the other factors known to influence an individual's approach to learning. It shows that there is a lack of research on the cultural dimensions of Mongolia, and it is not clear what cluster Mongolia belongs to in terms of culture, which greatly affects the learning style, especially the extent to which individuals rely on abstract concepts and concrete experiences in their learning methods. However, further empirical research is required to confirm the precise nature of the cultural dimensions' effects, particularly the relative impact of each dimension and the possible interconnections between them. I believe that a multilevel regression model that supports several levels of analysis may be a more suitable analytical approach to do this. Larger samples are also needed.

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