

Identifying Students' Self-perceived Multiple Intelligence Preferences: the Case of Students from Heilongjiang International University, China

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Abstract

Multiple Intelligences (MI) theory assumes that people have a full range of intelligences, and individuals differ. Although there have been many studies conducted related to MI, there are still questions that need answers in the context of students who are learning English as a Foreign Language (EFL) in China. Many teachers believe that identifying these intelligences has a significant impact on students learning skills. Identifying these intelligences, however, is not accessible if observation or identification comes from the teachers. Thus, the aim of this study was to identify Chinese college students' self-perceived MI and check the differences between male and females students' self-perceived intelligences. There were 359 Heilongjiang International University (HIU) students who participated in this study. The 35-item MI questionnaire was adopted to collect the data. The findings indicated that both male and female HIU students had a high self-perceived *Musical Intelligence*. Moreover, there were differences in terms of their self-perceived MI with three intelligences that male HIU students self-perceived are higher than the females. These are mathematical-logical intelligence, body-kinesthetic intelligence and interpersonal intelligence. The findings are followed by some recommendations for teaching and learning.

Key Words: Human Intelligence, learning abilities, MI Chinese context, multiple intelligences, self-perceived Multiple Intelligence

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Introduction

Many very successful people in life were judged to be failures at school. Brilliant scientists, writers, musicians, sports-people, artists, religious and political leaders were once judged according to a very narrow definition of what constitutes intelligence.

Intelligence is a mixture of several abilities that are all of great value in life. It would be ridiculous to think that intelligence could be measured on a single scale. People are intelligent in different ways and possess a set of intelligences, not just one type or level of intelligence.

Larsen-Freeman and Anderson (2011) state that teachers who recognize the multiple intelligences of their students acknowledge that students bring with them specific and unique strengths, which are not taken into consideration by many teachers in the classroom situations, and activities can be categorized and used in the classroom according to students' intelligence.

Multiple intelligences (MI) are part of a person's make-up that could be hard to determine. There is no precise assessment that can provide a comprehensive survey of students' multiple intelligences besides observation (Armstrong, 2008). My argument is that, for university students, the most likely first step to identify or know their MI is to do the self-perceived survey of their multiple intelligences as they likely know their intelligence better than those who observe them.

Students at HIU are pre-intermediate in their learning abilities and in need of improvement. Teachers at HIU are looking for ways to increase classroom teaching efficiency.

This study is an attempt to identify HIU students' MI to help researchers or teachers create activities to provide opportunities for them to process information based on their distinct intelligence to develop their learning ability.

Literature review

A Theory of Multiple Intelligences and its criticism

In the 80s, an American Psychologist Howard Gardner proposed a theory of Multiple Intelligences (MI) (Gardner, 1983). He aimed to challenge basic human intelligences, named linguistic, mathematical, musical, spatial, bodily-kinesthetic interpersonal and intrapersonal. This theory introduced a pluralistic view of the mind, recognizing different facets of human knowledge or ability manifested by individuals. Though his original paper, he identified seven intelligences only. As his research progressed, he added more intelligences named "naturalistic intelligence" and "emotional intelligence" (Armstrong, 2008 as cited in Derakhshan & Faribi, 2015, p. 63). Based on these intelligences, Gardner grouped these into three domains, which are the analytical, introspective and interactive domains and serve as organizers of the intelligences to understand how these work. (McKenzie, 2002, p. 156).

Intelligences are defined as general cognitive problem-solving abilities. It is a mental ability that involves perceiving, analyzing, reasoning, learning, critical thinking, and so on (Colom, Karama, Jung, & Haier, 2010). People's intelligences can be changed, developed, and grew to a certain level over time (Darling-Hammond, Flook, Cook-Harvey, Brigid, & Osher, 2019).

Gardner (2011) mentioned that learners' MI could be an advantage in the educational settings, as this allows the program to design different activities that suit a particular learner. Also, as students will likely learn areas that he/she desires, acquisition of knowledge can be realized easily because a specific student has already possessed the intelligence that he/she needs. According to McKenzie (2002, p. 156), the MI model is a learner-based philosophy that is emphasizing the multiple dimensions of human intelligences. Hence, teachers who recognize the multiple intelligences of their students are likely to help them bring out their specific, unique strengths and preferences (Colom, Karama, Jung, & Haier, 2010; Gardner, 2011; Larsen-Freeman and Anderson, 2011). As Gardner (1999, 2011) argued, students would be better educated by a broader vision of education in which teachers use different methodologies, exercises and activities to reach all students and not just to focus on those who excel in linguistic and logical intelligence (Ibnian & Hadban, 2013; Rohaniyah, 2017). Many educators have begun to recognize that students have unique differences and started to modify teaching methods that cater to students with multiple intelligences, though identifying them is still a challenge as each intelligence has a unique development order in a person's different stages (Gardner, 2011).

The Eight MI posited by Gardner in 1983 (cited in Armstrong, 2008):

1. Linguistic intelligence is an ability to use language effectively, either spoken or written. Individuals who have this intelligence tend to be sensitive to the meaning and words orders and embody skills of memorization, expression, explanation, or persuasion.
2. Logical-Mathematical intelligence is the ability to use numbers effectively, which is often addressed as scientific thinking (Gardner, 1993). Individuals who have this intelligence tend to be sensitive to the patterns, symmetry, logic, and aesthetics of mathematics.
3. Visual-spatial intelligence is the ability to perceive and represent the visual-spatial world accurately and transform visual-spatial ideas into imaginative and expressive creations. Individuals who have this intelligence tend to interpret and graphically represent visual or spatial ideas (Gardner, 2011).
4. Musical intelligence is the ability to understand and develop musical techniques and to respond emotionally to music. It includes the skills to interpret musical forms and ideas to create imaginative and expressive performances and compositions.
5. Bodily-kinesthetic intelligence is the ability to use the body skillfully and handle objects skillfully. Individuals who are high in Bodily-kinesthetic intelligence tend to have skills to express emotion through body movements, and critique the actions of the body.
6. Interpersonal intelligence is the ability to understand people and relationships, which includes the skills to communicate clearly what needs to be done, use empathy, help others, solve problems, discriminate, and interpret among different kinds of interpersonal clues.
7. Naturalistic intelligence is the ability to process information regarding nature, which includes individuals who are likely to do well in careers and can contribute towards sustainable management and conservation of environment.
8. Intrapersonal intelligence is the ability to reflect on one's inner moods, intuitions, and the temperament to create or express a personal view. People with this intelligence tend to be sensitive to self-perception and control.

Gardner (1993, p. 23) argued that "all humans possess certain core abilities in each of the intelligences," so certain individuals have more potential in particular intelligences. This

argumentation is supported by Marques & Dhiman (2018), as they also claimed that people exhibit several intelligences, not just one. Some intelligences arise at an early age of a person, such as the logical-mathematical and musical intelligences, while others can be developed gradually (Gardner, 2011).

Nevertheless, there are various criticisms found about MI. According to the critics, the intelligences are perceived as fundamental abilities or cognitive processes that are known and acknowledged by educators. Others claimed that general intelligence, such as critical thinking, reflectiveness, or memory, does exist and this theory fails to acknowledge the importance of general intelligence. Gardner notes that the evidence he found suggests that MI is not a content-independent knowledge base, and this is still open to debate because no definitive evidence supports the argument. Furthermore, critics think that the intelligences which Gardner labeled in his study are part of a person's aptitude. Additionally, they argue that MI is culturally embedded; therefore, the only way to distinguish this is when a person encounters tasks that are not familiar to them. Others also asserted that MI, as an approach to learning, might sound ideal but impractical. Accordingly, Gardner affirmed that MI needs to be conducted and tested in the fields of biology and cognitive science before it is put into practice (Peariso, 2008, p.11). Thus, this suggests that Gardner himself is one of MI critics. Some critics also claimed that intelligences are what commonly called "gifts or talents" (Gardner (1983, 1993) agrees but would want linguistic and logical-mathematical ability to be labeled as talents, rather than being elevated for no particular reason (Gardner, 2011).

For many years, many studies have been conducted, and empirical evidence continues to mount Multiple Intelligences support for the theory. Certainly, the theory may be falsified, but the evidence suggests that multiple intelligences exist within each individual (Armstrong, 2008; Gardner, 1993, 2011; Hoerr, 2000). Despite the different issues regarding subjectivity, problematic definition, and lack of empirical research, MI approach becomes a hot topic in different areas in education, which includes English language teaching.

Multiple intelligences and English language teaching and learning

Many scholars (Jones, 2017; Luo, 2018; Spirovska, 2013) believe that MI can be integrated into English language teaching and learning, as this helps as a building block for English acquisition, enhancement of all intelligences, and an alternative for providing different assessment to help students further improve their academic achievements (Gardner, 2011; Luo, 2018). According to them, acknowledging multiple intelligences and using them as a tool to organize teaching and learning methods could help to avoid the "one size fits all" teachers' mentality to develop students' learning abilities (Jones, 2017; Spirovska, 2013). Integrating different intelligences such as linguistic intelligence, musical intelligence, logical-mathematical intelligence, visual-spatial intelligence, bodily-kinesthetic intelligence is beneficial to students simply because each intelligence has its strength. For instance, promoting linguistic intelligence can be beneficial to students in developing their oral and written communication. Musical intelligence can be useful in developing students' vocabulary skills and even pronunciation, as musical intelligence might be able to foster students' critical or logical thinking (Gardner 2011). As for visual-spatial intelligence, information technology provides different learning resources that are useful to students learning. Visual is another way to help learners develop their language, especially English abilities.

Accordingly, Spirovska (2013) argued that MI has different benefits in the English language classroom. However, teachers should adopt a student-centered approach to teaching and learning and employ a dynamic and non-conventional way of teaching. In this manner, students will be able to bring out the best of their capacities and abilities (Zhang, 2017). Consequently, when learners exhibit different abilities, teachers should know how to adapt, create and innovate different types of activities that could match their strengths and learning styles (Massanet-Oliver, 2018, p.16). By doing so, multiple intelligences can be a good tool to develop a better understanding and appreciation of students' individual preferences about learning and to raise awareness in students' individuality (Spirovska, 2013, p.6). Knowing which intelligences help a learner better, teachers can help students work on the areas where they have found difficulties and exploit what they are good at. Creating different activities that are effective and engaging, therefore, is likely to benefit students since these activities will prevent boredom (Luo & Huang; 2019; Sedov, 2019), which is the reason why, in English language teaching and learning, a non-conventional classroom and teachers who are not afraid to innovate are likely to benefit the MI approach.

Collaborative learning focuses on a student-centered approach, so sharing ideas is one of the strengths of MI once implemented in the English language classroom. Teachers play a significant role in students' learning process when implementing the MI approach to teaching. Hence, teachers should not focus on the failures of their students but their strengths and abilities so that students will be motivated to engage in the class (Shearer, 2020).

This study answers two questions:

1. What are HIU students' Self-perceived Multiple Intelligence preferences?
2. What are the differences between the male and female students at HIU in terms of their Self-perceived Multiple Intelligence Preferences?

Participants

The participants of the study were the first and second year Chinese undergraduate students at HIU. The total sample of participants consisted of 359 students of different majors (80 male and 279 female). The level of their proficiency is pre-intermediate. The study was carried out in the academic year 2019.

All the participants were volunteered and purposively sampled from freshmen and sophomore students at HIU, because they have at least two years' studying at HIU which would allow teachers or researchers at HIU to do further treatments.

Instruments

A 35-item multiple intelligences questionnaire was downloaded (<https://www.businessballs.com/self-awareness/howard-gardners-multiple-intelligences/>) and adopted to identify HIU students' self-perceived Multiple Intelligences. The questionnaire covered seven parts, each part including five questions representing one self-perceived MI. To complete the 35-item Likert questions, students were asked to read each item and select their self-perceived MI level. It took an average of 15 minutes to answer the questionnaire. The 5 Likert Scale scaling was employed, ranging from 1-strongly disagree to 5-strongly agree. Cronbach alpha was used to

determine the reliability of the questionnaire. Also, the instrument was piloted to other students who were not part of this study.

The reliability value of the questionnaire is .917 (above 0.90), which indicates that the questionnaire is reliable. Also, the construct validity of the items and underlying variables were determined using questionnaire items correlation value.

The CFI value is .765, NFI is .677, and IFI is .768, which is acceptable in this study. And RMSEA is .069, which meets the standard of below .08.

Table 1

Correlation value of each question with the intelligence

MI Preference	Question N. & Correlation Value				
Linguistic	Q3 (.687*)	Q6(.604*)	Q10(.682*)	Q14(.590*)	Q30(.622*)
Logical-mathematical	Q26(.653*)	Q23(.618*)	Q18(.684*)	Q15(.542*)	Q13(.664*)
Musical	Q1(.448*)	Q2(.762*)	Q5(.760*)	Q24(.783*)	Q33(.794*)
Bodily-kinesthetic	Q25(.785*)	Q21(.577*)	Q16(.680*)	Q7(.778*)	Q4(.720*)
Visual-spatial	Q9(.637*)	Q11(.673*)	Q12(.582*)	Q22(.656*)	Q29(.677*)
Interpersonal	Q35(.651*)	Q32(.676*)	Q31(.649*)	Q20(.656*)	Q8(.607*)
Intrapersonal	Q17(.626*)	Q19(.600*)	Q27(.653*)	Q28(.564*)	Q34(.632*)

* Significant Correlation at the 0.01 level (2-tailed)

As the correlation value of each item is at 0.01 level (2-tailed), meaning this is significant; thus, the validity of the questionnaire was achieved.

Findings and discussion

To find out HIU students' self-perceived Multiple Intelligences, descriptive statistics were used by finding the mean value between males and females, which is followed by identifying the similarities and differences between males and females MI. These will be presented in Table 2 and Table 3.

Table 2

Descriptive Statistics of Mean Value of Each Multiple Intelligence

MI Type	No. of Students	Minimum Score	Maximum Score	Mean Score	Standard Deviation
Linguistic	359	5	25	14.45	3.140
Logical	359	5	25	13.46	3.190
Music	359	5	25	15.66	3.909
Bodily-kinesthetic	359	5	25	13.62	3.587
Visual-Spatial	359	5	25	14.00	3.042

Interpersonal	359	5	25	14.57	3.250
Intrapersonal	359	5	25	14.39	3.077

As shown in Table 2, the mean score of each multiple intelligence, the mean scores are M=13 to 16 with the highest score of M=15.66 for Musical intelligence, the only MI type that scores above 15 (60% of the total 25), which is followed by interpersonal, linguistic, intrapersonal, visual-spatial, bodily-kinesthetic, and logical-mathematical. With the M=15.66 and SD=3.909, the indication is that students' self-perceived MI is dominated by Musical Intelligence. As students' learning tends to be dominated by Grammar Translation or Audio-lingual, perhaps integrating this intelligence to help them develop vocabulary acquisition could be helpful. According to Gardner, music can be used in an educational context to express ideas and can be developed through exploration and exploitation of the oral-aural channel. (Gardner, 2011, p.129 cited in Massanet-Oliver, 2018, p. 12)

Table 3

Descriptive Statistics of Multiple Intelligences of Males and Females

MI Types	Gender	Number	Mean	SD	Variance
Linguistic	male	80	14.91	3.691	.413
	female	80	14.31	3.000	.336
Logical*	male	80	14.60	3.814	.426
	female	80	12.86	2.755	.308
Musical	male	80	16.70	4.268	.477
	female	80	15.75	3.866	.432
Bodily-kinesthetic*	male	80	15.10	4.289	.480
	female	80	12.93	2.814	.315
Visual-spatial	male	80	14.41	3.679	.411
	female	80	13.86	2.727	.305
Interpersonal*	male	80	15.64	4.098	.458
	female	80	13.94	2.678	.299
intrapersonal	male	80	14.64	3.739	.418
	female	80	14.24	2.466	.276

* Significant Difference at the 0.01 level (2-tailed)

To identify HIU students' self-perceived MI differences between male and female students, 80 males and 80 female students were randomly chosen from the data and tested. Table 3 illustrated that male students' self-perceived MI is higher than females in all seven intelligences. Among seven intelligences, male students indicated that their highest self-perceived MI is Musical intelligence, and their lowest self-perceived intelligence is Visual-spatial intelligence with the lowest self-perceived MI of M= 14.41. Similarly, female students highest self-perceived MI was Musical intelligences with M=15.75 and the lowest self-perceived MI is Logical Intelligence with M=12.86.

The Standard Deviation (SD) of MI among male students is also higher than female students. As is illustrated, the highest MI SD among male students is Bodily-kinesthetic

Intelligence with $SD=4.289$, while the female students' is Musical Intelligence with $SD=3.866$. Among the intelligences the Visual-Spatial intelligence was the lowest among male students with $SD= 3.679$, while the female students showed that Intrapersonal Intelligence was the lowest with $SD=2.466$.

It is also indicated that both male and female students have high self-perceived Musical intelligence while their other self-perceived MI varies.

Interestingly, the findings found that there are significant differences between male and female MI in terms of the three MI, the logical intelligence, bodily-kinesthetic intelligence and interpersonal intelligence where the males always show high in these three intelligences. According to Gardner (2011), people who are high in logical-mathematical are thought to be good with abstract entities of numbers. Also, these individuals tend to question and answer their own limits by exploring, analyzing, categorizing and working in different ways (Gardner, 2011; Spirovska, 2013). Nonetheless, people who are high in bodily-kinesthetic intelligence tend to use non-verbal communication or body language often to communicate. Whereas, interpersonal intelligence involves the moods in communication or how a person interacts with others. According to Gardner (2011), people who are high in interpersonal intelligence tend to have a good relationship with others. They are good at teamwork and they are willing to learn and exchange feedback. They also tend to express themselves and discuss their ideas clearly with others (Gardner, 2011).

Conclusion

The purpose of this study is to identify the self-perceived MI preferences of Chinese students at Heilongjiang International University, China to provide teachers with a better understanding of their students to help them develop their learning abilities by creating materials and activities that provide learners with opportunities to process information based on their distinct intelligence.

From the findings presented, we can see that HIU students are relatively higher in Musical, Interpersonal, Linguistic and Intrapersonal intelligences, than Visual-spatial, Bodily-Kinesthetic and logical intelligences.

Furthermore, the findings also indicated that male and female HIU students differ in the sequence of their self-perceived multiple intelligence preferences. Male students' MI sequences are Musical, Interpersonal, Bodily-kinesthetic, Linguistic, Intrapersonal, Logical, and Visual-spatial. Female students' MI sequences are Musical, Linguistic, Intrapersonal, Interpersonal, Visual-spatial, Bodily-kinesthetic, and Logical. From the differences, we can see that Musical Intelligence ranks first in both male and female students, but the other six MI are completely different in terms of sequence.

HIU students have different self-perceived intelligence preferences. Thus some recommendations are presented.

First, HIU teachers are recommended to use integrated strategies and instructional activities providing students with activities which suit their abilities that optimize their opportunities to develop these intelligences. Hence, information processes could be easier. As MI theory provides a platform to help students' learning, integrated strategies and instructional activities are likely to cater to the different needs of students in terms of intelligence profiles, learning styles and learning preferences. By doing so, students' successful and effective learning processes might be easy. Redefining teachers or educators' role has a tendency to help students to be more engaged and motivated. Since, the relationship between intelligences and teaching and learning processes are viewed as a fundamental element in planning students learning activities, promoting higher academic performance, learner success and lifelong learning, educators therefore need to acknowledge that there are different independent abilities learners have, which are important prerequisites to language education.

Second, English learning education should be viewed as the cultivation and development of students' knowledge. Therefore, creating an education which fit every student can provide equal opportunities for development and highlight the diversity, periodicity, and directionality of students' development. Teachers and educators therefore are supposed to pay attention to students' strengths instead of failure. Understanding the individuality of students and perhaps personalizing instruction to maximize their achievement and life development should be some of the criteria in designing materials and teaching methods.

Third, as multiple intelligences represent a key component of students' success, teachers should develop course materials or teaching methods that address the needs of students based on the intelligences they possess to encourage academic success and promote an effective learning experience, for example, by using content-based or task-based approach as teaching methods. Providing a holistic and collaborative way of learning might be able to bring out the best among learners as they can use their individual strengths to help each other. Letting students learn authentically by using their personal talents and interest might create a more active and involved classroom. Providing students a space to do what they do best might motivate them to show their domain intelligence and build self-esteem.

To take advantage of the usefulness of multiple intelligences in the English classroom, a few recommendations were discussed. Integrating the approach of MI in a non-conventional and a student-centered classroom might help teachers and learners to understand that a learner does not need all multiple intelligences to be a proficient student. Instead, teachers should know their students' strengths and shape his/her other intelligences gradually by integrating those in teaching lessons.

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