Learners Test Performance and Gardner`s Multiple Inteligence Theory: Intercorrelation in a Bilingual Context

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Abstract

Although decisions and inferences made based on test scores depend both on the characteristics of test takers and testing environment, the former seems to have the most overriding importance. The present study which was conducted in a bilingual environment is in line with this assumption and is aimed at investigating intelligence as one of the test taker characteristics. First, it aimed at finding the possible correlation between any of the eight types of intelligences in Gardner`s MI theory and EAP test performance. Second, it intended to survey the intercorrelation among the eight types of intelligences themselves. To that end, 122 male bilingual EFL learners who were all sophomore university students were chosen as the participants of the study. They sat for the final EAP exam and filled the questionnaire on multiple intelligence. The test takers' scores on EAP exam were correlated with their multiple intelligences. The result did not demonstrate any statistically significant go-togetherness between EAP test performance and any types of intelligence; however, a significantly positive correlation was observed among the eight types of intelligences themselves showing that all types of intelligences are equally important and ought to be equally dealt with in EFL context.

Keywords: multiple intelligence; correlation; intercorrelation.

1. Introduction

Technically speaking, intelligence should not be considered as a unitary construct, since, according to the theories proposed, it is made up of different components with hierarchical organization. Intelligence is described as the combination of a general factor and several specific factors. All people can access the general factor to the same extent for all kinds of cognitive acts, while the strength of specific factors fluctuates from one act to another (DÖrnyei, 2005). In 1930s Thurstone made a distinction between seven chief cognitive abilities and listed them as verbal comprehension, word fluency, number facility, spatial visualization, associative memory, perceptual speed, and reasoning. After a while, Thurstone proposed seven primary cognitive abilities as: verbal comprehension, word fluency, number facility, spatial visualization, associative memory, perceptual speed, and reasoning (cited in DÖrnyei, 2005). Next, after different theories and models proposed for intelligence, Gardner (1983) introduced his prominent theory of multiple intelligences consisting of eight distinct intelligences.

1.1. Multiple intelligence

Gardner`s Multiple Intelligences was first developed as a reaction to the traditional conceptualizations of intelligence and later became a major contributor to educational practices and reforms. Gardner questioned the validity of traditional IQ tests in that he thought they would only tap the logic and language, however, the human brain has other equally important competencies. Therefore he defined intelligence as "a biopsychological potential to process information that can be

activated in a cultural setting to solve problems or create products that are of value in a culture" (1999: 34). Initially the theory consisted of seven distinct intelligences proposed as Linguistic, Mathematical-Logical, Visual-Spatial, Bodily-Kinesthetic, Musical, Interpersonal, and Intrapersonal (Gardner, 1999). Naturalistic intelligence was subsequently introduced by Gardner and was added to the previous seven intelligences, therefore made the total of eight distinct intelligences. In stating the rationale of his theory, Gardner (1991) posited that:

All human beings are capable of at least seven different ways of knowing the world -- ways that I have elsewhere labeled the seven human intelligences. According to this analysis, we are all able to know the world through language, logical-mathematical analysis, spatial representation, musical thinking, the use of the body to solve problems or to make things, an understanding of other individuals, and an understanding of ourselves. Where individuals differ is in the strength of these intelligences -- the so-called profile of intelligences -- and in the ways in which such intelligences are invoked and combined to carry out different tasks, solve diverse problems, and progress in various domains (p12).

The linguistic intelligence enables us to use the words effectively both in the oral and written form. In other words, this intelligence enables people to manipulate the structure, phonology, and the semantics of language to reach pragmatic results. Logical-mathematical intelligence is the capacity to use numbers efficiently. It arouses the sensitivity to logical patterns and relationships, statements and propositions, functions and other related abstractions, and thus demystifies the use of possesses such as categorization, inference, generalization, calculation and hypothesis testing. Spatial intelligence is the competence for recognizing the visual-spatial world accurately and applying transformation on that perception. This kind of intelligence is useful in appreciation of color, line, shape, form, space, and the relationship existing among them. Bodily-Kinesthetic Intelligence accounts for the use of the whole body to express ideas and meanings and also the use of hands to produce and transform things. Musical intelligence involves one's sensitivity to rhythm, pith and melody, duration etc. of a musical piece. It enables people to perceive, transform, discriminate and express musical forms. By musical intelligence, one can recognize the moods, interests, motivations and personalities of other people. Intrapersonal intelligence, on the other hand, accounts for recognizing one's own mood, behavior, motivation and interest; or simply put, having a precise picture oneself. Naturalistic intelligence, which was added later on by Gardner, enables us to recognize and categorize a variety of different kinds of environments. It involves the sensitivity to natural phenomena.

Armstrong (2009) proposed some key points regarding the MI theory. Armstrong claimed that all human beings have access to all types of intelligences. Given the appropriate incentive, reinforcement, support, and instruction, most people are capable of enhancing each of the intelligences to a satisfactory level of competency. All intelligences most often work together in an intricate way, that is, no intelligence exists alone and all intelligences interact with one another. Finally, Armstrong stated that "There are many ways to be intelligent within each category - there is no standard set of attributes that one must have to be considered intelligent in a specific area. Consequently, a person may not be able to read, yet be highly linguistic because he can tell a terrific story or has a large, oral vocabulary. Similarly, a person may be quite awkward on the playing field, yet possess superior bodily-kinesthetic intelligence when she weaves a carpet or creates an inlaid chess table. MI theory emphasizes the rich diversity of ways in which people show their gifts within intelligences as well as between intelligences" (p. 16). Gardner (1987) also draws attention to the overriding importance of recognizing and nurturing all of the human intelligences and the combination of those intelligences since it is held that they interact in an abstruse way.

1.2. English for academic purposes (EAP)

Language for specific purposes (LSP) is a movement toward serving the language needs of those who need to learn language so as to carry out particular tasks and roles with it. Therefore, the main purpose is acquiring content and real-world skills by means of a second language rather than

acquiring the language for its own sake. English for academic purposes (EAP) is a sub category of LSP that was coined by Tim Johns and appeared in the collection of papers edited by Cowie and Heaton for the first time (Jordan, 2002). EAP, currently, refers to any English language teaching course that has a study purpose. Hyland (2006) asserts that EAP is a very broad term that covers all areas of academic communicative practice from pre-tertiary, undergraduate, and postgraduate teaching and classroom interactions to research genres and administrative practice (such as course documents and doctoral oral defenses).

To investigate the relationship between multiple intelligences and EAP test performance, three research questions were posed:

1. Is there any significant correlation between any type of intelligences and EAP test performance?
2. Which one of the intelligence types in MI theory is most highly correlated with EAP test performance?
3. Is there any correlation among the eight types of intelligence in MI Theory?

Three null hypotheses were offered accordingly as follows:

1. There is no correlation between any type of intelligences and EAP test performance.
2. None of the intelligence types in MI theory is highly correlated with EAP test performance.
3. There is no relationship among the eight types of intelligences in MI theory.

2. Methodology

2.1. Participants

The current study involved 122 Iranian second-year university male students, majoring in Computer Sciences. They speak Turkish as their first language, Persian as their second language, and they were learning English as a foreign language. The classes were held once a week for 90 minutes and were compulsory for all students. The main activity in the classes was reading technical texts. The amount of participants' past exposure to English, both inside and outside the classroom was estimated by asking them about their backgrounds. They were asked about the past experiences of travelling to or studying in an English-speaking country, and the English classes they had taken so far. Results showed that none of the students had been abroad, and that they had studied English for about 6 years, mainly through reading-based formal education in the Iranian secondary and high schools.

2.2. Instruments

Two main instruments were applied in this study: An EAP test and the Multiple Intelligence Developmental Assessment Scale (MIDAS). In the final term exam, a test was given to the subjects in four sections: A, B, C, and D. In section 'A' they were asked to complete 6 sentences with the given words. In part 'B', which included 8 multiple choice items, they were required to select the correct option. In part C that involved 4 items, the correct forms of the words given in parentheses must be used for completing the sentences. In part D, they were asked to translate 2 short paragraphs into Persian.

MIDAS is a questionnaire recommended by Gardner and developed by Shearer (1996) for measuring multiple intelligences. The instrument takes 35 minutes to be completed and includes 119 likert-scale (from A to F, with E being the highest and F being `I do not know`) questions that cover eight areas of abilities, skills, interest, and activities. In this study, eight types of intelligence were surveyed and recently proposed 9th intelligence (Gardner, 1999), existential intelligence, was not included.

2.3. Procedure

At first EAP final test was given to the participants. After finishing the test, they were asked to read the questionnaire on multiple intelligences carefully and mark their desired options in a separate answer sheet. Also they were given some extra clarifications for a couple of the items to alleviate any ambiguity. The participants' results on the two tests were collected and analyzed

respectively.

3. Data analysis

Pearson product-moment correlation coefficient was calculated to investigate the relationship between EAP test performance and the multiple intelligences. A multiple correlation was run in order to explore the correlation between each of the multiple intelligences and EAP test performance on the one hand and the intercorrelation among the different types of intelligences.

4. Results and Discussion

The result of correlational analysis is shown in table 1:

Table 1. Intercorrelation among different types of intelligences and EAP test performance

	Intrapersonal	Interpersonal	Musical	Kinesthetic	Naturalistic	Linguistics	Math/Logic	Spatial
EAP test performance	.090	.098	.274	.172	-.003	.113	.065	-.079
Intrapersonal		**.460**	.310	.111	**.525***	**.514***	**.735****	.400
Interpersonal			**.634****	**.531***	**.565****	**.493***	.427	**.671****
Musical				**.665****	**.605****	.276	.290	.367
Kinesthetic					.332	.002	.080	.332
Naturalistic						.388	**.521***	**.621****
Linguist							**.615****	**.667****
Math/Logic								**.546***

The correlation coefficient for intrapersonal intelligence and EAP test performance was .090 which did not indicate any relationship between the two variables ($r(122) = 0.090$, $p<0.05$). Pearson's correlation coefficient also yielded a very trivial positive correlation between interpersonal intelligence and EAP test performance which was not statistically significant ($r(122) = 0.113$, $p<0.05$). There is a proportionately higher correlation between musical intelligence and EAP test performance, however, the result is not significant yet again ($r(122) = 24$, $p< .05$). A negative correlation was observed between EAP test performance and naturalistic and spatial intelligences. The correlation coefficients for EAP test performance and naturalistic and spatial intelligences are respectively -.003 and -.079. Mathematical-logical intelligence showed a negligible correlation with EAP test performance ($r(122) = .065$, $p< .05$). The kinesthetic and linguistic intelligence were roughly correlated to the same degree with EAP test performance. The Correlation coefficient was .172 for kinesthetic intelligence and .113 for linguistic intelligence.

The result of the correlation analysis between EAP test performance and multiple intelligences did not demonstrate any significant value for the correlation coefficient; therefore, the first null hypothesis stated as "There is no correlation between any type of intelligences and EAP test performance" is confirmed. None of the eight intelligences in the MI theory appeared to have a high significant correlation with EAP test performance. However, among the eight intelligences, musical intelligence relatively had the highest correlation with EAP test performance.

Although there was a very low and negligible correlation between EAP and the eight types of intelligences, a high significant intercorrelation was observed among the multiple intelligencers themselves; therefore, the third null hypothesis stated as "There is no relationship among the eight types of intelligences in MI theory" is rejected and the relationship among them is confirmed, which is in line with the findings by Visser, Ashton, and Vernon (2006) who also found a high intercorrelation among the eight intelligences.

5. Conclusion

Gardner (1987) held that through recognizing one's multiple intelligences, we will have a better opportunity for coping more appropriately with the many problems that are confronted in the world. Currie (2003) also maintains that in bringing the MI theory into effect in classrooms, it is

crucially important that teachers take into account the students' strength in order to make the process of learning more attainable. The present study was aimed at uncovering the relationship between EAP, which is an essential aspect of competence for postgraduate and university students and the eight types of intelligences as a highly critical theory in psychology and education proposed by Gardner. The results showed a lack of go-togetherness between the EAP test performance and the eight types of intelligences. This lack of correlation might be due to the small number of participants or that particular context in which the study was carried out. Another finding of the study was the existence of a significant positive correlation among the eight types of intelligences that support the idea that all different types of intelligences interact with one another in an intricate way, and that all human are equipped with all of these intelligences to some extent. However, this study was performed in a bilingual situation with a limited number of participants; other studies need to be conducted in different contexts with larger number of participants.

6. References

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