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The Role of Gender Differences in the Cognitive Style of Impulsivity/Reflectivity and EFL Success

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Abstract

Styles are those general characteristics within a person that make him/her prefer something and has tendency toward doing it. Such characteristics are cognitive styles and when used in educational situations are referred to as learning styles. Impulsivity (I) and Reflectivity (R) are two characteristics of human beings in cognitive domain. Impulsivity is a sudden action undertaken without careful thought by "quick guessers" who while uttering their guesses, commit a greater number of errors whereas reflective people, referred to as "thoughtful", are slow and accurate, weigh all the possibilities, take longer to respond, and consequently make fewer errors .This study was after finding I/R effects on EFL success, the relationship between gender differences and I/R, as well as the interaction between gender differences and I/R. Hence, 105 Iranian pre-university female and male students in Shiraz, were randomly selected to take part in this study, divided into two groups of I/R based on the results of Yando and Kagan's (1968) adult/adolescent version of Matching Familiar Figures Test (MFFT), an individually administrated visual discrimination matching-to-sample task, based on their response latency and response accuracy. Oxford Placement Test measured the participants' degree of proficiency whose EFL success was assessed by the nation-wide pre-university English Achievement Test. Data analysis showed that I/R tendencies do not facilitate EFL success, since there was not a statistically significant relationship between the variables of the present study; therefore, teachers should not ignore impulsivity, though they should be taught to postpone their obviously incorrect answers

Keywords: Cognitive styles, Learning styles, Impulsivity, Reflectivity:

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1. Introduction

It is obvious that thinking is a unique characteristic of human being which enables him/her to decide on the selection of different alternatives, carrying out different tasks to reach a better result. The way we react to solve a problem is said to have strong relationship to our personality and cognition. These cognitive features when used in educational situations are referred to as learning styles.

Keefe (1979) believes that learning styles may be thought as cognitive, affective, and physiological traits that are relatively stable indications of how learners perceive, interact with, and respond to the learning environment" (4).

Some theories have been proposed by researchers to explain how people get, retain, and remember what they learn. Skehan (1991) believes that learning style might be "a general, predisposition, voluntary or not, toward processing information in a particular way(228). It is said that such a style can be the outcome of both cognition and emotion.

2. Impulsivity/Reflectivity Tendency

Impulsivity (I) and Reflectivity (R) are believed to be two characteristics of human beings in cognitive domain. Oxford Advanced Learners' Dictionary (1989: 626) defines impulsive people or their behavior as "marked by sudden action that is undertaken without careful thought" whereas reflective people are referred to as "thoughtful" (1057). Block et al (1974: 611) believe that reflective people are "slow deciders in uncertain situations" while impulsive people are "quick deciders in uncertain circumstances". Williams et al (1977), refer to Sonneman who believes that impulsivity shows those " who express themselves in writing quickly, demonstrate personality qualities such as : quickness of thinking; restlessness; flightiness; rashness; haste; unreliability" (292).

On the contrary, it has been argued that some students are slow and accurate. Unlike impulsive learners, these students take longer to respond, weigh all the possibilities, and consequently make fewer errors in answering a question, solving a problem. These learners are said to be reflective. The construct of I/R has been operationalized considering response latency and errors on Matching Familiar Figures Test (MFFT),a visual recall test. A double median split for time and error results in for cells illustrated in Figure 1.
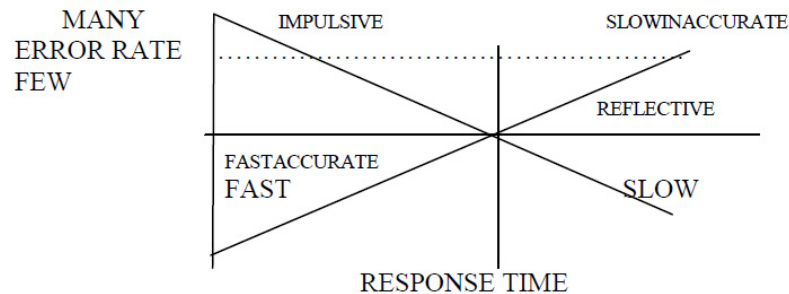

Figure 1. Relationship between Impulsivity and Reflectivity Adapted from Jamieson (1992: 494)

Based on the above discussion, this study has got three questions, and thus three corresponding hypotheses were posed.

1. Is there a relationship between the personality tendencies of Impulsivity/ Reflectivity of Iranian learners of English language and their performance on a nation-wide pre-university English Achievement Test?

  H1: Reflective learners do have a better performance on the Achievement Test.

2. Is there a relationship between participants' gender and their performance on English Achievement Test?

  H0: There is no relationship between participants' gender and their performance on the Achievement Test.

3. Is there any interaction of Impulsivity/Reflectivity tendencies and gender on English Achievement Test?

  H0: There is no relationship between the combination of Impulsivity/Reflectivity and gender on a nation-

wide pre-university English Achievement Test.

3. Background Literature

3.1 Impulsivity/Reflectivity Measurement Instrument

The instrument for measuring conceptual tempo is Matching Familiar Figures Test (MFFT) which has different versions for different ages and is constructed by some researchers including Kagan (1965) and Yando and Kagan (1998), accepted as a valid test to measure I/R by some researchers.

Margolis and Brannigan (1976), discussing the effect of impulsivity on the test performance suggested their solution as administering the tests individually or putting the learners into small groups, finding the impulsive learners, re-administering another test to impulsive learners, and finally noting many possible differences in test performance.

Williams et al (1977), examining the relationship between certain handwriting characteristics and Eysenck's Extroversion-Introversion and Kagan's Impulsivity-Reflectivity dimension, accepted MFFT as one of the two valid personality tests in the past 20 years "to tap important personality dimensions" (292).

3.2 Gender differences

Gender difference, a special variable of the present study, has been studied by some researchers of the cognitive style of Impulsivity/ Reflectivity. Messer (1976) refers to Kagan as having reported "small but consistent gender differences in the direction of fewer errors" (1041) in samples of six-seven and eight-year old girls. The researcher had stated that females are slightly more reflective than males.

Harrison and Nadelman (1972) concluded that four and a half year old girls were more reflective than boys, though a lot of researchers found no such differences (e.g., three and a half year old middle class whites of Lewis et al, 1968 did not show any gender differences.)

3.3 English as a foreign language (EFL) success

Doron (1973) examined adult ESL learners in the USA. The findings of her study show that reflective learners were more accurate, though slower, than impulsive ones in reading. Kagan-Dona (1980) examined the underlying structures of sixteen indexes of syntactic complexity known to be related to good writing through writing samples from secondary & postsecondary students in which they found an association between syntactic complexity and an analytic cognitive style.

Ho (1995) explored the ways of adding reflective elements into ESP classrooms under curricular & institutional constraints to enhance learning through experience. Results indicated that the variable group did not like the reflective activities due to the overwhelming amount of writing involved.

4 Methodology

4.1. Participants

Participants of the present study consisted of two groups: The first group included forty-eight pre-university female students in Shiraz. They were randomly selected regardless of their personality characteristics to carry out the test- retest design to secure the reliabilities for the correlational analysis for MFFT over a two-week period of interval between the two sessions.

As gender was a variable of the present study, the second group of the participants consisted of seventy female and thirty five male students to take part in the study. These students continue learning English as a foreign language during a one-year period after a period of five years learning English in the junior high schools, and high schools in Shiraz.

4.2 Instruments

Three instruments were employed in this study consisting of the test for dividing the participants into two groups based on their personality characteristics, the test for measuring the participants' English proficiency, and the nation-wide pre-university English Achievement Test. Yando and Kagan's (1968) adult/adolescent version of MFFT, the most frequent used instrument, was designed to measure conceptual tempo of the participants'. The test is an individually administered visual discrimination matching- to- sample task. On one page there is a picture of a common item and familiar object and on the other page there are six or eight variants only one of which matches the familiar figure of the top page. The two pages are exposed simultaneously to the participant who was to point to the picture among the variants that exactly matches the isolated figure. There are two practice items and twelve test items which follow the two practice items. The tendency toward fast or slow decision times and number of errors are used to identify the degree of conceptual Impulsivity/Reflectivity. An example is presented in Figure 2 in the appendix. Oxford Placement Test (Allen, 1985) version, consists of 50 multiple choice questions, was designed to measure the participants' English proficiency in grammar. This test was employed for validating the English Achievement Test.

The nation-wide pre-university English Achievement Test was the third instrument used in this research, administered to pre-university students in Shiraz, at the end of the second educational semester. For its reliability, the "internal consistency method" was used and the KR-21 was 60%. Likewise, its validity was empirically computed against Oxford Placement Test (Allen, 1985) and a correlation of (r=0.52) was found between the scores of these two tests.

4.3. Procedure

At the beginning the instructions of the study were explained to the students verbally. The subjects were individually tested for half an hour appointments by the examiner in a quiet to provide them with the opportunity of concentrating on the items being tested. One pre-university male and two pre-university female students were trained and helped the researcher administer the adult/adolescent version of MFFT to randomly selected subjects of each class.

Forty-eight pre-university female students aged 17-18 in Shiraz took part in test-retest reliability for the Matching Familiar Figures Test (MFFT). Three of the students who were absent on their scheduled date for the retest were dropped from this pilot study. Thus the analysis contained 45 participants. The administration of the personality test lasted approximately 20 minutes for each participant resulted in 1800 minutes time for the whole group during the two test sessions. The essential instructions given to the subjects were that they were always to point to the variant (one of the six or eight on the lower page) that was exactly like the standard (on the upper page). None of the subjects had any difficulty understanding the instructions once they had gone through the two practice items. A maximum of five to seven errors were permitted based on the number of variants of each trail. Both response latency and response accuracy were used from this match to standard test as indices of cognitive tempo, that is, the time between presentation of the item and the subject's first response, and the number of errors, respectively. Applying correlational coefficient between the two scores of response latency in time 1 and time 2 gave the test-retest reliability of 79% for mean response time and 55% for number of errors which are almost in line with the results of Messer's (1976) study, as cited in Jamieson (1992), who reported the result of 0.89 and 0.52 for time latency an error rate and Jamieson (1992) whose study's result showed 0.93 and 0.51 for response time and number of errors, respectively.

Following this, the main study was carried out with the same procedure. At this time seventy female and thirty five male were randomly selected to take part in the investigation. Having administered the adult/adolescent version of Yando and Kagan's (1968) version of MFFT, the participants were divided into two groups of impulsivity/reflectivity personalities based on their response latency and response accuracy. The examiner recorded the number of errors the subject made on each item and the amount of time for the first response, whether correct or not.

Then Oxford Placement Test (Allen, 1985) was applied and finally the English Achievement Test ,the participants' final exam, was carried out.

5. Results

The relationship between Impulsivity/Reflectivity and Iranian EFL students' Achievement Test was investigated.

The data obtained from the pre-university Achievement Test were subjected to a two-way ANOVA. The ANOVA provides us with the findings of three effects. 1. The effect of Impulsivity/Reflectivity on the Achievement Test. 2.The effect of participants' gender on the Achievement Test, and 3.The effect of the interaction of the Impulsivity/Reflectivity and gender on the Achievement Test.

5.1. Personality Type and Achievement Test

In order to investigate the relationship between I/R and the Achievement Test scores for the whole sample, Impulsivity/Reflectivity tendencies and gender were defined as independent variables and the Achievement Test score was defined as dependent variable of the study. Two scores were kept as the participants worked on the items of MFFT, that is, the amount of time and the number of errors. After computing double median split half based on the median of time and error, the participants were classified as reflective or impulsive. Those who were above the median of time and below the median of error were reflective whereas those who were below the median of time and above the median of error were impulsive. Two other groups could be obtained from the median of time and error. Those who were below the median of both time and error, that is, fast-accurate or "good guessers" and those who were above the median of both time and error, that is, slow-inaccurate or bad guessers were not considered in this investigation. The results of the computed data of male and female Impulsive and Reflective tendencies and their Achievement Test scores are displayed in Table 1.

Table.1. Descriptive Statistics for Mean and SD of Achievement Test According to Two Variables of Sex and Personality Type

	Reflective	Impulsive	Total
Female	M=11.06 SD=2.67 N=18	M=10.30 SD=2.53 N=22	M=10.64 SD=2.59 N=40
Male	M=10.63 SD=2.42 N=12	M=9.86 SD=3.17 N=9	M=10.30 SD=2.71 N=21

As can be seen in Table 1, the highest range of mean belonged to reflective and impulsive females and the lowest range of means belonged to reflective and impulsive males. However, the differences among the males and females and between each group were not significant at .05 level.

The results of the computation of ANOVA based on the Achievement Test scores are presented in Table 2.

Table2. Two-way ANOVA on I/R, Gender and Achievement Test

Source of Variation	Sum of Squares	DF	Mean Squares	F	Sig.
Main Effects	10.311	2	5.156	0.734	0.48
Group	8.721	1	8.721	1.242	0.27
Sex	2.540	1	2.540	0.362	0.55
2- way interactions	0.000	1	0.000	0.000	0.99
Gr by Sex					

Residual	400.225	57	7.021
Total	410.537	60	6.842

These data show that the effect of learner's tendencies (I/R) and their Achievement Test scores was not statistically significant. Accordingly, the first two hypotheses of this study are rejected. That is to say, female/male reflective did not perform better than female/male impulsive as was expected. Furthermore, in analyzing the effect of the participants' gender and their Achievement Test scores, the two-way ANOVA did not yield a significant result at .05 level. Therefore the third hypothesis of the study was proved. That is, the learner's gender and personality tendencies did not have any significant effect on their performance in English Achievement Test scores.

The correlation between time and error of Achievement and proficiency Tests is presented in Table 3.

Table 3. Pearson product Correlation between Time, Error, Achievement and Placement Tests

Test	Time	Error
Achievement	0.08	-0.18
Placement	0.9	-0.19

The computed data showed that when the number of errors is larger, the Achievement Test score is smaller which is exactly what common sense expects. However, there is no significant difference between error, time, and English proficiency test scores. In other words, although the correlation between the Achievement Test scores and the number of errors is negative, it is not statistically significant.

6. Discussion

Results pertaining to the three research questions are discussed below. With regard to the first research question, the hypothesis of the study claimed that there would be a positive relationship between the (I/R) tendencies of pre-university learners of English and their performance on the Achievement Test. Referring to the data presented in Table 2., the findings were not statistically significant (0.48>0.05). Thus the first hypothesis was rejected. Moreover, the researcher was after finding the different performance of female learners in comparison to the performance of male learners on the test. However, the computed data did not yield a significant result at 0.05 level, either (0.55>0.05).

These findings were in accordance with the findings of Hansen-Strain's (1987) and Jamieson's (1992) studies. Hansen-Strain (1987) concluded that the cognitive tempo of ESL learners was related to their culture but not to their gender. However, she found no apparent relationship between cognitive tempo and language test performance, either. Moreover, Jamieson (1992) believed that I/Rs have more association with learning activities than language proficiency production. She claimed that "fast-accurate learners were better language learners than I/Rs who lack accuracy and speed, respectively.

For the analysis of the effect of the participants' gender on their Achievement Test scores the two-way ANOVA found no significant relationship between male and female participants in their performance on the Achievement Test. Moreover, the finding of this research was in contradiction with that of Boyle (1987) who mentioned that females are better than males in receptive as well as productive verbal tasks, higher-level and lower-level tasks. With regard to the third hypothesis, the data obtained from the ANOVA did not reveal any statistically significant interaction between I/R tendencies and gender on the one hand, and a nation-wide pre-university Achievement Test, on the other hand. As Table 2 presents 0.99 as the interaction of gender and I/R , the null hypothesis was not rejected at all.

7.Conclusion

The present investigation made it clear that Impulsivity/Reflectivity tendencies do not play a basic role in learning English as a foreign language between Iranian pre-university learners. That is to say, the findings of the present study indicate that personality tendency does not facilitate learning English as a foreign language (Table 2.). Jamieson (1992:498) claims: Interestingly, Reflection and Impulsivity were neither positively nor negatively related to the language proficiency (498).

Therefore, the researchers can provide the explanation for lack of significant relationship between dependent and independent variables of the study which complete Jamieson's (1992) conclusion. We also believe that in an achievement test which is a timed test, reflective answers fewer questions but answers them more correctly than impulsive who answers more questions with more errors. That is to say, the few number of questions answered by reflective will cancel out the errors done by impulsive. Nevertheless, the contention is that if the scoring of the timed test includes negative points for the number of wrong answers, the result may be changed.

Still another explanation may be the fact that correlational research has limitations for the investigation of such a complex phenomenon as language test since so many factors, including culture, social backgrounds, and learning strategies interact to affect language learning. In this case, to obtain a better and useful understanding of test performance, factorial research designs would facilitate the sorting out of interaction effects.

It is worth mentioning that the findings of the present study are in line with Jamieson's (1992) and Hansen-Strain's (1987).

8.Pedugogical Implications

Pedagogically speaking, what is apparently acceptable is that teachers can observe these traits in their classrooms and make learners conscious of their behavior and provide the participants with a means of diagnosis and teach fast-inaccurate or impulsive learners to postpone their guesses until they become sure of the correctness of their answers. This can be related to the fact that on the one hand, scoring of some tests includes negative points for errors as a result of which the learners' negative points would cancel the correct answers out. On the other hand, such a situation is a handicap in classrooms because not all teachers are so patient to the learners' inaccurate responses and "peer group is prone to jeer at the child who impulsively blurts out obviously incorrect answers" (Kagan, Pearson, and Welch, 1966:359).

As the results of this study show, there is no difference between impulsive and reflective learners' English proficiency. Consequently, foreign language teachers should not pay much attention to reflective and ignore impulsive. As for testing, test-makers should devise their tests in such a way that both I/Rs can benefit from the tests indiscriminately.

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