

Brain Dominance and Test Format: A Case of Vocabulary

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Abstract—This research was conducted to investigate the relationship between brain dominance and test format. This relationship was taken into consideration to see whether examinees' hemispheric preferences affect their performance on different vocabulary test formats or not. The research data were collected from a sample of 53 Iranian language learners using the Style of Learning and Thinking (SOLAT) questionnaire, which is a tool that measures the inclination toward the right-, integrated-, and left thinking. The researchers also collected data on students' performance on eighty vocabulary test items with different formats including multiple-choice synonyms, multiple-choice antonyms, word-for-word translation, and picture identification. Statistical analyses revealed that brain dominance is a factor which affects students' performance when taking different vocabulary test items. Right-thinking test-takers outperformed integrated and left-thinking test-takers on the picture identification test. Left-thinking test-takers, on the other hand, outperformed the other respondents on multiple-choice synonyms, multiple-choice antonyms, and word-for-word translation.

Index Terms—brain dominance, test format, multiple-choice test, translation test, picture identification test

I. INTRODUCTION

Learning and thinking styles have been related to individual's hemispheric preference (Springer & Deutsch, 1997). Hemisphericity as a learning style is specified as the tendency of an individual to count on "the processes associated with one rather than the other cerebral hemisphere in information processing" (Albaili, 1996, p. 427). The left hemisphere is mainly involved in processing the data in logical and sequential ways. The right hemisphere, on the other hand, deals with processing the information holistically and nonlinearly (Torrance, 1982).

Much of the theory of left and right hemisphericity has been made through treating some patients. The brains of these patients were damaged as a result of some accidents. Those who were damaged on the left part of their brain gave the indication that language is located in the left hemisphere. The left hemisphere of the brain is concerned with language by way of analysis and abstraction, while the right hemisphere apprehends language as more general patterns, either auditory or visual (Willing, 1988).

Hartnett (1980, cited in Alptekin & Atakan, 1990, p. 135) categorizes students into two major groups regarding the various features of cognitive style that have been discovered. "The first group is said to be field-independent, verbal, analytic, serialist, and sequential-successive. In contrast, the second group is described as field-dependent, imaginal, relational, holist, and simultaneous-synthetic". Hartnett (1980) calls cognitive modes of the former group as analytical and to those of the latter as holistic. Second language learners are no exception to the mentioned categorization. "Some prefer to use a more analytic approach to second language learning problems, while others prefer to tackle them in a predominantly holistic manner" (Alptekin & Atakan, 1990, p. 135).

Noticeably, assessment which stands in a dynamic interaction with learning (Danili & Reid, 2006) can be expected to be influenced by test-takers' learning style. Language learners' performance on different tests is shown to be affected by learning and cognitive styles (Bachman, 1990; Kunnan, 1998). While the effect of certain learning styles such as field-independence/dependence on the performance of test-takers has been shown in the literature, the extent to which test-takers performance on different tests is affected by brain dominance has not to the best knowledge of the present researchers been studied. It should be born in mind that assessing learners with proper test formats and enabling them to have their best possible performance can increase their motivation (Gipps, 1994).

As Johnstone (2003) reminds, assessment must be humane. Humanity takes into consideration factors that influence students' performance, such as cognitive and psychological traits of individual personality (Danili & Reid, 2006). Besides, language testing as a growing profession should embrace postmodernism for this standpoint can alert and sensitize stakeholders on the differences regarding beliefs sets, styles, and strategies in a given society. Hamp-Lyons (2000, p. 581) cogently expands upon this:

Under the influence of postmodernism, we cannot avoid acknowledging the contingent nature of knowledge nor the fact that different stakeholder groups will have competing goals and values. The combination of expanded views of stakeholders and accountability with growing acceptance that the truth is not 'out there' but in us has made many

language testing professionals question what they do and how they do it: this is what I mean when I refer to 'ethical language testing'.

II. REVIEW OF LITERATURE

Individual learners are classified according to their own preferred ways of interacting with, taking in, and processing new stimuli or information. These preferred ways which are called learning styles (Hopper, 2010) have been shown to affect language learning. Leaver (1986) suggests that left-brain thinkers act on grammatical structure and contrastive analysis with ease, while right-brain thinkers are good at learning language intonation and rhythms. Left-brain thinkers look to strategies that involve dividing words and sentences into parts; right-brain thinkers favor holistic strategies such as guessing at words and hunting for key notions.

A large body of research has been conducted to relate left-right hemisphericity to personality traits, and academic achievement (Torrance, McCarthy, & Kolesinski, 1988; Torrance, Reynolds, Ball, & Riegel, 1978; Torrance, Reynolds, Riegel, & Ball, 1977). However, studies into the relationship of hemisphericity and learning styles in learning a second/foreign language are sporadic. For instance the role of hemisphericity in pronunciation ability was examined by Guiora, Buchtel, Herold, Homburg, and Woken (1983) who studied the extent to which the right hemisphere might be activated during the task of listening to and pronouncing tone language sounds. Analysis of the results indicated a correlation between the measure of hemisphere efficiency and approximation of native-like pronunciation. The researchers concluded that right hemispheric activity can predict the quality of pronunciation in a foreign language. The findings of a study conducted by Dreyer, Wissing, and Wissing (1996) disclosed an intricate pattern of relationships between cognitive styles and aspects of pronunciation accuracy: "in the case of perception of final consonants, field independence, and right hemispheric dominance was related to better performance, while in the case of production (aspiration of initial consonants), field dependence, and left hemispheric dominance was related to better performance" (Dreyer et al, 1996, p. 37).

Glezerman and Balkoski (1999) proposed their model of the organization and representation of word meaning in the cerebral cortex (Figure 1). The authors distinguished the left hemispheric word meaning and its right hemispheric equivalent. Accordingly, they believe that the meaning of a word has two components: empirical and categorical. The first component corresponds to the psychological term 'object reference' and the second component corresponds to 'concept'. The right hemispheric equivalent of the empirical component of word meaning is the object image. "In normal individuals, word sound (phonological code) is directly connected with the empirical and categorical components (left hemisphere) and through them with the right hemispheric equivalents", based on Glezerman and Balkoski (1999, p. 57).

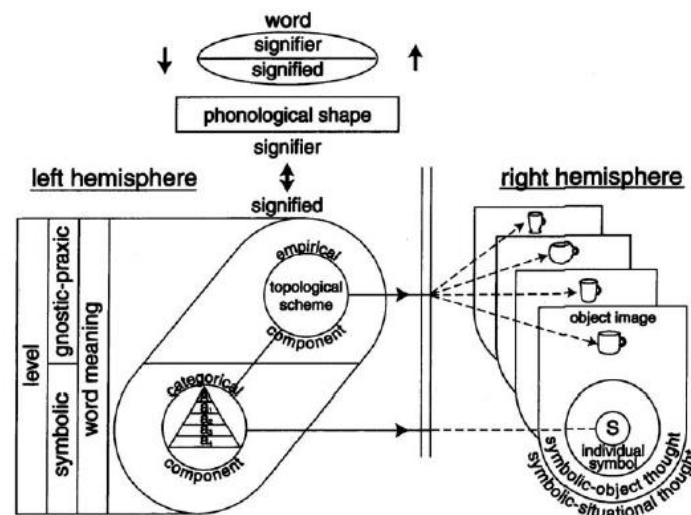


Figure 1. Model of cerebral organization of word meaning. From Glezerman, T. B., & Balkoski, V. (1999). *Language, thought, and the brain*. New York: Kluwer Academic/Plenum.

Studies with regard to the relationship between hemisphericity and L2 achievement have not been supportive. Alptekin and Atakan (1990) explored the relationship between L2 achievement and two learner characteristics, field dependence-independence and hemisphericity. They determined subjects' trait-level hemisphericity (a stable tendency to activate a given hemisphere) by means of their conjugate lateral eye movements (CLEM). Field-independent subjects did better on the discrete-point and cloze tests. Hemisphericity, was not related to second language success. A decade later similar results were obtained by Tendero (2000) who investigated the relationship between the hemispheric dominance (HD) and English proficiency in the four macro skills of the college students vis-a-vis their age, gender and area of specialization. Seemingly, the subjects' hemispheric dominance had no effect on L2 achievement in the four skills. But, it influences their success when they were grouped based on age and area of specialization.

Research also has shown the relationship between hemisphericity and translation ability. Research by Fabbro, Gran, Basso, and Bava (1990) showed that both hemispheres are activated during simultaneous interpretation. That is, linguistic functions were more equally balanced between left and right hemispheres in translators than in non-translators. In a similar vein, Lambert (1993) scrutinized mastery in interpretation as a function of whether the data was given bilaterally or unilaterally, to the left or to the right ear. In this study with subjects performing a simultaneous interpretation task, the researcher found fewer errors when the input from the second language to the first language was presented to one ear rather than to both ears. There was, too, a tendency for the left ear condition to be better than the right ear condition. Hamers, Lemieux, and Lambert (2002) investigated the role played by experience, age and age of bilinguality, and found that all possible factors affect the hemispheric control of interpretation. Findings revealed that the more experienced interpreters interpreted better, regardless of ear of input. But the obtained findings revealed the possibility that hemispheric preferences for linguistic analysis might be much more under an interpreter's voluntary control than first expected.

Research into the relation between test format and test takers' performance are not few (Shohamy, 1984, 1997; Bachman & Palmer, 1996; Brantmeier, 2005; Bowles and Salthouse, 2008). The form of a test is related to its physical aspect that relies on the form of the items making up the test (Cohen, 1994; Fulcher & Davidson, 2007). Test format is one of the central factors which accounts for differences in test takers' performance (Shohamy, 1984, 1997; Bachman & Palmer, 1996; Brantmeier, 2005). A number of researchers have directed their attention to test format in the fields of language learning and educational measurement.

Bowles and Salthouse (2008) examined four vocabulary test formats (including, picture identification, produce-the-definition, multiple-choice synonym) and their relations to age and cognitive abilities, including reasoning, spatial visualization, memory, and speed. In earlier adulthood, picture identification had the strongest growth, and produce-the-definition the weakest. In later adulthood, picture identification had the strongest decline, and multiple-choice synonyms the least (Bowles & Salthouse, 2008, p. 366). The four formats differed in their relation to other cognitive variables.

Apparently, relationships between the left-right style of thinking and the test format have not been investigated before. The aim of the current research is to take into consideration these kinds of relationships. For this reason, it would be a worthwhile research endeavor in bringing into light the importance of brain dominance as a factor in vocabulary test success.

III. RESEARCH QUESTIONS

1. Is there a significant relationship between hemispheric preferences and performance of upper-intermediate and advanced language learners on different vocabulary test formats?
2. Is there a significant difference between the means of whole brain (bilateral), left brain, and right brain groups, with respect to performance of upper-intermediate and advanced language learners on different vocabulary test formats?

IV. METHODOLOGY

A. *Participants*

The participants of the present study were 53 Iranian English learners chosen out of 79 randomly selected English learners from two language institutes in Sari (Iran) based on their PET language proficiency test scores. The Preliminary English Test (PET) is an international exam sanctioning a certain level of mastery of the English language. All of the participants enjoyed upper-intermediate and advanced English proficiency and were familiar with the four test formats which were the concern of this research. Out of the 53 participants, 29 were female and 24 were male. Their age ranged from 16 to 36. Incidentally, all participants were rewarded for their cooperation. It must be noted that the dominant method of assessment in those two language institutes was multiple choice format. Assuredly, the subjects of the study were already familiar with this format. To ensure the subjects' capability to cope with translation and picture identification test formats, the researchers elaborated on the new formats prior to the exam session.

B. *Instrumentation*

In the current research, two instruments were used to collect data: the Style of Learning and Thinking (SOLAT) questionnaire (Torrance, McCarthy & Kolesinski, 1988) and a set of vocabulary test items. SOLAT is a research tool that is mainly used for determining a subject's brain hemisphere preference and learning style (Torrance, McCarthy & Kolesinski, 1988).

SOLAT was employed to determine participants' dominance in either the left cerebral hemisphere, right cerebral hemisphere or the integration of both. SOLAT is composed of 28 items. There are two parts for every item. Further, there are four different ways to answer. Examinees can either mark the first part if it defines them, mark the second part if it defines them, mark both parts if they feel that both describe them, or mark neither statement. In the questionnaire, one part describes an approach which is the characteristic for the left mode of thinking and the other part for the right mode of thinking. Marking both or any parts is have to do with the integrated thinking.

The second instrument was a vocabulary test with eighty items with four different formats including synonyms, antonyms, translation, and picture identification tests. The synonyms vocabulary test consisted of 20 multiple-choice items (Cronbach's alpha = 0.707). Examinees were instructed to circle the word that was most nearly the same in meaning to the target word. The antonyms vocabulary test (Cronbach's alpha = 0.741) was the same as the synonyms vocabulary test, except that the examinees were asked to circle the word most nearly opposite in meaning to the target word. For both tests, the score was the total number of items answered correctly.

The third test consisted of 20 word-for-word-translation items (Cronbach's alpha = 0.695). The examinees were given a target word, and asked to translate that word into Persian. Answers were scored either correct (score = 1) or incorrect (score = 0). Total score was the sum of the item scores.

The picture identification test consisted of 20 items (Cronbach's alpha = 0.667) and the examinees were asked to circle the word that identified and described the image. Responses were scored either correct (score = 1) or incorrect (score = 0). Total score was the sum of the item scores.

C. Procedure

In order to have a homogeneous group of 53 subjects, The Preliminary English Test (PET) was administered to 79 English language learners. Only those learners whose scores were one standard deviation above and below the mean of the normal distribution curve were selected for this research.

The SOLAT questionnaire was translated into Persian and reviewed by two experts in order to check the clarity of the sentences. The questionnaire, then, was back-translated into English. The comparison of both translated texts indicated a close resemblance in word choice and structure.

The examinees were required to fill in the questionnaire first. Then, they were asked to answer the vocabulary test which took 90 minutes.

V. RESULTS

For the analysis of the numerical data, the SPSS software was used. Four one-way ANOVAs were carried out on the scores of each test, with the three levels of Style of Learning and Thinking questionnaire (right-, integrated-, and left thinking) as independent factors. Games-Howell was applied as the post hoc test to determine the source of differences when significant ($P < 0.05$) main effects occurred since the test of homogeneity of variances indicated unequal variances.

TABLE 1
DESCRIPTIVE STATISTICS FOR STYLE OF LEARNING AND THINKING MODES

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	left	17	32.1	32.1	32.1
	mixed	10	18.9	18.9	50.9
	right	26	49.1	49.1	100.0
	Total	53	100.0	100.0	

Table 1 shows that right-thinkers outnumbered integrated and left-thinkers.

TABLE 2
ONE-WAY ANOVA FOR THE SYNONYM TEST

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	202.700	2	101.350	39.284	.000
Within Groups	128.998	50	2.580		
Total	331.698	52			

The ANOVA shows that there was a significant difference among the three groups in terms of their overall performance on the synonym test: $F(2, 27) = 39.284, P < 0.001$

TABLE 3
MULTIPLE COMPARISONS: THE RESULTS OF GAMES-HOWELL POST HOC TEST FOR THE SYNONYM TEST

(I) left_mixed _right	(J) left_mixed _right	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
left	mixed	2.14706	.91737	.092	-.3328	4.6269
	right	4.41629*	.37398	.000	3.5020	5.3306
mixed	left	-2.14706	.91737	.092	-4.6269	.3328
	right	2.26923	.90583	.072	-.1969	4.7354
right	left	-4.41629*	.37398	.000	-5.3306	-3.5020
	mixed	-2.26923	.90583	.072	-4.7354	.1969

*. The mean difference is significant at the 0.05 level.

Games-Howell test was used to determine the source of differences. As Table 3 presents, there is a significant difference between right and left group in regard to the synonym test as the *P* value is small and less than 0.05. There is no significant difference between right and mixed group, as there is no difference between left and mixed group.

TABLE 4
ONE-WAY ANOVA FOR THE ANTONYM TEST

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	161.900	2	80.950	29.624	.000
Within Groups	136.629	50	2.733		
Total	298.528	52			

The results from One-way ANOVA revealed that learners' performance differed significantly across the three groups: $F(2, 27) = 29.624, P < 0.001$

TABLE 5
MULTIPLE COMPARISONS: THE RESULTS OF GAMES-HOWELL POST HOC TEST FOR THE ANTONYM TEST

(I) left_mixed _right	(J) left_mixed _right	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
left	mixed	1.75294	.93668	.192	-.7693	4.2752
	right	3.92986*	.39652	.000	2.9586	4.9011
mixed	left	-1.75294	.93668	.192	-4.2752	.7693
	right	2.17692	.91885	.089	-.3238	4.6776
right	left	-3.92986*	.39652	.000	-4.9011	-2.9586
	mixed	-2.17692	.91885	.089	-4.6776	.3238

*. The mean difference is significant at the 0.05 level.

The post hoc test, as Table 5 shows, indicated that there is a significant difference between right and left group regarding the antonym test as the *P* value is small and less than 0.05. Further, there is no significant difference between right and mixed group. There is no significant difference between left and mixed group as well.

TABLE 6
ONE-WAY ANOVA FOR THE TRANSLATION TEST

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	175.583	2	87.792	31.490	.000
Within Groups	139.398	50	2.788		
Total	314.981	52			

The results from One-way ANOVA disclosed that learners' performance differed significantly across the left, right, and mixed groups: $F(2, 27) = 31.490, P < 0.001$

TABLE 7
MULTIPLE COMPARISONS: THE RESULTS OF GAMES-HOWELL POST HOC TEST FOR THE TRANSLATION TEST

(I) left_mixed _right	(J) left_mixed _right	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
left	mixed	1.75294	.94459	.197	-.7983	4.3042
	right	4.08371*	.39260	.000	3.1242	5.0432
mixed	left	-1.75294	.94459	.197	-4.3042	.7983
	right	2.33077	.93315	.072	-.2067	4.8682
right	left	-4.08371*	.39260	.000	-5.0432	-3.1242
	mixed	-2.33077	.93315	.072	-4.8682	.2067

*. The mean difference is significant at the 0.05 level.

As indicated in Table 7, Games-Howell test showed that there is a significant difference between right and left group in regard to the translation test. The difference between right and mixed groups is not statistically significant. The same is true for left and mixed group, statistically speaking.

TABLE 8
ONE-WAY ANOVA FOR THE IMAGE TEST

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	212.345	2	106.172	41.269	.000
Within Groups	128.636	50	2.573		
Total	340.981	52			

The results from One-way ANOVA (Table 8) disclosed that performance differed significantly across the three sub-groups of brain dominance: $F(2, 27) = 41.269, P < 0.001$

TABLE 9
MULTIPLE COMPARISONS: THE RESULTS OF GAMES-HOWELL POST HOC TEST FOR THE IMAGE TEST

(I) left_mixed _right	(J) left_mixed _right	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
left	mixed	-2.34706	.95453	.075	-4.9268	.2327
	right	-4.53167*	.36737	.000	-5.4346	-3.6288
mixed	left	2.34706	.95453	.075	-.2327	4.9268
	right	-2.18462	.93300	.095	-4.7402	.3710
right	left	4.53167*	.36737	.000	3.6288	5.4346
	mixed	2.18462	.93300	.095	-.3710	4.7402

*. The mean difference is significant at the 0.05 level.

According to Table 9, there is a significant difference between the group consisted of right-thinkers and the one consisted of left-thinkers. However, there is no significant difference between right and mixed group, as there is no difference between left and mixed group.

VI. DISCUSSION

The specific aim of this study was to investigate the possible relationship between brain left-right thinking style and test format. Based on the above outcomes, brain dominance is an important factor in the performance of test-takers when taking different vocabulary test formats. Right-thinking test-takers outperformed integrated and left-thinking test-takers on the picture identification test. Left-thinking test-takers, on the other hand, outperformed the other respondents on multiple-choice synonyms, multiple-choice antonyms, and word-for-word translation. It is perfectly obvious that the format of tests in relation to the cognitive style of a person influences her/his performance. In other words, success on a vocabulary test is not solely a function of second language proficiency. Brain dominance as a non-linguistic factor influences the ability to answer vocabulary tests of different formats. The concept of brain dominance as a cognitive style allows researchers to give a concise description of individuals and describe their differences in learning and thinking style.

Given the already mentioned references, it must be further argued that the success of right-thinkers on picture identification test can be due to the fact the right hemisphere processes a whole cluster of stimuli at the same time. In fact, the nonverbal-holistic mode of this hemisphere guided the interpretation of the picture and, then, the selection of the correct word through grasping the visual/spatial relationships and, as a result, putting together the grasped stimuli to

understand the whole text. The features of right hemisphere lend themselves to simultaneous and global aspects of macrostructure processing, asserts Bloom (1994). On the contrary, the left hemisphere breaks down information into components in a linear and sequential manner. Left-brainers as detail-oriented thinkers approach the world by looking at the parts in the big picture. They prefer multiple choice items since these items require them to think of one thing at a time and select only one choice. For these reasons, left-brained subjects answered synonym and antonym multiple-choice questions successfully. Ylvisaker, Hibbard, and Feeney (2006) mention that word retrieval and word finding are particularly associated with the 'language zones' of the left hemisphere and with other parts of the frontal lobes that are associated with retrieval generally. The left-brainers performed better with the word-for-word translation test than the right-brainers. Here again the subjects had to work out a couple of first language words as choices, not on paper but in their minds, while translating the target word. And this stands similar to the mental processes put to work in synonym and antonym multiple choice tests. Word-for-word translation, furthermore, requires morpho-syntactic processing of the source lexicon and, thus, test-takers need to focus on the microstructures (i.e. morpho-syntactic and lexical elements) to perform sequential information processing, thereby counting upon the left hemisphere. Based on Bloom (1994), left hemisphere strategies are likely better suited to the successive and analytic aspects of microstructure processing of text. Normally, the left part of the brain is involved when it comes to word-for-word translation and that is why the left-brainers were more successful in taking the translation test than the right-brainers.

As this research brings to the fore, each testing tool may need different cognitive processes and, thus, it is very important to have several assessment formats of the same construct in order to delve into the nature of the construct besides the necessary cognitive processes involved. Identification of these processes can provide hints on fully grasping the construct, highlight Bowles and Salthouse (2008). Since test format can be in favor of either right or left brainers, the test makers should take into consideration multiple formats of vocabulary tests and develop tests that contain a balanced number of items for the left-brained and right-brained students. In order to do this, the tester must lessen the number of the multiple choice items because they cater only to the left-brained students and include enough items for the right-brained students such as open-ended questions, questions which call for interpretation of images and body language, object manipulation, intuitive problem-solving, expression of feelings and the like.

Indubitably, test format affects test performance (Shohamy, 1984; Wolf, 1993; Kobayashi, 2002; Bowles & Salthouse, 2008; In'nami & Koizumi, 2009). Bachman and Palmer (1996, p. 46) are of the opinion that "the characteristics of the tasks used are always likely to affect test scores to some degree, so that there is virtually no test that yields only information about the ability we want to measure". Hence, task characteristics should be taken seriously and controlled for their effects cannot be cancelled. The test should not disadvantage any examinee and, in consequence, be free from any sort of bias in order to be fair.

Theories from the field of educational psychology can be resourceful in developing language tests. It is a well-grounded discovery that learning from a text combined with images is more beneficial than learning just from a simple text. For instance, the dual coding theory elaborated by Paivio (1986) suggests that the human minds' own two independent channels for sorting out verbal and visual information. Understanding and preserving of the information are more likely to be enhanced when the two channels interact and, thus, ease the integration of both sorts of information into a coherent mental representation. In this study, right-thinkers outnumbered integrated and left-thinkers. However, in education left thinking is mostly considered as a norm. It is time to include more images in teaching and testing methods in order to serve the pedagogical needs of visual-spatial thinkers. Pictures can be added to the test items to represent real life situations and reduce the cognitive load of the test task and, as a result, improve item processing. Based on a study by Saß, Wittwer, Senkbeil and Köller (2012), pictures in the stem of test items support the retrieval and application of relevant knowledge and pictures in the answer options increase the correctness in responding. Crisp and Sweiry (2006) highlight that particular features of a query such as diagrams or pictures are especially distinct and can come to regulate the mental representation that is shaped. In consequence, small changes to these salient features of a question may influence how the question is understood. It is believed that using images as a response format has implications for the validity of test items. Indeed, assessment with images can influence item difficulty and, to a lesser extent, item discrimination (Vorstenbosch, Klaassen, Kooloos, Bolhuis, & laan, 2013). Kordjazi (2012) opines that colorful and lively images enrich the learning processes of learners and make the task appear authentic. Moreover, images are totally believed to have a motivational role in the context of instructional texts (Peeck, 1993) and this, surely, can apply equally to exam questions. It is crucial for scholars to consider the influence on motivation, confidence, and self-esteem if they apply inappropriate instruments to test students' knowledge. It is necessary to look for appropriate test formats and to get the best reply from students (Gipps, 1994; Danili & Reid, 2006).

Messick (1984) reminds that a learner's competence may not be disclosed in either classroom or test performance due to personal or incidental elements that impact behavior. Thus, following the leading research on learning theories in addition to understanding the psychological processes that are responsible for learning can provide constructing information to develop tests that cater for language students with different learning styles. Bahar (1999) reports that divergent students perform better in all cases compared to convergent students. The reason is not unrelated to the test format. To Bahar (1999), when a person is thinking over at the relationship between students' performance in any given subject and their thinking styles, the type of testing technique used should be mentioned owing to the fact that a particular type of assessment may favor a particular type of cognitive style. Cognitive styles, indubitably, impact the

personality of the students, and influence the psychological behaviors that show how students apprehend, interpret and react to the pedagogic situation (Fatt, 2000).

For the language teacher, the findings of the current research may direct them to consider deeply and critically those parts of the syllabi that are in need of enrichment or revision. Moreover, the findings can also guide them to improve their teaching styles to suit to the learners' learning and thinking styles and branch out vocabulary-related activities as well as methods of teaching new words to guarantee the learning success. Hemisphericity-balanced people, says Leaver (1986), perform well as learners of foreign languages. So, developing both hemispheres of the brain through diversified teaching activities and experiences should not be given a miss in the class for "it is now believed that the dominance of one hemisphere over another is essentially the result of learning and mental exercise, not an inherent quality" (Munzert, 1980, p. 42).

In brief, assessment is not a simple process. So, it is well-recommended to use as wide as possible a combinations of test types and assessment methods in order to do justice to language learners (Brown & Hudson, 1998). Critical language testing, Shohamy (2001) says, is in favor of the use of multiple testing methods for assessing a person's knowledge because it is humane. Testing practices should support human needs rather than frustrate them (Danili & Reid, 2006). Awareness-raising is a necessity. As Shohamy (2000) aptly puts it, research in the field of language teaching must warn teachers as testers of the problematic areas for examinees so that tests are revised for the sake of test fairness.

Overall, there are many ethical issues in regard to test formats that need to be taken seriously and critically to ensure an advantageous impact on teaching and testing practices. It must also be borne in mind that assessment may unmindfully comply with a distinct set of personal traits in the individual. Therefore, test results can mirror possession of such traits in addition to capabilities in the individual, assert Danili and Reid (2006).

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