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On the Role of Willingness to Communicate and Critical Thinking in Receptive/Productive Lexical Knowledge of Gifted and Non-Gifted EFL Learners

Kamal Heidari *

Naser Rashidi **

Abstract

This study investigated the receptive and productive vocabulary command of learners based on their willingness to communicate (WTC) and critical thinking skill. The study also aimed to compare gifted and non-gifted learners in terms of the above-mentioned variables. To this end, 112 gifted and non-gifted Iranian EFL learners were picked out and given four instruments (WTC questionnaire, critical thinking skill test, receptive, and productive vocabulary tests). Having analyzed data through two-way ANOVA and independent samples t-tests, the study revealed that, first, no significant difference was found between high and low WTC learners and also high and low critical thinkers in their receptive lexical command; and second, high and low WTC learners, high and low critical thinkers, and also gifted and non-gifted learners showed significant differences in their productive lexical command. Thus, while for receptive vocabulary knowledge, giftedness is a more influential factor than WTC and critical thinking, for productive vocabulary knowledge, WTC, critical thinking, and giftedness are all influential. The pertinent theoretical and practical implications of the study will also be explicated.

Keywords: Receptive/Productive vocabulary, Giftedness, Critical Thinking, Willingness to communicate, EFL students

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* Ph.D. Candidate, Shiraz University- Email: k_86_tefl@yahoo.com

** Professor, Shiraz University- Email: nrashidi@rose.shirazu.ac.ir, Corresponding author

Writing and speaking about vocabulary is both a cliché in that they have extensively been addressed in many studies, as well as a must in that it has been admitted as the key to language learning (Kirmizi & Komec, 2019). Given this importance, several research studies in the related literature have dealt with vocabulary. Despite the multitude of studies, research on vocabulary is still open owing to its multi-dimensional nature (Kirmizi & Komec, 2019; Pignot-Shahov, 2012). Receptive and productive vocabulary is among the areas which are still in its infancy as there are many question marks about these two types of vocabulary knowledge (Kirmizi & Komec, 2019; Min, 2008). One of these open-to-investigation areas associated with receptive and productive vocabulary is the contribution of WTC and critical thinking in receptive/productive vocabulary knowledge of gifted and non-gifted learners (Fahim & Komejani, 2011; Yashima, 2002).

WTC, as one constituent of individual differences, is commonly defined as the degree of a learner's inclination to be engaged in a conversational setting (Syed & Kuzborska, 2018). In the second and foreign language domains, the idea underlying WTC is that students with higher levels of WTC show higher levels of tendencies to be engaged in communication settings (Cao & Philp, 2006). To communicate, vocabulary (both receptive and productive) is of great importance in that without adequate receptive/productive vocabulary; it would be a daunting task to convey intended meanings.

On the other hand, as with critical thinking, Bassham et al. (2002) defined it as cognitive abilities that help to overcome challenging situations. In other words, critical thinking refers to the ability to judge based on adequate reasons and documents (Moore & Parker, 2009). Additionally, Tirri (2017) rightly mentioned giftedness as a largely taken-for-granted term in educational contexts. Very few studies, if any, have ever addressed giftedness concerning vocabulary (Raithby, 2014).

Schmitt (2014) highlighted the importance of undertaking studies to ascertain the factors that might impact the vocabulary learning process in a

second or foreign language and called for further studies in this respect. To address such a call, the present study looked into the contribution of WTC, critical thinking, and giftedness to vocabulary learning. In other words, the research questions put forward in this study were as follows:

RQ₁: Do giftedness and WTC make any significant difference in the receptive lexical knowledge performance of EFL learners?

RQ₂: Do giftedness and WTC make any significant difference in the productive lexical knowledge performance of EFL learners?

RQ₃: Do giftedness and critical thinking make any significant difference in the receptive lexical knowledge performance of EFL learners?

RQ₄: Do giftedness and critical thinking make any significant difference in the productive lexical knowledge performance of EFL learners?

Literature Review

The point that having adequate command of lexical knowledge plays a core role in mastering a language and also having an influence on various aspects of the language learning process has unanimously been approved by researchers (Dabbagh & Janebi Enayat, 2017; Gonzalez-Fernandez & Schmitt, 2019). Scholars also admit that vocabulary comprises various sub-aspects, and that being aware of these different sub-categories of lexical knowledge might considerably assist teachers and language practitioners to adopt an encompassing approach for vocabulary development of their learners both quantitatively and qualitatively (Schmitt, 2014; Zhong, 2012). One of these subcategories is called receptive/productive vocabulary command, which is among the main aspects of vocabulary to study. Receptive/productive vocabulary is one aspect of language that has a significant role in language learning (Yu, 2010). Receptive vocabulary is defined as vocabulary items that can be perceived and recognized but cannot be produced (Schmitt & Meara, 1997). Productive vocabulary, in contrast, means those lexical items that can be not only recognized but also produced in varying contexts (Laufer, 1998).

Receptive vocabulary has been confirmed to be larger than productive vocabulary (Laufer & Paribakht, 1998) and also, receptive vocabulary has been reported to be typically acquired before productive vocabulary (Schmitt, 2010).

Regarding the relationship of critical thinking and vocabulary, in general, the literature shows positive effects. Mirzai (2008) and Farahanynia and Nasiri (2016), for example, reported that high critical thinking learners outperformed low critical thinking ones in lexical inference. Fahim and Komijani (2011) also inquired into the contribution of critical thinking to vocabulary and finally reported a significant correlation between Persian learners' lexical command and their critical thinking. Also, Khabiri and Pakzad (2012) examined the impact of critical thinking instruction on Iranian EFL learners' vocabulary retention. Their study uncovered that instructing critical thinking significantly improves the vocabulary retention of EFL learners. Additionally, Behar-Horenstein and Niu (2011) stated that there is now a consensus on the importance of critical thinking skills and also the necessity of developing these skills in educational contexts as these skills help learners to actively and consciously engage in classroom procedures. Furthermore, critical thinking assists them to reflect on the arguments posed by others, solve controversies, and make reasonable solutions to complicated issues.

As with WTC, as another variable of the study, it is well established that the propensity to communicate is remarkably dynamic (Cao & Philp, 2006), and individuals vary from one another in the extent of their predilection to initiate and be involved in communicating events (Yu, 2009). WTC is one component of individual differences and is often defined as the degree to which a learner is inclined to be engaged in a communicative setting (Kim, 2004; MacIntyre, Clement, Dornyei, & Noels, 1998). Many studies in the literature have addressed WTC from different angles (Syed & Kuzborska, 2018). To make them more organized, Suksawas (2011) categorized them into two main groups. The first group contains studies that describe WTC to

be personality dependent. It means that depending on students' personality features; their WTC level is also different. The second group includes studies that describe WTC to be context-dependent. These studies, in fact, state that one single student might show different levels of WTC in different contexts. There are also some experimental studies on the WTC in the related literature. MacIntyre et al., (1998), as an example, looked into WTC in terms of affective factors. Kim (2004) examined WTC Pyramid model in terms of its reliability and validity. Yashima (2002) also studied WTC among EFL learners. Despite these studies, one gap in the literature is the lack of adequate studies concerning whether or not WTC can contribute to the process of learning vocabulary items both receptively and productively. This research study, then, aimed to address this gap as part of its purpose.

Lastly, giftedness is also an important issue in education. Gifted and talented education dates back hundreds or even thousands of years when Plato asked for specific educational programs for intellectually and cognitively able students (Sternberg, 2017). Furthermore, during the Renaissance, people showing high skill and talent in different aspects such as art, literature, architecture, etc. received different forms of support by governments and society. Reviewing the pertinent literature, different researchers and experts have provided various definitions for giftedness. However, what is common in all these definitions is that gifted students are those students that have higher than average potential in intellectual, creative, social, or physical domains (Gagne, 2004). Gagne further maintains that talented students are those ones that have higher than average skills in one or more human performance.

In light of giftedness and language learning, very few studies have looked into the performance of gifted and non-gifted learners on language learning especially vocabulary (Faramarzi, Elekaei, & Heidari Tabrizi, 2016; Sheikhy Behdani, & Rashtchi, 2017). Knowing about whether or not gifted and non-gifted learners differ in terms of language related factors such as vocabulary can keep gifted learners challenged and motivated as appropriate techniques

and vocabulary exercises could be used for each group. Further, it can help them to maintain and foster their creativity by providing them with appropriate instruction, facilities, and resources.

Method

Design of Study

This study was of quantitative descriptive pre-experimental between-group research design type. In particular, first of all, the study was quantitative and descriptive as it dealt with numerical data as well as statistical analysis and interpretation. Further, it was descriptive because it aimed to examine the current status of a phenomenon (receptive/productive lexical knowledge). Second, the study was pre-experimental because the study lacked randomization, treatment, and pre-test factors. From among different types of pre-experimental research types, this study was of one-shot intact class design in that the researchers gathered data from pre-existing classes without imposing any treatment. Third, since the study contained different groups of participants whose performances were to be compared, it was of between-group research design.

Participants

The study participants were 112 male (51) and female (61) Iranian EFL learners selected based on convenience sampling procedure. They were both gifted (53) and non-gifted (59) learners. Their recognition of giftedness and non-giftedness was based on their school criteria. To be more exact, prior to the beginning of an academic year, a test is administered by the education ministry to select gifted learners for gifted schools. The test comprises mathematics, science, foreign languages (specifically English language), and intelligence questions. Since the test is of norm-referenced type, the performance of the test candidates is compared with one another and those with the best performance are selected as gifted and others as non-gifted

students. They ranged from 15 to 18 years in age and were studying at four schools (two gifted and two non-gifted schools) in Shahrekord, Iran. The participants were distinguished in terms of their WTC features and critical thinking skill via relevant instruments. Regarding ethical issues, before starting the study, the participants were notified briefly as to the goals of the study and their informed consent was received. Additionally, this notification could help them to reduce their anxiety and to encourage them not to cheat. However, no detailed information was given to the participants to inhibit data pollution concepts such as hawthorn and halo effects. Table 1 represents the participants' information vividly.

Table 1.
Number of Participants in Each Group

	Number	High Critical	Low Critical	High WTC	Low WTC	Male Number	Female Number
Gifted Learners	53	26	27	25	28	24	29
Non- Gifted Learners	59	28	31	27	32	27	32

Instruments

To gather data, four research instruments were used. McCroskey's (1992) WTC questionnaire was the first instrument to measure the level of learners' WTC (Appendix A). The questionnaire contains 20 items: 8 are fillers and 12 are the main items that describe different communicative settings to the participants and they are asked to specify their willingness to be involved in those communicate contexts by a number from one to one hundred. McCroskey (1992) and McCroskey and Richmond (1987) asserted that its content is highly valid. McCroskey (1992) also stated that for the WTC questionnaire, exploratory factor analysis was run to make sure about its construct validity. As McCroskey and Richmond (1987) depicted, the total

score fell in the range of 0 and 100. Since this test is a commonly-used scale and has repeatedly been confirmed in terms of its reliability and validity, no reliability and validity testing was conducted for it in the present study. The results of this questionnaire revealed that 52 of the participants were high WTC, and 60 ones were low WTC learners.

The second research instrument was the Cornell Critical Thinking Skills Test (CCTST) developed by Ennis, Millman, and Tomko (2005) that was used to ascertain the critical thinking level of the participants (Appendix B). The CCTST consists of 52 items in multiple-choice formats. Every item includes three choices. The test comprises four main parts: Induction, Credibility, Deduction, and Assumption Identification. Based on the test instructions, those whose total score was over 60 were recognized as high critical thinkers and those whose total score was lower than 60 were identified as low critical thinkers. The internal consistency estimates for the test range from .67 to .90 and its split-half reliability ranges from .55 to .76 (Ennis, Millman & Tomko, 2005). Additionally, Behar-Horenstein and Niu (2011) reported that "measures of validity were computed in standard conditions. Correlations between Level Z and other measures of critical thinking range about .50. The CCTST was found to be predictive of graduate school performance" (P. 27). Finally, different studies such as Ennis (1993) and French, et al., (2012) also checked the test construct validity by running and investigating a set of correlations and approved its construct validity. In this study, the Cronbach alpha index estimated for this test was .70. Additionally, the content and face validity of the test was also confirmed by some experts.

The third research tool was a test to assess receptive lexical knowledge. It was constructed by the researchers and contained 50 items (Appendix C). This number of items was decided by consulting some experts in testing and vocabulary, considering factors such as participants' proficiency level, available time, and reviewing the related literature. In the items, the English lexical items were provided, and the learners should remember their native

language (Persian) equivalents. As with the fourth research instrument, the same 50 lexical items of the receptive test were used. However, this time, it included Persian language words, and the learners needed to produce the English equivalents (Appendix D). This procedure is in line with the operationalized definition of receptive and productive lexical knowledge in the literature (Nation, 1990; Read, 2000). The selected words belonged to Coxhead's (2000) Academic Word List. Besides, the words were double-checked to be at a difficulty level in accordance with the participants' level of proficiency (by checking the participants' textbooks and comparing their vocabulary with the selected list for the research purpose). As with their reliability, the tests were administered to another equivalent group of learners, and then Cronbach alpha was estimated. The obtained indices for reliability were .74 and .71, respectively, which are acceptable values of reliability. Finally, regarding their validity, the face and content validity were confirmed by giving the tests to some testing and assessment experts and applying their comments to make the tests valid. Also the construct validity of the word list tests was confirmed through content analysis of the tests and making sure about its suitability for the intended purpose (Brown, 2000).

Procedure

Four sessions were needed to collect data. In the first session, the WTC questionnaire was distributed among the students to respond to its items. No time limit was allocated for them to respond to the questionnaire items. Then, in the second session, they took the CCTST test (in about 60 minutes) whose purpose was to ascertain their critical thinking level. Having specified their WTC degree and critical thinking skill and divided them into two distinct groups of high and low WTC and also high and low critical thinkers, in the third session, the researchers distributed the receptive vocabulary test to the groups. The allocated time for doing the test was 45 minutes. Then, in the

fourth session, with a 12-day time interval, the participants took the productive vocabulary test in 45 minutes.

Data Analysis

The Statistical Package for Social Sciences (SPSS) and specifically descriptive statistics along with two-way ANOVA, and independent samples t-tests (along with their sub-tests such as Levene's test, Wilks' Lambda), were employed to analyze gleaned data. To put it more clearly, before dealing with the data analysis related to the afore-mentioned questions of the study, some primary statistics including a test of normality, error checking, missing data, and descriptive statistics were used to know about the nature of data and to select the best statistical methods and interpreting the obtained results appropriately. Having checked these preliminary tests, the main statistical tests were run. Since in the posited research questions the giftedness, WTC, and critical thinking independent variables were compared in terms of receptive and productive lexical knowledge, two-way ANOVAs along with independent samples t-tests and regression were run in that these two statistical methods purpose is comparing the means of two or more groups.

Results and Discussion

Results

The first research question addressed in the study was whether or not giftedness and WTC make any significant difference in the receptive lexical knowledge performance of EFL learners. To respond to the question, a two-way ANOVA, and an independent-samples t-test were run. Table 2 shows the descriptive statistics pertinent to the variables. The point that is apparent in this table is the considerable difference in the Mean values of gifted and non-gifted learners.

Table 2.

Descriptive Statistics of WTC, Giftedness, & Receptive Vocabulary

Giftedness	WTC	Mean	Std. Deviation	N
Gifted	High WTC	42.80	5.72	25
	Low WTC	42.32	5.90	28
	Total	42.54	5.76	53
Non-gifted	High WTC	32.81	7.61	27
	Low WTC	34.59	7.01	32
	Total	33.77	7.28	59
Total	High WTC	37.61	8.38	52
	Low WTC	38.20	7.54	60
	Total	37.92	7.91	112

Table 3 is the possibility of any interaction effect of the independent variables (Giftedness and WTC). As the table shows, the interaction effect is not significant as the P-value is greater than 0.05 (Sig. =0.37). This, in turn, implies that there was no significant difference in the effect of giftedness on receptive lexical knowledge for high and low WTC learners. The table also shows that there was a significant main effect for giftedness (Sig. = 0.000); but not for WTC (Sig. = 0.607) as far as receptive lexical knowledge is concerned. This, in turn, implies that high and low WTC learners did not differ in terms of their receptive lexical knowledge but there was a difference in the receptive lexical knowledge of gifted and non-gifted learners.

Table 3.

WTC and Giftedness on Receptive Vocab

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2195.529 ^a	3	731.843	16.612	.000	.316
Intercept	161563.786	1	161563.786	3667.351	.000	.971
Giftedness	2178.768	1	2178.768	49.456	.000	.314

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
WTC	11.743	1	11.743	.267	.607	.002
Giftedness * WTC	35.391	1	35.391	.803	.372	.007
Error	4757.900	108	44.055			
Total	168074.000	112				
Corrected Total	6953.429	111				

a. R Squared = .316 (Adjusted R Squared = .297)

Now, to see whether gifted or non-gifted learners had a better performance on the receptive lexical knowledge test, the results of the independent-samples t-test are presented. According to Table 4, there was a significant difference between the gifted and non-gifted learners in the receptive lexical knowledge test (Sig. =0.00, t = 7.00).

Table 4.
Independent Samples T-test for Gifted and Non-Gifted Learners in Receptive Test

	Levene's Test for Equality of Variances	t-test for Equality of Means								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper	
Receptive Test	Equal variances assumed	5.70	.01	7.00	110	.00	8.76	1.25	6.28	11.24
	Equal variances not assumed			7.0	108	.00	8.76	1.23	6.31	11.21

In a similar vein, Table 5 reveals that the mean performance of gifted learners ($M = 42.54$) was significantly higher than that of non-gifted learners ($M = 33.77$).

Table 5.
Descriptive Statistics for Giftedness and Receptive Test

	Giftedness	N	Mean	Std. Deviation	Std. Error
					Mean
Receptive Test	Gifted	53	42.54	5.76	.79
	Non-gifted	59	33.77	7.28	.94

The second research question was whether or not giftedness and WTC make any significant difference in the productive lexical knowledge performance of EFL learners. In order to reply to the question, a two-way ANOVA and an independent samples t-test were run. As with the Two-Way ANOVA results, Table 6 presents the pertinent descriptive statistics. Like the receptive test, the mean values of gifted and non-gifted learners are considerably different.

Table 6.
Descriptive Statistics of WTC & Giftedness on Productive vocab

Giftedness	WTC	Mean	Std. Deviation	N
Gifted	High WTC	42.44	3.83	25
	Low WTC	38.14	6.85	28
	Total	40.16	5.98	53
Non-gifted	High WTC	35.70	6.20	27
	Low WTC	32.34	6.51	32
	Total	33.88	6.54	59
Total	High WTC	38.94	6.16	52
	Low WTC	35.05	7.23	60
	Total	36.85	7.00	112

Table 7 implies that since the P value was greater than 0.05 (Sig. =0.68), there was no significant difference in the interaction effect of giftedness and WTC on productive lexical knowledge. Additionally, there was a significant main effect for both giftedness (Sig. = 0.000) and WTC (Sig. = 0.001) as far as productive lexical knowledge was concerned. This, in turn, implies that high and low WTC learners were different in terms of their productive lexical knowledge, and also there was a difference in the productive lexical knowledge of gifted and non-gifted learners.

Table 7.

Giftedness & WTC on Productive Vocabulary

Source	Type III Sum of				Sig.	Partial Eta Squared
	Squares	df	Mean Square	F		
Corrected Model	1513.2	3	504.4	13.8	.00	.27
Intercept	153408.1	1	153408.1	4206.7	.00	.97
Giftedness	1091.2	1	1091.2	29.9	.00	.21
WTC	407.1	1	407.1	11.1	.001	.09
Giftedness * WTC	6.0	1	6.0	.16	.68	.00
Error	3938.4	108	36.4			
Total	157598.0	112				
Corrected Total	5451.7	111				

Now, to check the differences between gifted and non-gifted learners and also high and low WTC learners in terms of productive lexical knowledge, two separate independent samples tests were run. According to Table 8 and 9, there was a significant difference between the gifted and non-gifted learners in the productive lexical knowledge test (Sig. =0.00, $t = 5.28$) and it was the gifted ones who showed better performance in the productive lexical knowledge test ($M = 40.16$) compared to non-gifted ones ($M = 33.88$).

Table 8.
Independent Samples T-test of Giftedness on Productive Vocabulary

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Productive Test	Equal variances assumed	1.8	.17	5.2	110	.00	6.28	1.18	3.93	8.64
	Equal variances not assumed			5.3	109.9	.00	6.28	1.18	3.94	8.63

Table 9.
Group Statistics of Giftedness and Productive Vocabulary

		Giftedness	N	Mean	Std. Deviation	Std. Error Mean
Productive Test	Gifted		53	40.16	5.98	.82
	Non-gifted		59	33.88	6.54	.85

Likewise, as Tables 10 and 11 show, there was a significant difference between the high and low WTC learners in the productive lexical knowledge test (Sig. =0.03, t = 3.03) and it was the high WTC ones who showed better performance in the productive lexical knowledge test (M = 38.94) compared to low WTC ones (M = 35.05).

Table 10.
Independent Samples T-test of WTC and Productive Vocabulary

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Productive Test	Equal variances assumed	2.6	.109	3.03	110	.003	3.8	1.2	1.3	6.4
	Equal variances not assumed			3.07	109	.003	3.8	1.2	1.3	6.4

Table 11.
Group Statistics of WTC and Productive Vocabulary

		WTC	N	Mean	Std. Deviation	Std. Error Mean
Productive Test	High WTC		52	38.9	6.1	.8
	Low WTC		60	35.0	7.2	.9

Finally, in order to see from among the two independent variables (Giftedness and WTC) which one was a better predictor for the learners' productive lexical knowledge test, a regression test was run. Table 12 clearly indicates that it was the giftedness that was a better predictor for productive lexical knowledge as it explained 44 percent of productive lexical knowledge performance (Beta = -.44) compared to 27 percent of WTC (Beta = -.27).

Table 12.
Coefficients Regression Results of Giftedness and WTC on Productive Vocabulary

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B			Correlations	Collinearity Statistics		
	B	Std. Error				Lower Bound	Upper Bound	Zero-order		Partial	Tolerance	VIF
(Constant)	52.2	2.5		20.7	.00	47.2	57.2					
Giftedness	-6.2	1.1	-.44	-5.4	.00	-8.4	-3.9	-.4	-.4	-.4	1.0	1.0
WTC	-3.8	1.1	-.27	-3.3	.00	-6.0	-1.5	-.2	-.3	-.2	1.0	1.0

The third question of the study deals with whether or not giftedness and critical thinking make any significant difference in the receptive lexical knowledge performance of EFL learners? Table 13 presents the descriptive statistics of the variables according to which the mean values of gifted and non-gifted learners are considerably different (42.54 and 33.77 respectively).

Table 13.
Descriptive Statistics of Giftedness and CT

Giftedness	Critical level	Mean	Std. Deviation	N
Gifted	High Critical	44.92	3.79	26
	Low Critical	40.25	6.44	27
	Total	42.54	5.76	53
Non-gifted	High Critical	32.42	7.68	28
	Low Critical	35.00	6.80	31
	Total	33.77	7.28	59
Total	High Critical	38.44	8.74	54
	Low Critical	37.44	7.09	58
	Total	37.92	7.91	112

Additionally, Table 14 shows the results of two-way ANOVA according to which the interaction effect of the independent variables was significant

(Sig. = .00). Similarly, there was a significant main effect for giftedness (Sig. = 0.000) but not for critical thinking (Sig. = 0.39) as far as receptive lexical knowledge is concerned. This, in turn, implies that gifted and non-gifted learners were different in terms of their receptive lexical knowledge. In contrast, the high and low critical thinking learners did not differ significantly in terms of their receptive lexical knowledge performance.

Table 14.

Effects of Giftedness and Critical Thinking on Receptive Vocabulary

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2531.5	3	843.8	20.6	.00	.36
Intercept	162333.1	1	162333.1	3964.8	.00	.97
Giftedness	2196.9	1	2196.9	53.6	.00	.33
Criticallevel	30.5	1	30.5	.74	.39	.007
Giftedness * Criticallevel	364.8	1	364.8	8.9	.00	.07
Error	4421.8	108	40.9			
Total	168074.0	112				
Corrected Total	6953.4	111				

To see whether or not the observed difference between the gifted and non-gifted learners, as far as receptive lexical knowledge is concerned, was statistically significant, an independent samples t-test was run whose output is presented in Tables 15 and 16. According to these tables, there was a significant difference between the gifted and non-gifted learners in the receptive lexical knowledge test (Sig. =0.00, $t = 7.00$). To put it another way, the gifted learners outperformed in the receptive lexical knowledge test ($M = 42.54$) compared to non-gifted ones ($M = 33.77$).

Table 15.
Independent Samples T-test of Giftedness on Receptive Vocabulary

		Levene's Test for Equality of Variances		t-test for Equality of Means						
Receptive Test		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
	Equal variances assumed	5.7	.01	7.0	110	.00	8.7	1.2	6.2	11.2
	Equal variances not assumed			7.0	108.3	.00	8.7	1.2	6.3	11.2

Table 16.
Group Statistics of Giftedness and Receptive Vocabulary

Receptive Test	Giftedness	N	Mean	Std. Deviation	Std. Error
					Mean
	Gifted	53	42.5	5.7	.79
	Non-gifted	59	33.7	7.2	.94

Finally, regarding the fourth research question which was whether or not giftedness and critical thinking make any significant difference in the productive lexical knowledge performance of EFL learners; and if yes, which one is a better predictor, Table 17 presenting the related descriptive statistics, indicates that there seems to be a considerable difference in the performance of gifted learners and non-gifted ones and also between the high and low critical thinking learners as far as the productive lexical knowledge is concerned.

Table 17.

Descriptive Statistics of Giftedness and CT

Giftedness	Criticallevel	Mean	Std. Deviation	N
Gifted	High Critical	42.9	3.53	26
	Low Critical	37.4	6.66	27
	Total	40.1	5.98	53
Non-gifted	High Critical	36.0	6.25	28
	Low Critical	31.9	6.26	31
	Total	33.8	6.54	59
Total	High Critical	39.3	6.16	54
	Low Critical	34.5	6.97	58
	Total	36.8	7.00	112

Moreover, Table 18 that presents the results of two-way ANOVA uncovers that while the interaction effect was not significant (Sig. = .53), there was a significant main effect for both giftedness (Sig. = 0.000) and critical thinking (Sig. = 0.000) variables as far as productive lexical knowledge is concerned. This, in turn, implies that high and low critical thinking learners were different in terms of their productive lexical knowledge, and also there was a difference in the productive lexical knowledge of gifted and non-gifted learners.

Table 18.

Giftedness & CT on Productive Vocab

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1749.1	3	583.0	17.0	.00	.3
Intercept	153527.8	1	153527.8	4478.2	.00	.9
Giftedness	1084.1	1	1084.1	31.6	.00	.2
Criticallevel	639.7	1	639.7	18.6	.00	.1
Giftedness * Criticallevel	13.2	1	13.2	.38	.53	.0
Error	3702.5	108	34.2			
Total	157598.0	112				
Corrected Total	5451.7	111				

Then, to check whether or not these differences between gifted and non-gifted learners and also high and low critical thinking learners were statistically significant, two independent samples t-tests were run. According to Table, 19, there was a significant difference between the gifted and non-gifted learners in the productive lexical knowledge test (Sig. =0.00, t = 5.28) and according to Table 20, gifted learners had a better performance in the productive lexical knowledge test (M = 40.16) compared to non-gifted ones (M = 33.88).

Table 19.
Independent Samples T-test of Giftedness on Productive Vocabulary

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Productive Test	Equal variances assumed	1.8	.17	5.2	110	.00	6.2	1.1	3.9	8.6
	Equal variances not assumed			5.3	109.9	.00	6.2	1.1	3.9	8.6

Table 20.
Group Statistics of Giftedness and Productive Vocabulary

		Giftedness	N	Mean	Std. Deviation	Std. Error Mean
Productive Test	Gifted		53	40.16	5.98	.82
	Non-gifted		59	33.88	6.54	.85

Furthermore, Table 21 reveals that there was also a significant difference between high and low critical thinking learners in terms of their productive

lexical knowledge (Sig. = 0.000, t = 3.88). Table 22 also indicates that high critical learners had a better productive lexical knowledge (M = 39.37) in comparison to low critical thinking learners (M = 34.51).

Table 21.

Independent Samples T-test of Critical Thinking and Productive Vocabulary

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Productive Test	Equal variances assumed	1.4	.23	3.8	110	.00	4.8	1.2	2.3	7.3
	Equal variances not assumed			3.9	109.7	.00	4.8	1.2	2.3	7.3

Table 22.

Group Statistics of Critical Thinking and Productive Vocabulary

		Critical level	N	Mean	Std. Deviation	Std. Error Mean
Productive Test	High Critical		54	39.37	6.16	.83
	Low Critical		58	34.51	6.97	.91

Discussion

One finding of the study was that concerning receptive vocabulary knowledge, high and low WTC learners and also high and low critical thinking learners did not differ significantly; but in contrast, the gifted and non-gifted ones significantly differed and the former learners outperformed the latter

ones. Receptive level of vocabulary is the first level of English vocabulary learning and it is, in fact, the basis for the second higher level of vocabulary learning that is productive lexical knowledge (Kim, 2013). In a similar vein, Schmitt (2010) contends that learners need to learn receptive lexical knowledge first, and then they can expect to develop their productive lexical knowledge. Moreover, Laufer and Paribakht (1998) report that ESL and EFL learners typically have more receptive language knowledge than productive knowledge. This might have many reasons. For example, it could be stated that since receptive lexical knowledge is mainly related to listening and reading skills and not writing and speaking ones (Schmitt, 2010), ESL learners have more resources and opportunities to expand their receptive vocabulary (through self-studying for instance); but regarding productive vocabulary extension, they need specific contexts and conditions (such as an instructor for writing to guide and correct them, or a group for speaking to speak to them).

On the other hand, MacIntyre and Charos (1996) argued that "recent trends toward a conversational approach to second language pedagogy imply that learners must use the language to develop proficiency, that is, they must talk to learn" (P. 3). This means that learners will not learn and master a language unless they use it communicatively. Thus, to achieve such an important purpose, different individual, psychological, social, and physiological factors are involved. One of the most important factors is WTC. Many studies have foregrounded the pivotal role of WTC in mastery and proficiency of language in general, and communicative and productive facets of language in particular (Cao, 2011; Ghonsooley, Khajavi & Asadpour, 2012; Peng, 2012). Learners, then, need to be highly willing to initiate and maintain communication while in receptive aspects of language WTC is not considerably involved. This could justify the first finding of the study according to which, high and low WTC learners had almost the same level of

performance in the receptive vocabulary test without any statistically significant difference.

As with the outperformance of gifted learners compared to the non-gifted ones in terms of receptive test, some points need to be stated to justify this finding of the study. Giftedness is better to be understood as a combination of "innateness" and "context" meaning that giftedness is originally innate; however, in order for it to be activated, context is needed, and by the context it means different social and educational factors should join forces to burgeon giftedness. Furthermore, as Raithby (2014) and Burr (2003) rightly contend, the concept of giftedness is elusive, context-dependent, and mostly individually based rather than holistically based. Therefore, defining and elaborating on it is not straightforward as it needs to consider the specific context in which the giftedness concept is intended. With regard to the present study context, it could be stated that gifted learners outperformed the non-gifted ones on the receptive lexical test because firstly, gifted learners, by definition, make use of their super intellectual abilities more efficiently in comparison with non-gifted ones; and secondly, gifted learners are more able to use their cognitive and memory abilities more effectively. To put it more clearly, the receptive lexical command is usually defined as the capability of providing the native language equivalents of target language vocabulary items. In fact, learners are required to relate the target language and native language lexical words and consequently, because gifted learners have been proved to be more capable of creating such a connection, they usually have a better performance compared to non-gifted ones who could use their memory and cognition abilities less effectively. Additionally, the related literature has shown that gifted learners are more creative than non-gifted ones (for example, Hennessey, 2004; Tirri, 2017). Thus, they can make the optimal use of their creativity and find varying strategies to make a more vivid and easy-to-understand way to remember the equivalent of given target language lexical items.

As with empirical studies, Fahim and Komijani (2011) carried out a research to look into the interplay of critical thinking and vocabulary command as well as lexical learning strategies among Persian EFL students. Their study showed a significant correlation between the learners' lexical command and their critical thinking. Similarly, Khabiri and Pakzad (2012) dealt with the influence of critical thinking instruction on Iranian EFL learners' vocabulary retention. They finally reported that teaching critical thinking ability might significantly improve the vocabulary retention of EFL learners as it raises their consciousness regarding vocabulary items and aids them to retain the items in later contexts. Farahanynia and Nasiri (2016) also studied the interplay of critical thinking and lexical inference and finally concluded that learners with higher critical thinking skills outperformed in lexical inference. Zarei and Haghgoo (2012), in contrast, concluded that the interrelationship of critical thinking and vocabulary knowledge of learners was not significant.

Another finding of the study was that high and low WTC learners, high and low critical thinking learners, and also gifted and non-gifted learners had significant differences in terms of their productive vocabulary performance. It was also understood that high WTC learners outperformed low WTC ones and similarly, gifted learners had a better performance on the productive vocabulary test compared to the non-gifted ones. Also, high critical thinking learners had higher productive lexical knowledge in comparison with low critical thinking learners. This type of lexical command is often referred to as the lexical items that might be produced in a suitable communication setting to convey a specific message. In other words, productive words are those that speakers and writers produce in their speech and writing. Therefore, these types of vocabulary items have become internalized and established enough in the learners' minds to be used adequately and effectively in different contexts. Furthermore, one difference between the receptive and receptive vocabulary knowledge is that in the former type, learners merely know about

the general meaning of words. However, in the latter type, learners know the different aspects of lexical items and are familiar with a variety of lexical items-related nuances. Learners should possess adequate knowledge regarding a word to be able to use it efficiently (Benjamin & Crow, 2012). In line with this, Mozaffari (2012) rightly asserted that providing learners and students with an education system in which learners actively participate in classroom procedures and activities helps them to raise their consciousness and, consequently, develop their high-order skills including critical thinking skill. This, in turn, aids them to become largely independent and autonomous in their learning.

The key role of vocabulary to improve language proficiency has been realized for long among teachers, learners, and other relevant stakeholders. In line with this, Richards and Renandya (2002) asserted that vocabulary is of great importance in the language proficiency of learners in that it is the foundation of other facets of language including language skills. Additionally, there is now consensus that vocabulary and thinking are closely interrelated (Schmitt, 2000; Wharton, 2000) meaning that the more vocabulary knowledge a person has, the more effectively and adequately he/she will be able to think. Likewise, the higher the thinking power, the higher the use of vocabulary. Hence, it might be stated that vocabulary knowledge and thinking ability influence each other. This study showed that high critical thinking learners were more successful in productive vocabulary performance compared to the low critical thinking ones. In line with this, high critical thinkers are more able to fulfill and express the necessary skills of thinking critically (including generalizing, inferring, judging, assuming, and creative thinking) as they have more productive knowledge. They can ask more questions and more efficient detailed questions; make more effective reasoning; make value judgments, etc. Furthermore, WTC tightly bounds up with speaking skill and communication. To communicate and convey intended meaning efficiently, making use of appropriate lexical items is important. By definition, WTC

refers to the willingness and readiness to initiate and maintain speech (Cao & Philp, 2006; Kim, 2004; Yu, 2009). Research has shown that learners with higher tendencies to communicate are more successful in language learning (Yashima, 2002). In a similar vein, high WTC learners have often more productive vocabulary as they use them in their speech more frequently than the low WTC learners. In fact, it might be stated that WTC and productive vocabulary are tightly interrelated. This, in turn, justifies the outperformance of high WTC learners of the present study with regard to the productive vocabulary tests in comparison with the low WTC learners.

In line with this finding that critical thinking has a central role in learning a language especially productive and communicative-related vocabulary, Ramos (2014) reported that classrooms in which teachers are the authority are typically characterized as dealing with receptive learning approaches involving techniques such as memorization and repetition. Ramos (2014) further stated that in spite of this weakness, learners showed a tendency to be involved in class activities and they thought the traditional receptive teaching methods are not effective as these methods do not make it possible for them to actively participate and communicate during classes. Likewise, Lee et al. (2014) also showed that the learners in their research study believed that they would not be given sufficient time and opportunities to critically think and actively participate in classes. Mozaffari (2014) maintained that teaching critical thinking in EFL contexts is a big challenge for teachers as they know this skill is of great importance for learners but they do not know how to develop and teach it to their children. This lack of knowledge comes down to their previous training meaning that they were not taught and trained how to teach this skill.

Fahim and Komijani (2011) and also Paul and Elder (2005) highlighted the significance of critical thinking and vocabulary knowledge in efficient language production. Paul and Elder (2005) made such an important role arguing that “the only capacity we can use to learn is human thinking. It can

be concluded that the utilization of critical thinking skills would help EFL students learn L2 vocabulary more effectively and profoundly.” (p.10). Similarly, Sheikhy Behdani and Rashtchi (2017) also studied the interplay of critical thinking and vocabulary recall. Their study revealed that these two variables are meaningfully and positively correlated. Sharafi-Nejad et al. (2016) also reported that critical thinking skills significantly influenced vocabulary learning. Similarly, Faramarzi, Elekaei, and Heidari Tabrizi (2016) showed that learners with higher critical thinking showed more command of vocabulary when compared with lower critical thinkers. Lastly, the study by Mirzai (2008) examined the interrelationship of critical thinking ability of a group of learners with their ability to infer lexical items meaning. The study uncovered that high critical thinkers outperformed low critical thinkers as far as lexical inference was concerned. Mozaffari (2012) also reported that EFL educational systems especially the Iranian ones are still largely in accordance with traditional approaches and methods such as the Grammar Translation Method (GTM) and also the Audio-Lingual Method (ALM) which are based on passive techniques and strategies including memorization and repetition. She further added that these methods largely ignore the importance of important skills such as problem-solving, reasoning, and critical thinking. She finally concluded that EFL educational contexts require drastic improvements to be effective in nurturing the higher-order skills of learners.

Conclusion

As it was pointed out throughout the study, this study investigated the impacts of giftedness, critical thinking, and WTC on the receptive/productive lexical knowledge of Iranian EFL learners. All taken together, it was found that first, as with receptive lexical knowledge, high and low WTC learners and also high and low critical thinking learners did not differ significantly; but in contrast, the gifted and non-gifted ones significantly differed and the former

learners outperformed the latter ones. Second, high and low WTC learners, high and low critical thinking learners, and also gifted and non-gifted ones had significant differences in their productive vocabulary performance. Furthermore, high WTC learners performed better than low WTC ones and similarly, gifted learners had a better performance on the productive vocabulary test in comparison with the non-gifted ones. Also, high critical thinking learners had higher productive vocabulary knowledge compared to the low critical thinking ones. These results help to conclude that while for receptive vocabulary knowledge, giftedness is a more influential factor than WTC and critical thinking, for productive vocabulary knowledge, WTC, critical thinking, and giftedness are influential and should be taken into consideration by teachers and materials developers while dealing with this facet of lexical knowledge.

Some implications might arise from the present study findings. One implication is concerning the crucial role of receptive/productive vocabulary in language learning. Teachers should be motivated to take lexical knowledge (both receptively and productively) into account and also to put an effort to employ a variety of approaches and educational resources to strengthen these two facets of lexical knowledge in that as Webb (2008) stated, knowing a wider range of receptive vocabulary indicates a more productive vocabulary size. Furthermore, teachers should try to enhance the WTC of their students by using different techniques as the present study showed that this enhancement of WTC could help learners to use their receptively mastered lexical items productively as well. Likewise, as the critical thinking ability of learners is developed, their productive use of lexical items also increases. As a result, teachers are asked to make use of varying techniques and methods to boost their learners' critical thinking ability.

A further implication could be mentioned about WTC. Although in the past, being aware of structural rules was the first and foremost purpose of language pedagogy, recently, using the language and mastering its

communicative competence have been emphasized (Mystkowska-Wierstelak, 2018) as it is believed that learners should be given opportunities in pedagogical contexts to practically make use of language so that they would actively use the language and, as a result, master it. To achieve this end, learners should be motivated to increase their willingness to produce the language. WTC is, thus, of great importance in achieving this end in language learning. Consequently, language teachers and learners need to find ways and strategies to bolster up WTC. Teachers are encouraged to strive to enhance learners' WTC by encouraging them to become involved in classroom activities, not to be afraid of taking risks, and to cooperate with the teachers and peers. Learners are also encouraged to engage themselves in classroom activities actively and not to feel embarrassed if they make any mistake as mistakes and errors are like signposts showing that they are on the correct path of learning.

Additionally, paying decent attention to giftedness education and gifted learners is also of great importance as gifted learners play an influencing role in the prosperity of societies. In other words, the way gifted learners are educated reflects an important engagement of society for its future development (Besancon, 2013). Helping gifted learners to nurture their talents and potentials is a great responsibility on the shoulder of governments, educational stakeholders (including pedagogical curriculum developers and material developers), and especially teachers. Similarly, critical thinking should not also be ignored as it is an influencing factor of success, especially in academic contexts. Thinking is the distinct difference between humans and animals. As with academic contexts, thinking critically is, in fact, a criterion to distinguish between high and low achieving learners in that learners who think critically about different facets of their academic enterprise have a better understanding of their objectives and as a result, could achieve them more easily and effectively. Furthermore, critical thinking is the key to cultivate other important potentials such as creativity, risk-taking power, and

motivation. In other words, when learners critically think about their objectives and reach a comprehensive and vivid understanding of them, they could find more effective and creative strategies to achieve them. Further, they become more willing to take wise risks as they are highly aware of what they want to fulfill. Given these points, teachers are highly expected first, to learn and enhance the critical thinking skills by themselves and second, help learners to know more about it and shore up their critical thinking skills.

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Appendix (A)
Willingness to Communicate (WTC)

Name:

Directions: Below are 20 situations in which a person might choose to communicate or not to communicate. Presume you have completely free choice. Indicate the percentage of times you would choose to communicate in each type of situation. Indicate in the space at the left of the item what percent of the time you would choose to communicate. (0 = Never to 100 = Always)

- _____ 1. Talk with a service station attendant.
- _____ 2. Talk with a physician.
- _____ 3. Present a talk to a group of strangers.
- _____ 4. Talk with an acquaintance while standing in line.
- _____ 5. Talk with a salesperson in a store.
- _____ 6. Talk in a large meeting of friends.
- _____ 7. Talk with a police officer.
- _____ 8. Talk in a small group of strangers.
- _____ 9. Talk with a friend while standing in line.
- _____ 10. Talk with a waiter/waitress in a restaurant.
- _____ 11. Talk in a large meeting of acquaintances.
- _____ 12. Talk with a stranger while standing in line.
- _____ 13. Talk with a secretary.
- _____ 14. Present a talk to a group of friends.
- _____ 15. Talk in a small group of acquaintances.
- _____ 16. Talk with a garbage collector.
- _____ 17. Talk in a large meeting of strangers.
- _____ 18. Talk with a spouse (or girl/boyfriend).
- _____ 19. Talk in a small group of friends.
- _____ 20. Present a talk to a group of acquaintances.

Appendix (B) Cornell Critical Thinking Test

Name: Age: <div style="text-align: right;">School Name:</div>
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<p>1. Suppose you know that All the cars in the garage are Mr. Smith's. All Mr. Smith's cars are Fords. Then would this be true? All of the cars in the garage are Fords.</p> <p style="text-align: right;"><i>YES</i> <i>NO</i> <i>MAYBE</i></p>
<p>2. Suppose you know that All John's pencils are blue. Then would this be true? At least some of John's pencils are not blue.</p> <p style="text-align: right;"><i>YES</i> <i>NO</i> <i>MAYBE</i></p>
<p>3. Suppose you know that All the books about sailing are Bill's. All the green books are Bill's. Then would this be true? At least some of the green books are about sailing.</p> <p style="text-align: right;"><i>YES</i> <i>NO</i> <i>MAYBE</i></p>
<p>4. Suppose you know that None of Jane's dolls have hats. Then would this be true? None of the dolls that have hats are Jane's</p> <p style="text-align: right;"><i>YES</i> <i>NO</i> <i>MAYBE</i></p>
<p>5. Suppose you know that All the red books are John's Then would this be true? All John's books are red.</p> <p style="text-align: right;"><i>YES</i> <i>NO</i> <i>MAYBE</i></p>
<p>6. Suppose you know that All of Mary's books are about horses. None of the books on the shelf are about horses. Then would this be true? At least some of Mary's books are on the shelf.</p> <p style="text-align: right;"><i>YES</i> <i>NO</i> <i>MAYBE</i></p>
<p>7. Suppose you know that</p>

All Jean's pencils are red.
 All the pencils on the table are red.
 Then would this be true?
 At least some of the pencils on the table are Jean's.
YES **NO** **MAYBE**

8. Suppose you know that
 At least some of the children in the Martin family take out books from the library.
 All people who take out books from the library have library cards.
 Then would this be true?
 At least some of the children in the Martin family have library cards.
YES **NO** **MAYBE**

9. Suppose you know that
 All X's are Y's.
 No Z's are Y's.
 Then would this be true?
 At least some X's are Z's.
YES **NO** **MAYBE**

10. Suppose you know that
 At least some of Fred's pencils are green.
 Then would this be true?
 None of Fred's pencils are green.
YES **NO** **MAYBE**

11. Suppose you know that
 None of Sue's books are about animals
 Then would this be true?
 None of the books about animals are Sue's.
YES **NO** **MAYBE**

12. Suppose you know that
 At least some of Kate's pencils are blue.
 All the pencils in the box are blue.
 Then would this be true?
 At least some of Kate's pencils are in the box.
YES **NO** **MAYBE**

13. Suppose you know that
 All Z's are Y's.
 All Y's are X's.
 Then would this be true?
 All Z's are X's.
YES **NO** **MAYBE**

14. Suppose you know that

<p>None of the fifth grade boys are on the football team. John is a fifth grade boy. Then would this be true? John is not on the football team.</p>	<p>YES</p>	<p>NO</p>	<p>MAYBE</p>
<p>15. Suppose you know that All the members of the school band have been in Boston. No one in Frank's class has been in Boston. At least some members of the school band are in Frank's class.</p>	<p>YES</p>	<p>NO</p>	<p>MAYBE</p>
<p>16. Suppose you know that All X's are Y's. Then would this be true? At least some X's are not Y's.</p>	<p>YES</p>	<p>NO</p>	<p>MAYBE</p>
<p>17. Suppose you know that All boys are painters. All children are painters. Then would this be true? At least some children are boys.</p>	<p>YES</p>	<p>NO</p>	<p>MAYBE</p>
<p>18. Suppose you know that All the second grade children are out on the playground. Then would this be true? All the children out on the playground are in the second grade.</p>	<p>YES</p>	<p>NO</p>	<p>MAYBE</p>
<p>19. Suppose you know that At least some of the books on the table are about stars. None of Bob's books are about stars. Then would this be true? All of the books on the table are Bob's.</p>	<p>YES</p>	<p>NO</p>	<p>MAYBE</p>
<p>20. Suppose you know that All the boys in John's class are football players. Fred is a football player. Then would this be true? Fred is not in John's class.</p>	<p>YES</p>	<p>NO</p>	<p>MAYBE</p>
<p>21. Suppose you know that All the pets of the Greens won some prize in the pet show.</p>			

Fido is one of the Greens' pets. Then would this be true? Fido won a prize in the pet show.	YES	NO	MAYBE
22. Suppose you know that No animals are dogs. Then would this be true? No dogs are animals.	YES	NO	MAYBE
23. Suppose you know that Eileen is one of the children on the playground. Then would this be true? Eileen is not one of the children on the playground.	YES	NO	MAYBE
24. Suppose you know that All X's are Y's. Then would this be true? All Y's are X's.	YES	NO	MAYBE
25. Suppose you know that All cats can fly. All animals that can fly are black. Then would this be true? All cats are black.	YES	NO	MAYBE
26. Suppose you know that All the things in the trunk are Bill's. The brown baseball bat is Bill's. Then would this be true? The brown baseball bat is in the trunk.	YES	NO	MAYBE
27. Suppose you know that None of Bob's books are on the table, but there are books on the table. Then would this be true? At least some of the books on the table are not Bob's	YES	NO	MAYBE
28. Suppose you know that All X's are Y's. All Z's are Y's. Then would this be true? At least some Z's are X's.	YES	NO	MAYBE
29. Suppose you know that All Mary's pencils are yellow. Then would this be true? At least some of Mary's pencils are not yellow.	YES	NO	MAYBE

30. Suppose you know that All pencils are heavy. Nothing made of wood is heavy. Then would this be true? At least some pencils are made of wood.	YES	NO	MAYBE
31. Suppose you know that At least some of the green pencils are Dick's. Then would this be true? All Dick's pencils are green.	YES	NO	MAYBE
32. Suppose you know that No X's are Y's. Then would this be true? No Y's are X's.	YES	NO	MAYBE
33. Suppose you know that All dogs are brown. Then would this be true? At least some dogs are not brown.	YES	NO	MAYBE
34. Suppose you know that All the cookies Jane made for the fair had nuts in them. All the cookies with nuts in them were sold. Then would this be true? All the cookies Jane made for the fair were sold.	YES	NO	MAYBE
35. Suppose you know that All brown animals have four legs. Then would this be true? All animals with four legs are brown.	YES	NO	MAYBE
36. Suppose you know that All members of the football team weigh over 150 pounds. Henry does not weigh over 150 pounds. Then would this be true? Henry is on the football team.	YES	NO	MAYBE
37. Suppose you know that All of John's candy is in the box. All of the candy that is not chocolate is also not in the box. Then would this be true? At least some of John's candy is not chocolate.	YES	NO	MAYBE

38. Suppose you know that All the papers in the box are torn. None of John's papers are in the box. Then would this be true? None of John's papers are torn.	YES	NO	MAYBE
39. Suppose you know that All of the boys are singing. Then would this be true? All of the people who are not singing are also not boys.	YES	NO	MAYBE
40. Suppose you know that All the math homework is due today. None of John's homework is due today. All the homework for Mr. Miller's class is math homework. Then would this be true? None of John's homework is for Mr. Miller's class.	YES	NO	MAYBE
41. Suppose you know that All the pencils in the box are green. All Sue's pencils are sharp. All the green pencils are Sue's. Then would this be true? At least some of the pencils in the box are not sharp.	YES	NO	MAYBE
42. Suppose you know that None of my shirts are wool. None of the shirts hanging up in the closet are wool. Then would this be true? At least some of my shirts are hanging up in the closet.	YES	NO	MAYBE
43. Suppose you know that All X's are Y's. Then would this be true? All things that are not Y's are also not X's.	YES	NO	MAYBE
44. Suppose you know that All four-legged animals can fly. No horses can fly. All fast runners are four-legged animals. Then would this be true? No horses are fast runners.	YES	NO	MAYBE
45. Suppose you know that All of the boys in the class collect stamps.			

- All students who are not members of the Stamp Club also do not collect stamps.
Then would this be true?
At least some of the boys in the class are not members of the Stamp Club.
YES **NO** **MAYBE**
46. Suppose you know that
All of the boys are running, but not everyone is running.
Then would this be true?
At least some of the people not running are not boys.
YES **NO** **MAYBE**
47. Suppose you know that
None of Tom's books are on the shelf.
No science books are on the shelf.
Then would this be true?
At least some of Tom's books are science books.
YES **NO** **MAYBE**
48. Suppose you know that
All of Bill's five uncles are allowed to drive.
All people who have a license have passed a driving test.
All people who are allowed to drive have a license.
Then would this be true?
At least one of Bill's uncles has not passed a driving test.
YES **NO** **MAYBE**
49. Suppose you know that
All of the band members are working.
Then would this be true?
Everyone who is not working is also not in the band.
YES **NO** **MAYBE**
50. Suppose you know that
All the books on the shelf belong to the library.
No science books belong to the library.
At least some of the books that Elmer likes are on the shelf.
Then would this be true?
At least some of the books that Elmer likes are not science books.
YES **NO** **MAYBE**
51. Suppose you know that
All the people who live on Main Street were born in Milltown.
None of the students in Room 352 live on Main Street.
Then would this be true?
None of the students in Room 352 were born in Milltown.
YES **NO** **MAYBE**
52. Suppose you know that
All teachers are college graduates.

All people who have gone to high school are men.
 All college graduates have gone to high school.
 Then would this be true?
 At least some teachers are not men.
 YES NO MAYBE

Appendix (C) Receptive Vocabulary Test

Name:

Instruction: Please write the Persian equivalent of the following words in the space provided.

English Word	Persian Equivalent	English Word	Persian Equivalent
1) Achieve		26) Rational	
2) Abandon		27) Seek	
3) Access		28) Summary	
4) Bias		29) Status	
5) Arbitrary		30) Intelligence	
6) Compatible		31) Transfer	
7) Definitely		32) Tradition	
8) Advocate		33) Ongoing	
9) Colleague		34) Environment	
10) Core (Adj)		35) Design	
11) Equivalent		36) Reject	
12) Ignore		37) Voluntarily	
13) Welfare		38) Legal	
14) Focus		39) Aid	
15) Randomly		40) Clarify	
16) Rigid		41) Obvious	
17) Establish		42) Hierarchy	
18) Sufficient		43) Proportion	
19) Vehicle		44) Widespread	
20) Identical		45) Utilize	
21) Trigger		46) Purchase	
22) Individually		47) Framework	
23) Schedule		48) Benefit (V)	
24) Violate		49) Economy	
25) Fundamental		50) Community	

Appendix (D) Productive Vocabulary Test

Name:

Instruction: Please write the English equivalent of the following words in the space provided.

English Equivalent	Persian Word	English Equivalent	Persian Word
	انجام دادن		منطقی
	رها کردن		جستجو کردن
	دسترسی		خلاصه
	جانبداری		شأن و مقام
	دلخواهی		ذکاوت/هوش
	سازگار		انتقال دادن
	قطعا		سنت
	حمایت کردن		ادامه دار
	همکار		محیط
	اصلی/مرکزی		طراحی کردن
	معادل		رد کردن
	نادیده گرفتن		داوطلبانه
	آسایش و رفاه		قانونی
	تمرکز کردن		کمک رساندن
	بطور تصادفی		شفاف سازی کردن
	سفت و سخت		واضح و آشکار
	تثبیت کردن		سلسله مراتب
	کافی		سهم و میزان
	وسيله نقلیه		گسترده
	برابر		بکار گرفتن
	باعث شدن		خریداری کردن
	بطور فردی		چارچوب
	طرح و برنامه		سودبردن
	تجاوز کردن		سود رساندن
	اساسی		جامعه