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GENDER DIFFERENCES IN VOCABULARY PROCESSING IN THE EFL TERTIARY CONTEXT: SPEED OF RECALL AND MEANING ACCURACY

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Abstract: This study aims at investigating gender differences in processing vocabulary (recall speed and the accuracy of meaning recall) among EFL students. The study sample consisted of 35 EFL students (21 females and 14 males) out of a population of 120 EFL students from the English Department at Abbas Laghrour University of Khenchela, Algeria. The experiment's results were analyzed based on inferential statistics using a t-test. Results have shown that there is a significant difference between the memorization performance of males and females in terms of the two recalls. The results also revealed that females outperformed males in the two aspects under study: recall speed and meaning accuracy.

Keywords: EFL; Gender; Memorization; Recall; Vocabulary

DIFFERENCES ENTRE LES SEXES DANS LE TRAITEMENT DU VOCABULAIRE DANS LE CONTEXTE TERTIAIRE DE L'EFL : VITESSE DE RAPPEL ET PRECISION DES SIGNIFICATIONS

Résumé : Cette étude vise à enquêter sur les différences entre les sexes dans le traitement du vocabulaire (vitesse de mémorisation et précision de la mémorisation du sens) parmi les étudiants d'anglais comme une langue étrangère. L'échantillon de l'étude était composé de 35 étudiants (21 femmes et 14 hommes) sur une population de 120 étudiants du département d'anglais de l'Université Abbas Laghrour de Khenchela, en Algérie. Les résultats de l'expérience ont été analysés à l'aide de statistiques inférentielles à l'aide d'un t-test. Les résultats ont montré qu'il existe une différence significative entre les performances de mémorisation des hommes et des femmes en ce qui concerne les deux types de rappel. Les résultats ont également révélé que les femmes surpassaient les hommes dans les deux aspects étudiés : la vitesse de rappel et la précision du sens.

Mots-clés : EFL, Mémorisation, Rappel, Sexes, Vocabulaire

Introduction

It is widely accepted that gender has an influence on the learning process and the academic performance of learners. And it has been considered an important factor in social studies like in sociology and sociolinguistics fields, for example, (Nisa, 2019) and (Catalán,

2015). Many researchers like Norton and Pavlenko (2004) recognize that gender interacts with many facets of social identities such as ethnicity, class, (dis) ability, age, and social status to play a significant role in framing Students' language learning experiences, performance, trajectories, and outcomes. Compared to research on other variables like motivation, age, or learning styles and their effect on language learning, not many studies investigated sex as a variable in relation to memory and vocabulary recall or the learning-teaching process, as Catalán (2015) clearly declared: "The factor of memory is neglected in most language teaching methods as well as in second language acquisition research" (p. 64). Some of such studies that investigated the former issue are Cremona et al. (2020), Fontecha (2010), and Gale, S. D., Baxter, L. A., Connor, D. J., Herring, A. M., & Comer, J. (2007). The present study is an investigation into sex and vocabulary memorization and recalls with the purpose of finding out whether there is a significant difference between EFL students' performance in recalling vocabulary, and their gender, by measuring their speed of recall and the accuracy of recalling the meaning. This experiment was conducted with 35 English students from the English department at Abess Laghrour University of Khenchela, Algeria. It was a conventional belief that male and female students process and recall the new English vocabulary differently in EFL classes. However, the current situation shows that no studies statistically confirm gender differences in learning and recalling vocabulary (especially in terms of speed and accuracy). To the best of our knowledge and based on the literature we have reviewed, only a few studies focused on examining the relationship between gender and vocabulary recall among EFL learners. More importantly, looking at the Arab and Algerian research scene in that matter, we find that there are almost no studies targeting the issue in question. This gap between this common belief and the current situation caused an inconvenience in the learning and teaching process where EFL classes use unified gender approaches in teaching vocabulary.

In order to achieve the overarching objective of this study, and subsequent to formulating our research inquiries, the research aims encompass the following: Firstly, to explore whether a noteworthy disparity exists between males and females in the recollection of vocabulary. Secondly, to gauge the speed at which EFL students can spontaneously recollect recently introduced words. Lastly, to assess the accuracy with which both females and males recall the meanings of these novel vocabulary terms. Derived from the problem statement above and in the pursuit of a more comprehensive understanding of this phenomenon, we have formulated the subsequent research questions: Does a substantial discrepancy exist in vocabulary recall between males and females? Is there a statistically significant contrast in the speed of vocabulary retrieval between males and females? Furthermore, is there a statistically significant difference in the ability of males and females to recollect the meanings of recently introduced vocabulary? Building upon our research inquiries and informed by prior literature, we posit the following hypotheses: Firstly, we hypothesize that females will outperform males in the speed of vocabulary recall. Secondly, we anticipate that females will also exhibit superior accuracy in the recollection of word meanings when compared to males.

1. Literature Review

Multiple studies have explored the interplay of gender and vocabulary, employing various research methods and data collection tools to yield diverse perspectives and outcomes (Catalan, 2003; Baer et al., 2006; Kaushanskaya, Marian, and Yoo, 2011; Pahom et al., 2015; Al-Qaysi and Affendi, 2016; Martinez, 2020; Dalila Djilah; 2020; Ridwan and

Zailani, 2022). However, a common limitation in these studies is the lack of in-depth examination of the relationship between gender and vocabulary memorization and recall among EFL learners, especially in Arab and Algerian universities. Further research in this area is crucial for refining vocabulary teaching approaches and methods, as it can help identify the distinct strategies and patterns employed by males and females in vocabulary learning and recall

2. Method

This section explains the method employed in conducting this research. The sampling strategy, the analytical tools adopted in the research, and the data collection procedure.

2.1. *The Population and Sample*

We chose the population for this study to be EFL learners from the English Department of Abbes Laghrour University at Khenchela. The whole population size was 120 students. In this study, we worked with a level of confidence of 89%, $\approx 90\%$, (Sample Size Calculator by Raosoft, Inc., n.d.). We followed a simple random sampling to choose 37 participants (the sample size), we worked with 35 participants while 2 students were absent. Participants were taken from different levels and sexes (females=21 and males=14).

2.2. *Procedure and Instruments*

The quasi-experimental method design was adopted in this study since it aims to demonstrate causality between an intervention and an outcome (Harris et al., 2006). In this study, the intervention was the new words introduced to participants, and the outcome was the scores archived by participants through the tests used. Moreover, the study conditions made realizing the actual experiment on a large scale impractical and not logistically feasible. The reasons are the small number of participants, the limited number of available laboratories where the investigation would take place, and the short time we had to realize the research. Also, the study represents an original work in the gender studies field.

-Data Collection Tools

In an attempt to provide answers to the preceding research questions, three tests were given to the participants, a pretest, a speed test, and an accuracy test. The pretest consisted of 24 vocabulary items divided into 3 parts of speech (verbs, adjectives, and nouns), the pretest aim is to eliminate any familiar words to the participants before starting the experiment. The participants took a speed test right after being introduced to the new vocabulary items, the speed test focuses on how fast male and female participants can recall a word after hearing its definition. the speed was measured in milliseconds. As a final step in this research, the participants took an accuracy test after a week of being introduced to the new words, the accuracy test assesses the participants' ability to define each vocabulary item.

-Statistical analysis tool

We relied on inferential statistical tools to analyze and interpret the data gathered by the previous tests, more specifically we opted for an unpaired (independent) t-test because it is the most suitable procedure to compare the averages or means of two independent groups and determine if there is a significant difference between them.

-Procedure

. The experiment comprised an introduction phase and three sets of tests: a pretest, a speed test, and an accuracy test. The pretest involved 24 vocabulary items across verbs, adjectives, and nouns. Participants defined words they knew, with familiar words being eliminated, resulting in a list of 15 words. These 15 words were introduced with slides showing word, part of speech, English definition, and Arabic equivalent. Participants could seek clarifications but not synonyms. They were informed not to use Arabic equivalents later in the test. After introducing the words, participants took a speed test measuring recall speed. The 35 participants were divided into groups of 8. The test used an online system to measure response time. A week later, an accuracy test assessed participants' ability to define the vocabulary. An unpaired t-test was used for data analysis on 14 out of 15 words (one word was excluded due to technical issues).

3. Results

After gathering the data and analyzing the results of the three tests using an independent t-test, the results are presented in the tables below.

3.1. Speed of Accuracy Results

Table 1 below represents the participants' speed scores while the second table (table 2) shows the t-test results of the speed scores.

Table 1. The Participants' speed scores

Participants	Females Scores (in seconds)	Males Scores (in seconds)
P1	55,92	29,93
P2	5,59	7,82
P3	29,74	24,13
P4	24,15	60
P5	15,53	30,48
P6	7,53	43,45
P7	14,42	20,45
P8	21,35	8,95
P9	19,38	60
P10	35,14	60
P11	46,55	37,89
P12	44,26	21,99
P13	18,15	54,11
P14	15,26	37,21
P15	27,04	/
P16	34,08	/
P17	36,63	/
P18	19,58	/
P19	33,96	/
P20	32.08	/

P21	28.65	/
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Table 2. The Speed t-test Results

	Female	Males
Mean	26,90428571	35,45785714
Variance	165,3244457	329,5773566
Observations	21	14
Hypothesized Mean Difference	0	
df	22	
t Stat	-1,526114171	
P(T<=t) one-tail	0,07061531177	
t Critical one-tail	1,321236742	
P(T<=t) two-tail	0,1412306235	
t Critical two-tail	1,717144374	

Statistical analysis of the speed results

The female's speed performance was hypothesized to be better than the male's. The t-test concerning speed results -table 2.3- rejected the null hypothesis which suggests the absence of any significant difference between the two genders and confirmed our hypothesis with the time response of the 21 female participants (Mean=26.90) being less than the time response of the 14 male participants (Mean=35.45). This difference is significant at $P(T \leq t)$ one tail = $0.07 \leq \alpha = 0.1$

4.3. Meaning Accuracy Results

Table 3 below represents the participants' meaning scores while the second table (table 4) shows the t-test results of the meaning scores.

Table 3. The Participants' Meaning Scores

Participants	Females	Males
P1	0	3
P2	14	12
P3	12	11
P4	13	3
P5	5	5
P6	4	7
P7	1	12
P8	3	5
P9	13	0
P10	3	0
P11	5	3
P12	3	5
P13	4	0
P14	14	6
P15	10	/
P16	8	/
P17	11	/
P18	10	/
P19	13	/

P20	14	/
P21	14	/

Table 4. The Meaning's t-test results

	Females	Males
Mean	8,285714286	5,142857143
Variance	24,41428571	17,36263736
Observations	21	14
Hypothesized Mean Difference	0	
df	31	
t Stat	2,027534401	
P(T<=t) one-tail	0,02563935485	
t Critical one-tail	1,309463549	
P(T<=t) two-tail	0,05127870971	
t Critical two-tail	1,695518783	

Statistical analysis of the Meaning results

We hypothesized that the female's meaning recall is better than the male's. The t-test of the meaning recall results –table 4- rejected the null hypothesis and confirmed our previous hypothesis with the mean of the female participants' scores (8.28) being higher than the mean of the male participants' scores (5.14). This difference is significant at $P(T \leq t)$ one tail = $0.02 \leq \alpha = 0.1$. As the previous tables and commentaries show, there is a significant difference between males and females regarding vocabulary recall. The results revealed that females outperformed males in every aspect of the study i.e.: speed and meaning.

5. Discussion

This dissertation investigated the gender differences in vocabulary processing among EFL Students. This was achieved by quantifying this process into two measurable aspects (speed of recall and accuracy of meaning recall). According to the obtained results from the tests, we found that males and females perform differently when it comes to memorization and recalling of new vocabulary items. Females outperformed males in the two aspects of the experiment. The female's speed performance was better than the male's. The t-test showed that the female participants had a mean of 26.90s which is a faster time response than that of the males, 35.45s. The t-test results also indicated that this difference is significant with $P(T \leq t)$ one tail = $0.02 \leq \alpha = 0.1$. Concerning the second aspect of the experiment, meaning results showed that females outperformed males with the mean of the female participants' scores (8.28) being higher than the mean of the male participants' scores (5.14). This difference is significant with $P(T \leq t)$ one tail = $0.02 \leq \alpha = 0.1$.

Based on these findings, it is evident that both genders process EFL vocabulary differently. Accordingly, the teaching methods and instruction programs in the department of English in Abbas Laghrour University must be revisited and customized to meet this kind of cognitive differences between males and females. More precisely, the curriculum and syllabi designers in the department should design gender-specific courses with full focus on vocabulary. Moreover, the methods the teachers employ in courses such as oral expression

and written expression, which are gender-neutral, must be changed in accordance with the different ways male and female students process vocabulary. Indeed, this research goes in line with previous literature, which has confirmed that males and females process vocabulary differently. In a broader sense, the study confirms the common claim in scientific, human and social sciences which states that the cognitive gender differences are as significant as the physiological and social ones. Yet, it is a valuable addition to the literature in the field of linguistics where it provides a better understanding of vocabulary processing in the EFL context and helps in identifying the gender differences concerning recall speed and accuracy.

Considering the originality of this work, our research also works as a starting point for many future studies that may help in reaching a more holistic view of the matter of gender and vocabulary processing. For instance, one of the aspects that require investigation is the difference between male and females EFL students in processing different kinds of vocabulary. In other words, given that both genders have different social and cultural interests and preferences, the question to be touched upon is whether males and females process vocabulary from various categories (food, sports, fashion, cars, business, literature, beauty and lifestyle, etc.) differently. Another intriguing aspect is the use of vocabulary by male and female EFL students in speaking and writing in different contexts and genres. This might extend to investigating this latter aspect in translation and interpretation. Gender studies as a field of study focuses on the social and cultural constructions of gender, as well as the ways in which gender influences various aspects of the human experience. This study adds some significant aspects to the field of gender investigation in general. The findings confirmed that there is a significant difference between males and females when it comes to processing new vocabulary items. These findings help enrich the gender studies field by providing a new perspective on gender differences when it comes to EFL classes.

Conclusion

This study investigated gender differences in vocabulary processing by measuring the speed of recall and the accuracy of meaning recall of EFL students at the University of Abbas Laghrour, Khenchela. The findings confirmed our hypothesis and showed a significant difference between genders in Vocabulary memorization: speed of recall and recall of meaning. Furthermore, the research questions were answered based on the t-test's results reporting that there is a significant difference between males and females in vocabulary recall with the females outperforming the males in every tested aspect. More precisely, it has been confirmed that there is a significant difference between male and female performance in vocabulary recalling speed with the females being faster, and a significant difference between male and female performance in recalling the meaning of the new vocabulary with the females being more accurate. This work studied vocabulary processing from the aspect of gender. Due to some constraints and the nature of the subject being an original work in gender studies, the results of this experiment should be considered in light of the study's limitations. First, the sample size is relatively small. Second, the difference in sample sizes for men and women. Although small, the difference of 21 women versus 14 men may influence the results since the research is mainly based on gender studies. Moreover, time was another issue considering that the experiment was held during class sessions which made it hard to adapt to the participants' schedules. In light of the previously mentioned points, the issue is still somehow vague and needs further research.

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