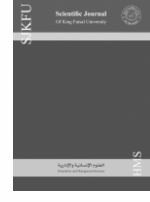




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### Gender Differences in the Lexical Retrieval of Emotionally Valenced Words: The Case of Adult Saudi EFL Learners

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### الاختلافات بين الجنسين في الاسترجاع اللفظي للكلمات ذات التكافؤ الانفعالي: حالة المتعلمين السعوديين البالغين الدارسين للغة الإنجليزية كلغة أجنبية

فايزة صالح الحمادي

قسم اللغة الإنجليزية، كلية الآداب، جامعة الملك فيصل، الأحساء، المملكة العربية السعودية

#### KEYWORDS

الكلمات المتفاحية

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#### ABSTRACT

The issue of gender differences in relation to lexical retrieval merits further study, particularly within the context of emotive words. The present study is centred on the possibility of finding gender differences between Saudi EFL adult students in retrieving positive, neutral and negative words. Due to the undecided positions of many researchers on whether there are differences between men and women in linguistic performance on different linguistic and non-verbal stimuli, a null hypothesis was formulated. The study adopted a quasi-experimental design. This type of design attempts to approach the rigour of an experimental design (Gravetter and Forzano, 2006). The sample was 70 Saudi EFL learners, with 35 men and 35 women. Two experiments were run: an RT experiment and a free-recall one, including positive, neutral and negative emotive words. The findings of the first experiment revealed no significant differences between the three types of words. The findings of the second experiment uncovered statistically significant differences between males and females in the retrieval of neutrally valenced words. The study has implications related to the way emotive vocabulary can be incorporated into any university curriculum.

#### المخلص

تركزت الدراسة الحالية على إمكانية إيجاد فروق بين الجنسين بين الطلاب السعوديين البالغين الدارسين للغة الإنجليزية كلغة أجنبية في استرجاع الكلمات الإيجابية، والحيادية، والسلبية؛ بسبب المواقف المترددة للعديد من الباحثين حول ما إذا كانت هناك فروق بين الذكور، والإناث في الأداء اللغوي على المحفزات اللغوية، وغير اللفظية المختلفة. تمت صياغة الفرضية الصفرية. اعتمدت الدراسة على تصميم شبه تجريبي. يحاول هذا النوع من التصميم الاقتراب من صرامة التصميم التجريبي. بلغ حجم العينة 70 متعلماً سعودياً للغة الإنجليزية كلغة أجنبية منهم 35 ذكراً، و 35 أنثى. تم إجراء تجربتين: تجربة رجوع الزمن، وتجربة الاسترجاع الحر بما في ذلك الكلمات الانفعالية الإيجابية، والحيادية، والسلبية. كشفت نتائج التجربة الأولى عن عدم وجود فروق ذات دلالة إحصائية بين أنواع الكلمات الثلاثة. كشفت نتائج التجربة الثانية عن وجود فروق ذات دلالة إحصائية بين الذكور، والإناث في استرجاع الكلمات ذات القيمة المحايدة. وللدراسة تضمينات حول كيفية إدراج الكلمات الانفعالية في أي منهج دراسي جامعي خاص باللغة الإنجليزية.

## 1. Introduction

It goes without saying that memory is a basic component of the human brain, and without it, regular day-to-day existence would be a steady battle. Research recommends that memory is a helpful process that might be affected by numerous internal and external factors (Iaccino, 1993). Specifically, one of these variables might be emotional excitement (Hamann, 2001). Some research suggests that memory is enhanced for emotional events, and this is seen as a transformative favourable position (Hamann, 2001). The pursuit of this connection drove specialists to concentrate on other essential parts of emotionally exciting material, including the impact of the valence on enhancements, or how positive or negative a stimulus is (Kensinger and Corkin, 2003). Be that as it may, the consequences of this examination did not deliver a reliable finding crosswise over examinations (Mather and NsSmith, 2008). Past investigation appears to show that contrasts between males and females' cerebrum life systems and capacities may likewise have an effect on the connection between memory and emotion (Bourne, 2005). Notwithstanding, research on the factors of memory, emotion, valence and gender differences has additionally yet to uncover a new set of results.

## 2. Review of Literature

### 2.1. Gender Effects on Emotional Functioning:

For the most part, in the field of emotions, females are believed to be all the more candidly talented and more expressive than men, explicitly sending and receiving non-verbal signals (Brody and Hall, 2000). Nonetheless, males are increasingly believed to be coherent and to express more displeasure than females. Additionally, males are

believed to be more logical and to express more anger than females. In terms of verbalising emotions, women tend to refer to positive and negative emotions more often in interpersonal situations and even in their writing (Brody and Hall, 2000). Regarding outward appearances and nonverbal conduct, again females are all the more facially expressive with most emotions and they will in general utilise a greater number of signals than males (Brody and Hall, 2000). These findings have even been found crosswise over societies.

A few investigations have shown that empathy is another variable in which males and females will generally vary (Eisenberg, 2000; Rueckert and Naybar, 2008). females

tend to show more elevated amounts of empathy than men. Notwithstanding, females may unequivocally embrace increasingly emotional interests, while other progressively inconspicuous proportions of empathy may increasingly exhibit rise to dimensions of empathy across genders (Rueckert and Naybar, 2008).

### 2.2. The Complexity of Memory as Linked to Emotions:

Past research has laid much emphasis on the connection between memory and emotions (D'argembeau and Linden, 2004; Doerksen and Shimamura, 2001; Kensinger and Corkin, 2003). Phelps (2004) views memory as the recollection of events at will. Yet findings from research concentrating on this connection are conflicting. Some studies consider that these findings exhibit an unmistakable connection between emotive substance and memory improvement (Julian, 1975), while others link results in direct complexity to this (Levine and Pizarro, 2004). Early research on this connection found that 'emotional memories often contained vivid, highly idiosyncratic details that seemed to endure for a long time' (Brown and Kulik as cited in Levine and Pizarro, 2004, p.532). Notwithstanding this memory enhancement, it was proposed that emotional recalls were

permanent. Later research has scrutinised this theory. Specifically, it was demonstrated that 'greater emotional intensity was associated with greater memory confidence but not with consistency' (Levine and Pizarro, 2004, p. 532).

In the aggregate, research has shown that recalls are not ideal portrayals of events, as was initially thought. Rather, these emotional recollections change over time and are affected by events and evaluations following the emotional event. The conceivable reasons that memory is enhanced for emotional events or circumstances are related to how much they are novel, particular and fascinating (Levine and Pizarro, 2004). Hamann (2001) preferred the evolutionary standpoint in this connection. Living organisms clearly recall data that are significant to the life forms' survival later on, explaining that an emotionally arousing event or stimulus would likely have 'both immediate and future relevance to survival and reproductive success'. Research in this field has additionally centred on the locations in the brain that are activated when preparing emotional data, so as to clarify this connection. Cerebrum structures that have been reliably ensnared in the preparation of feelings are the amygdala and the hippocampus (Phelps, 2004). The amygdala forms emotional substance and the hippocampus assumes a noteworthy job in revelatory memory (Phelps, 2004). Research exhibits that pressure hormones such as epinephrines are secreted when an individual is presented to an upgrade that inspires strong emotions (Levine and Pizarro, 2004). At that point, these hormones initiate noradrenergic frameworks in the amygdala, which thus aids the enhancement of long-term memory in other cerebrum zones (Levine and Pizarro, 2004).

### 2.3. Memory, Gender and Emotion:

There seems to be little research explicitly engaged with the effect of gender on the recall of positive and negative emotive words.

The connection between emotional and intellectual functions has attracted much consideration in the literature about memory processes. Interest in the association between memory and emotion can be followed back to William James and Sigmund Freud (Banich et al., 2009). Albeit an early pioneer in the fields of brain science and cognizance, William James accepted that very emotional events left an individual with close to ideal memories for those occasions (Banich et al., 2009). Other studies have shown that recollections are most certainly not permanent (Levine and Pizarro, 2004). Research has shown that a person's memory for an emotional occasion not long after the occasion and a memory for an occasion over a more drawn-out passage of time is connected yet not actually comparable (Scollon, Howard, Caldwell and Ito, 2009).

Notwithstanding the unpredictability of these connections, researchers started to reconsider the impact of gender differences on memory for emotive stimuli. A meta-diagnostic study by Wagner, Phan, Liberzon and Taylor (2003) of neuroimaging scans of emotional processes found more lateralised handling of emotion in males and more brainstem activity in females. A few investigations show that sympathy is another variable in which males and females will generally differ (Rueckert and Naybar, 2008). A few studies demonstrated that females will display higher amounts of empathy than males. Nonetheless, females may expressly embrace increasingly empathetic attitudes, while other increasingly unobtrusive proportions of empathy may exhibit more equal levels of empathy between genders (Rueckert and Naybar, 2008).

Burton et al. (2004) maintain that little research has been conducted in the field of memory differences between males and females, as far as emotions are concerned. Nonetheless, they propose that the male memory may dispose of data that are not crucial; however, it turns

out to be attentive to emotive data. Interestingly, the female memory may take all verbal data as critical and place equated emphasis on all incoming verbal material (Burton et al., 2004). This finding demonstrates that emotional material is not marginalised in a perpetual frame in the mind. As Scollon et al. (2009) see, a person's present intellectual functioning (e.g. qualities, convictions and inspirations) will influence emotional data retrieval, and along these lines, these recollections are always reproduced.

As indicated by Parrott and Spackman (2000), emotions can influence memory in three ways: when the data is candidly exciting, when an individual is in a specific emotional state amid encoding of data, and when an individual is in a specific emotional state amid recall of the data.

Onoda et al. (2009) show that the connection between memory and emotion is noteworthy, as most human exercises are upheld by memory and people encounter an assortment of emotional states every day. It has been hypothesised that events with a forceful emotional segment are more strikingly retrieved than those without such parts (Nielson, Yee and Erickson, 2005).

Ochsner and Schacter (2000) argue that people regularly exhibit unrivalled memory for emotional encounters, while memory for other events is weakened. Ultimately, the focal details are better recalled than the marginal ones. Individuals regularly trust that they can recall emotional events with exactness, a phenomenon regularly referred to as flashbulb memory, which compares the dimension of precision to that of close photographic quality (Kensinger, Garoff-Eaton and Schacter, 2006). Be that as it may, investigation into that does not appear to demonstrate that self-reported enhancement of memory for emotional events is connected to real memory enhancements (Kensinger et al., 2006). The consistency of recollections of emotional events after some time is an avenue of research which has delivered conflicting results.

### 2.4. Recall of Positive and Negative Words across Genders:

There is little, if any, significant research on the question of gender differences with respect to emotional data retrieval. Armony and Sergerie (2007) found a memory enhancement effect for fearful faces with both male and female members in contrast with impartial faces. Mather and Nesmith (2008) show that memory was improved with candidly exciting pictures contrasted with impartial ones. This impact was most articulated for the negatively valenced pictures. Once more, no noteworthy gender differences were found in this study (Mather and Nesmith, 2008). These findings appear to suggest that few researchers have found that females recall more emotive material than males. An issue with these examinations is that both used emotionally arousing pictures, and it is not known whether this can be applied to other stimuli.

No study has to date has directly addressed the effect of gender on lexical retrieval of emotive words versus non-emotive ones except Cuming's (2013). This study involved 71 students from the University of Johannesburg. A word list was developed from a database of words rated in terms of valence and arousal, which was used to test the recall of neutral, positive and negative emotive words for each participant. Statistical techniques were used to analyse the data. The results exhibited statistically significant differences between male and female participants in the recall of neutral words and the total recall of words. Females in particular recalled significantly more neutral words than males, and the same result was found with respect to the total number of words recalled. There were no statistically significant differences between male and female participants in the recall of positive and negative emotive words.

The present study will fill a gap in the literature and apply a quasi-experimental design to detect any gender differences in the lexical retrieval of emotive and non-emotive words by adult EFL Saudi male and female students. It is centred on the possibility of finding gender differences between Saudi EFL adult students in retrieving positive, neutral and negative words. Due to the undecided positions of many researchers on whether there are differences between males and females in linguistic performance on the different linguistic and non-verbal stimuli matters.

The following null hypothesis was formulated: Saudi males and females exhibit no significant statistical differences in the recall of positive, neutral and emotive words.

### 3. Objectives of the Study

The aim of the present study is to apply the quasi-experimental design to detect any gender differences in the lexical retrieval of emotive and non-emotive words by adult EFL Saudi males and females.

### 4. Methods and Materials

#### 4.1. Research Design:

The study adopted a quasi-experimental design. This type of design attempted to approach the rigour of an experimental design (Gravetter and Forzano, 2006). It is usually used in experiments involving human participation and thus takes into consideration the intervention of uncontrolled variables such as mood, time, and environment. This design was used as the study involves a comparison between two groups (males and females). The variables are as follows:

- Dependent variables: The recall of positively valenced, negatively valenced, and neutral words making up the dependent variables measured in each of the two groups
- Independent variables: gender, age (not studied here since it was not the focus of the study)

#### 4.2. Participants:

The sample was made up of Saudi EFL university students currently enrolled at King Faisal University in the Department of English. They were randomly selected from a population of 400 males and females. The size of the sample was 70 participants, with 35 males and 35 females. All the participants voluntarily took part in the two experiments. The age of the participants ranged between 19 to 21 years. The minimum and maximum ages were 19 and 21, respectively, with a standard deviation of 1.10.

#### 4.3. Procedure:

##### 4.3.1. Lexical Decision Tasks

Students were given information about the research and informed about the study procedure. They did not receive any compensation or course credit for participation. The study consisted of two experiments:

##### 4.3.1.1. Experiment One: Reaction Time (RT) Recall:

- In the first phase, students saw a list of positive, neutral and negative words on the screen. This took 20 minutes, and then the lists disappeared.
- In the second phase, students were presented with lists that contained some of the words they had seen before. The words were presented one at a time. If the word was on the lists they had seen, participants press the 'y' key; if not, they press the 'n' key. Reaction times were measured through a simple programme specifically designed for that purpose. The phase took ten minutes.

The statistical tools employed for the statistical analysis include the t-

test and the Mann–Whitney U Test.

##### 4.3.1.1. Experiment Two: Free Recall:

- During the first phase, the participants were given instructions detailing the steps of the procedure. The instructions informed the participants that they will be presented with a list of words on a projector screen which they will need recall at a later stage (see Appendix 1). The first phase had a set time of five minutes, where they were presented with three lists, each comprised of five words. The first list comprised positive words, the second neutral words and the third negative words.
- After seeing the words, students were given an interval of five minutes to write down as many words as they could recall in any order. This phase had a set time of 15 minutes.

The t-test for the two samples was conducted. The Mann–Whitney U test was run for experiment two because, unlike the t-test, it does not require the assumption of normal distributions. It is nearly as efficient as the t-test on normal distributions. This test can be used to determine whether two independent samples were selected from populations that have the same distribution; a similar nonparametric test used on dependent samples is the Wilcoxon signed-rank test.

### 5. Results and Findings

#### 5.1. Findings of Experiment One:

The t-test revealed no significant differences in the recall of positively valenced words (Table 3) between males ( $M = 331.23$ ,  $n = 35$ ) and females ( $M = 289$ ,  $n = 35$ ).

Table 1: T-test results for timed recall of positive words across genders

Gender	Mean	Std	t-test
Male	331.23	222.16	t (0.025) for 95% CI = 1.9948 declare p larger than alpha = 0.05 not significant.
Female	289	202.91	
Sum	620.23	425.07	

The t-test revealed no significant differences in the recall of neutrally valenced words (Table 4) between males ( $M = 334.43$ ,  $n = 35$ ) and females ( $M = 273.06$ ,  $n = 35$ ).

Table 2: T-test results for timed recall of neutral words across genders

Gender	Mean	Std	t-test
Male	334.43	218.98	t (0.025) for 95% CI = 2.0098 declare p larger than alpha = 0.05 not significant.
Female	273.06	244.64	
Sum	602.04	463.62	

The t-test revealed no significant differences in the recall of negatively valenced words (Table 5) between males ( $M = 401.71$ ,  $n = 35$ ) and females ( $M = 322.83$ ,  $n = 35$ ).

Table 3: T-test results for timed recall of negative words across genders

Gender	Mean	Std	t-test
Male	401.71	254.39	t (0.025) for 95% CI = 2.0099 declare p larger than alpha = 0.05 not significant.
Female	322.83	227.15	
Sum	724.54	481.54	

#### 5.2. Findings of Experiment Two:

The Mann–Whitney U Test for positive words revealed no significant differences in the recall of positively valenced words between males ( $Md = 4.20$ ,  $n = 35$ ) and females ( $Md = 5$ ,  $n = 35$ ),  $U = 271.70$ ,  $z = -1.112$ ,  $p = .22$ ,  $r = .15$ .

Table 4: Mann–Whitney U Test results for positive words

	Positive	
Mann–Whitney U	271.70	
Wilcoxon W	348.20	
Z	-1.112	
Asymp. Sig. (two-tailed)	.218	
a. Independent Variable: Gender		
Positive		
Gender	N	Median
Male	35	4.20
Female	35	5.00
Total	70	5.00

The Mann–Whitney U Test for neutral words revealed a significant difference between males and females in the recall of neutral words, with males ( $Md = 3$ ,  $n = 35$ ) and females ( $Md = 4$ ,  $n = 35$ ),  $U = 162.5$ ,  $z = -2.55$ ,  $p = .005$ ,  $r = .33$ . In terms of Cohen's criteria, this is considered a medium effect size (Pallant, 2010). Thus, females were demonstrated to have remembered significantly more neutral material than males.

Table 5: Mann–Whitney U Test results for neutral words

		Neutral
Mann–Whitney U		162.50
Wilcoxon W		249.30
Z		-2.554
Asymp. Sig. (two-tailed)		.005
a. Independent Variable: Gender		
Positive		
Gender	N	Median
Male	35	3.00
Female	35	4.00
Total	70	4.00

The Mann–Whitney U Test for negative words revealed no significant differences in terms of recall for negatively emotive words of males ( $Md = 4.5, n = 35$ ) and females ( $Md = 5, n = 35$ ),  $U = 270, z = -1.22, p = .20, r = .15$ .

Table 6: Mann–Whitney U Test results for negative words

		Negative
Mann–Whitney U		270.00
Wilcoxon W		348.00
Z		-1.222
Asymp. Sig. (two-tailed)		.005
a. Independent Variable: Gender		
Positive		
Gender	N	Median
Male	35	4.50
Female	35	5.00
Total	70	5.00

It is noteworthy that the Mann–Whitney U Test for the total number of words revealed a significant difference in the total number of words recalled from the word list, with females ( $Md = 14, n = 35$ ) recalling significantly more words than males ( $Md = 11.5, n = 35$ ),  $U = 166.0, z = -2.41, p = .003, r = .35$ . This is a medium effect size according to the criteria set by Cohen (Pallant, 2010).

## 6. Discussion of the Findings

The findings of the second experiment uncovered no noteworthy differences between males and females in the retrieval of negatively valenced words. Males and females recollected around an equivalent number of negatively emotive words from the word list. This observation is in accordance with past research (Arnone et al., 2010). Despite the fact that women are thought to tend to recall positive and negative events, this appears to tally with personal memory explicitly (Canli et al., 2002). In this manner, in a memory test of episodic memory, there are no critical contrasts between males and females, for the most part (Guillem and Mograss, 2005).

In the two experiments, the findings are tallied with Burton et al. (2004), who contend that there are few studies on gender differences in emotional memory, and this makes it hard to set up a steady example of results in this respect. As indicated by Rozenkrants and Polich (2008), some investigations demonstrate that females respond unequivocally to negatively valenced data, and males respond emphatically to positively valenced material. This stronger response may show that females would recall negatively valenced data more than males do with respect to positively valenced material. The findings of their study uncovered no significant differences in cerebrum movement between genders when seeing positive or negative material. Also, there were no differences found in connection to the course of valence of the material (Rozenkrants and Polich, 2008). In other words, in the first experiment, males and females responded similarly to emotionally loaded material, and this did not vary significantly between positive and negative material.

In the second experiment, females were found to recall essentially increasingly neutral words than males. Although past research uncovered conflicting findings with respect to gender differences, there is some understanding that females by and large perform better than males in long-term memory tests (Burton et al., 2004; Canli et al., 2002). A few researchers contend that males' cognitive mindset is receptive to the general essence of data, while females' subjective cognitive mindset is a more basic elaboration of data (Guillem and Mograss, 2005). An increasingly elaborate processing style may lead

females to encode words better than males, whose cognitive style would not prompt progressively effortful preparing.

However, in the timed recall experiment, both performed similarly. This is in concurrence with Burton et al. (2004), who contend that there are few studies on gender differences in emotional memory, which makes it hard to set up a steady example of results. One reason might be the effect of priming, which can operate better in free recall than under pressure. Particularly, semantic priming affected the activation of negative words from the same semantic field, such as 'murderer' and 'intruder'

The findings of the two experiments did not point to crucial differences between males and females in the retrieval of negatively valenced words. In this manner, male and female participants recalled a similar number of negatively emotive words. This is in concurrence with past research results (Canli et al., 2002), where negatively valenced words are thought to conduce to a more behavioural reaction, which may have a more significant enhancing impact on memory (Kousta et al., 2009). The study by Cahill et al. (2004) could underpin this finding.

One conceivable clarification of the findings in the present study can be related to the hypothesis of desensitisation. Fanti et al. (2009) characterise desensitisation as the reduced emotional responsiveness to a negative or an aversive stimulus after repeated exposure to it. Being repeatedly exposed to reality or media brutality may prompt critical changes in conduct and in emotional functioning (Funk et al., 2004). Despite the fact that initial responses to violent events might be solid, after some time, these responses diminish and an individual moves toward becoming habituated to violence (Fanti et al., 2009).

## 7. Qualitative Evaluation and Conclusions

A qualitative appraisal of the way of reacting on the recall test was incorporated notwithstanding the statistical analyses. From the results of the recall test, it appeared that the primacy and recency impacts were clear (Neath and Suprenant, 2003). Likewise, the way of reacting has shown that numerous members recollected certain groupings of comparative words. This can be found according to sets with words grouped together, (e.g. 'killer', 'intruder' and 'torment'). This is in accordance with the relatedness and distinctiveness model of memory (Fiske and Taylor, 2008), as these words are identified with one another, reinforcing the association between these words and bringing about better memory results for these words. As each word is recalled (i.e. 'killer'), comparable words (i.e. 'murderer' and 'torment') are activated in the memory and retrieved by the participant. Additionally, this is in accordance with the hypothesis on relatedness and distinctiveness proposed by Talmi et al. (2007), which states that emotionally stimulating words improve memory due to their comparability with one another and their uniqueness in respect to neutral words.

The findings of this study demonstrated that significant gender differences exist in the free recall of neutral words and the aggregate recall of words from the word list. In any case, there were no gender differences found in the retrieval of positive or negative emotive words in both experiments. The first experiment adopted a reaction time method and no statistically significant results were found, while the second experiment with free recall did find significant differences.

There were surely limitations of this study that may have affected the results. These limitations include the number of the sample, the age group and the words selected as stimuli. The results achieved in this study fill in a gap, allowing future research to expand on them. It appears that this study was one of the first to focus on gender differences as well as memory in a Saudi setting, utilising a word list. The results of this investigation are not in accordance with the

prevalent memory processes for emotive material that has been found in different regions than Saudi Arabia. This may point to an essential distinction in the results of this study when contrasted with past studies in different regions.

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## Biographies

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With both an MA and a PhD in applied linguistics, Dr AlHamadi has published extensively on applied linguistics, psycholinguistics, discourse analysis and translation studies, and delivered workshops on various administrative issues. She acted as vice president of female students' affairs for seven years and as vice dean for Library Affairs for six years. She is currently associate professor and a member of a number of scientific and academic counsels, committees and associations.

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