A Grammatical-Lexicographic Study of Structure in Some Selected Samples of Second Language Mental Lexicon of Kuwaiti Speakers

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Abstract

This study investigates Kuwaiti learners' use of English Word Associations. The issue of how second language (L2) learners structure their lexical knowledge has been of interest to L2 researchers for decades. However, the role of language proficiency in determining qualitative and quantitative features of lexical knowledge is unexplored. This study replicates Zareva (2007); therefore, the word association test used is the same. For this purpose, 40 Kuwait University students were distributed into two clusters according to their language aptitude levels. In addition, another set of five native speakers of English was tested to compare the organisation of word association of the Kuwaiti speakers to the organisation of word association of the native speakers of English. The method involved a written vocabulary test consisting of 76 different word items where subjects were asked to select the suitable answer out of 4 possible answers related to the given word's meaning and think of three possible words to associate with the given word. Results showed consistency with Zareva's findings and suggest that variations in lexical knowledge organisation involving native speakers and L2 learners are quantitative instead of qualitative.

Keywords: second language mental lexicon, word association, second language learners

1. Introduction

There is an ongoing debate in generative research into second language acquisition (SLA) about the extent to which second language (L2) grammars diverge from native speakers and whether or not innate linguistic knowledge (Universal Grammar) is still available to older L2 learners. Much debate centred on the acquisition of morphology and syntax. There has been much less work looking at the development of lexical knowledge and the extent to which L2 learners' lexicons diverge from native speakers. This study explores the lexical organisation of L2 English learners whose first language (L1) is Kuwaiti Arabic, focusing on associative connections between lexical items.

2. Research Questions/Hypothesis/Objectives

The study's aim is to replicate Zareva's (2007) study, who undertook a word association test in English with both native speakers and L2 speakers from various L1s. Depending on whether the results show similarities or differences between the L2 speakers and the native speakers, inferences were drawn about whether properties of Universal Grammar are involved and the extent to which L2 learners have access to universal properties of the lexical organisation.

This research tested two hypotheses. The first hypothesis stated that there would be variances in the native speakers of English and L2 speakers in their mental lexicon organization with L1 Kuwaiti Arabic. In particular, they will differ quantitatively (in terms of the number of associations between items and the strength of those associations) and qualitatively (in terms of paradigmatic, syntagmatic, and phonological associations). The second hypothesis stated that less proficient L2 speakers would be quantitatively and qualitatively different in lexical organisation from more experienced speakers.

3. Review of Literature

Recent studies on the topic added to the limited literature on qualitative studies. These studies explored a variety of angles for qualitative and quantitative L2 mental lexicon. Word association remains the common measure for second language acquisition. However, the approaches in current literature present curious perspectives. While some studies examined both qualitative and quantitative dimensions, some research focused on either aspect. More critical methods of establishing L2 acquisition also clarified earlier approaches. Four more recent studies inform the research trends in English as L2 mental lexicon. Dutch, Turkish, and Chinese L2 speakers of English show varying word association competencies. Although there is no attempt to compare their outcomes, the results reveal different mental lexicons, which may not be concluded universally for students of English as a second language.

Matusevych, Dehaghi, and Stevenson (2018) demonstrated the difference of mental lexicons between monolinguals and bilinguals through a computational model in free association. This study used more than one proficiency group. This model assisted in testing the hypothesis that bilingual relationships in L2 are affected by their L1 via links among lexicons of Dutch-English monolinguals and bilinguals. The premise is that there were indistinguishable differences in the word associations of non-native and native speakers. The bilingual Dutch-English semantic network addressed this issue through statistical analysis and showed which forms of limits were methodically provided for foreseeing the bilinguals' free word. Results indicated that L1 Dutch responses were significantly close to the responses of Dutch monolinguals. A quantifiable difference revealed that Dutch-English bilinguals showed methodically varied answers in their L2 from English monolinguals.

Further tests also indicated that the impact of L1 and L2 word associations nearly matched those of the Dutch-English bilinguals. In addition, there is a strong connection between the bilingual lexicon in translation equivalents. The study confirms that for bilinguals, the mental process describes the translation of L2 cues into L1, followed by the generation of L1 associations, and then translating the words back into L1. The researchers did not find the usefulness of syntagmatic and orthographic responses in the data. The findings suggest that bilinguals merely actuate a more expansive collection of L2 words and samples from them. Although the study planned to examine how reliably different types of responses are generated through several cue lexes, a more realistic model would have measured the development of the bilingual lexicon. Weights in their model may have been modified along with the word type. While the study examined quantitative and qualitative dimensions, the model may be enriched with syntactic and semantic properties and word frequency.

In Lu and Lim (2021), the qualitative and quantitative word association analyses of Chinese EFL learners' English mental lexicon show that vocabulary size had a meaningful correlation with the accuracy in paradigmatic and syntagmatic associations. However, the conclusion does not hold for the phonological association as some high-level learners demonstrated very low retrieval of phonological associations, and low-level learners showed strong phonological associations. The research intention was that vocabulary knowledge stipulates the learners' essential skills to receive L2 input leading to vocabulary acquisition. As L2 learners constantly want to develop vocabulary, the study specifically investigated the types of word association in Mandarin Chinese university students living in China or Korea. Both groups of students showed intermediate to high intermediate overall English proficiency. The inquiry or comparison of the role of L1 in the Chinese EFL learners' development of mental lexicon with those in Korea accounted for the potential difference in results. Lexical decision task, vocabulary size test and word association task helped establish the correlation. The findings showed that the students frequently activated paradigmatic association in their L2 mental lexicon and then by phonological and syntagmatic associations. This outcome suggested that L2 learners' mental lexicon relied on their English vocabulary size, noting an inconsistency on word association types. The Chinese EFL learners' vocabulary size shows their ability to identify the words' meanings irrespective of how well they know them. Setting aside the paradigmatic, phonological, or syntagmatic association, the links between the recognized word and other words develop once the word is identified. With several levels of paradigmatic, phonological, and syntagmatic links, there is an increased tendency to build more connections as more words are retained in the L2 mental lexicon. The researchers also implied that L1 played some role in the L2 mental lexicon development. In addition, the study explained that the results might be related to the environment of English learning in both locations. The English mapping systems and Korean Hangul are more similar, contrasted to the Chinese writing system. Chinese EFL learners showed more frequent phonologically related words than Korean EFL learners. The difference suggests that the Chinese L2 words' forms and meanings may be more robust than Korean EFL learners. These claims, however, need more detailed information regarding the participants' overall proficiency and linguistic background due to the influence of the different learning environments. A more comprehensive approach can directly compare EFL learners with varying L1 backgrounds. Furthermore,

conclusions may be limited to written access of L2 mental lexicon, particularly with the phonological association.

Contrary to Lu and Lim (2021), Jiang (2019) suggested that the Chinese mental lexicon is not structured on a phonological basis. However, this study cited Lu's (2010) earlier study indicating the tendency of Chinese L2 learners to respond phonologically more to unfamiliar stimulus words. Considering the time-lapse, observations in the Chinese L2 mental lexicon may be attributed to emergent factors. However, Jiang (2019) justified the difference to the research method, i.e., the aural-oral mode of data collection and its corresponding time-pressure procedure. The perceived effect on results prompted Jiang's (2019) research to adopt the written data collection mode. The insight indicated that receiving stimulus words impacts the production of phonological responses.

The mental lexicon works in different proficiency levels is a curious study angle in Yolcu and Demirel (2018). Since humans show varying abilities to relate words, the research expected to reveal specific phonological and semantic characteristics corresponding to their proficiency levels. Both quantitative and qualitative methods helped to determine this difference. Quantitatively, the study revealed phonological and semantic strategies of individuals with high and low proficiencies. The word association test results for 50 Turkish native speakers with English as L2 showed little difference between low and high proficiency learners. All participants linked the words by establishing a semantic relationship. Those with low proficiency levels tended to use more phonological strategies than those with high proficiency levels. In addition, there is no difference in the use of semantic techniques in word association. Qualitatively, the participants verbalized their thoughts, reflecting their personalities and personal backgrounds through a retrospective interview. The findings concluded that the associative responses to stimulus reflect the mental processes of individuals.

Bui, Skehan and Wang (2018) also examined high proficiency learners and the effects of pre-task planning, online planning, and repetition. Although the study is literature-based, the insights include qualitative and quantitative approaches. In studies cited in this research, retrospective interviews revealed differences in low-intermediate and advanced foreign language students. Learners depend mainly on retrieval and rehearsal strategies. More proficient learners employ these strategies more evenly, while the other group uses more retrieval strategies. Learners with high proficiency have not performed well on task-based research and still need to develop a broad range of formulaic language skills. The differences suggest that learners need to draw from the mental lexicon to evade repetition and create lexical diversity compared to native speakers. Since performance varies in exciting ways for high-level performers with native speakers and intermediate learners, further studies support these observations. In addition, this research identified a difference in the strategies of the learner groups.

In current studies, word association has been used to explore the L2 mental lexicon. Their results suggest different aspects of lexical competence, including vocabulary size, spontaneous lexical production, and organization. The quantity of the mental lexicon signifies an individual's verbal fluency, as this ability demonstrates the retrieval of as many correlated words as possible given a limited time (Ostovar-Namaghi, Nakhaee, & Abbasi-Sosfadi, 2020). Specifically, verbal fluency comprises semantic and lexical fluency. The research addressed a gap in determining the interrelations of lexical fluency, a remarkable predictor of second language performance, on C-tests, a text completion test based on reduced redundancy principle. The study, unlike this research, built upon sex differences in lexical fluency test and C-test performance, using university undergraduate students. The correlational analysis and independent-sample T-test revealed a strong positive correlation between lexical fluency and the C-test. Notably, lexical fluency predicts the variance in C-test performance by 54%.

On the other hand, gender difference did not yield significant results and claimed not to intervene in the findings. This research showed that lexical fluency interventions could significantly impact EFL students' C-test performance as a well-established predictor of language proficiency. The study recognizes C-test as a beneficial intervention tool for lexical fluency. However, its internal and external validity may be further explored. Correlations between listening, reading, speaking, and writing and lexical fluency can be extended to determine overall language proficiency.

Since no study in Kuwait had been conducted in the field, this research intends to determine the mental lexicons of L2 learners. Moreover, with the inconsistent findings in various environments, this study aims to determine if Zareva's (2007) assertions may be supported in the Kuwaiti mental lexicon of L2 learners.

4. Methodology

4.1 Subjects

To test our assertions, a sample of 45 adults participated in the study. There were five native speakers (NSs) and 40 Kuwaiti speakers. Despite the invitations to match the number of participants in each group, only a total of five NSs had been willing to participate. The 40 Kuwaitis were randomly selected from Kuwait University colleges, the College of Arts, and the College of Education in different academic years. Kuwaiti participants were all students of English Literature and Linguistics. A placement test determined the students' proficiency level. The reason for choosing Kuwait University students was that there were many subjects at the intermediate level. Also, since English is the medium of instruction in the modules, students should have an excellent English level to understand the courses. The main difference between the two colleges is that Education students learn more educational modules in Arabic as they are expected to work as teachers after graduation. Arts students enrol for more focused English studies, either in English Literature or linguistics.

Table 1. Demographic information of L2 learners

		Advanced	Intermediate
Gender	Male	8	7
	Female	12	13
Age	19 - 21	8	17
	22 - 24	9	3
	25 +	3	0
College	Art	12	6
	Education	8	14
Academic Year	1	0	1
	2	1	10
	3	7	4
	4	12	5
	Total	20	20

4.1.1 Demographic Information

The sample size included 45 participants, consisting of 5 native speakers, 20 advanced learners, and 20 intermediate learners, as shown in Table 1. Based on the demographic profiles, the advanced learners comprised mostly of females, 22 to 24 years old, who belong to the College of Arts in their fourth-year level. For the intermediate level, most informants were females, 19 to 21 years old, who were enrolled in the College of Education in their second-year level. There are more females in the sample since in Kuwaiti universities more females take Education courses.

On the other hand, the NSs consisted of two males and three females only. More of the participants were at least 25 years old, as shown in Table 2. Only 45 participated in the study as the others dropped out from the test.

Table 2. Demographic information of NSs

		Natives
Gender	Male	2
	Female	3
Age	19–21	1
	22–24	1
	25 +	3
	Total	5

4.2 Instruments

Kuwaiti participants were placed into the Quick Placement Test (QPT) to determine their levels of English language proficiency. However, the study administered only Part One of the test in the experiment since, according to the instructions of QPT, the test outcome could be assumed from the score of Part One. From the results, students could be categorised as either advanced or intermediate.

QPT is a flexible English language proficiency test that assesses Reading, Vocabulary, and Grammar. QPT is

easy to administer and score. QPT's design helps teachers distinguish students' levels and place them in separate classes according to their language.

As for the test of word associations (WAs), Zareva's (2007) test was used. The test consisted of 73 [spell out SWs here] (SWs). The random selection was based on arranged sampling from the Hornby lexicon's starting point. The sample involved each first new boldface main entry from the right-hand file from every 20th column. The selection started from the initial page in the wordlist. Zareva (2007) argued that selecting this WA test could preclude partiality in the assembled WA data associated with the SW choice procedure as used by some earlier studies. Therefore, the test had a suitable representation of various frequency groups plus the complete lexical classes of content words, such as verbs, nouns, adverbs, and adjectives. However, every SW was accompanied by four possible choices based on word familiarity:

  1) I have not seen this word before___

  2) I have seen this word before, but I do not recall what it means ___

  3) I think this word means _____

  [provide a synonym or brief explanation]

  4) I know that this word means _____

  [provide a synonym or brief explanation]

A fifth choice was added to determine the collected WA data by questioning the participant to provide one association with 3, 2, or minimally.

  5) I associate this word with _____ _____ _____

Participants were presented with the general aim of the test on the first page. Moreover, instruction was given in L1 (Arabic) and English as well, in the following manner:

> If you have not seen this word before, you would tick statement (1) and move on to the next item. If you have seen the term except do not remember the word's meaning, you would tick (2) and move on to the next item. If you think you know what it means or know what it means, you would provide another word that means the same thing (a synonym) or give a brief explanation in either (3) or (4). If you have answered (3) or (4), I would like you to think of up to three other words you associate 'sandwich' with. If you cannot think of three, two or one is fine.

Four examples of ideal answers were given to clarify the participants and to draw the participants' attention in the test. The test consisted 76 items, but only 73 were analyzed. The test required the students' names, majors, and year levels since some Kuwaiti students behave irresponsibly towards questionnaires. Collecting the students' names assured them that they would gain credit for completing the papers later from their tutor.

4.3 Procedures

The researcher met with the head of the English Department at the College of Arts to discuss the arrangements for the test. Upon approval, the researcher attended the first class during the second part of the lecture as arranged with the tutor. The tutor encouraged the participants to take part in the test to gain extra marks as credit for their voluntary participation. The test took place during lecture time.

The researcher administered two tests, the placement and the vocabulary tests for each of the classes. The total time for the tests was one hour—20 minutes for the placement test and 40 minutes for the WAs vocabulary test. For the first class, only 20 qualified for inclusion in the analysis. Among the 28 students given this test, eight students were excluded since either they quit, belonged to another department, or did not complete the test. For the second class, 20 participated out of the 26 students since the remainder was excluded for not completing the test.

The Head of the Department signed the ethical approval on behalf of the students. The researcher explained to participants of their rights to quit at any time.

4.4 Data Analysis

The study compared data between participants in terms of the quantitative features. The features of the three groups, comprising the advanced learners, NSs, and intermediate learners, were analysed by associating one measure with each of the elements in the following manner:

  - measuring the commonality of replies to determine the strength of the associative domain

  - calculating the total quantity of responses to determine the size of the association

The total number of different measured-Response heterogeneity responses. Moreover, the study examined the qualitative features of the three groups of participants concerning the type of association in the following manner:

- the ratio of paradigmatic

- the ratio of phonological

- the ratio of syntagmatic associations.

Furthermore, the study compared these features to measure the strength of the relationship between the qualitative and quantitative features of the three groups of participants. The scoring began by distributing WAs into lists. Each list represented a group of participants, and responses included in the lists were only those with correct meanings of the SWs. Zareva's procedure in considering correct responses of the SW's expected lexical class. The expected response would be an adverb similar to the SW in the test for the SW hard. Hence, reactions such as "strenuously" and "laboriously" in option (3) or (4) were considered.

On the other hand, if the participants' associated responses, for example, "difficult" or "strong" or any similar adjective in option (3) or (4), the answer in (5) was excluded from the analysis as a result of not fulfilling the condition of lexical class. Nevertheless, Zareva (2007) did not justify the reason for doing it in such away. In addition, responses were restricted, and some were treated as separate associations. For example:

1) All inflected words were treated as one form. Thus, inflexion of the plurals as in "bed," and the word "beds" was treated as one word. Additionally, the third person singular as "collect", "collects" was treated as one word. The "-er", "-est" preference inflexions for adjectives were treated also as one word as in *smart-smarter-smartest*.

2) Irregular inflected forms were treated separately from the base word; for example, the base word "child" and its irregular plural form "children", "good" and "better", or "go" and "went."

3) Only the headword was accounted for in multiword responses. Hence, only one word was considered for multiword responses such as people and some people, or the headword *desire in burning desire.*

4) SW included in multiword responses were excluded in the analysis. An example would be excluding "bracelet" (SW) from the response "gold bracelet" and considering only "gold" in the analysis.

5) Derivational forms were considered distinct forms: *breathing*, *disregard*, *mindless*, *unusual*, and *supportive*. Even the suffixes "-*ing*" and "-*ed*" were treated as derivational rather than inflectional in the analysis.

Table 3 below shows the scoring procedure for the qualitative features. The number of responses gauged the total number of responses representing the association's size. The participant's overall responses to every given SW in the group list were taken.

Table 3. Scoring procedure of the qualitative features

Subject	Word 1		Word 2	
	advantageous	Score	blanket	Score
1	good	1	comfort	2
	choice	1	warmth	3
			bed	1
2	better	2	warmth	3
	preferred	1	winter	1
				1
3	better	2	sleep	1
			comfort	2
			warmth	3
Total Responses	5		8	
Commonality Total Score		7		17
No. of different associations		4		5

Despite that Zareva's (2007) explanation of calculating the strength of the associative domain was not completely clear, the researcher described the way of measuring the strength of the associative domain as follows:

Zareva (2007) indicates that the associative domain's strength relates to the measure of response commonality. To determine this measure, each score for every response was determined by the total rate of its occurrence

among a group's responses. The scores range from 1, the lowest commonality score given to a WA, and 29, the highest score. If the group obtains a score of 1, this means that only one member in the group gave the association. If the group obtains a score of 29, every member in the group provided a similar association to a given term.

According to Zareva's results, it is clear that the mean of commonality is about three times the mean of total responses. Therefore, the following method was used in calculating the raw data of the within-group associative commonality that relates to the strength of the associative domain:

a. If the word occurs once, the commonality score is 1.

b. If the word occurs more than once, the commonality score is the number of occurrences.

The number of different responses related to the heterogeneity of the associations and different responses is a sign of how participants associate things and ideas to certain SWs; hence, the number of different answers given to each SW participant in each group list was determined.

On the other hand, qualitative features were measured separately by calculating each response category in paradigmatic, syntagmatic, and phonological associations. Associations were classified concerning lexico-syntactic with the given SW. Moreover, differences between associations were based on previous general studies discussed earlier. Paradigmatic associations were determined about the lexical class of responses. If the response had the same lexical class as the SW, it was classified as a paradigmatic association. For example, if the response were beneficial for the SW, it would be classified as paradigmatic. The two words share the same lexical class in that both are adjectives. However, it is considered syntagmatic if the two words, response, and SW, have different lexical classes. If the benefit was the response for the SW was advantageous, the response is not an adjective. Hence, the response and the SW have different lexical classes. In addition, syntagmatic associations were related to responses that can collocate with SWs to form a syntactic string. For example, in the SW pillar, the response community can develop a syntactic string with the SW. Finally, phonological connections were classified as replies linked to SWs in phonological terms, with no syntactic or semantic connections to the SWs. Hence, morphological derivations were classified as either paradigmatic or syntagmatic associations rather than phonological as in *defensive-offensive* or *amoral-moral*.

L2 researchers have become more accurate in defining the criteria they select for their qualitative WA distinction. This outcome was achieved by elaborating rich information on the coding process. They mainly adopt L1 WA coding descriptions developed in earlier studies. Therefore, the same method of classifying qualitative WA was used to maintain consistency in the category.

5. Data Interpretation and Results

The first hypothesis stated that there would be quantitative and qualitative variances in the native speakers of English and L2 speakers in their mental lexicon organization with L1 Kuwaiti Arabic. To test if there are variations in the means of the independent variable, the mental lexicons of advanced L2 learners, NS, and intermediate L2 learners of English in the vocabularies that they already recognize, the study conducted a three one-way analysis of variance (ANOVA). The dependent variable is each participant's total number of WA, measured within-group response commonality, and the number of different responses.

Table 4 below shows their means and the standard deviation from the three ANOVA tests. The results indicated a suggestive group outcome on all dependent variables linked with the quantitative results of the participants' meaning connections.

Table 4. Advanced and intermediate L2 learners of English and NSs' group means and standard deviations for the associative patterns.

Associative Patterns [*]	Mean			Standard deviation		
	NSs	L2 Advanced	L2 Intermediate	NSs	L2 Advanced	L2 Intermediate
Total	121.60	58.80	34.50	39.89	21.33	13.46
Common	154.80	134.70	79.65	43.40	36.03	22.14
Different	93.20	34.45	19.25	39.11	17.38	10.49

Note. * Total stands for the total number of associations; common stands for within-group associative commonality; and different stands for the number of different associations.

The analysis indicates a statistically significant variance among the total number of responses of the three groups, at $p \leq .01$, where $F (2, 42) = 35.136$. Also, at $p \leq .01$, the results from within-group associative commonality yielded $F (2, 42) = 20.43$. For the number of different responses, at $p \leq .01$, the outcome indicated $F (2, 42) = 32.933$. In general, the study concludes that the numerical features of the L2 intermediate and advanced learners' wordlists and those of the NSs' mental lexicons are dissimilar.

Once we have determined that differences exist among the means, post hoc pairwise multiple comparisons were conducted to compare which means of the three groups differ. The mean differences were statistically significant among the groups during post hoc comparisons. A 0.05 significance level was adopted using the Bonferroni basis. Approximately intermediate learners answered with a significantly lesser number of responses compared to the advanced learners and NSs. At $p \leq .05$, the results indicated 95% CI = -40.83, -7.77 and 95% CI = -113.23, -60.97 respectively. This group also showed less common responses compared to NSs and advanced learners. At $p \leq .05$, the results specified 95% CI = -114.35, -35 and 95% CI = -79.84, -30.26 respectively. The outcomes for different responses are consistent with the number of responses and the common responses. This group also had fewer answers than the NS and the advanced learner groups. At $p \leq .05$, the statistical results specify 95% CI = -96.67, -51.23 and 95% CI = -29.57, -0.83, respectively.

Similarly, the advanced learners also responded with fewer responses than the NSs responses. The results yield 95% CI = -88.93, -36.67 at $p \leq .05$. They also have fewer different responses than the NSs with 95% CI = -81.47, -36.03 at $p \leq .05$. On the other hand, there is no significant difference between the native and the advanced learners in the number of common responses. Figure 1 shows the participants' mean responses, different responses, and commonalities.
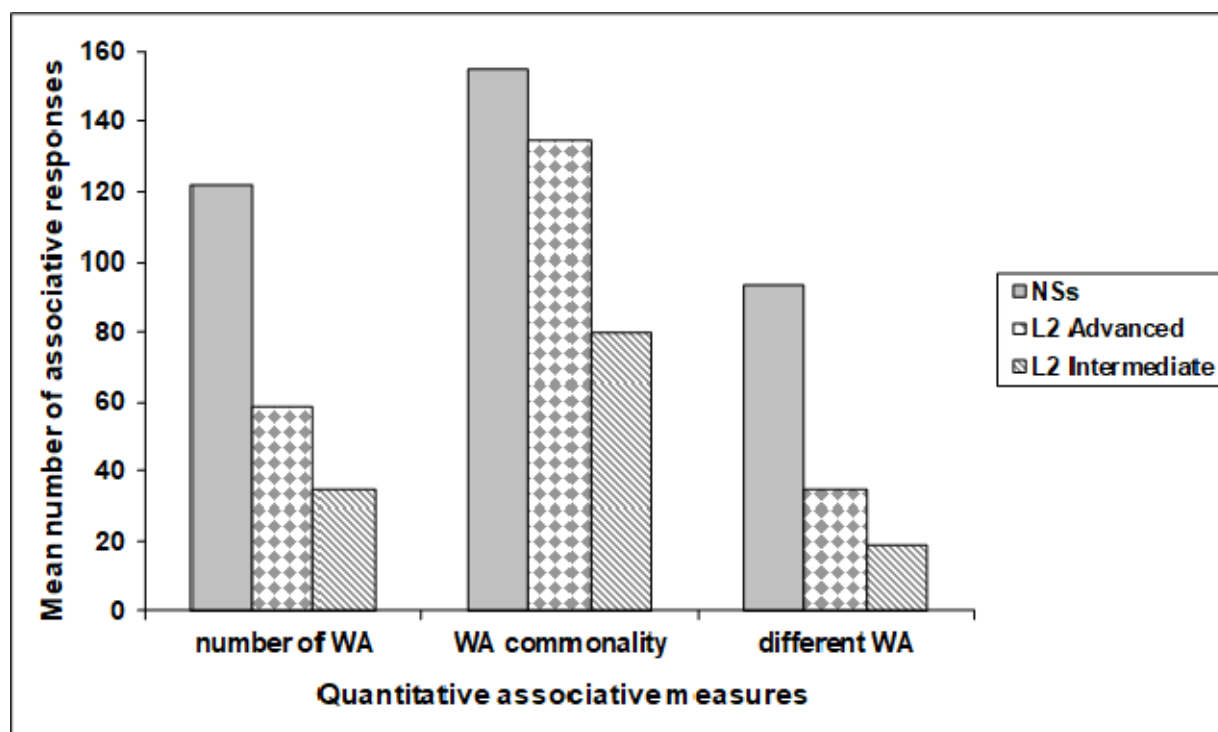

Figure 1. Participants' mean distribution of the total number of responses, different responses, and responses commonality with familiar words

Thus, the findings support the first hypothesis since there are quantitative differences between L2 intermediate and advanced learners and NSs. The differences are evident through the number of different responses and the total number of word associations in the within-group response commonality.

Overall, the advanced learners' commonality, size, and heterogeneity suggested that connections strongly resembled the NSs' quantitative patterns of associative links. In contrast, both NSs and advanced learners

significantly varied from the L2 intermediate learners.

Considering the hypothesis on the participants' proportion of syntagmatic and paradigmatic WA responses, the findings indicate qualitative differences in the mental lexicons of the intermediate and advanced L2 learners and the NS. The ratio of paradigmatic reactions was calculated by dividing paradigmatic expressions by total words. The same approach was made for the proportion of syntagmatic responses. A two one-way analysis of variance (ANOVA) measured the reactions.

Table 5. Group means and standard deviations for the associative patterns of L2 intermediate and L2 advanced and NS learners of English

Associative Patterns [*]	Mean			Standard deviation		
	NSs	L2 Advanced	L2 Intermediate	NSs	L2 Advanced	L2 Intermediate
Paradigmatic	55.15	55.63	50.60	6.59	8.09	9.59
Syntagmatic	44.85	44.37	49.40	6.59	8.09	9.59

Note. * Total stands for the total number of associations; common stands for within-group associative commonality; different stands for the number of different associations; paradigmatic stands for the proportion of paradigmatic associations; and syntagmatic stands for the proportion of syntagmatic associations.

There were no significant differences among the three groups in both the mean proportion of syntagmatic and paradigmatic responses. At $p \geq .05$, the results yield $F (2, 42) = 1.805$ and $F (2, 42) = 1.805$ respectively. Therefore, we can conclude that the intermediate and advanced L2 learners' lexical organization, or qualitative characteristic, is not different from that of the NSs' mental lexicon.

Figure 2 below reveals that the general trend of responses is similar across three groups. There are more paradigmatic than syntagmatic reactions to familiar words among all participants. Contrary to other research findings, the participants did not produce clang associations. The findings show the significant qualitative difference between NSs' and L2 learners' association patterns were linked to L2 learners' overwhelmingly syntagmatic connections between the words in their mental lexicon—the results of this study are consistent with Zareva's (2007) study. Hence, this research confirms a qualitatively comparable general result of the linguistic structure, which is only quantitatively varied throughout all groups.
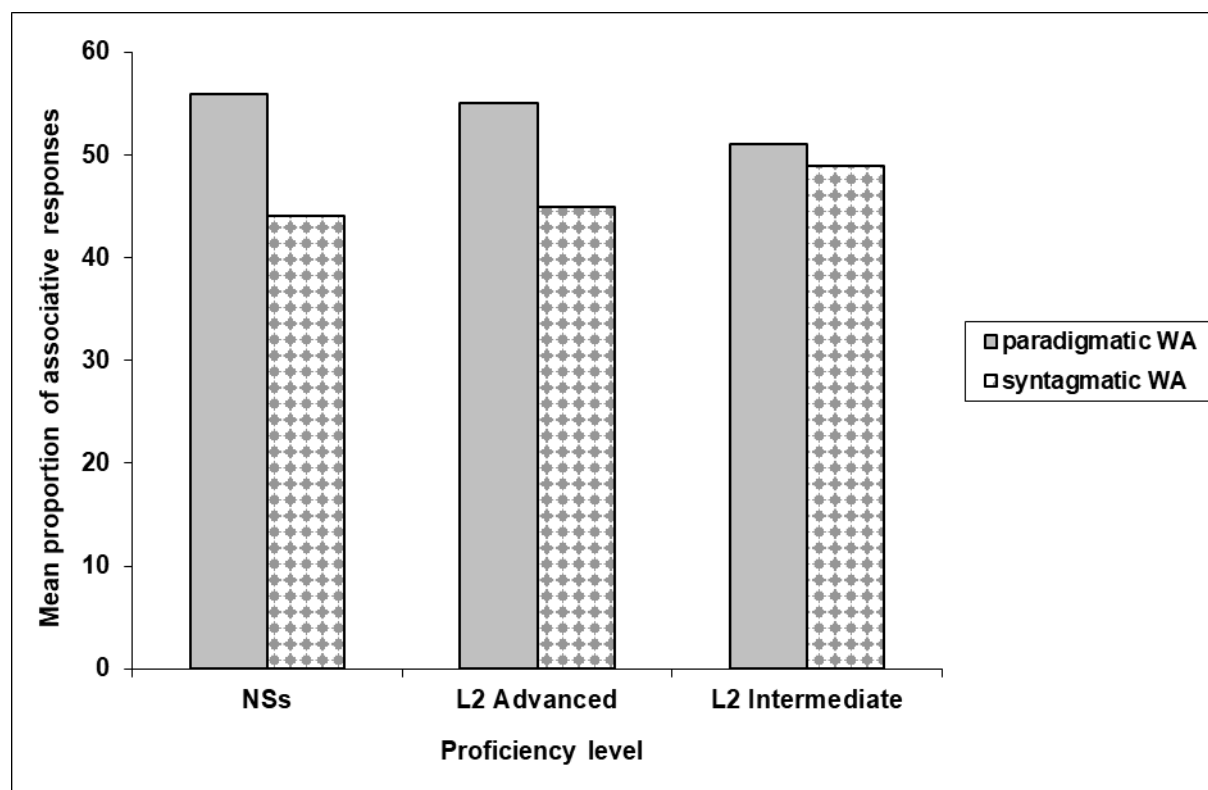
Figure 2. Mean proportion of syntagmatic and paradigmatic responses produced from familiar words

The second hypothesis stated that less proficient L2 speakers would be quantitatively and qualitatively different in lexical organisation from more experienced speakers. However, the bivariate Pearson product-moment correlation was conducted to test the hypothesis for all groups (L2 intermediate and advanced learners and NSs), as shown in Table 6.

Table 6. Correlation matrix of the groups of L2 advanced and intermediate learners of English and NSs of English

	(1)	(2)	(3)	(4)	(5)
Natives					
(1) Total number of association	____				
(2) within-group associative commonality	0.992**	____			
(3) number of different associations	0.964**	0.930*	____		
(4) proportion of paradigmatic associations	0.448	0.385	0.550	____	
(5) proportion of syntagmatic associations	- 0.448	- 0.385	- 0.550	-1.000*	____
L2 Advanced					
(1) Total number of association	____				
(2) within-group associative commonality	0.859**	____			
(3) number of different associations	0.964**	0.727**	____		
(4) proportion of paradigmatic associations	- 0.221	- 0.081	- 0.296	____	
(5) proportion of syntagmatic associations	0.221	0.081	0.296	-1.000*	____
L2 Intermediate					
(1) Total number of association	____				
(2) within-group associative commonality	0.839**	____			
(3) number of different associations	0.917**	0.628**	____		
(4) proportion of paradigmatic associations	0.117	0.373	0.009	____	
(5) proportion of syntagmatic associations	- 0.117	- 0.373	- 0.009	-1.000*	____

Note. * Correlation is significant at the 0.05 level; **Correlation is significant at the 0.01 level.

The table shows weak or no significant relationships between the qualitative and the quantitative features of the

participants' lexicons (as groups). At the same time, robust findings are indicated for the quantitative measures for each group.

1) For native speakers:

   • Very strong relationship between the total number of associations, both within-group associative commonality, and the number of different associations (r = 0.992 and 0.964, respectively).

   • Very strong relationship between within-group associative commonality and the number of different associations (r = 0.930).

2) For L2 advanced:

   • Very strong relationship between the total number of associations and both within-group associative commonality and the number of different associations (r = 0.859 and 0.964, respectively).

   • Strong relationship between within-group associative commonality and the number of different associations (r = 0.727).

3) For L2 intermediate:

   • Very strong relationship between the total number of associations and both within-group associative commonality and the number of different associations (r = 0.839 and 0.917, respectively).

   • Strong relationship between within-group associative commonality and the number of different associations (r = 0.628).

For the qualitative measures (paradigmatic and syntagmatic proportions), there was no significant relationship between them (r = -1) for each of the three groups. In other words, any increase in paradigmatic associations reflects a decrease in syntagmatic associations in the same amount.

6. Major Findings and Discussion

The study of word association structure has enriched the investigation of the organization of semantic memory. Researchers have built their theoretical views using WA tests and interpreting WA data in several research studies.

WAs have been used as a research instrument in connecting existing theories of associative structure theories; hence WAs denote how semantic knowledge is structured in the human mind. Therefore, WA tests in L2A are used to examine how L2 learners organise their linguistic knowledge and compare the structure of L2 mental lexicons and NSs mental lexicons. Likewise, WA tests have served psycholinguistic research in other areas, such as the study delving into the conceptual interpretation in bilingual memory. In addition to explaining how linguistic information is represented in L2 learners' memory, WA also reflects conceptual and linguistic processing (Zareva, 2007).

Zareva's (2007) research was not designed to discuss lexical processing, and while replicating the study, we would not touch upon it. On the other hand, Zareva investigated the qualitative and quantitative qualities of L2 learners' lexical knowledge as their competence improves. Therefore, an objective of the study focuses on this knowledge by evaluating the qualities of L2 learners' WA domains and the NSs WA domain characteristics for words that are already familiar to the participants. Moreover, another goal of the study was to determine if the discrepancies in the lexicons of NSs and L2 learners were usually quantitative, qualitative, or both. Through this, the study can ascertain the nature of a well-structured lexicon.

Furthermore, similar to Zareva's study, this research measured the robustness of the relationship of the quantitative and qualitative features of L2 learners' lexicons. It was of interest to Zareva to explore this relationship as there was an assumed connection between these two types of features due to the lack of empirical exploration. The results of examining the quantitative characteristics of the mental lexicon of the three groups, including L2 intermediate and advanced learners of English and the NSs) showed that the quantitative qualities of the NSs' mental lexicons are unique from the quantitative descriptions of the L2 intermediate and advanced learners' vocabularies. These differences can be identified mainly at a mid-level competency, similar to Zareva's findings. In addition, the analysis of the size and diversity of the intermediate learners' WA domains showed that they reported a smaller WA in size and with less variety than the NSs and the advanced learners. According to the number of NSs participating in this study (n = 5), which is smaller than the number of L2 intermediate learners (n = 20), the average produced WA was smaller and less varied.

Conversely, L2 advanced learners reported approximately similar WA domains to the NSs in size, though they showed slightly more considerable heterogeneity. This result concerns the categorical link between the size of

WA domains and vocabulary size. Smaller vocabulary sizes have fewer associations, a lower degree of commonality, and lesser heterogeneity of meaning associations. In Zareva, Schwanenflugel and Nikolova (2005), smaller vocabulary sizes are vocabularies of approximately 6,000 words for L2 intermediate learners. In general, these characteristics imply that the intermediate learners' lexicons are quite freely linked as their quantitative features do not show the strength and organisation of the interconnections among recognizable words found for the L2 advanced learners' and NSs' lexicons. Like recent studies, word association strategies do not vary along with proficiency levels, a claim consistent with Zareva's findings (2007).

Large vocabularies point to more significant links and allow users of languages to associate familiar words with many different concepts and ideas. Zareva et al. (2005) suggested that larger vocabularies contain over 9,000 words. Therefore, language users with an extensive vocabulary have richer links in size, commonality, and heterogeneity. Hence, a possible conclusion is that a language user with a more extensive vocabulary, the better the connections they would produce and should be anticipated to, particularly in terms of the quantity and assortment of associations.

One of the significant variances in the quantitative qualities of the L2 intermediate learners' linguistic structure is the degree of within-group commonality. L2 intermediate learners differ from NSs and L2 advanced learners in the within-group commonality of response domains. Calculating L2 learners' associations of commonality and comparing their responses to NSs was primarily performed by L1 lexical research. Then it was used in L2 research. L1 research observed that NSs assemble their organizations into small, commonly given responses. For instance, like previous studies in Zareva (2007), the majority of the NSs responded to the SW "blanket" cluster using only ten associations (*bath*, *bed*, *cover*, *electric*, *sheet*, *snow*, *soft*, *warm*, *warmth*, *wool*). Only 19 percent of the replies are distinctive (Zareva, 2007, p. 145).

Interestingly, in this study for the NSs group, we also came across four associations (bed, warmth, soft, snow) out of the ten associations. Therefore, past researchers suggested that this large number of associative commonalities indicates nativelikeness of associative behaviour. L2 students display less commonality, unlike NSs. However, NSs types develop with progress in language proficiency.

On the other hand, Zareva (2007) argued that the lower associative commonality did not indicate unstable meaning association. Recent studies have investigated the effectiveness of associative native-likeness as a sign of the stability of the lexical organisation. These studies argued that using native-like associative commonality to measure the consistency of L2 learners' lexical organisation is generally sensitive, as a difference between NSs and NNSs is not helpful in an educational context (Zareva, 2005 cited in Zareva, 2007). Hence, the use of within-group commonality was applied in Zareva's study, which measures L2 learners' consistency of the associative domain instead of the notion of native-like associative commonality. As argued by Zareva, the reason for that is to account for the linguistic and extra-linguistic factors in the same way, hence, to help by showing what L2 learners' commonality of meaning associations would look like. Furthermore, an important feature distinguishing within-group associative commonality approaches from native-like associative commonality is that within-group commonality can limit differences related to an increase in language proficiency to measure the integration of the word shape into an overall network of connections (Zareva et al., 2005).

The comparison of within-group commonality for the three groups revealed differences. The L2 advanced group revealed a little lower within-group commonality, unlike the commonality domains of NSs. The L2 intermediate group showed less consistency in their WA domains than NSs' WA domains and L2 advanced WA domains similarly. Consequently, outcomes are consistent on the effect of language proficiency in earlier studies. As we can conclude from this result, there is an effect of language proficiency on the within-group commonality. The improvement in language competencies significantly increases the within-group commonality of the learners' lexical connections. Therefore, within-group commonality becomes constant with increased language proficiency, though the general pattern remains the same. Zareva (2007) added her interest in investigating the relationship between the connections of the words in the L1 lexicon and the connections in the L2 lexicon, and the interaction between L1 and L2 at varying competency levels. The reason for her interest is that this investigation would add an explanation of the mechanism of storing two-word systems and the extent of the undertaking where L2 learners assemble lexical associations in their mental lexicons (Zareva, 2007).

An interesting finding similar to Zareva's conclusion was in the qualitative characteristics of the groups' associative domains. The analysis revealed that the general association patterns of the three groups' participants are similar. The syntagmatic associations are less than paradigmatic responses to recognized SWs. It could be contended that by the time L2 learners attain an intermediate level of language competency, they develop their capacity to produce lexico-syntactically related responses towards NSs' capacity. In consonance with previous

studies, adult L2 students create their answers almost the same way as NSs do (Zareva, 2007).

Moreover, their behaviors are similar to those of the NSs, also at lower levels of language competency, as awareness with SWs could significantly affect associated responses than is regularly acknowledged. Some L2 researchers interested in the response shift concept investigated the issue and attempted to match children's L1 and L2 learners' developing lexicons. The researchers' primary goal was to explore if there is a predisposition for L2 learners to make more clang and syntagmatic associations in the way L1 English-speaking children do or if an L1 adult's responses develop early in the learning process. For example, the control of paradigmatic associative over other patterns in adult speech.

The review of literature includes a French group of L2 learners, an O-level French exam produced more paradigmatic associations than syntagmatic. Interestingly, there is a high proportion of clang, in addition to un-French associations. Therefore, based on this finding, he concluded that the correct semantic organisation is deficient for the L2 mental lexicon. This notion might be the reason for the difficulties L2 learners face in their language production in writing and speaking. As participants were NSs of English and L1 Japanese learning English as a second language. In his analysis, there was the addition of SW familiarity. In general, his findings showed significant quantitative differences between L2 learners and the NSs, and there were differences in the familiar words. Hence, based on his results, he concluded that the syntagmatic patterns are essential in organising L2 learners' lexicon. This influential role of syntagmatic association does not imply that the organisation of L2 mental lexicon would be less than NSs', particularly when we consider the case of SW familiarity.

In L2 lexical research, not much research has applied greater than one proficiency group of L2 learners. Consequently, L2 studies rarely report proficiency on learners' qualitative pattern of meaning organisation. They aimed to find out the role of language proficiency in L2 learners' linguistic connections. Overall, the results of this study are consistent with Zareva's results and previous studies aimed at general conclusions of qualitative features. The results showed no unique distinctions in the qualitative characteristics of the lexical organisation of L2 advanced and NS' level of proficiency. L2 intermediate-level learners build their mental lexicons with largely paradigmatic associations. Likewise, results are inconsistent with L1 research hypotheses, which claim that L2 learners' lexical associations move from more child-like to more adult-like connections. In other words, according to the developmental shift, L2 learners' associative networks would develop as shifting from syntagmatically governed "child-like" lexicons to paradigmatically dominant "adult-like" lexicons.

In contrast, results support Zareva's argument that L2 intermediate learners, with an intermediating of linguistic knowledge consisting of at least a vocabulary of 6000 words, have intermittent syntagmatic over paradigmatic associations among their recognized words. In addition, similar to the finding of Zareva, none of the subjects of the three groups produced a clang for the given SW. This result concludes that the deletion of more phonological associations than semantical or syntagmatic associations is generated by SW familiarity instead of the loose organisation of the L2 mental lexicon. However, this study suggests that additional research should be conducted to investigate the qualitative characteristics of L2 learners' lexical associations in more detail to find out obtained frontier words. It should explore such terms that are already familiar to the length these words are difficult to define or describe by the learner. Thus, we could explain the value of a lower level of word familiarity on general domains of lexical associations and whether it is significant among groups of participants with different levels of language proficiency (Zareva, 2007).

Furthermore, findings revealed robustness in the association concerning qualitative and quantitative qualities as divided sets. Consequently, this result implies that quantitative and qualitative characteristics develop quite separately. In addition, paradigmatic and syntagmatic associations are not motivated due to an improvement in heterogeneity, commonality of L2 learners' associative links. Therefore, since adult L2 learners of an intermediate level of language competency construct their lexical associations of recognizable words with governed patterns similar to the behaviour of adult NSs and L2 paradigmatically advanced learners, it could be argued that it is related to their developed mental skills and their distinctions of vocabulary, too. Zareva (2007) points to this conclusion and suggests that it implies that we need to investigate the use of WA tests in L2 research empirically. The study further asserts the contrast that "… a rather sensitive index of the state of one's linguistic knowledge about a given word" instead of showing differences between NSs' lexical organization and L2 learners' lexical organisation and disregarding explaining the critical role of word familiarity in the development of the organisation of the mental lexicon (Zareva, 2007, p. 149).

7. Conclusion

To sum up, the study findings are consistent with Zareva's results indicating that advanced and intermediate

Kuwaiti learners of English show quantitative rather than qualitative differences in their acquisition of Lexical knowledge. The intermediate Kuwaiti learners show more quantitative differences than the two other groups in general. In terms of qualitative differences, adult Kuwaiti speakers showed almost similar behaviour to NSs in preferring paradigmatic over syntagmatic associations. Such a preference is related to the diversity and stability of connecting meaning to words they are familiar with. An explanation for this behaviour could be related to an artefact of their sophisticated mental skills, in addition to their word familiarity. Hence, the lexical knowledge of L2 learners is not significantly different, at least qualitatively, from the lexical knowledge of native speakers. This difference may be because there is some innate mechanism for organising the mental storage of vocabulary that underlies development patterns. In other words, the lexicons of L2 speakers eventually converge on those of native speakers of the target language. Therefore, we can conclude that the properties of Universal Grammar are potentially involved, and L2 learners have access to universal properties of the lexical organisation to an extent. Even though L2 learners require input to learn the L2 lexicon, unconsciously analyzing input is highly constrained. In addition, we can claim that L2 speakers have the same fundamental lexical knowledge as native speakers, though it is not an easy task for learners who try to match forms with those conceptual accounts. Consequently, learning as UG properties is innate and cannot be understood, whereas the learner could overcome the problem over time as the learner becomes more skilled. Furthermore, it is of interest to explore various aspects related to the lexicon of L2 speakers rather than WA, such as the effect of writing words on L2 vocabulary learning.

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