



Kristianstad
University
Sweden

Exploring the Mental Lexicon of Pakistani L2 Learners:

The Role of Culture and L2 Knowledge in Organizing the Mental Lexicon

Abdul Qadir

Kristianstad University

School of Teacher Education

English, Spring 2011

Level IV English

Tutor: Eivor Lindstedt

Examiner: Stefan Ekman

Table of Contents

1. Introduction	1
<i>1.1 Aim</i>	2
<i>1.2 Material</i>	3
<i>1.2.1 Participants</i>	3
<i>1.2.2 The Word Association Test</i>	4
<i>1.3 Method</i>	5
<i>1.3.1 Procedure for Analysis</i>	6
2. Theoretical Background	7
<i>2.1 The Mental Lexicon and Word Association</i>	8
<i>2.2 Didactic Implications of Word Association</i>	10
<i>2.3 Categorization in Terms of Lexical Categories</i>	11
<i>2.4 Lexical Semantic Relations</i>	11
<i>2.4.1 Synonymy</i>	11
<i>2.4.2 Antonymy</i>	12
<i>2.4.3 Hyponymy</i>	12
<i>2.4.4 Meronymy</i>	12
<i>2.5 Non-Lexical Semantic Relations</i>	13
<i>2.5.1 Phonological Influence</i>	13
<i>2.5.2 Collocations</i>	13
<i>2.5.2.1 Semantic Preference</i>	14
<i>2.5.3 Metaphor</i>	14
<i>2.5.4 Metonymy</i>	14
<i>2.5.5 Synecdoche</i>	15
<i>2.5.6 Fixed Expressions</i>	15
<i>2.5.7 Connotations</i>	15
<i>2.5.7.1 Discourse Prosody</i>	17
<i>2.6 Results from Previous Studies on Word Association</i>	18
3. Analysis and Discussion	20
<i>3.1 Analysis of the Data in Terms of Lexical Categories</i>	20
<i>3.1.1 The Overall Analysis of the Data</i>	20
<i>3.1.2 Participant-wise Analysis of the Data</i>	22
<i>3.2 Analysis of the Data in Terms of Lexical Semantic Relations</i>	24
<i>3.2.1 The Overall Analysis of the Data</i>	24
<i>3.2.2 Participant-wise Analysis of the Data</i>	26
<i>3.3 Analysis of the Data in Terms of Non-Lexical Semantic Relations</i>	27
<i>3.3.1 The Overall Analysis of the Data</i>	27
<i>3.3.2 Participant-wise Analysis of the Data</i>	30
<i>3.4 An Overview of Analysis of Lexical/Non-Lexical Semantic Relations and Lexical Categories Along With Their Implications</i>	31
4. Summary and Conclusion	32
<i>4.1 Limitations and Future Proposal</i>	32
References	i
Appendices	i
Appendix I Word Association Test.....	i
Appendix II Tables.....	i

Abstract

There are different types of psycholinguistic approaches which attempt to examine the quality and the organization of the human mental lexicon; the word association experiment is one of them. The word association experiment can be used to probe the development of human vocabulary. The current investigation was carried out in order to trace the influence of the cultural background and L2 knowledge on the mental lexicon of the undergraduate Pakistani L2 learners of English. It was hypothesized that the individual's culture and knowledge of L2 bear direct relation with their mental lexicon. Influenced by the culture, they may connect different words with attitudinal bonds, whereas L2 knowledge is accountable for the growth of vocabulary. The motivation stems from the fact that none of the previous studies has targeted Pakistani L2 learners for the word association test in order to investigate their mental lexicon. The data was gathered through a word association test. The results supported the hypothesis. A considerable amount of attitudinal responses emerged in their responses, and the number of paradigmatic responses found in the data was the highest of all. Therefore, it was concluded that Pakistani L2 learners' vocabulary was considerably influenced by their cultural milieu due to the presence of attitudinal responses to the stimulus words, and their vocabulary is patterning toward native-like since the number of paradigmatic relations with the stimulus words was the highest of other types of relations. The findings carry important implications for didactics.

Key words: the word association, the mental lexicon, syntagmatic relations, paradigmatic relations, clang relations, connotations

1. Introduction

A great deal of efforts have been made in the field of theoretical linguistics, focusing on how the human vocabulary, technically known as the mental lexicon, works. Its underlying mechanism is complicated. Since we do not really have any microscopic technology by which we could locate the position of the mental lexicon in the brain, and see how its entries are linked with each other, we have to map it out theoretically to understand its complex mechanism.

There are different kinds of theoretical and applied approaches which psycholinguists employ for the study of the mental lexicon. The results reveal some evidences to help understand its function, and these evidences help teachers optimise the way they teach vocabulary. Among these evidences is the word association test. The association experiments are of great importance since they reveal the patterns of links among lexical items. In this type of experiment, the subject is given an incentive word which triggers other words in the subject's mind. Only those words are activated which are closely linked to the incentive word in the same way as when one calls someone, the other ones in the neighbourhood become attentive. With the help of this type of investigations, different kinds of links among words have been discovered.

Association investigations have been carried out in many different ways; for instance, by changing the variables such as, age, gender, L1 and L2 in order to find out what similarities and differences there are among these variables, and in the hope of getting a better picture of how the words link together with respect to a particular variable. Although word association tests have provided a useful insight into the modelling of the mental lexicon, it is not the ultimate stage. The word association experiments cannot stand alone in offering full implications for pedagogy; other types of approaches have to be incorporated in order to optimize learning and teaching of vocabulary.

A stimulus word can trigger different words, depending on how tightly they are connected to the stimulus word. The stimulated word might belong to two different kinds of domains which are identified as two basic categories of associations. Different terms have been used to make a distinction between these two kinds of domains such as, extension meaning and intension meaning; denotation and connotation; core meaning and encyclopaedic knowledge. Extension meaning belongs to the semantic network, while intention meaning is concerned

with personal and cultural background knowledge. Intention meaning is connotations or attitudes associated with a word; these connotations and attributes are shaped by one's experience and personal beliefs (Schmitt, 2000, p. 27). Analysis of the responses in terms of intention meaning provides us with an opportunity to carry out an investigation in order to trace how the culture of the individuals influence their mental lexicon, while analysis in terms of extension meaning gives insight to evaluate the quality of the mental lexicon.

1.1 Aim

The aim of the current study is to carry out an investigation of the mental lexicon of the undergraduate Pakistani L2 learners of English in order to trace whether their cultural milieu influence their vocabulary. In addition to this, the current study also aims to measure the level of their vocabulary: developed or developing.

The hypothesis is that the culture of the individuals does influence the vocabulary of the individuals since the words they store in their mental lexicon carry connotations that will potentially emerge in their responses to the stimulus words, and the more the knowledge of L2, the better the quality of the vocabulary.

The motivation for doing this investigation stems from the observation that none of the previous studies targeted Pakistani L2 learners of English in order to explore their mental lexicon. Another observation is that while the researchers explore the mental lexicon of L2 learners, they do not take the fact into consideration that their cultural background might influence the organization of their vocabulary. The data is mostly analysed in terms of lexical categories (2.3) and lexical semantic relations (2.4). The current study argues that the data can further be analysed in terms of non-lexical relation (2.5). A paradigmatic or syntagmatic response could be a connotation, metaphor and so on. This kind of analysis, especially in terms of attitudinal responses, is usually downplayed. The current study will analyse the data with three different angles: (1) lexical categories, (2) lexical relations and (3) non-lexical relations.

Word association study has important didactic implications (2.2): it reveals evidences that how the words are organized in the mental lexicon of L1 and L2 learners, which aids teachers to design new strategies for the improvement of vocabulary. The current study's focus is at Pakistani L2 learners' vocabulary. The study will determine what level of vocabulary they

have acquired. This discovery will enable them to devise more efficient strategies for the development of their vocabulary. The current study, through the discussion and quantitative analysis, will also show that it is important for teachers to take the cultural background of the subjects into account while teaching vocabulary because attitudinal associations play an important role in the word-network. While they teach new words, they should teach the connotations associated with those words as well. The knowledge of such connotations will help learners form the strong links among different words. Attitudinal bonds will work as mnemonic devices, and will be helpful in retrieving the words from long-term memory.

1.2 Material

The investigation included twenty undergraduate Pakistani L2 learners of English who were student at Malmö University, and a word association test containing one hundred stimulus English words. Data to be analysed was collected from the responses of the participants in the word association test.

1.2.1 Participants

The participants have not been selected randomly, but with careful considerations since this study attempts to investigate Pakistani L2 learners of English. The participants must be Pakistanis, not from any other culture. The participants were more or less at the same educational level, that is, undergraduate, and studying English at Malmö University. The participants were efficient enough in communicating in English as their second language so that they easily comprehended the instructions of the tests and responded as accurately as possible.

Only the information concerning their first language (L1) was asked; it was Punjabi. On the other hand, irrelevant information about their personal identification was not required. The reason why the participants are asked about their L1 is that in Pakistan there are several languages. Punjabi is spoken in the province of Punjab. On the other hand, each province has its own language, traditions, and customs. Pakistani students studying at Malmö University come from different parts of Pakistan, which means they have different language and culture from the students who come from Punjab. Therefore, for the sake of cultural homogeneity, it was necessary to ask about their first language, assuming that having the same L1 they are more homogeneous in terms of their culture. The inquiry about their first language makes

more sense than asking to which culture you belong. There was another problem that a Punjabi speaker despite having Punjabi as L1 might have lived in another province. This problem was solved by asking the participants personally whether they lived in Punjab or in another province. Thus, only those participants were selected who lived in Punjab throughout their lives.

1.2.2 Word Association Test

There is no definite standard for the number of stimulus words to be used in the test. The number of words used in the current study was set on the assumption that all the links discussed in the theoretical background should have the probability to occur. For example, thirteen types of links have been mentioned in the theoretical background. It was not prudent to expect that in a set of twenty stimulus words, all thirteen links would appear in the responses. It was decided that the higher the number of words, the greater the chances of all links to appear in the responses, Therefore, and a test containing one hundred English stimulus words was prepared.

There seems to be no clear-cut standard for the selection of words too; therefore, the selection had to be customised in regard with the nature of the test. The main problem is that the selection of words may control the subjects to produce the desired responses and restrict the others. For instance, if the selection consists of only those words that do not have their antonyms or synonyms, there is less likelihood that antonymy or synonymy in the responses will occur. The same is true for hyponymy and meronymy. Similarly, if only the culturally loaded stimulus words are used, probably all the responses will appear to be attitudinal responses. If only the apparently neutral words are selected, there is high chance that a negligible number of attitudinal responses would emerge. Therefore, the selected words for the current study were a blend of different type of words: both that could be perceived as more culturally loaded and seemingly neutral. There is one great advantage of this blend that the more culturally loaded word could have neutral responses (lexical relations) too, while some seemingly neutral words may have connotational responses (non-lexical relations) as well. There is no hundred per cent certainty that the culturally loaded word will elicit only the connotational responses; they might activate collocations, synonyms or antonyms. Therefore, in order to see the patterns both types of words were included, assuming that every type of expected response will emerge.

The test was administered to every subject individually. Only the content words from different lexical categories were selected such as, nouns, adjectives, verbs and adverbs. The stimulus words were chosen with respect to their ordinariness so that every participant is already familiar with their meanings. The disadvantage of picking up some difficult or less common words is that the participants might not be aware of what they mean; therefore, there is high probability that they will affect the outcome negatively. The more common words, the more accurate results of word association are expected to emerge. The process of selecting words included watching of TV news, scanning through the papers and popular TV shows for the selection of commonly used words. The words used in the test can be viewed in Appendix 1.

As mentioned in the second paragraph in the section (1.3) that the context may contribute to change the association of the word, the words which had less common semantic similarities were presented one after another. The rationale behind it is that it might reduce the effect of the context that might cause to change the association which was already stored in the mental lexicon. For example, the word ‘police’ do not seem to influence the association of the word ‘deep’ because they do not have any kind of semantic similarity, but the word ‘sex’ before the word ‘teen’ may alter its association if they are presented one after another. Although all of the problems, related to the context, cannot be eliminated, this way of ordering the words is merely an attempt to reduce the effect of the context.

1.3 Method

The test was taken by every individual in isolation. As the current study is interested in the immediate responses from individuals which come without deliberate thinking, it was considered necessary to use such the kind of technique which could reduce the effect of thinking and the context. It was decided that they should be encouraged to put their responses on the paper immediately, just after having seen a stimulus word without allowing any process of thinking. When the subject took longer than what was considered to be normal time to respond, such responses were discarded although such cases were rare. Every stimulus word with its given number was written on a separate card and a sheet of paper with numbers from one to hundred was created. The given number for each of the words had a one-to-one correspondence to the numbers written on the paper sheet. Every individual was supposed to write down their answers on the place provided against the numbers. For example, when the word with number one was shown to the subject, they wrote down their response on the place

provided against the number one, and word with number five against the number five on the list. In this way, the simultaneous exposure to all of the words was avoided, and subjects also wrote down their responses without letting any thinking influence their association.

There are some reasons that why every stimulus word was presented separately, and why it was crucial to avoid presenting these words orally to the subjects. First, the reason why to avoid presenting all of the words at the same time (all words written on the same paper sheet) is that the association of a word can be altered easily by the context in which they are presented with other words. As Aitchison (1997) notes “people normally response to the word ‘moon’ with items such as *sun*, *night* and *star*. But if ‘moon’ is presented alongside words such as ‘elephant, hall, whale, stadium’, subjects tend to reply with the word *big*.” This could affect our results negatively, so it was eliminated by presenting every word one by one. Secondly, the reason why the incentive words were presented in the written form (not the spoken) is that subjects might not be able to make out the speaker’s odd pronunciation of the words. This factor also has the potential to affect the result negatively. The test was taken in a position that the experimenter and the subjects sat in front of each other. The researcher presented all words one by one and the subjects wrote down their responses to every word one by one. The responses might have been taken in oral form, but the idea was discarded because it could also affect the immediate associations. It is possible that the subjects know a word, but cannot pronounce it well. As a result, for the fear of embarrassment, they could leave out the immediate responses and bring those subsequent associations which were easy to pronounce.

1.3.1 Procedure for Analysis

The responses were analysed in terms of (1) lexical categories, (2) lexical semantic relation and (3) non-lexical relation. First, it was determined that to which above-mentioned categories a response belonged, and further into which sub-category it fell. Then the total number of these three main categories along with their respective sub-categories was counted. The number was also looked at from two perspectives: the overall and participant-wise analysis of the data. The results from first two main categories were then compared with previous studies (2.6) in order to assess the organization and the quality of the vocabulary. For the sake of tracing the cultural influences, the number of attitudinal responses from third main category was also observed in relation to the number of other responses. The presence of

attitudinal responses itself is the evidence that the vocabulary is influenced by the culture. The question is to what extent it is influenced. The number of attitudinal responses in relation to the number of other responses can indicate the extent of influence. For example, the total number of attitudinal responses in the data is 50 per cent, it becomes reasonable to say that it is considerably influenced.

In order to know whether the response and stimulus collocate with each other, the Oxford Collocation Dictionary was used. If the dictionary shows that they collocate, then the response was counted as collocation. There might appear a situation where a response might be both collocation and connotation. In that case, the responses were categorized into a separate category under the main category non-lexical, and then the number was added to both sub-categories: connotations and collocations. If such responses are categorized just as connotations, then it will affect the result of collocations and vice versa. Therefore, there is no harm in sorting them both as collocations and connotations at the same time, but if they are absolutely left out, it will severely affect the results.

There might be some incorrect data. For instance, when it is hard to understand because of spelling mistakes, and when the hand-writing is too illegible to read, such responses are referred to incorrect responses, and have been excluded from the analysis.

There were some other considerations for the test. Spelling mistakes were ignored, assuming that it was not a writing test. The reason is that if the subjects do not know the spelling of the word which comes first into their mind, they might avoid writing it, and would look for other word whose spelling they know. So, this could impede the efforts for getting the immediate responses. The answers given in their native language were not acceptable. The answers must be in the form of single words, rather than long sentences since it is a word association test.

2. Theoretical Background

In the theoretical background all the relevant concepts related to the current investigation will be discussed in detail. This section explains all kinds of links which might occur in the responses. This section also includes a sub-section which surveys the results of previous studies relevant to the current investigation, which will further be used in the interpretations of the results.

2.1 The Mental Lexicon and Word Association

Human word store is referred to as mental lexicon. The words in the mental lexicon are connected via different kinds of links. The words make a complex network among them. The straightforward evidence for the existence of such a network is that when an individual listens or reads some word, it activates the others that are connected with it. It is the presence of the links among them which conveys a reaction to the other words, and hence stimulate the others.

In the investigation of the mental lexicon, psycholinguists utilize word association experiment. With the help of word association experiment, linguists or psychologists do not attempt to argue the existence of the mental lexicon, but they attempt to acquire some clues which could help them understand how the entries of the mental lexicon are arranged. The question under their discussion is of the organisation, not the storage. This can be best understood by the example of the depository of a library. It is a fact that the libraries have storage of books, but what is unknown is that how the libraries arrange these books in order. There could be numerous methods of arranging the books: they might be arranged alphabetically, topic-wise, author-wise, year-wise and so on. Similarly, linguists are interested in discovering the methods of organising the entries of the mental lexicon. They hypothesize that the entries of the mental lexicon are arranged either phonologically or semantically or in another fashion. They then look for some evidences that could support their hypotheses. There are different kinds of clues from ‘slip of the tongue’, ‘word searches’, ‘speech disorders’ and so on which also suggest how the entries are stored in the mental lexicon (Aitchison, 1994, p. 16), instead of those ones which we gather from the above mentioned experiments. There is no strict consensus among linguists about which method is adopted in arranging the entries. However, they all value all of the sources of these clues. Aitchison (1994) concludes that “each of these can provide valuable information, though each has its own inbuilt problems. We therefore need to combine all these sources, but with some degree of caution” (p. 27).

The word association test is simple, but practical. “Give me the first word you think of when I say ‘hammer’.” (Aitchison, 1994, p. 83). The word association test is the simple vocabulary test which reveals the closest words that are associated with the stimulus word. It is logical to think that only those words will pop up in the subjects’ minds that are closely connected with the stimulus word. Therefore, the analysis of these kinds of word associations gives insight

into how the words are linked together in the mental lexicon. For example, if the experimenter gives the subject a stimulus word, say *black*, it might trigger the word *white*. Further, when we analyse this link between black and white, we note that it is not just an odd link between these two words, instead it shows a definite relationship between them; they are antonyms. Word association test responses could show different kinds of links among words. Aitchison (1994) mentions that the early works show that the links between words are established by 'habits'. She argues that the words which happen to occur together develop strong links among them (p. 83). Once they are strongly linked together by occurring over and over again, they trigger each other. When one calls the first word, the second word automatically becomes activated.

There are certain realities attached to every object in the word. For instance, a physical object knife's core function is cutting; it can be sharp, pointed, long, short or blunt. These are the realities attached to it, and in the discourse, they will accompany with knife. Knife cannot sing, dance and walk because such realities are not its characteristics; therefore, apparently it will never accompany with these realities in the discourse. Every time one hears this word, the links between these words get stronger and stronger. It is a fact that the function of *knife* is not that of opening locks as a key does. Therefore, it seems logical to assume that when the word *knife* is heard, most likely it will trigger the words 'cutting', 'sharp', 'blunt', and pointed, rather than other functions and characteristics which are not usually attached to it. The underlying rationales for the formation of these links are the habits and the realities attached to them. The concept of realities is akin to the concept of semantic preference (2.5.2.1).

The stimulated words could vary from subject to subject. For example, if the response of a Swedish student to the word *sun* is 'good', and the response of Pakistani student is 'bad', a clear distinction can be made between these two responses. First, it will be noticed that there is no semantic connection between *sun* and 'good' or *sun* and 'bad'. If the words are not semantically related, then why are their responses 'good' or 'bad' to the word *sun*? The answer would be that these kinds of responses represent the influence of their personal experience to the word *sun*. The reason could be that Sweden is a cold country where people like sun. Contrarily, Pakistan is warm country where people dislike sun. Therefore, it is plausible to accept that individuals' culture (see the definition of culture in section 2.5.7) is also one of the factors which influence the formation of the word associations.

2.2 Didactic Implications of Word Association

Word association carry important implications for didactics although it is best known as psychological approach. Richard and Rodger (2001) state that there is a general agreement among the language teaching specialists that vocabulary is an important aspect language teaching (p. 37). According to Schmitt (2000), word association is one of the research paradigms that reconnoitre the organization of the mental lexicon (p. 38), and one of the testing approaches that assess the vocabulary knowledge is the word association (p. 176). The word association can be used to assess the knowledge of vocabulary of L1 and L2 learners. Results from previous studies (see 2.6) showed that L1 learners produce paradigmatic responses, whereas beginner L2 learners are more inclined to syntagmatic responses. This discovery requires teachers to develop some effective strategies that facilitate L2 learners to shift their responses from syntagmatic to paradigmatic. By means of this approach, teacher can measure the vocabulary level of the learners.

Participants' responses show collocations in the association test, which means they also store words in the form of chunks. Word association test can reveal to what extent their responses are collocation. According to Nattinger (1988), knowledge of collocations helps not only memorize the words, but also define the semantic boundaries of the words (p.69). Vasiljevic (2008) states "knowledge of collocations allows words to be retrieved from memory in pre-assembled chunks and the ability to chunk information can significantly reduce processing load during the text comprehension" (p. 3). Teachers, while introducing new words, can inform about the other words that collocate with certain words. Doing so will help learners retrieve ready-made chunks from their memory which in turn will aid to reduce processing load of the text comprehension.

All kinds of links: lexical or non-lexical serve as subconscious mnemonic strategies which help learners to retrieve the words form their mental store. Teacher can teach new words by associating them with some connotations, and these connotations will work as pneumatic devices to remember and retrieve the words from long-term memory. For example, in a certain country where a teacher has to introduce a new English word 'bribe' to the pupils, he or she can say more about it such as 'it is usually *police* or *politicians* in our country who bribe.' By attaching 'police' and 'politicians' with 'bribe', these words will not be added to the word-network of 'bribe', but also will help to remember it. Similarly, teachers can check

with the help of association test that to what extent students associate connotations with the words. They can then inform the learners that such words are regarded as taboo, impolite, informal or formal, old fashion or comical because they carry positive or negative connotations. This can make learners confident in using their vocabulary in a certain context. Therefore such strategies seem to have positive implications for didactics. Apart from this, Meara (2009) notes several didactic implications of word associations for “the study of memory”, “child language acquisition”, “cognitive and behavioural disorders”, “language loss”, and “bilingualism” (p. XI).

2.3 Categorization in Terms of Lexical Categories

There is a convenient way of categorising different kinds of responses in terms of their form. There are three categories: (1) clang associations, (2) Paradigmatic associations and (3) syntagmatic associations. When the responses are not semantically related to the stimulus words, but have phonological or orthographic similarities, it is said to be ‘clang association’. Sometimes the responses belong to the same lexical category (word class) of the stimulus word, for example, the response to the verb (to run) in verb (to walk). Such responses are said to be in ‘paradigmatic association’. The last category is known as ‘syntagmatic association’ in which the lexical category of the responses is different from the lexical category of the stimulus word, for example, the response to the noun (politician) in adjective (corrupt).

2.4 Lexical Semantic Relations

The words which are linked to each other with links such as, synonymy, antonymy, meronymy and hyponymy are categorised as lexical semantic relation. The sub-categories have been explained in the following sub-sections.

2.4.1 Synonymy

Synonymy is the kind of relation in which the words have the same meanings, for example, beat, hit, strike and stroke. McGregor (2009) defines synonymy “the relation of sameness or close similarity of meaning; lexemes related in this way are synonyms” (p. 137). Murphy (2010) states that it is rare that two words represent precisely the same meaning, which means there are hardly absolute synonyms (p. 110). As this study concentrates only on what we call the general notion of synonymy, the study will not go into the niceties of synonymy, that is, aspects and sub-types. Miller and Fellbaum (1991) suggest that synonymy is “the most

important lexical relation in the model of word associations (p. 202). In the word association experiment, when the stimulus word is presented, the response may appear from the domain of synonymy. For example, in response to the word 'small', the response might be 'little' or 'tiny' because both words are synonyms which are present in the mental lexicon. This phenomenon suggests that the words that have the same meanings can also activate each other.

2.4.2 Antonymy

The responses may be the opposites of the stimulus words, for example, white and black, go and come, spend and save, up and down, high and low and so on. This phenomenon is realized as antonymy, and the words related in this way are antonyms. There are four basic types of antonyms pointed out in McGregor (2009, p. 137-138): (1) gradable antonyms, (2) non-gradable antonyms, (3) reverse relation and (4) converse relation. In the current study, the term antonyms will be used as an umbrella term for all of the above-mentioned types of antonymy.

2.4.3 Hyponymy

The responses to the stimulus word may appear in the form of hyponyms. McGregor (2009) states, "in hyponymy the meaning of one lexeme includes the meaning of another" (p. 138). For example, for any words such as, banana, mango, strawberry, peach and so on, the response might be 'fruit'. The word 'fruit' subsumes all kinds of fruits; therefore, it is known as a super-ordinate term. The word 'shirt' or 'tie' may stimulate the word 'dress', that is, also a super-ordinate. The super-ordinate terms such as, colour, cutlery, kinship, and so on include their subordinates. This implies that the words in the mental lexicon are also organized in this way.

2.4.4 Meronymy

According to McGregor (2009), "Meronymy is the part-whole relation" (p. 138). Nose is the part of face, so are the eyes and lips. Similarly, tyres, handle, gear bonnet and engines are the parts of the car. The word 'handle' may stimulate the word 'car' or anything which has the handle as its part. McGregor (2009) points out the difference between hyponymy and meronymy. "Hyponymy is a transitive relation, but meronymy is not". He explains that Alsatian is a type of dog; dog is an animal. Therefore, Alsatian is a hyponym of animal.

Contrarily, the nostril is the part of the nose, but it is not the part of face, which meronymy does not have “the property of transitivity” (p. 139).

2.5 Non-Lexical Semantic Relations

The words which are linked to each other with links such as, phonological relations, collocation, connotation and metaphor and so on are categorised as non-lexical semantic relation. The sub-categories have been explained in the following sub-sections.

2.5.1 Phonological Relations

The phonological similarities between two words may influence each other. McCarthy (1990) states that subjects “may for a long time lack the ability to make instantaneous collocational associations, and may be more inclined to associate L2 words by sound similarities” (p. 40). The word ‘boy’ may stimulate ‘toy’; the word ‘effect’ may trigger ‘reflect’; the word ‘cry may activate ‘try’.

2.5.2 Collocations

Nesselhauf (2005) states two definitions of collocations. First, the collocations are the co-occurring of the words which usually occur at a certain distance in a sentence, but the distinction is made between those which occur more frequently and those which occur less frequently. According to the second definition, collocation is a relation between words which is fixed to some degree, but not completely (p. 12). The words are only said to be collocating only if they appear regularly and statistically significantly in some way, as Backer (2006, p. 96) states. A response might be a collocation; for instance, the word ‘tea’, which generally collocates with the word ‘strong’ almost, always co-occurs with ‘strong’, and they are fixed to some degree. When the word ‘tea’ is presented as a stimulus word, most likely the responses will be ‘strong’. This phenomenon reveals that in the mental lexicon, many of the words are linked with each other because they naturally tend to co-occur, and they trigger each other. Instead of such fixedness of the collocations (strong tea), there is a certain extent of flexibility of the syntactic positioning of the words (*the tea is strong*), but they are still considered to be collocating.

2.5.2.1 *Semantic Preference*

Stubbs (2001) defines semantic preference as “the relation, not between individual words, but between a lemma or word-form and a set of semantically related words” (p. 65). Backer (2006) explains the concept by giving the example of the word ‘rising’, which co-occurs with the words concerning money and work, for example, rising prices, rising wages, rising unemployment and so on. It can also occur with multi-word units; for example, the phrase ‘glass of’ is likely to occur with words related to drinks, such as glass of sherry, glass of wine, glass of water and so on (p. 86). The semantic preference suggests that there are strong links among those words which are semantically related, or which are naturally linked with each other. The phrase ‘glass of’ can never occur with ‘love’, for example, ‘*a glass of love’ in its literal sense unless pragmatics is involved. Therefore, only the words that are naturally linked, or have semantic relations have preference for their occurrence with one another. A response in a word association experiment could reveal such semantic preference among different words. For instance, when the word ‘glass’ is displayed as the incentive, potentially the response is likely to be ‘wine’, ‘water’ and so on, which implies the effect of semantic preference, rather than the words such as, ‘love, hope’ or of these kinds.

2.5.3 *Metaphor*

The response from a subject might be a metaphor, but such responses are quite infrequent. Johnstone (2008) states “metaphors like ‘You are my sunshine,’ an item from one conceptual field (‘sunshine’) is overlain on an item from another (‘you’), so that meaning from two fields are blended’ (p. 46). This is an understanding of one concept in terms of another. The response to the word ‘nest’ might be ‘home’. Here, ‘home’ is not a synonym of ‘nest’, but there is a clear analogy between these two words. This analogy serves as the link between these two words. Therefore, the responses might be metaphors.

2.5.4 *Metonymy*

Just like the metaphorical responses, the responses which use the art of metonymy are scarce. Despite the fact that there is less likelihood of these types of responses in the experiment, it is important to mention that such responses may occur. McGregor (2009) defines metonymy as a connection between two words in which the sense of one word is “extended to another concept via a typical or habitual association” (p. 131). The word ‘bottle’ can stand for

alcohols; the name of a city where the government is located can be used for the government such as Washington for Government or vice versa. Both words connected metonymically can stimulate each other. It implies that the words in the mental lexicon are also connected via metonymy.

2.5.5 Synecdoche

Synecdoche works in the same way as meronymy. It is also a part-whole relation. The word 'wheel' may activate the word 'car'. Similarly, 'hand' may stimulate the word 'arm' and so on.

2.5.6 Fixed expressions

In the word association experiment, any lexical word of a fixed expression may trigger the other lexical word in the same expression in the same way as the lexical words that collocate stimulate each other. According to Moon (1998), "fixed expression is a very general but convenient term ... and used to cover several kinds of phrasal lexeme, phraseological units, or multi-word lexical items: that is, holistic units of two or more words" (p. 2). Hudson (1998) identifies several kinds of fixed expressions such as, idioms, irreversible binomials, compounds and so on (p. 13). Since the current investigation addresses only lexical words, not grammatical words, only the relevant fixed expressions which comprise lexical words will be discussed. For example, if any of the lexical parts of the idiom 'kick the bucket' is shown to the subjects, it may trigger the other one. Similarly, the irreversible binomial 'kith and kin' always co-occur, and they are syntactically fixed. When the word 'kin' is presented as a stimulus word, most likely the responses will be 'kith'. This notion is also valid for compounds such as blackboard, football, breakdown, and so on.

2.5.7 Connotations

All kinds of attitudinal and connotational responses are shaped by the culture of an individual. Culture is a broad term which includes subjects' personal knowledge and experience. Culture nurtures its subjects. It shapes the way they think, behave and feel. Tylor defines culture a "complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society" (Tylor 1924 [orig. 1871] p. 1). Nunez et al. (2007) notes the definition of culture given by Geert Hofstede "Culture is the collective mental programming of the human mind", and they also argue that culture is "all

about the familiar way we think, feel and behave” (p. 4). Language is the embodiment of individuals’ identity, beliefs and habits which they develop in a certain culture. Schlesinger (1991) claims that “each language reflects the culture of its speech community” (p. 17). Osman (1985) notes “language is an index to culture. This means that language reflects the culture of its speaker – the way of life they lead as well their physical and social environment” (p. 184). What all these definitions suggest is that language is the mirror of the thoughts and feelings. Therefore, it is natural to believe that language is influenced by the culture of its speaker. Such influence can be observed in the word association test where the subjects influenced by their culture, response to the stimulus negatively or positively. Such connotations are the indicators of cultural influence on the vocabulary. Connotations may vary between social groups, age groups and geographical areas. That is why; those participants were selected who had the same age (roughly the same as all were undergraduate students), educational level (undergraduate level) and the cultural uniformity (Pakistani).

It has been explained above that to a stimulus word, subjects may express their attitude; it is easy to decide whether a response is an attitude or not because when there is no lexical semantic link between the stimulus and the response, most probably the response will be a word expressing attitude. This attitude is actually defined as connotation which a certain word carries with it. In the rest of this section, it will be thoroughly explained how the culture plays a vital role in the formation of such attitudinal and connotational responses. The following theories will explain the shift from language to culture.

The notion that a linguistic sign carries connotations owes a great deal to the work of Ferdinand de Saussure and Ronald Barthes. According to Culler (1976), for Saussure the “language is a system of signs”. Every word of a language such as, ‘parrot’, ‘pen’ and so on is functioning as a sign. Spoken words, written words, paintings and images work as signs only when they seem to convey meaning. A sign, like a coin, has two parts: ‘form’ (sounds of words, written words, images, material objects) and ‘concept’ (an idea of what a thing look like). Every form is associated with a certain concept. For example, when we hear or see the word (form) “Walkman”, a “concept of a portable cassette-player” (an idea of what it is like) pops up in the mind. Saussure called the form signifier and the concept signified. The connection between the form and the concept is arbitrary (p. 19). Saussure (1960) called the study of sign “semeion” (p. 16). The word ‘semeion’, which has Greek origin, is generally known as semiotics. Meaning is central to the study of signs. The only purpose of the sign is

to communicate meaning. What meaning a sign represents is totally a matter of convention. If something conveys meaning, it must be using signs (signifier and signified). Hall (1997) argues that according to the semiotic approach, all cultural objects convey meaning which means they must make use of signs. This, in turn, means they function as language, and thus they must be analysable in terms of Saussure's model of sign (signifier and signified) (p. 36).

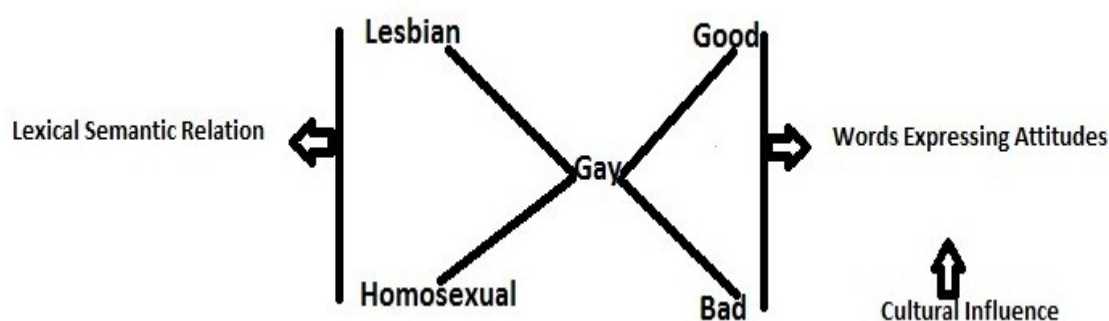
Barthes took a step further from Saussure's sign model. For Barthes, according to Hall (1997) the signs themselves function as signifiers, and "they construct a meaning and carry a message". For example, clothes may signify "elegance", "formality" and "casualness" that are signified, and so do the other signs (words and images) signify other signified (p. 37). Barthes further points out that the signs itself functions as a signifier and also convey the meaning, which he calls a 'myth' in order to depoliticize the purposeful intention of the meaning. We note that the whole process of the representation of the meaning, that is, from language to culture is completed at two levels. According to Hall (1997), Barthes calls the first level 'denotation', and the second level 'connotation'. Schmitt (2000) refers various terminologies to the same concept: "extension meaning and intention meaning", "definitional information and contextual information", "basic domain and abstract domain," and "core meaning and encyclopaedic meaning" (p. 26-27). McGregor (2009) defines connotation as "unstable meaning associations such as emotional overtones". Connotations depend upon the attitudes of a person, and upon linguistic or speech context. Connotations are important for language acquisition and change, and sometimes connotations get so firmly fixed with the word that it becomes a part of its sense (p. 130). Further, Hall states that the people who belong to the same culture interpret the signs in roughly the same way, and the people who belong to another culture will interpret these signs in a different way (p. 38). What is evident from the above discussion is that the signs, linguistic or non-linguistic, do carry connotation (attitudes) that vary as to the culture of the individuals. On this assumption, it is reasonable to expect that in the word association test, the participants' associations may show traces of cultural influence on their vocabulary.

2.5.7.1 *Discourse Prosody*

Sometimes the neutral words acquire positive and negative association due to the words they collocate with. Backer (2006) concludes that the word 'refugee' is perceived as having negative associations because it collocates with those words that describe it as something bad

(p. 87). Most of the words acquire some sort of discourse prosodies (negative or positive), which create the links between the stimulus words and those words which show the attitudes of the individuals to the stimulus words. Therefore, it is sensible to believe that words also have links with other words in the mental lexicon on the basis of discourse prosodies. If we trace the discourses of such attitudes, we will find that the underlying forces in the formation of the semantic prosodies are values and norms of the culture. If homosexuality is despised in a certain culture, the significant practices such as, the extensive use of negative words with 'gay' in written text or spoken conversations, and giving a lower profile to gays through adverts, will result in the negative attitudes of the society towards the word 'gay'. This is the discourse prosody which is responsible for the addition of those words which represent the attitude to the word-network of 'gay'. This is illustrated in the following figure no. 1.

Figure 1 showing the extension of the associations of the word 'Gay' with other words



The difference between lexical semantic bonds and non-lexical semantic bonds is that the former is considered to be stable, whereas the latter is less stable. For example, the antonym of black is white; both words will stay connected, no matter whether the knowledge of the individual progresses. On the other hand, the connotations are not stable, as McGregor (2009, p. 130) states. They change with the change in one's culture and attitude.

McCarthy (1990) also discusses the same kind of concept with different terminology which he calls encyclopaedic knowledge. He states that words are connected by a complex series of links to the individual's encyclopaedia of world knowledge which they have collected during their lives, and such knowledge is responsible for 'a web-like set of associations' (p. 41).

2.6 Results from Previous Studies on Word Association

Schmitt (2000) reports several traits of L2 association found in the previous studies on L2 word association. Schmitt refers to the studies of Meara (1980, 1983) and states that L2

learners' responses considerably differ from the responses given by native speakers. L2 learner's responses are less regular and are of different types, as compared with native speakers. L2 learner's, having less advanced vocabulary in L2, are often inclined to give clang responses. L2 learners sometimes fail to understand the stimulus word, which ultimately lead them to totally unrelated associations. The major difference between L2 learners' and L1 speakers' responses is that L2 learners, like L1 children, have a tendency to produce syntagmatic responses, whereas L1 speakers are inclined to paradigmatic responses. Furthermore, L2 learners are relatively unstable, but with the development of L2 vocabulary, their responses tend to become similar to those of the native speakers. It can be concluded that native speakers tend to produce paradigmatic responses, whereas L2 learners produce clang and syntagmatic responses. This is the clue that L2 learners have a relatively undeveloped mental lexicon. As soon as their knowledge of L2 advances, their responses tend to shift from syntagmatic to paradigmatic. This phenomenon implies that there is relation between the type of responses and the knowledge of the subjects. The clang and syntagmatic associations disappear respectively from the responses as the language of an individual matures. Schmitt is also convinced that although there takes place a shift from clang to paradigmatic, but every word does not go through this progression (p, 40-42).

Söderman (1993), analysing the Scandinavian L2 learners' word associations at different educational levels, found out that there was a steady shift in L2 learners' vocabulary from clang associations to syntagmatic and most importantly to paradigmatic association, as found in L1 children. He concluded that the responses tend to change from syntagmatic to paradigmatic in L2 learner's word association as they receive more exposure to L2, and that development is quite similar to that of L1 children, although he was convinced that the distributional pattern did not quite reach like native speakers (p. 149). Schmitt (2000) states that L2 learners have to be very advanced in order to achieve the native-like associations. Schmitt (2000) concludes that there is a connection between the proficiency of the subjects and the type of the response produced (p. 41). On this assumption, the subjects' level of proficiency and acquisition of second language vocabulary can be measured, and this is the target of the current study.

According to McCarthy (1990), L1 speakers organize words into semantically related sets of words in the mental lexicon, and in the word association responses co-ordination (antonyms) is the most common response which native speakers produce. Apart from this, in the

responses of L1 learners the other common associations are collocations, subordination and synonymy. Further, L2 speakers produce more clang association based on sound pattern of the words than L1 learners do (p. 39-40).

3. Analysis and Discussion

In order to get the clear picture of the results, it is important the data should be analysed in terms of (1) lexical categories, (2) lexical semantic relations and (3) non-lexical semantic relations respectively. In the first step, the data is analysed in terms of lexical categories which is further divided into two sub-sections: the overall analysis of the data and participant-wise analysis of the data. The rest of the two categories will also be analysed by following the same procedure.

3.1 Analysis of the Data in Terms of Lexical Categories

3.1.1 The Overall Analysis of the Data

Table 1 showing the overall analysis of the data

Total no. of Responses	2000	Percentage Approx.
Total no. of Paradigmatic Relations out of 2000	1230	61%
Total no. of Syntagmatic Relations out of 2000	735	37 %
Total no. of Incorrect Responses out of 2000	23	1%
Total no. of Clang Relations out of 2000	12	0.6 %

In the interpretation of the data, the difference is taken to be insignificant if the difference between two variables is at below 15%. The assumption is that less than this percentage, the difference is so small that it does not seem to give any information about the variables. When the percentage is over 10%, say 15% or 20% or above, it should be considered as significant because it suggests that variables are patterning towards some directions due to having relatively high or low number of responses with respect to each other.

It was mentioned above in the material section that the current study involved twenty participants who took the association test, and the association test consisted of one hundred stimulus English word. Each of the twenty participants contributed one hundred responses to one hundred stimulus words, which means the total no. of responses is 2000. The data showed that out of 2000 stimulated word, 1230 stimulated words were linked with the stimulus words by paradigmatic relation, 735 stimulated words by syntagmatic relation and 12 stimulated words by clang relation. There were also 23 incorrect responses, which have not been included in the counting; therefore, the number of valid responses is $2000 - 23 = 1977$. Incorrect responses are referred to those responses that were incomprehensible because of severe spelling mistakes, and illegible hand-writing and that consisted of phrases rather than words.

The overall analysis of the data represents that there is a significant difference of number between paradigmatic responses and syntagmatic responses. It was pointed out in the section (2.6) that according to previous studies' findings, the L2 learners tend to give clang and syntagmatic responses which is similar to the responses of young L1 learners, but as soon as their knowledge of L2 advances, their clang and syntagmatic begin to shift to paradigmatic relations. It is the norm of grown-up native speakers that they produce paradigmatic responses which is considered to be having the advanced command of vocabulary acquisition. When L2 learners begin to produce paradigmatic responses, this development indicates that they are patterning towards the native-like acquisition of the vocabulary.

The data shows that there is a striking difference between paradigmatic responses and syntagmatic responses produced by the undergraduate Pakistani L2 learners of English. The number of paradigmatic responses is significantly higher than that of syntagmatic responses. The paradigmatic responses outnumbered syntagmatic responses by approx. $61\% - 37\% = 24\%$, whereas the paradigmatic and syntagmatic responses were 61% and 37% respectively. The higher number of paradigmatic responses indicates that Pakistani L2 learners' vocabulary is patterning towards grown-up native-like acquisition which is considered as advanced vocabulary because according to the previous studies (2.6), it is the norm of native speakers to produce paradigmatic responses because their vocabulary is developed. If Pakistani L2 learners also produce paradigmatic responses significantly higher than other responses like the native speakers, it indicates that they also possess advanced vocabulary. Nevertheless, the presence of 37% responses suggests too that the acquisition of vocabulary is not exactly the

native-like. In section (2.6) Schmitt concludes that there is a connection between the proficiency of the subjects and the type of the response produced: the greater the number of paradigmatic responses, the higher the level of L2 knowledge (p. 41). Data suggests that L2 knowledge of Pakistani is also advanced, that is why their responses tend to be paradigmatic. A relatively low number of syntagmatic responses with respect to paradigmatic responses emerged in the data suggests that although the responses tend to be native-like, the number has to be reduced as low as possible in order to reach native-like command of vocabulary.

As compared with paradigmatic and syntagmatic responses, a negligible number of clang associations occurred in the responses which was 0.6%. In reference to the section (2.6), high number of clang association is founded in less advanced vocabulary of young learners of L1 and beginners of L2. It has also been pointed out too in the same section that the clang associations are first to disappear followed by syntagmatic associations, but every word does not pass this progression. The fewer the number of clang associations, the higher the number of paradigmatic associations or vice versa. The L2 beginners show syntagmatic and clang associations, while advanced L2 learners give paradigmatic associations. This finding in the previous studies implies that there is an indirect proportion between clang or syntagmatic relation and paradigmatic relation. The current study supports this finding. The number of paradigmatic responses was 1230, while the number of clang responses was just 12, which means if the vocabulary of Pakistani L2 learners were not advanced as the results showed, the number of clang associations would have been greater. Despite the fact that there appeared a large number of paradigmatic responses, the clang associations also emerged though they were insignificant. What the insignificant number of clang association suggests is that the Pakistani L2 learners of English have developed mental lexicon since in their responses, the number of clang association is virtually non-existent, while the number of paradigmatic responses is salient.

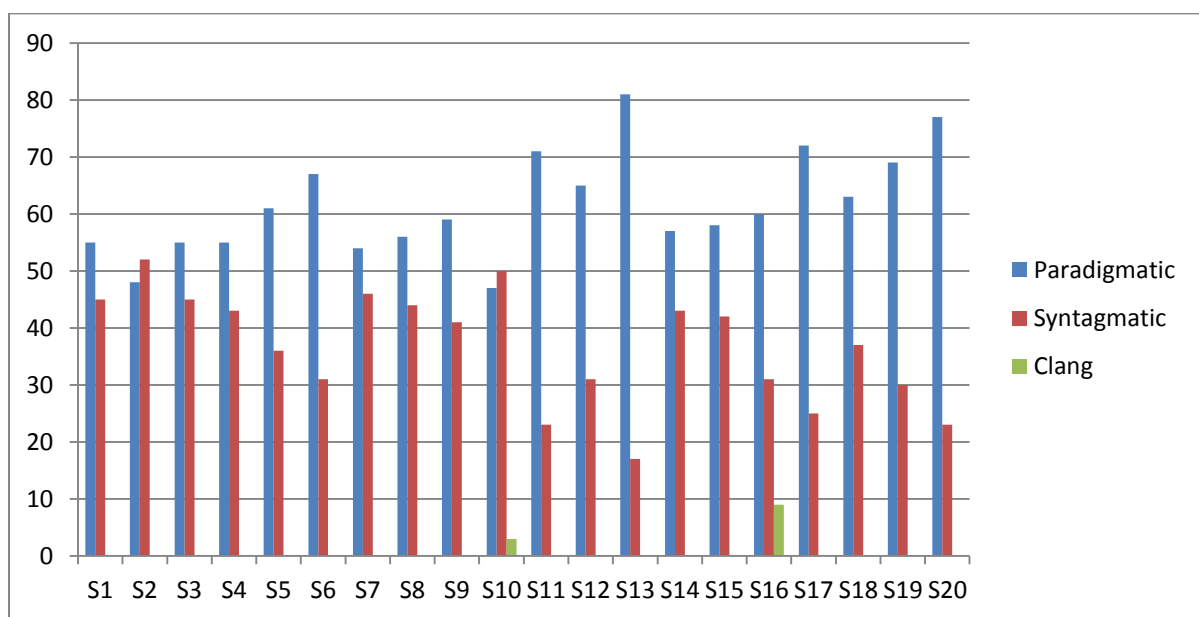
There were also 23 responses found in the association experiment which were unanalysable since some of these responses were phrases rather than a single word, and some of them were misspelled in a way that it was difficult to apprehend which word it was.

3.1.2 Participant-wise Analysis of the Data

The graph used for the visual representation of the results is called a histogram bar graph. The y-axis on the left side of the graph represents the number of responses out of 100 responses.

The y-axis has been divided into ten divisions although the graph shows only 9 divisions; each division corresponds to ten responses. The maximum number of responses per subject is one hundred since there were one hundred stimulus words. Similarly, on the x-axis, there are twenty divisions; each division corresponds to each individual participant's response. It also represents three kinds of responses in each division since every individuals' response were categorised into three categories. The different colours of bars correspond to different categories which are also mentioned on the right side of the graph. The short forms such as, S1, S2...S20 denote subject1, subject2...subject20 respectively.

Figure 2 showing the Analysis of the Responses of Each Participant



It is evident in the graph that every subject, with the exception of S2 and S10, produced a higher number of paradigmatic responses than that of syntagmatic ones. At some places the difference between paradigmatic and syntagmatic in the responses of a single subject is insignificant because both the responses have almost the same number, for example, in case of S1, S2, S3, S4, S7, S8 and S10. This observation suggests these Pakistani L2 learners do not possess advanced vocabulary since the number of paradigmatic and syntagmatic responses is almost the same. Contrarily, the difference is very prominent as in case of S5, S6, S11, S12, S13, S17, S18, S19, S20. It can be seen that paradigmatic and syntagmatic responses noticeably vary from subject to subject. It appears these Pakistani L2 learners having significant difference between paradigmatic and syntagmatic associations have advanced vocabulary since the number of paradigmatic responses is significantly higher than that of syntagmatic ones.

The graph also demonstrates that in some cases the the variations among different subjects are almost the same. The difference between paradigmatic and syntagmatic associations is somehow similar to one another; for example, in case of S3 and S4; S5 and S6; S7 and S8; S11 and S12; and S14 and 15. Such patterns indicate that L2 knowledge of the different subjects is seemingly similar to one others although there are other responses which do not make any pattern with other responses such as, S13, S17 and S20. What the graph displays is that almost all have a higher number of paradigmatic assosiations, and what are the interpretations of such high and low numbers have been explicitly explained in the preceeding section as to findings of the previous studies explained in section (2.6). It is noted that clang association also appeared in S10 and S16. The number is negligible as compared with the number of paradigmatic and syntagmatic responses. It is concluded that there is no uniformity in paradigmatic and syntagmatic responses. Some subjects have significant differences, but others do not. The collective analysis of the data suggests that Pakistani L2 learners' vocabulary is patterning towards native-like.

3.2 Analysis in Terms of Lexical Semantic Relations

3.2.1 The Overall Analysis of the Data

The lexical semantic relation comprises four sub-categories: synonymy, antonymy, hyponymy and meronymy. The responses belonging to all of these sub-categories emerged in the association test. Blow the table no. 2 represents the total number of responses out of 2000 that belong to these sub-categories.

Table 2 Showing the Overall Analysis of the Lexical Semantic Relations

Total no. of Synonymy out of 2000	299	15%
Total no. of Antonymy out of 2000	175	9%
Total no. of Hyponymy out of 2000	82	4%
Total no. of Meronymy out of 2000	7	.3%

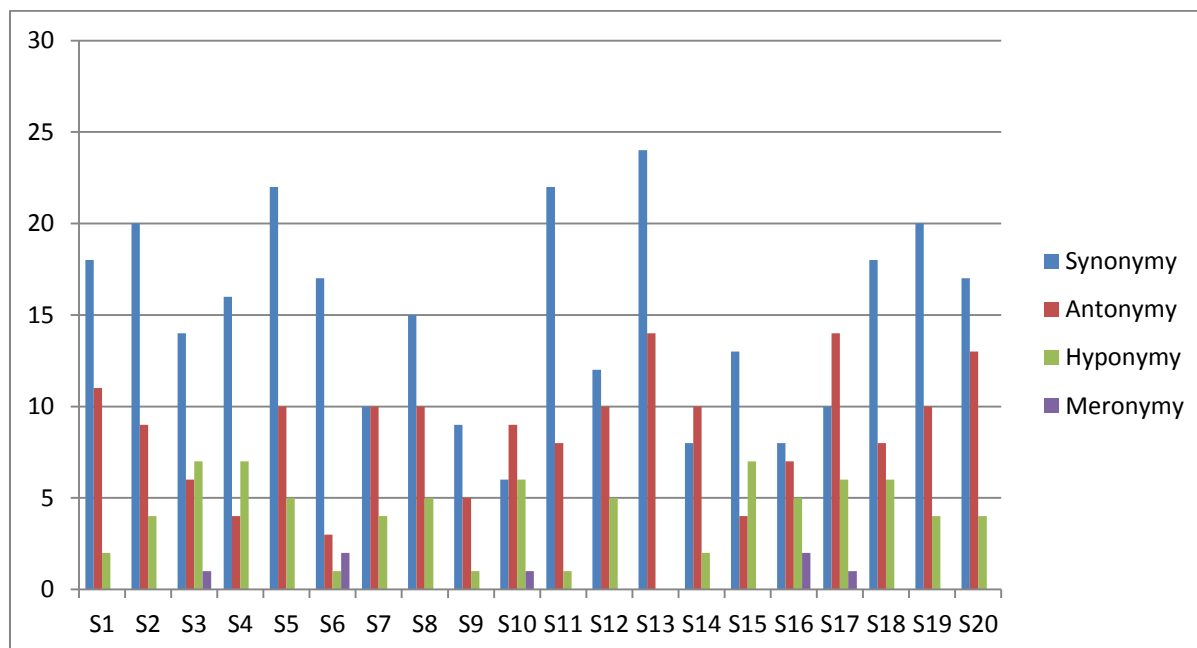
The table shows that the number of synonymy relations with which the stimulated words found to be linked with stimulus words was the highest of all among all the links in lexical semantic relations. The total number of synonymy relations is 299. After it, there come antonymy, hyponymy and meronymy with their numbers of occurrences, that is, 175, 82, and 7 respectively. As explained in the section (2.4), synonymy is a relation among words based

on similarity in the meaning. Any word could have several synonyms. The idea is that due to having similarities a stimulus word can trigger any of its synonyms. Synonymy is considered to be very important in the model of word association, as Miller and Fellbaum (1991) pointed out. That is why the number of synonymy is higher than other lexical semantic relations although according to the set criteria of significance, the difference between synonymy and antonymy is not significant since it is less than 10%. However, the highest number of synonymy indicates that in the mental lexicon, synonymy is used more in order to bond the words together than other relations in the domain of lexical semantic relation. The difference between synonymy and hyponymy is significant since the difference is slightly over 10% which is significant in regard to the set criteria. On the other hand, it is not significant in case of antonymy and hyponymy. In relation to the rest of the lexical semantic relations, meronymy has the negligible number; therefore the difference is highly significant. The occurrence of such number of responses indicates that meronymy and hyponymy are less used to connect the words in the mental lexicon than synonymy and antonymy. Synonymy is the most common link in lexical semantic relations.

The results also showed that antonymy was the second lexical semantic link which the participants' used more. According to McCarthy's findings discussed in (2.4), co-ordination is also a common feature of L1 learners. Therefore, we could say that they possess somewhat developed mental lexicon. The reason why synonymy and antonymy are the strongest links among word is that these links use a straightforward cognitive system of perceiving things on the basis of similarities and differences. Things are identifiable because of what they are not. Red is perceived as red because it is not green, or black is black because it is not white. This simple mechanism is involved in the perception of synonymy and antonymy. This kind of cognitions creates stronger links among words. It is apparent from the figure, as compared with synonymy and antonymy, the number of hyponymy and the meronymy is relatively low which implies that the network of the words in the mental lexicon of Pakistani L2 learners is mostly based on synonymy and antonymy.

3.2.2 Participant-wise Analysis of the Data

Figure no. 3 showing the number of the Lexical Semantic Relations



The graph demonstrates the variations of the lexical semantic responses of all the subjects. The responses vary from subject to subject. The graph illustrates that the number of synonymy outnumbered all other types of lexical semantic relations. Every subject's response shows the high number of synonymy with the exception of S7, S10, S14 and S17. This similar pattern suggests a general trend that Pakistani L2 learners tend to store words more by means of synonymy than other types of lexical semantic relations. Secondly, they also make word networks by means of antonymy, which also appeared significantly after synonymy in relation to meronymy and hyponymy. All the participants produced a high number of antonymy as compared with hyponymy and meronymy in their responses with the exception of S3, S4, S7, S14 and S15. This phenomenon reveals that most of the Pakistani L2 learners have the same fashion of linking words by means of antonymy. It is also apparent in the data that hyponymy and meronymy did not emerge significantly as compared with synonymy and antonymy. The reason could be the fact that almost all words seem to have synonyms in language, but all words do not have subordination or super-ordination relation with other words. So, it was somehow natural for these two relations to occur less significantly as compared with synonymy and antonymy. It is thus concluded that Pakistani L2 learners do not seem to store the words abundantly in their mental lexicon in terms of hyponymy and meronymy. The similarities in their responses suggest that they have almost the same level of vocabulary acquisition and exposure to L2 in terms of lexical semantic relation.

3.3 Analysis in Terms of Non-Lexical Semantic Relations

3.3.1 The Overall Analysis of the Data

In this category, the data revealed that the highest number of collocational responses occurred in non-lexical semantic relations. This is the highest number obtained in this category, that is, 609 out of 2000. The number of connotational or attitudinal responses, which is 559 out of 2000, also appeared meaningfully after collocational responses as compared with other types of non-lexical semantic relations, but slightly lower than the collocational responses. According to the criteria of significance, the difference between them is very small, 3%; therefore, both relations have almost the same number of occurrence. The other responses categorized as metaphors, fixed expressions and phonological relations also occurred with remarkably low number as compared with collocations and connotations.

Table no. 3 Showing the Overall Analysis of the Non-Lexical Semantic Relations

Total no. of Collocations out of 2000	611	30.55%
Total no. of Connotations out of 2000	545	27.25%
Total no. of Metaphor out of 2000	183	9%
Total no. of Fixed Expressions out of 2000	63	3%
Total no. of Phonological Relations out of 2000	12	0.6%

The high number of collocations in Pakistani L2 learners implies that their vocabulary acquisition seems to be native-like since collocational responses are common in L1 learners' responses, as McCarthy (1990) suggested section (2.6). This is also a reliable indicator of the native-like patterns in the vocabulary of Pakistani L2 learners. There are many underlying mechanisms and practices which construct and regulate collocations, but the mastery of collocations in L2 is only achieved when the subjects have excessive exposure to L2. The beginners do not first learn collocations in L2. As soon as their exposure to L2 increases, and they encounter the collocations over and over again, the collocations are retained in their long-term-memory. Why is McCarthy's finding that collocations are common in the native speakers' responses valid? The reason is that the native speakers live in the exposure to L1 where they come across pairs of words which usually happen to occur in each other's vicinity over and over again, and these words become fixed so tightly that when one of these words comes before them, the other one automatically becomes activated. This is the result of repeated encounters with the collocations. What it entails is that the L2 learners have to come

repeatedly in contact with collocations, and have excessive exposure to L2 in order to be able to master the collocations.

A large part of the total responses was based on connotational responses. This is the second highest number, which is 559 out of 2000, after the collocational responses in non-lexical semantic relations. None of the previous studies has taken the connotational responses into consideration for the investigation of cultural influence on vocabulary. There was no previous model to set the criteria how to measure the extent of the influence. Therefore, the criterion was set rather intuitively, assuming that their presence in the test itself is an evidence that vocabulary is surely influenced. Further, in order to measure how much it is influenced by the culture, its number was compared with all other types of links discussed in the study. The data showed that the number was considerably high as compared with all types of links. It was the second highest number 545 out of 2000 after collocation in both the categories: lexical and non-lexical semantic relations. The significant number in relation to other types of lexical and non-lexical relations is the indicator of the fact that vocabulary of individuals gets influenced by their culture.

Regarding section (2.3.7), connotational responses or encyclopaedic responses are those which do not belong to the domain of lexical semantic relations. Such responses show the subject's attitude or emotional reaction to the stimulus words. For example, the subjects' responses in the current investigation to the stimulus word 'politician' were like 'corrupt', 'corruption', 'great', 'untrustworthy', 'traitor', 'hate', 'exploit' and so on. Consider the word 'traitor' which implies that the subjects had the experience in their lives to see a politician turn traitor. He or she had kept the word 'traitor' in the association of politician in their long-term memory, and when the politician was displayed as stimulus, it got activated. The responses of this kind fall into the category of connotations since they represent the attitudes of the subjects. These connotational responses give evidence for the existence of attitudinal bonds in the mental lexicon. They, like other lexical or non-lexical semantic relations, link certain words together.

There could be another account for the development of this bond. It is reasonable to think that due to discourse prosody in the subject's culture, or any significant practices politicized the concept of the word 'politician', giving it negative impression. In contrast to negative impression, the positive association with a certain word can also be established through these

norms. The considerable amount of connotational responses in relation to all kinds of links discussed in the current study number helps to conclude that the individual's mental lexicon to a large extent is influenced by the culture he or she belongs to. This phenomenon justifies the position of the attitudinal links which play a central role in creating different word networks. It is a link just like the other ones, such as synonymy and antonymy by which the different words are inter-connected. This finding supports McCarthy's statement, section (2.5.7.1), that words also carry non-lexical associations which also form complex word networks. It was one of the hypotheses for the current study that if a considerable number of connotational or attitudinal response occurred in the association test, it would be a reliable indicator that the human mental lexicon had the cultural influences on its vocabulary. Here the reasonable amount of connotations confirms the hypothesis.

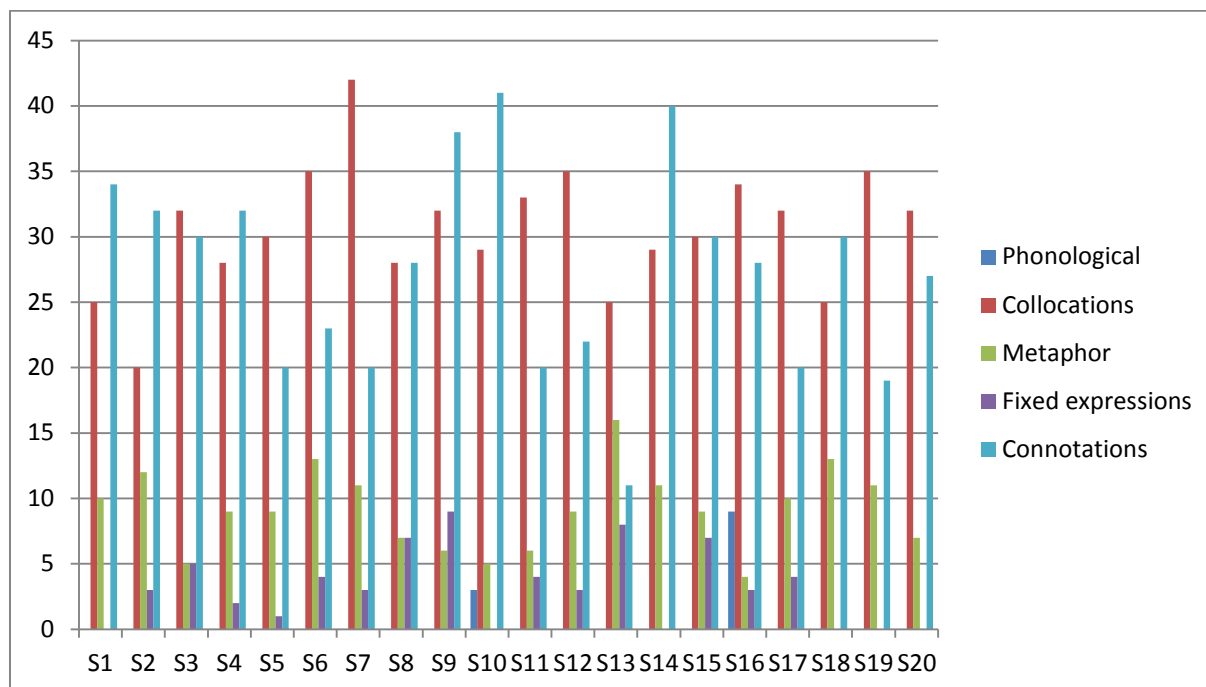
The other types of non-lexical links, such as metaphors and fixed expressions also emerged marginally in the association test; nevertheless, their number is not salient as compared with collocations and connotations. As no previous study was found to analyse responses in detail, there is no backup from theoretical background. Regardless of their low number, their emergence itself in the word association study is the evidence that responses based on these links could potentially occur. Nonetheless, there is convincing explanation in the section (2.5.3) and (2.5.4) that how the words could be linked through these ways. It was just thought that the connection between words might be set up on the basis of metaphor. The results revealed the evidences that the human mental lexicon also uses metaphorical connections to set up connections among words. For instance, the word 'sky' was found to be associated with the word 'roof', 'sun' for 'bulb', 'death' for 'end', 'snow' for 'cotton' and so on. It can be observed in these kinds of responses that these stimulated words do not have direct lexical relation, but what they seem to share with the stimulus words is some common characteristics in terms of shape, size and colour. The reason why they occurred with low number is that the metaphors of this kind are not commonly used in the conversation.

The number of phonological similarities between words is just 12 which is negligible. They have been discussed under the heading of clang associations in the theoretical background. According to the findings of past studies mentioned in (2.6), L2 learners who have advanced vocabulary do not produce clang responses. Their number indicates that Pakistani L2 learners have advanced vocabulary.

3.3.2 Participant-wise Analysis of the Data

The responses of all twenty subjects have been displayed with the help of graph.

Figure no. 4 showing the Analysis of Non-Lexical semantic Relations



The graph represents the responses of all of twenty participants. It presents the detail of every individual. The data illustrates the distribution of the collocational and connotational responses. Almost half of the participants showed the high number of collocational responses as compared with other links in this category. Contrarily, almost half of the participants gave the high number of connotational responses too. The difference between total number of collocational and connotational responses is not striking although the collocational responses were more numerous than connotational ones. All of the participants, with the exception of S3 and S8, produced metaphorical responses scarcely as compared with fixed expressions, collocation, connotation. The responses that are virtually non-existent in the current investigation are those which the participants elicited on the basis of the phonological structures of the stimuli.

3.4 An Overview of Analysis of Lexical, Non-Lexical Semantic Relations and Lexical Categories Along With Their Implications

By comparing the data from all of the three main sections of analysis and discussion, it was found that the highest number of responses was of collocations (611 out of 2000) followed by connotations (549), synonymy (299), metaphor (183), and antonymy (175) respectively. These are top five relations with the stimulus word found in the current data. On the other hand, the number of paradigmatic responses is (1230), followed by the number of syntagmatic

responses (735) and clang responses (12) respectively. As it was pointed out in the theoretical background that collocation, synonymy and antonymy are the norms of native speakers, such norms with their significant numbers were also found in the responses of Pakistani L2 learners of English, which entails that near native-like like success in the organization of the mental lexicon. To give paradigmatic responses is also the trait of native speakers which also indicates that Pakistani L2 learners' vocabulary is somewhat advanced. Both the findings lead to the conclusion that L2 knowledge or exposure to L2 does influence the vocabulary acquisition of the individuals, and this fact supports the hypothesis. Therefore, Pakistani L2 learners are thought to have good knowledge and excessive exposure of L2. On the other hand, the significant number of connotational responses also supports the other aspect of the hypothesis that the culture of the individuals does influence the vocabulary of the individual.

There were some other noticeable observations. It was seen that most of the attitudinal responses were syntagmatic in nature, but not necessarily. For example, when the noun 'politician' was given as the stimulus word, the response appeared in adjective and vice versa. Perhaps, the reason is that adjectives are the words that describe the people and things. The attribute to someone or something is the description of how the individual thinks about someone or something. So, when the attribute has to be shown in response to a certain noun, the adjectives are naturally come first since they describe people and things. Similarly, the connotational responses are more likely to occur in syntagmatic relation. The collocational responses often tend to be syntagmatic, but all types of lexical semantic relations are purely paradigmatic in their nature.

4. Summary and Conclusion

The purpose of the current investigation was to observe whether the culture and the knowledge of L2 of the undergraduate Pakistani L2 learners of English influence their mental lexicon. In order to carry out this study, an association test containing one hundred stimulus English words was created that was taken by twenty undergraduate Pakistani L2 learners who were students at Malmö University. The data retrieved from their responses were then analysed in terms of lexical categories, lexical semantic relations and non-lexical semantic relations. The results have supported the hypothesis that the individuals' cultural background influences the vocabulary of individuals. The emergence of connotations or attitudinal responses confirmed that the attitudes, just like the lexical semantic relation, also bonds the

different words together since the large number of stimulated words in the current investigation were found to be linked by the attitudinal bond. It was confirmed that all of the links, lexical and non-lexical, mentioned in theoretical background were used to make different word-networks in the mental lexicon since all of the links were found in the responses. It was also found that there is a co-relation between syntagmatic association and attitudinal responses, as most of the stimulated words which were connected with syntagmatic relations were attitudinal responses.

The current investigation has also concluded that the high number of paradigmatic associations in the association test shows that the undergraduate Pakistani L2 learners of English have rather developed vocabulary. This is somehow akin to the vocabulary of the grown-up native speakers who have enough knowledge of L1. In other words, it shows that their way of organizing the mental lexicon and knowledge of L2 is apparently grown-up native-like. However, the presence of the syntagmatic associations represents that their vocabulary is somehow not exactly advanced as that of native-like, but it is patterning towards it.

Both of the perspectives of analysing the responses (1. lexical categories and 2. lexical/non-lexical semantic relations) are important in order to examine the vocabulary. The perspective in which the responses are categorised as syntagmatic, clang and paradigmatic associations only provides with the clues about assessing the level of vocabulary, while the other perspective which further analyses the responses reveals the underlying mechanism of the formation of different links among different words. Both methods of analysis have their own essentiality in didactics. One addresses the quality of vocabulary; the second addresses the underlying factors influencing the formation of the links among the words.

4.1 Limitations and Future Proposal

Word association study apparently looks simple and fun to do, but it requires a great deal of effort and time. The stimulated responses have to be analysed very carefully and double-checked so that every stimulated word fits into the best category. It demands lots of careful planning. The major limitations of word associations are the selection of stimulus words and how to encourage participants to do this test willingly.

Up to this point, most of the word association studies have been carried out in order to analyse the responses in terms of lexical categories of the stimulated word and lexical semantic relations, this thesis attempted to design a framework by which these lexical categories of the stimulated words can further be analysed in terms of non-lexical relations. This way not only helps to trace the influence of the culture on vocabulary, but also help teacher to devise effective strategies for teaching vocabulary.

The lack of research on the different groups of L2 learners from different educational and cultural backgrounds invites to carry out further research within the domain of Second language. It provides an opportunity to carry out a comparative study between different groups of L2 learners in order to trace the differences and similarities in the organization of the mental lexicon, it will enable us to discover what kind of educational and cultural influences L2 learners have on their mental lexicons.

References

- Aitchison, J. (1994). *Words in the Mind*. Oxford: Blackwell Publishers Ltd.
- Baker, P. (2006). *Using Corpora in Discourse Analysis*. London: Continuum.
- Culler, J. (1976). *Saussure*. London: Fontana.
- Hall, S. (1997). *Representations: Cultural Representations and Signifying Practice*. London: Sage Publications.
- Hudson, J. (1998). *Perspectives on Fixedness*. Applied and Theoretical. Lund: Lund University Press.
- Johnstone, B. 2008. *Discourse Analysis*. Oxford: Blackwell Publishing.
- McCarthy, M. (1990). *Vocabulary*. Oxford: Oxford University Press.
- McGregor, W.B. (2009). *Linguistics: An Introduction*. London: Continuum International Publishing Group.
- Meara, P. (2008). *Connected Words: Word Associations and Second Language Vocabulary Acquisition*. Amsterdam: John Benjamins Publishing Company.
- Miller, G. A., and C. Fellbaum. (1991). Semantic Networks of English. In B. Levin and S. Pinker (eds), *Lexical and Conceptual Semantics* (197-229). Oxford: Blackwell.
- Moon, R. (1998). *Fixed expressions and idioms in English: a corpus-based approach*. Oxford: Oxford University Press.
- Murphy, M. L. (2010). *Lexical Meaning*. Cambridge: Cambridge University Press.
- Nattinger, J. (1988). 'Some Current Trends in Vocabulary Teaching.' In Carter, R. and McCarthy, M. (Eds) *Vocabulary and Language Teaching*, 62-82. London: Longman.
- Nesselhauf, N. (2005). *Collocations in a Learner Corpus: Studies in Corpus Linguistics*. Amsterdam: John Benjamin Publishing Co.
- Nunez, C., Nunez, R. M., & Popma, L. (2007) *Intercultural Sensitivity: From Denial to Intercultural Competence*. Assen: Royal Van Gorcum.
- Osman, T. M. (1985). *Malaysian World-View*. Pasir Panjang: Institute of Southeast Asian Studies.
- Richards, J. C., & Rodgers, T. S. (2001). *Approaches and Methods in Language Teaching*. Cambridge: Cambridge University Press.
- Saussure, F. D. (1960). *Course in General Linguistics*. London: Peter Owen.

- Schlesinger, I. M. (1991). The wax and wane of Whorfian views. In Cooper, R. L., Spolsky, B. (eds), *The Influence of Language on Culture and Thought: Essays in Honor of Joshua A. Fishman's Sixty-fifth Birthday (7-45)*. Berlin: Walter de Gruyter.
- Schmitt, N. (2000). *Vocabulary in Language Teaching*. Cambridge: Cambridge University Press.
- Stubbs, M. (2001). *Words and Phrases: Corpus Studies of Lexical Semantics*. London: Blackwell.
- Söderman, T. (1993). Word Associations of Foreign Language Learners and Native Speakers: The phenomenon of a shift in response type and its relevance for lexical development. In H. Ringbom (eds), *Near-native Proficiency in English* (pp. 91–182) *English Department Publications 2*. Åbo: Åbo Akademi University.
- Tylor, E. B. (1924 [orig. 1871]). *Primitive Culture*. 2 vols. 7th ed. New York: Brentano's.
- Vasiljevic (2008). Teaching Vocabulary to Advanced Japanese Students: A Word Association Approach. Retrieved from http://www.brookes.ac.uk/schools/education/eal/eal-4-1/Vasiljevic_2008_vol_4_1.pdf.

Appendices

Appendix 1

Word Association Experiment

First Language.....

1. Write the first word that comes to your mind. Time: 15 min

2. Do not care about spelling mistakes.

- | | |
|------------------------|----------------------|
| 1. Brave..... | 23. Holy..... |
| 2. Finally..... | 24. Short..... |
| 3. Road..... | 25. Disapproval..... |
| 4. Test..... | 26. Hell..... |
| 5. Innocent..... | 27. Freedom..... |
| 6. City..... | 28. Mother..... |
| 7. Angrily..... | 29. End..... |
| 8. Good..... | 30. Drink..... |
| 9. Love..... | 31. Pork..... |
| 10. Fast..... | 32. US..... |
| 11. Sharp..... | 33. Teen..... |
| 12. Abuse..... | 34. Servant..... |
| 13. Controversial..... | 35. Deep..... |
| 14. Hypocrite..... | 36. Police..... |
| 15. Extremely..... | 37. Music..... |
| 16. Always..... | 38. Cigarette..... |
| 17. Underground..... | 39. Apartment..... |
| 18. Carefully..... | 40. Hungry..... |
| 19. Accident..... | 41. Bicycle..... |
| 20. Shop..... | 42. Happiness..... |
| 21. Wet..... | 43. Finally..... |
| 22. Priest..... | 44. Lesbian..... |

45. Skirt.....	73. Donkey.....
46. Chicken.....	74. Internet.....
47. Salt.....	75. Believe.....
48. Beard.....	76. Touch.....
49. Spicy.....	77. Swine.....
50. Run.....	78. Milk.....
51. Gay.....	79. Beautifully.....
52. Leave.....	80. Death.....
53. Corrupt.....	81. Job.....
54. Bold.....	82. Learn.....
55. Follow.....	83. Positions.....
56. Forgotten.....	84. Kiss.....
57. Snow.....	85. Travel.....
58. Small.....	86. Government.....
59. Angry.....	87. Toilet.....
60. Share.....	88. Christian.....
61. Spy.....	89. Parents.....
62. Sleep.....	90. Muslim.....
63. Israel.....	91. Wife.....
64. Beer.....	92. Money.....
65. Religion.....	93. Foreigner.....
66. Dog.....	94. Law.....
67. Sister.....	95. Sex.....
68. Child.....	96. Divorce.....
69. Pub.....	97. Pepsi.....
70. Marriage.....	98. Girl.....
71. Rich.....	99. Sun.....
72. Sky.....	100. Soft.....

Appendix II

Table 1 Lexical Categories

Subjects	Paradigmatic	Syntagmatic	Clang
S1	55	45	
S2	48	52	
S3	55	45	
S4	55	43	
S5	61	36	
S6	67	31	
S7	54	46	
S8	56	44	
S9	59	41	
S10	47	50	3
S11	71	23	
S12	65	31	
S13	81	17	
S14	57	43	
S15	58	42	
S16	60	31	9
S17	72	25	
S18	63	37	
S19	69	30	
S20	77	23	
Total	1230	735	12

Table 2 Lexical Semantic Relations

Subjects	Synonymy	Antonymy	Hyponymy	Meronymy
S1	18	11	2	
S2	20	9	4	
S3	14	6	7	1
S4	16	4	7	
S5	22	10	5	
S6	17	3	1	2
S7	10	10	4	
S8	15	10	5	
S9	9	5	1	
S10	6	9	6	1
S11	22	8	1	
S12	12	10	5	
S13	24	14		
S14	8	10	2	
S15	13	4	7	
S16	8	7	5	2
S17	10	14	6	1
S18	18	8	6	
S19	20	10	4	
S20	17	13	4	
Total	299	175	82	7

Table 3 Non-Lexical Sematic Relations

Subjects	Phonological	Collocations	Metaphor	Fixed Expressions	Connotations
S1		25	10		34
S2		20	12	3	32
S3		32	5	5	30
S4		28	9	2	32
S5		30	9	1	20
S6		35	13	4	23
S7		42	11	3	20
S8		28	7	7	28
S9		32	6	9	38
S10	3	29	5		41
S11		33	6	4	20
S12		35	9	3	22
S13		25	16	8	11
S14		29	11		40
S15		30	9	7	30
S16	9	34	4	3	28
S17		32	10	4	20
S18		25	13		30
S19		35	11		19
S20		32	7		27
Total	12	611	183	63	545