

**WORD ASSOCIATION OF ENGLISH, ARABIC
AND LEARNERS' ENGLISH:
PUTTING THE COGNITIVE AND THE CULTURAL TOGETHER**

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ABSTRACT

Employing an introspective, ethnographic method of data collection and analysis, the present study investigates word association behaviour of Egyptian learners of English (1st and 4th graders) in Arabic and English, and in relation to English native speakers. Word association has been primarily utilized in exploring the way mental lexicon is structured and organized, and ultimately the various aspects of lexical competence. This paper advocates a reconciliatory, cognitive-cultural paradigm for studying word association working on the premise that (a) cognition is culturally structured via semantic and cognitive constructs such as schemas and prototypes which represent the individual's world view and (b) these constructs are represented in (and even shape) the word association representation in the semantic memory network. This paradigm could also be exploited in reinterpreting prior findings in word association literature. Results show that the differences among groups are more qualitative than quantitative. The prime responses vary considerably, encoding cultural constructs typical of each language responses organized around antonymy, and converseness relations between stimuli and responses are semi-absent in Arabic and the learners' English, possibly echoing a unilateral activation pattern where activation signals emitted from the stimulus are directed primarily to activate concepts/associates sharing similar meanings (synonyms). This activation pattern might be culturally prompted by the predominance of unilateral thinking modes. Another striking finding is that although connotations come first in frequency across groups, Arabic and 4th year EFL data significantly score higher than native English and 1st year learners' English. Arabic mental lexicon seems to be more organized along abstract, emotionally-charged and culturally-provoking associates than native English. Learner's English (4th year), influenced by semantic transfer, patterns similarly. Paradoxically, 1st year learners' English shows fewer connotations. Significant main effects for age group are found for such associative relations as synonymy, hyponymy, and clang with first graders scoring lower than fourth graders in both Arabic and EFL data. As for collocations, first graders in the two sets of data score the highest. The study also demonstrates that despite the academic exposure to English, Egyptian learners' L1 semantic and cultural constructs strike deeper in their association behaviour, a situation provoking further pedagogic work. The paper, finally, provides suggestions for further research.

Introduction:

Research on word association has intrigued psychologists since the beginning of the twentieth century (Kent & Rosanoff 1910). Driven primarily by psychopathological purposes, word association tests have been used as an instrument for diagnosing the disturbance of cognitive processes. A major turn in word association research has been launched by recent interest in vocabulary acquisition (both in L1 and L2). Educationalists, anthropologists, linguists and system specialists have offered significant contributions to our understanding of word association patterns. The last decade has witnessed a growing interest in word association in linguistics (Meara, 1992, Wilks *et al.*, 2005). Word association has been primarily utilized in exploring the way mental lexicon is structured and organized, and ultimately the various aspects of lexical competence. Cognitive linguistics, artificial intelligence and semantics view word association in relation to the semantic memory network where nodes of the network are connected by neural pathways. The most highly activated node represents the prime concept to which the rest of the associations are connected at varying degrees (Langacker, 1986, Veale & O'Donoghue, 2000).

Stimulated by cognitive research on word association in L1 and L2, lexical studies demonstrate differences in word association patterns between L1 and L2. Variables such as prime response, response commonality⁽¹⁾, response heterogeneity⁽²⁾, and number of responses have been *quantitatively* researched with a view to exploring the differences between L1 and L2 in vocabulary density (number of associative connections), vocabulary size (number of words at an individual's disposal), vocabulary organization (clang, syntagmatic and paradigmatic relations along which mental lexicon is organized), etc. This line of research has been largely descriptive and model-free rather than explanatory and model-driven.

The simple statistical treatments of word association data are not sufficiently discerning the qualitative differences in mental lexicon and semantic knowledge between L1 and L2. Two sets of data with the same figures could be quite differently interpreted ethnographically and sociolinguistically. Quantitative reading of data reduces word associations in the form of numbers and hampers reading the reasons why these numbers are this way and the implications drawn from that. This justifies the adoption of a cognitive, sociocultural approach which could account for the underlying mechanisms of response preference and organization. This approach is in line with the recent development in cognitive sciences (e.g. Shore, 1991; Lakoff & Johnson, 1999; Wettler *et al.*, 2005 and Ivanouw, 2006), sociocultural sciences (D'Andrade & Strauss, 1992) and psycholinguistics (Sheng *et al.*, 2006) which helps create a

new (reconciliatory) paradigm of language (L1/L2/L3) learning based on the premise that cognition and learning is socioculturally structured (Watson-Gegeo 2004, Sharifian, 2005).

Several comparisons have been made between L1 and L2 lexical and semantic networks (e.g. Namie 2002, 2004, Meara & Fitz Patrick 2006, Wilks & Meara, 2002, 2005, Sheng *et al.*, 2006). However, work on word association behaviour of Arabic native speakers is scarce. It has been argued that word association tasks reflect how the mental lexicon works and how it is organized, and reveal such factors as lexical density, size, width, etc. Unfortunately, little is known about such issues in the word association behaviour of L1 Arabic speakers and EFL learners. More importantly, the exact nature of subjects' (natives/non natives) response preferences and the factors that make a particular response more preferred/primed than the other(s) are not investigated. Furthermore, due to lack of an accurate, clear definition of what is an association, diverse and inconsistent categorization schemes have plagued association work. More specifically, an association is commonly defined as the response that is strongly and denotatively associated with the stimulus. Relations such as synonymy, hyponymy, antonymy, collocations, etc. (which highlight the literal/direct relations between the stimulus word and the response word) represent the core of scored responses in previous studies. These studies have not adequately tackled connotations or the way they are organized along the traditional syntagmatic/paradisgmatic taxonomy. The present paper attempts a modified (yet based on previous work) taxonomy that incorporates connotations.

The purpose of this study is to pursue these issues through comparing the associative behavior of L1 English speakers with the native speakers of Arabic, on the one hand, and L1 English speakers with Egyptian EFL students (1st and 4th years), on the other. The study comprises four sections. Section one is a theoretical background which recapitulates the suggested mediatory approach to word association. Section two gives an account of data collection and analysis methodology. Section three presents the results. Finally, section four provides an overall discussion, some pedagogic implications and suggestions for further research.

1. Theoretical background:

1.1. Semantic network and word association mapping:

Most word association work has centered on the paradigm that the associations prompted by a given stimulus word are interconnected to one another via a semantic network. The metaphor of *network*, Wilks & Meara (2002) argue, has been appealing to most word association theorists, as it evokes lively different intricacies and multiplicity of structure layers of qualitative aspects of mental lexicon. Seeking an illustrative model reflecting the dynamics of semantic network of the mental lexicon that helps explore how dense is a given network, Wilks & Meara employ the graph theory. Used in diverse disciplines, graphs illustrate density through the number of points/nodes, the number of connections each node has, and the number of steps or links it takes to get from one node to another (path). In other words, the more interconnections among items, the shorter the paths, and therefore the more dense the association web and vice versa. Surprisingly, results show *few systematic* differences in association density between L1 and L2. They explain:

Our discussion led us to propose that the simple measurement of density of the lexical networks in L1 and L2 might not be sufficient to convey important differences in the structural properties of these networks.... This suggestion should alert us to the dangers of accepting too superficial an analysis of the popular metaphor of the lexical network rather than opting for a more formal approach. Clearly the model we have used is a very simple one (p. 323).

Replicating the same study, Wilks *et al.* (2005) attempt computing the loose associations (e.g. music > heart)* they left unaccounted for in the previous study, yet employing the same “quantitative approach”. Again, the results pattern the same. Similar studies have conducted quantitative analysis of mental lexicon organization of associations (Wettler *et al.*, 2005, Sheng *et al.*, 2006). Going many steps forward, Fitzpatrick (2006) and Zareva (2007) attempt a more critical approach by reconsidering the current categorization schemes and proficiency effects. Nevertheless, three problems persist: (1) revealing the exact nature of response preferences, (2) a better understanding of the loose

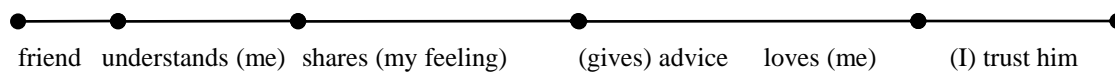
* > means prompt, activate

associations such as *mother* > *authority*, *cold* > *my bother* etc. and (3) how they are neurally and semantically connected.

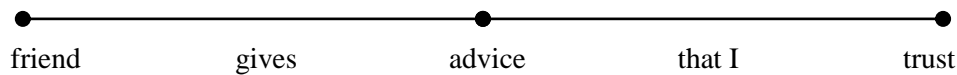
Word association is traditionally portrayed as a cognitive activity of the semantic memory network (a term dating back to Quillian 1968), whose form discussed earlier. The way nodes and paths (acrs) work is explained via a number of computation models (reviewed thoroughly in Veale & O'Donoghue 2000). One prominent model is spreading activation (Collins & Quillian, 1969, Motley & Camden, 1985). It is based on the assumption that during an association activity, the stimulus word (the start word) is activated and then propagates waves known as activation signals to the associate words which make up the word association chain. The activation force emitting from the start node to a given associate node is largely determined by how salient and adjacent is the latter to the former. This corresponds to the *radial category* (Lakoff, 1987) and could apply to the prototype response as well (Rosch 1973). Relational pathways connecting nodes are conceptual, leading to invisible connections between apparently unrelated nodes. In *lucky* > *clover*, for instance, a chain of intermediate (invisible) nodes lies on the pathway from the first (start) to the last one such as *lucky* > (having) *money* > (faces no) *problems* > (lives in great) *ease* (and) *comfort* > (which means to live in) *clover*. Such intermediate nodes must be active in order to transmit waves to other nodes of the association chain, and fill in gaps in the association schema. Veale & O'Donoghue note that spreading activation accounts also for the other relevant concepts potentially related, the way they are related to the central node and the cognitive constructs (metaphors, idioms, blends, embodiment, polysemy etc.) that "must be recruited to allow activation to reach all of the elements necessary for an interpretation" (260). In the above example, the construct recruited to connect the stimulus *lucky* and the response *clover* is that of an idiom which stores significant prototypical knowledge and creates many inferences. Connecting the two concepts involves mapping the representation of some semantic properties of one word onto the representation of the semantic properties of the other.

Another mapping model is that of *slippage* in which some intermediate nodes can be snipped to allow a path simplification between the source node and the target node in case these nodes are conceptually recoverable (Hofstadter & The Fluid Analogy Research Group, 1995). For example, in *friend* > *trust*,

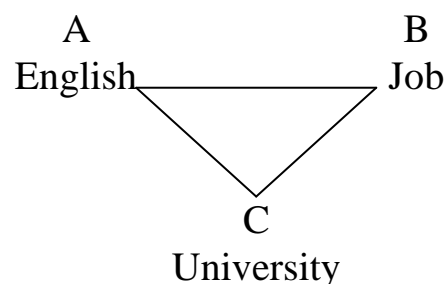
the *friend* node emits activation waves that move in pathways to such sub-nodes as *buddy* > *soulmate* > *understand* (me) > share (my feelings) > *advice* > *love* > *trust*. Schematically ...



Applying slippage:



Inherent in such models is the proposition that any two concepts sharing common semantic relations are (1) eligible to be bridgeable i.e. forming bridges linking between them and (2) recursive (allowing further bridges to be constructed). Bridges can also be created between two concepts in case both have relations to a third. e.g. A and B bridge to C. A and B are inherently unrelated, but after each bridges to C they become related.



Learning English and having a university degree makes one eligible for a job.

Lakoff (1987) introduces a similar scheme called “radial polysemy”. Concepts are connected around a central concept which acts as a prototype forming a network. The links between these concepts are formed through some cognitive constructs such as metaphor, metonymy, embodiment and other relations.

The semantic network with its activated nodes, and pathways, and the multiple constructs they convey are believed to be culturally determined. This is supported by the recent trend to create a reconciling (cognitive-cultural) paradigm which embraces an assumption that language, cognition and learning are culturally structured (Watson-Gego 2004). Such a synthesis dwells on restructuring information on cognition in terms of broad intersecting findings of such sciences as cognitive anthropology, social psychology, psycholinguistics, etc. The way mind works including mapping concepts, establishing neural connections, constructing and encoding knowledge, thinking and behaving, etc. is scioculturally shaped (Shore, 1991). The role of culture extends to shape

human development as the biological brain is subject to the forces of experience during the maturation period. Language and culture are constructed through each other. Cultural models (prototypes, schemas, metaphors, etc.) embrace experience and shape cognitive processes including the linguistic ones (D'Andrade & Strauss, 1992). Watson-Gego maintains that these models "are compatible with a neural network model of the embodied mind" (335). Accordingly, she argues, language forms adapt to the systems of beliefs and practices of a given community. These assumptions echo some of Whorf's linguistic relativity and its subsequent versions (Hudson 1990) on the deterministic relationship between language and culture.

Based on the above discussion, it is argued that as cognition is socially catered, word association processes which are cognitively represented in the form of semantic networks that make up the semantic memory are also socio-culturally formulated. The patterns concepts map and transmit signals to other concepts through neural connections, and the constructs used to perform (and even shape) these connections such as prototypes, schemas metaphors, etc. are also socially shaped. It is the cultural models prevailing in a given group that construct, connect and organize concepts, and encode knowledge.

Consequently, it could be argued that word association behaviour varies across cultures. The prime response (which is the most frequent one among subjects to a given stimulus) is the most highly activated node/concept embracing the most attributes necessary to make it the first option in association tasks, and transmits further activation signals to other words to form a chain of associations. It varies from culture to culture and from sub-culture to sub-culture. Thus, mere statistical measurements of prime response would not help explain the true differences between subject groups in a given cross-linguistic study. A qualitative, ethnographic analysis is inevitable. The same is true of measuring lexical density. Quantitative models show *few* differences. Alternatively, analyzed ethnographically and in the light of the sociocognitive premises outlined above, data of previous studies (of L1 and L2 for instance) would show *greater* differences. Handling response commonality and heterogeneity the same way is no exception. The suggested model also helps account for a group of neglected responses "previously categorized as loose responses" e.g. *bus* > *sleep*, *path* > *camping*, where the responses do not have direct links with the stimuli. Introspective, ethnographic data reveal that *sleep* associates with *bus* for test takers because they sleep in it. Similarly *path* activates *camping* as there are paths in camps. These are connotations which are considerably underresearched, almost overlooked. Issues such as the nature of activation relation between a connotative association and the stimulus word, the impact of the word class of the stimulus word on activating connotations, and the semantic constructs used to form connections between the stimulus and the

response words could be comprehensively probed under the umbrella of a sociocognitive approach of word association behaviour.

Motley & Camden (1985) maintain that association between lexical nodes are based on phonological similarity, syntactic similarity and semantic similarity, which would correspond to clang, syntagmatic and paradigmatic relations respectively. Connotations are higher-order structural representations which are activated simultaneously by linguistic and nonlinguistic stimuli. Semantically, stimuli with certain features (e.g. emotionally-charged) have higher cumulative activation levels which presumably spread to higher-order nodes. Since activation is initiated by the semantic and syntactic demands of the stimulus, such emotionally (e.g. mother, friend) and culturally (e.g. racism) charged stimuli have further loaded demands which activate loaded responses/nodes corresponding to these demands. Activation of connotations (loaded responses) can be operated via non-linguistic factors simultaneously with the linguistic factors. One is the psychological state of the participants (angry, relaxed, etc.). Angry subjects upon responding to the stimulus word *anger*, for instance, would act differently, activating, possibly, more loaded concepts/connotations than a relaxed subject. Second is personality traits variability which might influence activation levels. People with certain personality traits may activate more connotations than others. Further research is suggested in this regard. The connotations activated could be in the form of metaphors (e.g. *white* > *purity*), idioms (e.g. *diamond* > *women's best friend*), etc. A third factor could be the correlative proficiency level.

1.2. Aspects of lexical knowledge:

Lexical competence/knowledge is commonly referred to as the information a language user stores in his/her mental lexical repertoire about a given lexeme [Laufer (2005), Marinellie & Chan (2006)]. It involves such factors as: form, function, connections, associations and register. It is argued that lexical acquisition is a cumulative process, where the repetitive exposures to the same lexical item enrich the learner's knowledge of it (Laufer, 2005). Learning a new word is portrayed as learning a bundle of information units concerning its form, usage, register and connotation (Qi, 2001, Fitzpatrick, 2006). The more familiar the word to the learner (a high frequency word), the deeper the learner's knowledge of the various aspects of that word. Lexical knowledge aspects are technically measured via a number of factors, e.g. vocabulary breadth, receptive and active lexical knowledge, vocabulary depth, vocabulary use /access. Vocabulary breadth (size) has to do with the number of words a language user/learner has at his disposal. Receptive vocabulary represents the input internalized through reading and listening, whereas productive vocabulary has to do with the vocabulary output represented in writing and speaking. The gap between the two reflects many factors among

which are proficiency level, individual differences, personality traits variability, etc. Vocabulary depth involves information about form, function, denotations, connotations, cultural implications, etc. Vocabulary use/access is commonly defined as the tendency of learners to overuse high frequency words and forms, while avoid using others. Laufer (2005) argues that vocabulary use/ avoidance reflects certain characteristics of language user such as confidence, flexibility, originality, etc. Accessibility speed is materialized in the ability of language users to automatically and fluently retrieve words. All these aspects could be traced through association tasks. The diverse associative behaviour of language users obviously illustrates their lexical competence. Lexical competence/knowledge of L1 speakers certainly differ from that of L2 learners (Cheng *et al.*, 2006). Nevertheless, knowledge about the exact nature of such differences is still incomplete. One underresearched area of lexical competence which word association tasks can help reveal is the cognitive, sociocultural, and sociopolitical factors underpinning the associative behaviour of L1 and L2 speakers.

1.3. Semantic organization:

Semantic field theory (dating back to German linguists in the twenties of the 20th century) holds that the meaning of words can be grasped when linked to other words sharing a given semantic field (Crystal, 1997). For example, the concept/node *certificate* has meaning relations linking it to the concepts/nodes of *degree, document, diploma, merit, test, achievement, qualification*, etc. Such a structured collection of concepts constitute a domain/field in semantic memory. Words constituting a semantic field are organized syntagmatically and paradigmatically. Syntagmatic relations hold between words via collocation, where words are not substitutable, and occur adjacent to each other e.g. *red-scarf*. Paradigmatically related words are substitutable via synonymy, antonymy, gradation e.g. *hot-cold*. Previous studies have constantly acknowledged a natural shift in the way word association responses are organized in the mental lexicon from clangs (phonologically-based faulty responses) to the syntagmatic and then to the paradigmatic relations among monolinguals and bilinguals alike (Namie 2002, Shang *et al.*, 2006).

It is argued that this shift is assigned to maturation in the cognitive processes that enable the learner/speaker to acquire new features of words which promote picking the optimal response whose features match those of the stimulus. A counter hypothesis is furnished by other studies claiming that the predominance of syntagmatic relations in young children's associative tasks could be attributable to lack of familiarity with the stimuli rather than to maturation reasons. Support for this claim is found in the fact that those young children give paradigmatic associations to familiar words (Zareva, 2007).

The theory that the associations in the mental lexicon are arranged along the clang, syntagmatic, paradigmatic relations has been tackled in a number of studies (Zareva, 2007, Meara, 2002, Wilks & Meara 2002, etc.). Zareva maintains that this trichotomy represents the qualitative organization of the subjects' mental lexicons. Namie (2002) remarks that the majority of the syntagmatic responses are noun phrases prompted by adjective stimuli and represent between 20-33 percent of the responses. On the other hand, the majority of the paradigmatic responses are hyponymous items. The paradigmatic responses represent between 57-71 percent of the responses. Paradoxically, Sheng *et al.* (2006) point out that adjectives usually prompt paradigmatic responses, attributing this to the fact that "certain characteristics of the adjective class such as the existence of many antonyms, synonyms, and gradable continua, may promote more paradigmatic responding than nouns and verbs (585)". Moreover, various studies have proposed that it is more difficult for children (monolinguals/bilinguals) to produce paradigmatic responses for verbs than for nouns or adjectives. This is attributed to developmental and linguistic reasons. Paradigmatic responses for verbs are produced later. However, Sheng *et al.* (2006) report a number of studies on non-Indo-European languages, where paradigmatic responses for verbs are produced earlier, due to morphological properties of verbs which promote these associations.

1.4. Semantic cultural constructs: schemas & prototypes

a. Schema theory:

Dating back to Greek philosophers, prior knowledge and experience are thought to help the individual cope with new situations, understand new knowledge and predict future reactions. Revived by Bartlett 1932, Schema theory (background knowledge) has ever since been utilized in different domains of science, most prominently in cognitive and educational psychologies (e.g. Anderson, 1977 onward), cognitive linguistics (e.g. Lakoff, 1987) cultural linguistics (e.g. Sharifian, 2005), and cognitive anthropology (e.g. Watson-Gegeo, 2004). These scholars have contributed to our understanding of the relationship between language and schema. Lakoff views schema as a cognitive-model constructing device which is embedded in culture. Sharifian maintains that schema manifests itself in the form of shared, cultural values, beliefs, etc. A cultural schema, he argues, is not equally shared by all members of a given community. Rather, variables such as age, sex, educational background, etc. affect an individual's share of the components of a given culture. Watson-Gegeo (2004: 335) argues that schema and prototypes make up the cultural model which "operates below the surface level of behaviour and the linguistic level of morphology and syntax, to shape perception, information processing and the assignment of values".

Traditionally, two kinds of schema are identified: proposition schema and image schema. Proposition schema elucidates the interrelationships among concept propositions. Image schema, on the other hand, magnifies the collective overall *image* meaning of the whole construct which could match the meaning of every individual component part of this image. Schema is dynamic and ever changing due to new and changing input variables that restructure and sometimes change it altogether. More specifically, the schema underlying the first culture language could be subject to hybridity when being fertilized by other schemas underlying a second culture/language. Learning an L2 involves in varying degrees a possibility for hybridity. Extreme hybridity may lead to a substantial change in the former schema. Vocabulary learning involves identifying the schematic components residing in it through an interaction between two schemas: source schema (of L1 culture) and target schema (of L2 culture).

b. Prototype theory:

Rosch (1973 onwards) develops prototype theory (PT) as a theory of categorization. PT centers on the idea that concepts can be viewed in terms of prototypes. People see the world in the light of categories so as to be able to *contain* and understand it. The categorized concepts include events, emotions, abstract issues, objects, etc. Human mind stores the world in the forms of frames or stereotyped situations. Minsky (1975) states:

When one encounters a new situation (or makes a substantial change in one's view of the present problem), one selects from memory a structure called *frame*. This is a remembered framework to be adapted to fit reality by changing details as necessary (cited in Brown & Yule 1983: 238).

The prototype or the ideal example of a category is the one that possesses the largest number of features that typically characterize a member of this category. A bird prototype is more like a *robin* or *sparrow* than an *owl*, *eagle* or *kiwi*. A furniture prototype is more like a *chair* than a *cushion*. Thus, a concept is viewed in terms of a continuum of instances starting with the most typical instance and ending with the least typical instance (MacLaury, 1991, Adajian, 2005). PT offers an alternative to the classical view of categorization which is based on an equal membership of all instances of a given concept or category.

Dean (2003: 30) emphasizes that “not every member is equally central to our understanding of a given category”. The concept *mother*, for example, is categorized around a central member which is the mother that raises a baby and is biologically the mother. Other non-central members are: adoptive mother, birth mother, surrogate mother, etc. Equally important is the new insight the theory offers in defining a concept in reaction to the traditional semantic features. Instead of defining vegetable as: + animate, -human, etc., it is much

easier to refer to it by providing a prototypical vegetable *lettuce* and other examples graded in terms of how similar they are to the typical vegetable example. Rosch argues that categorization around a prototype helps reduce the unlimited variations among category members, and consequently organize the world around use. Concepts are images that have mental representation in mind (Amant, 2005). To Lakoff (1987: 136) “categories are represented in the mind in terms of prototypes”. He also notes that these variants are derived from the prototypical instance; they function as extensions to the central model. Extensions are generated by such connections as metonymic models, image schema, and metaphors.

In essence, PT could offer a method of understanding how learners categorize their mental lexicon (vocabulary). Prototypes serve as mental representations of all classes and categories of objects and concepts. More specifically, associations of a word are classified round a prototypical association. The prototypical association holds strong relations to the stimulus allowing it to receive the highest activation level which spreads to the neighboring nodes/concepts. Whenever the L2 learner encounters a word, an array of associations, on top of which is the prototypical association, is activated in memory. Associations holding phonological and semantic (paradigmatic and syntagmatic) relations to the prototypical association are eligible to receive further activation energy from the prototype node to make a network. The prototypical association arises as a result of repeated activations over time. The more a learner activates an association, the more likely it becomes prototypical. Aitchinson (1992) hypothesizes that prototypes not only help organize and categorize concepts, but also determine their acceptability. It follows, then, that an association should not have every single semantic feature with the prototype to be of the same category. This explains the fact that some (apparently) dissimilar concepts are associated to the stimulus or to the prime/prototypical response.

1.5. Age and/or proficiency:

Little attention has been paid to the impact of age on word associations of L2 or EFL learners. Some concern has been given to the study of the relation between association behaviour and proficiency level. This is due to the fact that lexical semantic organization research has been concerned with L1 for decades. Later on, comparative work between the mental lexicon structure and organization in L1 and L2 comes to the fore. Associative behaviours of monolinguals and bilinguals have been the main concern of most of these studies (e.g. Meara 2000, Wilks *et al.*, 2005 Sheng *et al.*, 2006, Namie 2002, 2004). Some latest studies (Laufer 2005, Fitzpatrick, 2006, Zareva, 2007) give more attention to the influence of proficiency level on L2 learners’ lexical association. It is suggested that clangs (phonologically similar words) have a

significant role in associative behaviour of the early stages of acquisition. Moreover, the syntagmatic-paradigmatic shift in responses is not largely related to proficiency level, but rather to maturational reasons. Lack of an independent proficiency measure and the diverse procedures adopted in the various studies yield vague and sometimes conflicting results. Fitzpatrick (2006) notes that there is no systematic relationship between responses and subjects' proficiency levels. Results also support the existence of proficiency related differences between the native, the advanced and the intermediate groups, yet "there is no pattern of development towards native-speaker-like responses" (p.137). Zareva (2007) reports that the intermediate learners' associative responses differ in terms of word breadth and depth from both advanced and native subject groups. However, the three groups pattern the same with regard to the predominance of paradigmatic over syntagmatic connections for familiar words. Concerning the age variable, previous studies show that learners display a slow semantic development, and that, in longitudinal studies, *advanced* (older) learners tend to make meaning errors and display slight increase in active vocabulary (Jiang 2004). The present paper investigates the impact of age on EFL learners in their L1 and EFL data, primarily motivated by an attempt to explore the impact of exposure to academic courses for a period of four years of specialized study of the English language and culture on students' semantic knowledge.

The present study:

The present study investigates the word association behaviour of Egyptian learners of English (1st and 4th graders) in Arabic and English, and in relation to English native speakers. The comparison covers the following aspects:

- The prime response and what makes a particular response prime.
- The semantic organization of mental lexicon.
- The cultural prototypes in mental lexicon.
- The impact of maturation and exposure to academic courses on word association behaviour of 4th year students in Arabic and English data.

2. Method:

2.1. Subjects.

15 British and 60 Egyptian EFL students participated in this study. British subjects (group one, G1) were Junior Teaching Staff, Ibri College of Applied Sciences, Oman. Egyptian subjects were 1st & 4th year students, English Department, Colleges of Arts and Education, Kafr El-Sheikh University. The Egyptian subjects were classified into four groups (of 15 students each). 1st year students made up groups two (G2) and three (G3), taking the word association test in English and Arabic respectively. Similarly, 4th year students made up group four (G4) and group five (G5) and took the same test in English and Arabic respectively.

2.2. Materials:

A word association test comprising 48 stimulus words (see Appendix) represents the main instrument in this study. Compiling a list of stimulus words is by no means an easy task. Lists of previous studies vary with regard to: (a) the number of the test words (ranging from 4 to 100 words), and (b) the criteria underpinning selection of stimulus words, (the familiarity level⁽³⁾, the word class⁽⁴⁾, abstract/concrete words, etc.) However, amongst the frequently adopted word association lists by most of the previous studies are: Kent-Rosanoff (1910), Coxhead (2000) Academic word list, British National Corpus (BNC) and Edinbrugh Association Thesaurus. Selection of the current list draws on all these resources, yet a number of factors have been taken into consideration. One is that only familiar words have been listed. Familiarity has been determined by two means: (a) by examining a sample of texts written by EFL learners and selecting the high frequency words, and (b) by administering a quick familiarity test to stimulus words where learners choose between “I know and I don’t know” options (Zareva, 2007). The second consideration is that the current list contains a sample of abstract words, concrete words, nouns, adjectives, adverbs and verbs, and words from different domains: politics, society, economy, education, religion, etc. The third consideration is that the list should contain culturally-provoking as well as culturally-neutral words. Words are culturally loaded if they have implications germane to a given culture which are not necessarily evoked by the word if used in a different culture.

2.3. Procedure:

A word association test was given to the EFL learners, both age groups. Each participant was given a copy of the test. Learners were told to write the words, phrases and sentences that come to their mind when they read a given stimulus word. No limits were put on the number or the quality of responses. They were asked to act freely and write as they wish. As for the native participants, the same procedure was followed under the supervision of an assistant. Having finished the test, each participant across groups was interviewed for commenting on the test and answering questions posed to them by the researcher and assistant on clarifying ambiguous responses, especially the loaded ones. For instance, one of the responses to the stimulus word *door* given by one of G1 subjects is *Oman*, when asked for explanation, she said, “the doors in Oman are well-designed”. Another example from the same group is the response “talking” to the stimulus “troubles”. The link between them is clarified by the British participant as follows: “Today, I was talking to a colleague and he drove me up the wall, it is really a trouble.” Similar explanations have been given by the other groups. This technique is called “introspective verbal reporting” (Fitzpatrick, 2006) which proves useful in helping the researcher to trace the participants’ mental processes during the test. A more strict version of this method is “think aloud protocol” which, though not problem-free, merits potential adoption in future studies.

2.4. Response categories:

The inspection of the associative responses in the data collected reveals that they organize around a variety of connections: synonymy, antonymy, converseness, hyponymy, hypernyms, meronymy (where the literal/dictionary meaning/denotation is highlighted), collocations, form-based associations, clangs and connotations (responses referring to personal, emotional, social, cultural or regional aspects of meaning). Dating back to de Saussure, lexical connections are organized along two intersecting dimensions: horizontal (paradigmatic) and vertical (syntagmatic) (Crystal, 1997). Paradigmatic relations manifest themselves in the form of a *chain* where lexemes can be replaced by others via synonymy, antonymy, hyponymy, meronymy, metonymy, etc. e.g.:

My father grows roses

Where lexemes may be substituted by others

Mother plants flowers

Mother is related to *father* via converseness, *grows* is synonymous to *plants*, and *flowers* is a hypernym of *roses*. On the other hand, syntagmatic relations refer to *sequence* connections where lexemes expectedly co-occur, such as *patient-doctor*, *teacher-student*, *grow-plants*, etc.

Based on the paradigmatic-syntagmatic axes, most previous studies on word associations introduce a trichotomous classification: clang, syntagmatic and paradigmatic (e.g. Namei 2002, Zareva 2007). Dissatisfied with the conventional clang, syntagmatic, paradigmatic classification on the basis that it masks many aspects of the semantic organization, Fitzpatrick (2006) alternatively proposes a three category taxonomy of association: (1) meaning-based association (similar to paradigmatic relations: synonymy, hyponymy, meronymy, collocation, co-occurrence, context and quality associations, etc.), (2) position based association (similar to syntagmatic relations: collocation, different word class collocation, etc.) and (3) form-based association (similar to clang associations: derivational and inflectional affix differences, similar form association, etc.). Nevertheless, such categorizations have overlooked a key category of word associations, namely connotations. Connotations are emotional associations (overtones, loaded meaning-based associations), and are largely shaped by the individual and common experience shared by most community members. Most classifications have been tightly restricted to strong denotative associations (paradigmatically and syntagmatically). An association has been defined as the response that is strongly and denotatively associated with the stimulus. Relations such as synonymy hyponymy, etc. (which mark a literal/neutral relationship between the stimulus word and the response word) represent the core of scored responses in previous studies on word associations.

The present categorization draws on the previous ones, though two modifications seem necessary for the current study purposes. First, the dividing line between the paradigmatic and the syntagmatic is sometimes crossed and the response is coded twice as both a paradigmatic and a syntagmatic e.g. *green* prompts *color*, where *color* might be coded as a hypernym (paradigmatic) and a collocation (syntagmatic) simultaneously. Second, some subcategories were collapsed due to their too small representation in the data and to the possibility that they could be merged in more representative (yet close in function) subcategories. For example, such subcategories as direct negation (*happy* > *not happy*) and attribute (*education* > *important*) merge into antonyms and collocations, respectively.

Responses were coded as follows:

Form based responses	Syntagmatic	Paradigmatic	Loaded lexicon			
	↓	↓	↓			
↓ Derivatives (salty>salt) Clang (dating>years)	Collocations (girl > beautiful)	Synonymy (initiate>start) Antonymy (defeat>win) Converseness (husband>wife) Co/hyponymy (media/tv) Hypernyms (Green>color) Thematic/lexical sets (aggression – fighting – hit – hurt – attack)	Connotations			
			⚡ ⚡ ⚡ ⚡			
			Religious (music > devil)	Personal (door> Oman)	Political (politics>lies)	Social ↓ (girl> politeness)

3. Results:

3.1. Prime responses:

Table (1) and Appendix show the prime responses of each stimulus word across groups. The inspection of the data uncovers that there is a sort of homogeneity in the responses by all groups with regard to such stimulus words as *education*, *environment*, *silence sweep*, *refuse*, *toxic*, *English*, *lecture*, *path*, *green*, *rob*, *troubles*, *door*, *house* (v), etc.

Table (1): Frequency and categorization of prime responses across groups.

Response categories	Native English	1 st year English	1 st year Arabic	4 th year English	4 th year Arabic
	G1	G2	G3	G4	G5
Synonymy	15	7	5	10	13
Antonymy Converseness	7	-	-	2	1
Hyponymy	2	-	-	-	-
Hypernyms	4	4	3	2	4
Thematic sets	1	1	1	2	2
Collocation	5	8	5	7	8
Connotations	9	15	18	12	8
	4	13	16	13	12
Total	48	48	48	48	48

A look at the three sets of L1 data (English, Arabic 1st and 4th years respectively) i.e. G1, 3 and 5 reveals that the semantic organization of the L1(s) mental lexicons is relatively similar. G1 and G5 data score relatively the same. Age seems to have an influence. The two age groups of Arabic data score rather differently. Most divergent are the figures of such categories as collocations (18/8), connotations (16/7) and synonyms (6/13). Consistent with previous data, a shift from the syntagmatic to the paradigmatic organization increases with age. The low score of connotations by the two senior L1 groups (G1 and G5) in comparison with the second L1 age group (G3) and the two L2 groups (G2 and G4) supports the claim that non-native speakers build their responses on their feeling and attitude. Yet, it is too early to support it. An examination of the entire data is inevitable to verify this thesis. The table also displays that the L1 associations (in both Arabic and English) are strongly linked to the stimulus word by means of synonymy, antonymy, hyponymy, etc., whereas the EFL data of both age groups display a lack of strong and direct relation between the stimulus and response words. The frequencies of synonymy, antonymy, etc. are lower than those of other relations such as thematic sets, which indicate that EFL lexicon is loosely connected with activation signals transmitting through long pathways. The high frequencies of connotations also indicate that L2 lexicon is possibly more organized around the second order of meaning (Wales, 1988) where figurative shades of meaning are coded. Though the current table could be cursory in nature, the prime responses represent a sort of prototypes around which the rest of the responses are organized. Such prototypes reflect the major schemas of the mental representation of reality in the Arabic and EFL data. Political, religious and social conceptualizations prevail giving support to the claim that the schemas and prototypes indexed in the stimulus words determine semantic memory operation. Units with similar meanings (schemas) are the most highly activated nodes, and consequently become the optimal candidates of response selection, which eventually surfaces in the actual responses given in association tasks.

3.2. Organization of mental lexicon:

a. Form-based responses:

Table (2): Percentages of form-based responses across groups.

Response categories	G1	G2	G3	G4	G5
Derivatives	005%	01.4%	008%	01.2%	00.8%
Clangs	-	02.2%	01%	01.7%	00.4%

Percentages in Table (2) indicate that the number of responses under this heading is extremely low across groups. Nevertheless, they are lower in L1 data than in EFL data. Concerning the derivatives, they score similarly in L1 groups, but higher in EFL than L1 (Arabic) irrespective of age. Clangs are absent in the

English data. The Arabic data of G3 and G5 also display some examples of clangs. This is not ascribed to a lack of familiarity of the stimulus words. The unsuccessful translation of the word *dating* which in Arabic is “*muwaʿada*” (the only available translation of dating right now) causes participants (who are not aware of its meaning even in Arabic) to draw on its form and come up with responses derived from its stem letters, w, ʿ and d, e.g. *waʿada*, *waʿd*, *wafaaʿ*? *bilwaʿd*, meaning *he promised*, *promise*, *keeping the promise* respectively. The English word *dating* is also problematic. Neither 1st nor most 4th year students know the meaning of the word. The responses it activates are: *years*, *ages*, *time*), *history*, *date (n)* etc.

b. Paradigmatic responses:

Table (3): Percentages of paradigmatic responses across groups.

Paradigmatic categories	G1	G2	G3	G4	G5
Synonymy	14.7%	5.9%	6.8%	8.8%	12.6%
Antonymy	4.5%	1.2%	01%	1.3%	0.9%
Converseness	1%	-	-	-	-
Hyponymy	5%	5.4%	3%	6.1%	4.04%
Hypernyms	1%	1.4%	8%	1.6%	1.4%
Thematic sets	14%	14.2%	14%	14.9%	14.4%

Table (3) shows that synonymy frequencies vary across groups, with native English scoring the highest, native Arabic of 4th year students the second highest and the three other groups lying at the bottom. Antonymy, on the other hand, is semi-absent in all groups except by native English speakers. The same also applies to converseness. A possible explanation is that the mental lexicon of native speakers of English enjoys two significant characteristics more than that of the learners’ English in both age groups: originality and flexibility. Lack of antonyms and converseness in the mental lexicons of Egyptian subjects (L1 and L2) could be explained as a lack of flexibility in their processing of stimulus words. Antonyms and converseness are not active axes of Egyptian subjects’ lexicon structure of L1 (Arabic) or English. This could be language/culture-bound in the sense that it is a characteristic of Arabic speakers’ lexical structure which transfers to their English too. Concerning the stimulus words which prompt synonyms most, all verbs score the highest, followed by some adjectives like *rich*, and nouns like *path* and *troubles*. Antonyms are prompted primarily by such common adjectives as *rich*, *happy*, *cold*, *white*, *black* and *hot*. As for thematic sets, groups score similarly indicating that L1 and L2 lexicons are similarly organized around lexemes belonging to a given semantic domain. Mental lexicons are structured like a thesaurus.

c. Syntagmatic responses:

Table (4): Percentages of syntagmatic responses across groups.

Syntagmatic categories	G1	G2	G3	G4	G5
Collocations	25.9%	34%	32.8%	21.6%	20.4%

Inspection of percentages of collocations in Table (4) does reveal a significant difference between English native speakers and the rest of the groups. L1 English collocations are more frequent than those of L2 English data of G4 (4th year), but less frequent than those of L2 English data of G2 (1st year). Moreover, the most significant difference in collocations percentages is that between 1st year and 4th year in Arabic and English alike (1st year subjects of both groups score significantly higher). The frequency of collocations decreases with age. Examination of the stimulus words prompting collocations exhibits that across groups eleven verbs (*anger, love, silence, initiate, sweep, house, reduce, criticize, lecture, defeat and rob*) come first, prompting nouns in most of the cases. This verbs advantage is consistent with previous studies (Namei 2002, Sheng *et al.*, 2006). Eight nouns (*environment, dating, girl, ruler, friend, troubles, door and eyes*) come second prompting adjectives. Finally, such adjectives as *rich, cold and salty* activate nouns.

d. Connotations

Table (5): Percentages of loaded responses (connotations) across groups.

Loaded responses	G1	G2	G3	G4	G5
Connotations	32%	33%	39%	42.56%	43.1%

Table (5) shows that connotations (loaded responses) represent the largest category across groups. This suggests that adult mental lexicon is significantly organized around loaded, figurative dimensions. Nevertheless, the percentages reported in Table (5) illustrate that there are significant differences in connotations between native English and Arabic of both age groups, on the one hand, and between native English and the English of 4th year students on the other. Meanwhile, native English speakers (G1) and 1st year (G2) score similarly. It is worth noting that the subjective nature of word association behaviour must be recognized, and that it is ultimately a way of representing reality with its idiosyncrasies (personal, social, etc.). The present finding supports Namei (2004) who notes that adult learners and language users' association behaviour is usually characterized by a high level of abstraction. It is hypothesized that the abstraction level is indicative of a depth of lexical knowledge where more abstract aspects of word meaning are attended to. Another noticeable thing clearly shown in the table is the outstandingly high score of connotations in Arabic (in both groups) and the EFL data of G4 in comparison to Native English of G1 and EFL data of G₂. It supports a claim that connotation is language/culture-bound. Further, the fact that G1 and G2 score

almost the same might suggest that the more mature and proficient the learners, the more they organize their responses around connotations under the impact of a semantic transfer from L1.

Table (6): The top ten stimulus words triggering most of the connotations across groups.

G1	G2	G3	G4	G5
Rich	House (v)	Certificate	Friend	Certificate
Certificate	Mother	Mother	Mother	Mother
Friend	Girl	Girl	Girl	Friend
Table	Diamond	Friend	Ruler	Girl
Travel	Music	Music	Black	Black/diamond
Door	White	Black/House(v)	White	Education
Girl	Happy/Friend	Ruler	Diamond	Music
Diamond/Mother	Rich	Diamond	Silence (v)	Troubles
Dating/Love	Black	Racism	Rich	White/English
House (v)/Cold	Politics	Health/white	Music	Health/Ruler

Examination of Table (6) reveals three prominent pieces of data. First, most of the top ten words evoking connotations in the entire data occur across groups, which suggests that these are shared concepts and could be described as common cross-linguistically and cross-culturally. Among the words occurring across groups are: *girl*; *mother*, *friend*, *house* (v) and *diamond*. Words occurring in most groups are: *rich* and *certificate*. In other words, half of the top words producing connotations are universal, and approximately the third is semi-shared cross-linguistically and cross-culturally too. This supports the cognitive anthropologists' claim that human mind view the world through some metaphorical constructs (prototypes and schemes) inherent in all humans, and therefore possibly universal (Shore, 1991, Ungerer & Schmid, 1996). Human emotional needs of love, warmth, trust, safety, and satisfaction seem to activate higher order concepts/nodes and establish strong neural connections across cultures. In addition, the need to be rich and to work are also prime. In cognitive linguistics (e.g. Lakoff and Johnson, 1980), speaking figuratively is a universal phenomenon, thus activating connotations is also universal. Under the sociocognitive view (e.g. Watson Gego, 2004) such psychological universals are adapted to by languages. Second, data of Egyptian subjects in both Arabic and English reveal that the color terms occur in all their groups evoking substantial proportions of connotations. This is not true of the native English list, which merits careful investigation. Other connotation-provoking stimuli typical of Arabic and EFL data alike are *music* > *being anti religion*, *health* > *a gift from Allah*, and *ruler* > *justice*, each representing a cultural aspect and making up, the mental model which helps one understand the world along the lines of his/her own culture. Equally prominent in the native English data are: *dating*- > *holiday*, *cold* > *snow*, *door* > *entry/future*, and *table* > *work*, all embracing conceptualizations and prototypes prevailing in the British culture. Third, a look at the EFL data reveals the tremendous impact of L1 (Arabic), even

in such a loose, idiosyncratic category of responses. Thus, some connotations, in this study, prove to be universal, whereas others are culture and language-bound.

Table (7): Examples of cultural (religious, social, political, etc.) traces/elements in connotations.

Stimulus words	Prominent connotations
Politics	Lies, Misrepresentation, Religion, Hypocrisy, Oppression (G1). It is better not to talk about politics (Gs5, 4, 2).
Media	Misrepresentation (G1)
Environment	Global Warming, Recycling (G1)
Anger	Red (G1), Nervous (Gs2, 3, 4, 5)
Terrorism	Al Qaeda, Arab, Islam, IRA (G1) Islam is against it (G3), America, Israel (G4) Anti-Islam (G5)
Love	Pink, Lust (G1) Family (Gs5, 2, 3, 4)
Dating	Sex (G1)
Diamond	Women's best friend (G1), Luxury (G4), Money (G2) A test from God (Gs 4,5)
Rich	Selfish, Corruption, Greed, Influence (G1) Money (Gs 2, 3, 4, 5)
Mother	Love (Gs, 2, 3, 4) Authority (G1)
Toxic	Skull, Crossbones (G1)
Ruler	Tyranny (G1) Justice (Gs, 2, 3, 5)
Certificate	Job (Gs 1, 2, 3, 4, 5)
Aggression	America (Gs 1, 2, 3, 4, 5)
Friend	Help, Advice, Trust (all groups)
Criticise	Gentleness (G1), Fighting (Gs 2, 4, 5)
Disease	A Test from God, Make us free from sins (Gs 2, 3, 4, 5)
Racism	Black & White, Nazis (G1). Israel (Gs 3, 5). Against religion (Gs 3, 4, 5)
Lucky	Green, Irish, Clover, Clip, Dip (G1) A Test from Allah (Gs 3, 4)
Defeat	Islam will win (G3) Israel (G4)
Health	Gift from Allah (G3) Essential (G1)
Green	Lucky, England (G1) Eyes (Gs 2, 3, 4, 5)
Troubles	Ireland, Blues, Wrinkles (G1)
White	Beauty, Sin (Gs 3, 5) Snow, Cleanliness (G1)
Soft	Hair (Gs 2, 3, 4, 5), Pillow, Cushion, Fluffy (G1)
Music	Devil, Anti-religion (Gs 3, 4, 5)
Black	Death, Sorrow, Darkness (all groups) Evil, Labrador (G1)
Eyes	Green (Gs 3, 4, 5) Blue (G1)
Girl	Doll, Pink, Long Hair, Child (G1). Politeness, Beauty, Innocence Religion (Gs 2, 3, 4, 5).

In an attempt to capture the cultural prototypical traces underpinning connotations activated by stimulus words, Table (7) displays (qualitatively rather than quantitatively) some examples of connotative responses which reveal the similarities and differences between groups (especially between English and Arabic and between native English and learners' English). The data show similarities in most of the responses across groups. However, some differences (which are basically culture-bound) may account for the cultural discrepancy in the mental lexicon across groups. The table shows the prototypical associations of some responses typical of the lexical knowledge of

each language user. Striking differences in some aspects of lexical knowledge are shown in Table (7). Egyptian learners of English (G2 and G4) copy their L1 cultural knowledge (social, political, religious, etc.) in using and interpreting English lexemes. Such mappings may be acceptable or not, conditioned by how L1 and L2 are close to each other linguistically and culturally. In the present context, the religious prototypes of the lexical knowledge of Egyptian subjects are very prominent in many responses such as *healthy, music, defeat, terrorism, path, disease, girl, friend, rich, racism*, etc. Egyptian learners' data (both Arabic and English) frequently host such forms. On the contrary, native English data are almost religious connotation-free. Political prototypes also have a big share, with an obvious discrepancy in the political conceptualization of groups. While politics is considered a taboo for Egyptian students, English native speakers conceptualize it as *lies, hypocrisy, misrepresentation*, etc., a trend reflecting the fact that the latter group has more political awareness. *Terrorism, aggression, ruler*, etc. evoke responses which reflect diverse conceptualizations; *America and Israel vs. Arab-Islam*, or only *America*. As for the *ruler > justice* example, it is evoked by Egyptian learners in Arabic and English data alike. On the contrary, G1 participants, due to the fact that they are politically free, respond negatively, as the stimulus word *ruler* usually connotes such negative associations as *injustice, tyranny*, etc.

Social aspects of word knowledge represent a crucial construct of mental lexicon across groups. *Anger* is differently conceptualized. While G1 associate it with *red* as anger can be channeled through gestural means, the rest of the groups conceptualize *anger* as being *nervous* the dictionary meaning of which is (*excited/enthusiastic*). This could be attributable to a semantic knowledge deficiency. Likewise, *love* triggers associations evoking love for family, as it is a taboo to talk openly about love outside the context of family, homeland, same-sex colleagues, friends etc. *Dating* triggers most of (if not all) the clangs in the entire data of Egyptian participants across groups. Yet, 4th year English learners score the least. *Mother* and *friend* evoke similar responses (love) across groups, with the former representing *authority* as well as *love* for G1. The same is true of *girl*. Egyptian participants across groups associate it with *politeness, religiousness*, etc. echoing their culture values which deem *girl* to be polite and religious. G1 speakers respond differently as *girl* is associated more with *childish* features such as *doll, pink* and *long hair*. *Criticize* also echoes different cultural constructs. English native speakers associate it with "gentleness", while Egyptians correlate it with *fighting*, as the true meaning of *criticism* is blurred. For them, criticism is a taboo and when it happens it triggers violence due to the absence of argumentation. People use to reject criticism and react strongly against their critics. On the other hand, raised in a climate that enhances argumentation and accepting criticism if it is supported by data, G1 participants associate criticism with *gentleness*. *Rich* activates *corruption, greed*, and *influence* on the part of G1 and *money* for Egyptian participants across groups. This could be ascribed to the fact that in the West, when one gets richer, he/she

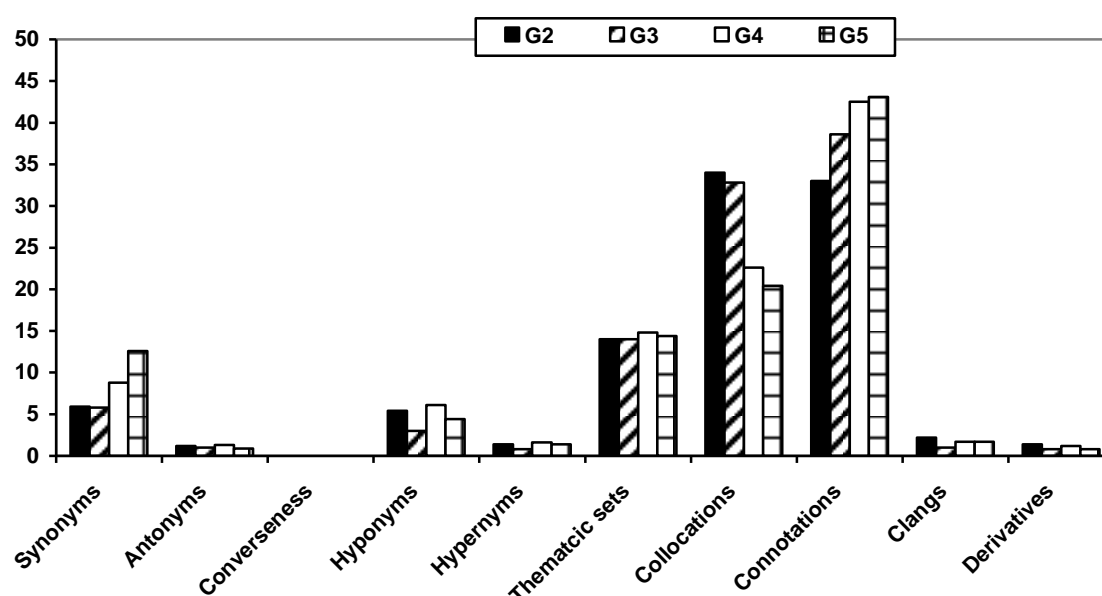
is interrogated for his wealth sources. Interrogation might reveal that they are *corrupt*, *greedy* or *misusing influence*. On the contrary, lack of accountability in the Egyptian context stimulates individuals aspiring to be rich. Consequently, people associate *rich* with *money*. Moreover, the antonym *poor* occurs frequently in response to *rich* by G1, while almost none of the Egyptian participants activates it.

Concerning color terms, all groups associate *black* with *death*, *sorrow* and *darkness*. Yet G1 participants extend it to *evil* and *Labrador* (a breed of dogs), possibly influenced by their environmental factors. *White* activates *beauty* and *skin* for Egyptian participants. This could be attributable to cultural heritage which prefers white skin to dark skin. Further, influenced by the physical surroundings G1 subjects associate *white* with *snow*. *Green* triggers *lucky* and *England* for G1. On the other hand, it evokes *eyes* by Egyptian participants. Such associations support the thesis that mental lexicon is constructed along sociocultural lines.

3.3. Age effects:

Fig. (1) demonstrates that generally there are no profound developmental differences between 1st and 4th grades in most association patterns. The two grades (in both Arabic and English data) organize most of their responses around connotations as their first choice, followed by collocations, thematic sets, synonyms, hyponyms and hypernyms respectively. Likewise, they pattern almost the same in antonyms, converseness, clangs and derivatives, all of which have extremely low representation in all sets of data irrespective of age or language. However, this overall description of age effects should not mask many interesting notes displayed in Fig. (1). First, organizing responses around connotation increases with age in the two sets of data (Arabic and English). On the contrary, organizing around collocations decreases with age in the two sets of data. Second, synonymous responses increase with age in the two sets of data, a finding consistent with that of Marinellie & Chan (2006). Third, the semi-absence of responses organized around antonymy and converseness in both age groups and two sets of data possibly indicates unilaterality (inflexibility) of activation patterns. Concepts antonymous to the stimulus word are left deactivated. The same is true of converseness. Fourth, form-based responses (clangs and derivatives) are also semi-absent across groups. This is due to word familiarity. All stimulus words are high-frequency words except “dating” which prompts all clangs in the entire data. However, 4th graders have fewer clangs, possibly due to maturation as well as exposure to more “doses” of English study than first graders. Besides, most of the present findings are in line with previous studies on Swedish and Persian (Namei 2002, 2004), Mandarin and English (Sheng *et al.*, 2006), English and French (Wilks & Meara, 2002), among others. There is a systematic shift in mental lexicon organization from clangs (phonologically-based responses associated with unknown/unfamiliar words,

e.g. dating) to syntgmatic (structure based organizations associated with less profound lexical knowledge and/or certain word classes especially verbs) and to paradigmatic (meaning-based organization signaling sophisticated word knowledge). Fifth, although the two sets of data showed the same shift, it is more prominent in Arabic than in learners' English. Finally, the fact that connotations increase while collocations decrease indicates that connotations are associated with an increase in word knowledge, where more abstract aspects of word meaning are attended to. Another possible explanation is that Arabic responses, organized around connotations, signal a characteristic typical of Arabic, which also transfers to learners' English.



G2 = 1st year English data, G3 = 1st year Arabic Data, G4 = 4th year English data, G5 = 4th year Arabic data.

Fig. (1): Word association percentage in two grades (1st, 4th) in Arabic and English data.

4. Discussion:

The results obtained can be summarized as follows:

1. Associative responses (across groups) are organized rather similarly, with connotations coming first (except for G2, whose collocations are slightly greater). It could be concluded, therefore, that greater attention should be directed towards their study in future studies. It is hypothesized that mental lexicon is so complicated that a large proportion of its constituents have loaded meanings or overtones. That G2 scores the lowest might indicate that overtones represent a more sophisticated lexical knowledge than other modes, G2 students' EFL semantic knowledge does not seem deep enough to help activate as many connotations as the rest of the groups. On the contrary, their Arabic data display similar proportions of connotations to those of the other groups. This suggests that the age factor or academic maturation might have an effect on learners' English more than L1 patterns.

2. L1 Arabic speaking participants evoke more connotations than their L1 English-speaking counterparts, a finding that suggests that Arabic mental lexicon is more organized around loaded relations than that of native English. Arabic speakers in L1 and L2 seem to jump to connotations. Further research is needed to support or refute this finding.
3. Concerning the denotative aspects of lexical knowledge, the rarity of antonyms in the Egyptian participant's L1 and EFL data is a striking finding which possibly reflects a sort of mental inflexibility or a unilateral mode of mental lexicon organization. It deserves further consideration to demonstrate the reasons underlying the inactive role of antonyms and converseness as modes of lexical organization in Arabic or learners' English. Synonyms occur frequently and fairly with similar proportions in L1 groups (native speakers of Arabic and English). Yet, in EFL data of both age groups, fewer synonyms occur, supporting a hypothesis that non-native speakers tend to produce fewer synonyms because their linguistic resources are insufficient (Fitzpatrick, 2006). It could be concluded that scarcity of antonyms is language-bound.
4. The variable of age does not seem to have a substantial impact on the subjects' semantic knowledge. In the (Arabic) data, there are significant differences between 1st year and 4th year subjects in the production of collocations (32.8% vs. 20.4%), connotations (38.6% vs. 43.1%), synonyms (6.8% vs. 12.6%) and hyponyms (3%, 4.4%). These figures are not consistent with previous research findings which suggest that adult L1 lexicon (both groups are adult) is generally stable in organization and structure (Sheng *et al.*, 2006). The current data demonstrate that mental lexicon is changing and that the traditional shift in lexical knowledge maturation from clang, syntagmatic, paradigmatic to loaded dimensions seems in progress. L2 data of both age groups pattern relatively the same. Differences are confined to collocations (33% vs. 21.6%) and connotations (33% vs. 42.56%) indicting the same shift. Noteworthy, however, is the slightly higher score of synonyms in 4th year English data (8.8%) than that of 1st year English data (5.9%). Such a difference closely relates to the academic maturation that the latter group has undergone, which makes it possible for them to produce more synonyms, as their vocabulary seems broader than that of 1st year subjects.
5. The exact nature of subjects, (natives/non-natives, junior, senior) response preferences has been underresearched. The present study reveals to some extent the complex interrelationships between the subjects' cultural schema and prototypes and their cognitive and linguistic patterns and options. Subjects act in line with their epistemological vision and how they view reality. The data collection and analysis scheme which enables subjects to write freely and reflect introspectively on their responses in subsequent interviews makes it possible to analyze data ethnographically and

qualitatively (as well as quantitatively) by drawing on the social, cultural, and political contexts that constrain the linguistic input available and the way it is represented. A prominent finding is that what makes a particular response more preferred than the other (s) is that an interaction is continuously taking place between the language forms and the values, beliefs and practices of a particular speech community. In a culture which places religion in the fore and emphasizes the political unilateralism; and in a society which suffers from poverty, unemployment etc. (and prefers the white skin, the polite girl, the green eyes) on the one hand, and the limited dose of exposure to English in a formal foreign language classroom setting rather than learning English in an immersion program, on the other hand, Egyptian learners' (across grades) association behaviour is clearly traceable to their native language conceptual patterns. Further, the semantic content residing in their EFL data is transferred from L1. It is not surprising that the present research reveals that Egyptian learners' L1 and EFL data pattern differently from Native English speakers' data. English speakers are consistently reported to show a great preference for diversifying responses, sticking more to denotative meaning, showing less prejudice for their culture and against other cultures, displaying greater tendency towards tolerance and attaching a high value to science, ecology and health care. This could be attributable to the fact that the English language culture (s) are influencing others at the present and not vice versa. Its/their values, beliefs and practices are being spread and gradually adopted by many people worldwide due to globalization forces.

4.1. Pedagogic implications:

Findings of the present study provide further evidence that (1) form, meaning and emotions are inseparable, (2) the differences among cultures do have an inestimable impact on differences in conceptualizations, schemas, and prototypes among languages, (3) word association research reveals that mental lexicons are constructed in a way that reveals the cultural models which represent the reality complexities and are compatible with the neural network mode of the mind, (4) these models distinguish a given culture from others and act as a barrier to the target culture knowledge to be accessed by learners. Results of the longitudinal section of the study exhibit that exposure to academic courses in such a formal class setting where English learning is largely confined to class activities does not have a (considerable) impact on students' association behaviour patterns: no significant differences between first and fourth graders are reported, and the gap between native English and learners' English remains. Egyptian learners of English map English words onto their L1 semantic structures via a process of "semantic restructuring" based on semantic transfer. Explaining the stages and processes of L2 or EFL vocabulary acquisition, Jiang (2004) postulates that the first stage is "word association to

L1” which attaches the word to its L1 translation with its syntactic, semantic and phonological features, leading to an activation of L1 lexical knowledge transferred to L2 or EFL word. The second stage is “L1 lemma mediation stage” whereby as a result of an L1 lemma information transference to L2 word and the continuous co-activation, L1 translation decreases and eventually L2 meaning specific formation is given wider space. The third stage is “full integration stage” where L2 knowledge is integrated in every L2 entry replacing their L1 translations. Results of the present study suggest that the Egyptian learners of English (of the two age groups) show such unsophisticated semantic knowledge that, if judged against the previous scale, could be placed in stage one. Nevertheless, it is commonly pointed out that semantic development could be too slow and inefficient to allow assimilate knowledge (Laufer, 2005).

For decades, lexical pedagogy research has been torn between “focus on meaning” and “focus on form” camps. The first camp, pioneered by Krashen (1985 onwards), works on the premise that vocabulary is better acquired through contextualized input and interaction, and that could offer the learner an intensive and straightforward exposure to the word in different contexts. Advocates of this camp postulate that reading for fun or engaging in pleasure reading could enhance vocabulary learning and retention without instruction. “Focus on form” theorists maintain that focus on meaning approach is not efficient in a formal setting of language learning (typical of the learning environment in Egypt) (Laufer 2005). Laufer argues that the “focus on form” approach helps develop lexical knowledge which is a composite of vocabulary access, size, depth, etc. through rich instruction via numerous context-free exposures to a given lexeme. Recent development in lexical pedagogy has fostered the creation of a new synthesis which involves some premises of the two approaches. The outcome has been a growing body of literature on vocabulary acquisition (eg. Jiang 2000, Jarvis, 2000, Bogaards 2001, Jiang 2004). In the following section a brief survey of instruction techniques and other pedagogic implications which might help promote the possibility of using word association tasks as a critical and efficient step in vocabulary instruction techniques is provided.

First, for promoting the acquisition of the cultural component of lexical meaning, teachers and learners can engage in exploratory discussion where teachers can identify the learners’ existing cultural knowledge of a given word. It is essential in this respect to uncover the learners’ conceptualization/schematization of a given word before both teachers and learners, or learners and native speakers engage in “collaborative inquiries in which meaning is negotiated through interaction with interlocutors’ existing knowledge and prior experiences” (Qi 2001: 246). Word association tests have been the key instrument for implementing such techniques. This is because they explore the

learners' existing schema and provide essential ethnographic information that helps explain data and direct towards putting the teacher's/researcher's finger on the missing (cultural) components of word meaning.

Such "collaborative inquires" in quest for bridging the gap in (cultural) meaning between L1 and L2/EFL might also include some online activities such as engaging in chatting groups and reading hypertexts on some culturally-loaded concepts/words (where the reader can navigate through various websites and links). It is through hypertexts that learners can have better access to target culture as they could construct knowledge (including lexical/semantic knowledge) for themselves by consulting e-dictionaries and other educational websites (Maghrebi, 2008). Web context (Court-right & Wesolek, 2001) is a similar activity. It involves exploring the possible online contexts in which a given word might appear.

Semantic mapping (Chia, 2001) is a further technique that could employ word association tasks. Semantic mapping involves asking learners to mention all the words that come to their heads upon hearing/reading a word. The teacher writes all the responses on the blackboard and helps students organize them around a given concept in L1 and L2. This is followed by conducting a contrastive analysis of the semantic and cultural patterns of the two languages. The outcome is the beginning of a semantic restructuring process, the results of which (Jiang, 2004: 427) are as follows:

Once learners become aware of the differences, the word will assume a new identity. It will no longer be seen through the lens of the L1, but will become a lexical and semantic entity in its own right. A subsequent encounter with the word will not serve to strengthen the form-meaning connections initially established using L1 semantic structure, but will strengthen the new meaning-form connections.

In conclusion, by recruiting a cultural-cognitive approach based on schema and Pt theories along with employing an ethnographic scheme of data collection and analysis, the present paper launches an investigation of word association processes in Arabic, English, and English of the Egyptian EFL learners of two age groups. The study also attempts a taxonomy of word association categories that accounts for connotations overtones, a semi-neglected class of associations in previous taxonomies. Additionally, the present findings could be utilized ethnographically and sociolinguistically for embracing further cognitive and socio-cultural studies of language learning. Finally, the effect of such variables as age, sex, social class, language proficiency, ethnicity, etc, on the variability of word association behaviour and the depth of lexical knowledge has yet to be explored.

Endnotes:

- (1) Response commonality is measured by calculating the frequency of occurrence of “any three most commonly given association to a word stimulus determined in terms of their absolute frequency of occurrence in a word association data set” (Zareva, 2007: 125).
- (2) Response heterogeneity is commonly measured by dividing the number of different responses to each stimulus word by the size of the subsample who has complete response word data for all stimulus words (Ivanouw, 2006).
- (3) Familiarity is a key condition for the success of the task. The main concern is to investigate the responses evoked by the stimulus words. Thus, it seems mandatory to enlist only familiar words; unfortunately, there is no word frequency dictionary for the English of EFL learners in Egypt. It is a huge task which could be based on printed materials intended for Egyptian EFL learners at all levels and age groups. Word association is viewed as an indicator of the learners’ learning environment.
- (4) It is argued that the variation in grammatical forms is motivated by the fact that they might present different cognitive processes (Ivanouw, 2006).

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APPENDIX

Stimulus words	Native English	1 st year English	1 st year Arabic	4 th year English	4 th year Arabic
Education	school	university/teacher	school/university	job opportunity	school/university
Politics	lies	president	president	president	president
Media	newspaper	TV	TV	TV radio	TV
Environment	pollution	pollution	pollution	pollution	All around us
Anger (v)	red	sad/problem	tension	nervous	tension
Terrorism	IRA, bombs Alqaeda	destruction	Islam is against it	killing	Anti-Islam
Love (v)	hearts	family	mother	friends	tendency
Dating	women	years	promise	meeting	meeting
Defeat (v)	win	enemy	Islam will win	Israel	win
Silence (v)	quiet	quiet	Fear	respect/politeness	to prohibit someone
Initiate	start	peace	Arab peace initiative	begin	rush
Sweep	clean	clean	clean	clean	clean
Diamond	ring	rich	beauty	beauty	precious stone
Rich	poor	money	money	living luxuriously	money
Girl	boy	polite	politeness	polite/religious	politeness
Mother	father	love/kindness	gentleness	love/kindness	tenderness
Refuse	say no	angry	control	object	disagree
House (v)	home	home	home	home	home
Toxic	poison	poison/food	hospital	death/poison	ambulance
Ruler	king	fair	just/justice	power	president
Certificate	diploma	job	excellence	graduation	excellence
English	language	language	fun	language	language
Happy	sad	success	glad	cheerful	pleased
Lucky	fortunate	happy	fate	- to be Muslim - to obey God	to have good luck/fate

Stimulus words	Native English	1 st year English	1 st year Arabic	4 th year English	4 th year Arabic
Aggression	violence	battle	Israel	destruction	violence
Friend	buddy	love	honest	love	close
Hot	cold	summer	tea	weather/love	heat
Criticize	complain	writers	opinion	bad things	mistakes
Disease	illness	doctor	a test from Allah	doctor	doctor/test from Allah
Racism	hatred	black & white	discrimination	America	discrimination
Lecture (v)	class	professor	professor	information/teach	doctor
Path	way/road	road/way	road	way/passage	road
Cold	snow	winter	weather	winter	ice
Salty	sea	food/fish	water/food	food	salt (something having much salt)
Healthy	essential	strength	gift from Allah	illness/Allah	strength
Green	grass/trees	trees (in the street)	plants	trees	trees
Rob	steal	steal/thief	steal	thief	theft
Soft	tissue/hard	hair	silk	smooth/silk	silk
Trouble	problems	problems	problems	problems	problems
Hammer	nail	carpenter	tool	nail	tool
Music	instruments	relaxation	serenity	instruments	serenity
Table	chair	study	play	game	game/play
Door	open	open	wood	open	wood
White	black	beautiful	skin	pure	beauty
Black	white	darkness	night	sadness	sadness/agonny
Travel	journey adventure	train	loneliness	means of transport	departure
Eyes	beautiful	see/green	green	sea/sight	beauty

