A Thesis

entitled

Concepts and Meanings in the Bilingual Memory of ESL Students

By

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Inspired by Pavlenko’s theories on *bilingualism* and *cognition*, this thesis aims at raising awareness on the value of experience in the L2 context during second language acquisition. In the present study, ESL students are proposed as subjects for a two-phase test that aims at investigating the differences between semantic and conceptual representations of L2 lexical items. The ESL Head-word Target–word Test instrument is proposed along with the Abbreviated Multidimensional Acculturation Scale by Zea et al. (2003), to determine whether there exists a correlation between experience with L2 culture and L2 concepts and meanings’ retrieval.
For my grandfather Gaetano that gave me the strength, for my father Giovanni that gave me the support, and for my fiancé Gino that gave me the chance to accomplish my American dream.
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This document represents the culmination of a wonderful and challenging experience in the United States; and it is the proof that hard work, dedication, and sacrifices pay off in the end.
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Chapter I

1. Theoretical Framework

1.1. Introduction

In this first chapter, I will analyze the literature that informed my study and examine the definition of relevant key terms such as ESL, EFL, Second Language Learners, Bilinguals, Monolinguals, Acculturation, and Biculturalism. Based on the assumption that for ESL students, the full acquisition of a L2 (second language) comes with the acquisitions of the contextual framework in which this language is spoken, my study tries highlight the importance of experience in the second language acquisition process, which has substantially ignored by most of the traditional bilingual research. In order to achieve this goal, acculturation, is used as a key value in the interpretation of a two-phase/word-pairs retrieval test that investigates the way L2 concepts and meanings are retrieved by ESL subjects. Treating acculturation as a variable will allow us to shed light on the crucial role of culture; and will contribute both theoretically and methodologically to fill one of the gaps found in bilingual research.

1.1.1. ESL, EFL, Second Language Learners, Bilinguals

According to the U.S. National Center for Education Statistics, in the 2003-2004 school year there were 3.8 million students studying English as a second language (ESL)
in the U.S. This number represents 11% of all students for the year. Among all U.S. states, California had the most number of ESL students with 1.6 million (“The number of ESL students in the US”, 2010)

For many people the labels ESL (English as a Second Language) and EFL (English as a Foreign Language) seem mutually intelligible. Without a doubt, both terms imply the study of English, yet, one might wonder, why would we have two terms to define the same concept? What makes these two terms different is their implied reference to the context in which English is acquired. While ESL students acquire their English in an English speaking context, EFL students do not get the same chance. Not only do ESL students learn English vocabulary, grammar, phonological system, and writing standards; but they are able to experience English (For the purposes of my study, experience refers to the collection of multi-sensorial inputs that second language learners (e.g. ESL) internalize during their language acquisition process in the target language context).

The traditional idea of bilinguals sees these subjects as speakers that learn, maintain, and use a second language interchangeably with their native language (Mindt, et al, 2008). However, many researchers have employed this term to refer to individuals, whose L2 proficiency was not always highly proficient; on the contrary, research has now made clear that different degrees of bilingualism exists along with other variables, such as age of exposure to L2, and contexts of acquisition (Bhatia and Ritchie, 2004; Bloomfield, 1933; Grosjean, 1999; Peal and Lambert, 1962; ). Personally, I believe, despite our assumptions based on fluency and competence, from the very moment we start acquiring a second language, in a smaller or higher extent we all became subjected
to the same issues bilinguals are subjected to. Who is to say when a learner stops being a second language learner and become a bilingual?

As demonstrated from research on this subject (Kroll and de Groot, 2005; Pavlenko, 2009; Wei, 2000), the biggest fascination and challenge in reviewing the literature on bilingualism is that the definition of bilingual is fundamentally fuzzy. As for many other concepts bilingualism is found to be a continuum. For this reason, throughout this paper we will consider the concept of second language learners and bilinguals interchangeably.

1.1.1.1. Bilingual vs. Monolingual

The differences between monolingual and bilingual can be subdivided in three main categories: linguistic differences, cognitive differences, and neural differences (Marian, et al., 2009).

1.1.1.1.1. Linguistic Differences

The first linguistic difference between monolingual and bilingual is that, independently from the vocabulary size of both, bilingual children may develop an earlier understanding of taxonomic relationships than their monolingual peers (e.g. car and bus are vehicles). Secondly, bilingual adults may be better than monolingual adults at learning new words. As the Marian, et al (2009) explain, in fact, “bilinguals use a variety of word-learning strategies with similar efficiency and are less susceptible to interference from conflicting orthographic information during word-learning” (Marian, et al., 2009, p.13). Lastly, it seems that in the bilinguals’ minds linguistic input co-activates both languages; so what happen is that whenever bilinguals hear, read, or produce words in one language, partially overlapping linguistic structures in the other language also are
activated. This phenomenon is also referred to as *across languages interference*, which is probably the most complex and debated object of research. Researchers have, in fact, learned that in bilingual subjects both languages are active and produce “interferences”, which in turn, justify the need for “control activation” of the non-target language (Poulisse & Bongaerts, 1994; Green, 1998; Costa & Caramazza, 1999; Hermans et al., 1998; Costa, Miozzo and Caramazza, 2006; Costa, La Heji & Navarrete, 2006; Kroll, Bobb & Wodniecka, 2006). However, if on one hand we are tempted to confer the word “interference” a negative value/connotation; Mindt et al (2008) reveal that, on the other hand, in comprehension tasks, dual-language activation is possible and sometimes can actually leads to facilitation effects rather than interference.

1.1.1.2. Cognitive differences

By cognitive differences we refer to that mix of people’s cognitive, attentional, and developmental factors influencing and characterizing their language acquisition process. Citing Weinert, Jarvis & Pavlenko, (2008), write: “A person’s level of cognitive development (…) is a strong determinant of further learning” (p.191). And they continue with an example: “Some of the problems that learners have with English articles (…) are due to their lack of having fully internalized the notions of definiteness and countability” (Hiki, 1991; Yoon, 1993 as cited by Jarvis and Pavlenko, p.191).

Among the cognitive differences between monolinguals and bilinguals, bilinguals demonstrated a greater ability in performing meta-cognitive skills and in divergent thinking (Mindt et al., 2008; Marian et al., 2009). Also, according to Mindt (2008), bilinguals seem to be advantaged in their inhibitory control abilities included those of attention, which was found slower to decline in age than in monolinguals.
1.1.1.3. Neural Differences

As far as the neural differences between monolingual and bilingual are concerned, in his 2004 “A Neurolinguistic Theory of Bilingualism,” Michel Paradis, Ph.D. (Philosophy, McGill), and Ph.D. (Neurolinguistics, Université de Montréal) warns us that “we [should not] generalize to bilinguals in general from any given subgroups (...) [and] we [should not] even generalize to any subcategory of bilinguals, no matter how they are subdivided according to sex, degree of proficiency, or age and manner of acquisition.

An unparallel number of studies have investigated the neural differences between the bilinguals and monolinguals, and in particular these discuss two main orders of concerns the quality and location of L1 and the L2’s processes of lateralization (Paradis, 2004, p.97). However, some evidence for right hemisphere dominance has been found in the acquisition of new vocabulary items (Hull & Vaid, 1987-2008; Ince & Christman, 2002; Kempe, Brooks, & Christman, 2009), other researchers, such as Mindt et al. (2008) sustain that despite some exceptions, there is “a growing body of literature supporting the notion that L2 is primarily stored in the same neural network as L1 because the neural process involved in language acquisition and speech disorders are similar in many ways across individuals, [regardless their monolingual or bilingual status]”

The same is shared by Paradis (2004) as he concludes that the L2 of a bilingual or second language learner should not necessarily be associated with the right hemisphere, and that even if it were, no one has been able to demonstrate how to bring this about. Paradis, (2004) explains that in bilinguals, both L1 and L2 seem to be represented in separate microanatomical subsystems located in the same gross anatomical areas in which they would normally appear in a monolingual (p. 116). Moreover, he claims, the
speculation made on the fact that L2 speakers were found to utilize more certain cerebral areas, such as *hyppocampal gyri, frontal lobe, and right hemisphere*, than others, does not imply that any implicit knowledge they have acquired is represented in those areas, and not in the areas regarded as traditional L1 areas (p. 116). On the contrary, the use of these “other areas” by L2 speakers was found to have to do with “compensatory strategies” they adopt regularly to compensate for gaps in their L2 knowledge. Apart from these strategies, the reliance on metalinguistic knowledge and pragmatic elements have also emerged and been recorded as L2 speakers’ cognitive mechanisms, by a number of studies (Paradis, p. 116).

From the analysis of Paradis (2004), it appears that research has not provided enough evidence to prove that in bilingual speakers the L2 is stored in separate locus of the brain than its L1 counterpart. Also, as Paradis (2004) suggests “L2 is represented in the left hemisphere in the same proportion as linguistic competence in unilingual [monolingual] speakers” (p. 109). Likewise, Marian et al. (2009) confirm that both use similar neural regions for language processing; even thought it seems that bilinguals have greater grey matter density than monolinguals in certain left hemisphere regions.

**1.1.1.1.1. Data on Bilinguals**

Contrary to what is often believed, most of the world's population is either bilingual or multilingual. Thus, surprisingly enough, monolingualism appears a characteristic only of a minority of the world's peoples.

As reported by the Modern Language Association (MLA), English is spoken by 80.6% of people over 5 years old in the entire US, whereas languages other than English are spoken by 19.39%. Approximately fifty-two millions of new bilinguals (where a
bilingual is an individual who has reported to speak another language other than English at home), five millions more than recorded in 2000, reported to speak another language other than English (US Census, 2005). However, this data does not even take into account the fluxes of immigrants that every year come to the United States to pursue a study or job career, or those who are illegally present in the United States and that aspire to be part of the American society.

According to the *Statistical Yearbooks of the INS and Urban Institute Estimates and Projections* (as cited by the *Urban Institute and the National Association for Bilingual Education NCLB Implementation Institute*) more than 14 million immigrants entered the United States (US Census, 2000). In their 2003 *U.S. Immigration – Trends & Implications for Schools Report* the authors claim:

Given the overall levels of legal immigration (about 800,000 or so per year), it is likely that the *net inflow* of undocumented immigrants averaged about 500,000 per year over the decade; the *annual undocumented entries* were much higher. Barring a major change in the nation’s legal immigration policy or a sustained deterioration in the economy we project the entry of another 14 million immigrants between 2000 and 2010.

1.1.2. **Bilingualism, Biculturalism and Acculturation**

Generally speaking, people who speak two languages usually also have knowledge and experience of the cultures identified with those languages. One of the most direct consequences is that their attitudes and/or behaviors are modified as a result
of contact with the culture of the context in which they moved in. This describes a process known as acculturation (Maxwell, para.1).

For this reason we cannot talk about bilingualism without cultural knowledge; and culture normally, but not necessarily, both reflects and is reflected into the language it is associated with. Just like in the definition of bilingualism, being bicultural is more than being functionally competent in two cultures; it is both a behavioral and psychological orientation in life. In a generic sense, we feel safe saying that identity, language, and culture are intrinsically linked; recent research on bilingualism seemed to have, in fact recognized the importance of considering experience in an L2 context and its cross-cultural and cross-linguistic implications in their investigation on bilinguals cognitive mechanism (Pavlenko, 2000). As discussed at the beginning of this chapter, the importance of considering culture, in bilingual research, is clear when we think about the differences between EFL and ESL learners.

1.1.3. Overview of Previous Studies

By tradition, bilingual research has aimed at shading light on the complex linguistics and cognitive processes involved in the bilingual mind by investigating their characteristics and the typologies of bilinguals and their performance, as well as the disadvantages and advantages, if any, of being bilingual. For a long time, a great deal of importance was given to those studies that focus on exploring and untangling the intricate mechanisms behind speech production, lexical retrieval, interference, and control mechanisms in bilinguals (Costa & Santesteban, 2004). Sadly, very little emphasis was placed on the sociolinguistics and cultural aspects of bilinguals.
1.1.3.1. Early Studies on Bilingualism

After reading a lot of early bilingual studies, it seems to me that many of them were of contrastive nature; in other words that they aimed at the investigation of the cognitive, linguistic, and psychological qualities of bilinguals in comparison with those of monolinguals. Some of these supported the idea that bilinguals were just like two monolinguals in one person; others, that after a certain age (i.e., the “Critical Period” by Lenneberg, 1967) the capacity of acquiring a second language was inhibited; and in some cases, even that bilingual were at an intellectual disadvantage when compared to monolinguals.

Among the earliest studies on Bilingualism, McLaughlin’s “Second-Language Learning in Children”, (1977), remains to me, one of the most interesting reviews published reflecting the traditional beliefs and concerns held in second-language acquisition research. Among the beliefs that the author attempts to reevaluate, he argues against the “Critical Period Hypothesis” postulated by Lenneberg in 1967, which assumes that there is a biologically determined period of life, normally agreed to be between age 3 and 9, in which language can be acquired more easily and beyond which time language is increasingly difficult to acquire (Brown, 2006). According to McLaughlin, the evidences in support of Lenneberg’s theory do not seem to prove that children learn faster and better than adults; and he explains, lateralization in the children’s brain seems to be reached much earlier than what believed (at around age 4) as demonstrated by studies such as Berlin’s (1972). Ultimately, McLaughlin questions the credence that sees bilingualism having negative consequences on intelligence, educational achievement, or
cognitive abilities, as bilingualism, conversely demonstrated its positive effects on the same spheres.

In view of the current purpose of this study we observe that among these early studies, some did try to explore the sociolinguistic dimensions of bilinguals. One of these is the 1954’s Ervin and Osgood study *Psycholinguistics: A survey of theory and research problems*. For the first time, a study on Bilinguals decided to take into account the importance of contexts of acquisition during the bilingual L2 acquisition process. Their work culminated in the distinction of what we now know as “compound” or “coordinate” bilingual types; where the former would be developed through experience in fused contexts and the latter would be developed through experience in different linguistic communities where no overlapping of languages is found.

Inspired by Ervin and Osgood’s work, (1954) another early study, conducted by Havelka, J. and Crosby in the late 1960s, analyzes the conditions presumed to affect both the separated use and the interference of the bilingual’s two languages in *compound* and *coordinate* bilinguals. In order to do so, a group of bilinguals was recruited and categorized in two groups according to the context of their languages acquisitions: *coordinate* bilinguals (23 subjects) and *compound* (9 subjects). Along with this distinction, the separated group was further subdivided into *bicultural* (15 subjects) and *unicultural* (8 subjects). In order to measure potential associative retroactive inhibition patterns in these subjects, a ranking and a lexical-association retrieval test on languages translated equivalents were conducted. The first test consisted in scaling 4 *stimulus-words* (from 1-7) on a standard set of meaning dimensions (such as *fast-slow; good-bad*, and so on…). The second test was measured the degree of associative independence of
translated equivalents by using the retroactive inhibition design. The subject was asked to learn list A, than B, then A again. That allows establishing the amount of associative interference imposed by the interpolated material. The results of this study confirmed that the coordinate bilinguals, contrastively to the compounds, appear to have more functionally independent language systems; but they have most importantly revealed that if the bilingual has learned his two languages in culturally distinct contexts, the semantic differences between translated equivalents are comparatively increased. This early study becomes interestingly current when compared to recent research like the present one. Not only do Havelka, J. and Crosby’s study demonstrates the importance of considering L2 context of acquisition in bilinguals, but it also confirms that there is a correlation between the acquisition of a distinct cultural set of knowledge and an increased capacity of perceiving what it is here indicated as semantic difference.

However a few attempts were made towards the recognition of the context of acquisition as a variable that greatly affect L2 learners; these do not imply the study of the depth of the relationships between the L1 and L2 cultures as internalized by their bilingual subjects. Clearly, the importance of acculturation in the shaping of concepts and meaning in the bilingual mind still seems very far from being considered among the concerns that the traditional research has. As Soffietti, professor of romance languages and linguistics at Syracuse University, asserted in his “Bilingualism and Biculturalism,” “to the investigator, bilingualism [should refer] not only to two distinct pattern of „linguistic habits,“ but also to distinct patterns of „cultural habits‘ in all of their anthropological meaning” (1960, p. 222).
Despite the assertions of researchers as Soffietti, as we have seen, in the bilingual research, the implications deriving from aspects such as culture, biculturalism, and acculturation was barely touched on, even worse, never considered.

1.1.3.2. Later Studies on Bilingualism

Only recently, bilingual research started to acknowledge the role that processes of cultural acquisition and patterns of language use play in the assessment of the complex system of processes happening in the bilingual literature. Along with this, the existence of “a wide range of cross-linguistic and cross-cultural differences in conceptual representation and categorization of abstract notions as well as concrete objects” in bilinguals (Pavlenko, 2000, p. 2) was also highlighted by a whole new school of research led by Aneta Pavlenko.

As indicated by Pavlenko (2000) the Nineties was the decade in which a renew interest for psycholinguistics emerged and the bilingual memory became the favorite subject for many research that involved bilinguals. She comments: “In the best tradition of monolingual Chomskian linguistics, languages were reduced to interchangeable codes linked to presumably language-independent -- but in reality English-based – concepts” (2000, p. 2) About this issues, Pavlenko suggests that “the field will benefit significantly from taking degrees of acculturation and biculturalism into consideration, and distinguishing between –however proficient and fluent- language learners engaged in a decontextualized classroom learning and bilinguals who use their two languages in their everyday lives and often in different cultures” (2000, p. 2).
1.1.3.2.1. Need for New Theoretical Approaches

Despite the psycholinguistics shift that bilingual research has experienced, this new body of research interested into psycholinguistics issues seemed to have produced inconclusive, or, as a minimum contrastive results. This state of affairs is also witnessed by authors such as Paradis (1997) and Grosjean (1998) that “have pointed out that [the models of the relationships between words and concepts developed during the Nineties] do not distinguish between the semantic and the conceptual level and suffer from confusion between processing and representation of lexical items (Pavlenko, 2000, 1).

1.1.3.2.1.1. Semantic and Conceptual Levels Need to be Distinguished

However psychologists and neurologists have always and commonly treated concepts/thought and word/meaning as separate entities, their models of the mental lexicon rarely account for a differentiation between conceptual and semantic levels of representation (e.g. The Word Association Model of Scarborough, Gerard, & Cortese, 1984; The Concept Mediation Model by Potter, So, Von Eckardt, & Feldman, 1984; The RHM, or Revised Hierarchical Model, also known as RHM by Kroll and Stewart, 1994; the Kroll & De Groot’s Distributed Lexical-Conceptual Feature Model, 1997, and The Spreading Activation Model of Cutting, Ferreira, 1999). Nonetheless, although the expected diversity in the combination of assumptions and research they carry, these models do have one thing in common: they constitute clear examples of the confusion that have saturated the field of bilingual psycholinguistic research preceding Pavlenko’s generation (Paradis, 2004). As a matter of fact, in many of them (e.g. in the Concept Mediation Model, the Word Association Model, the RHM, the Distributed Lexical-
Conceptual Feature Model, and in the Spreading Activation Model) the idea of concept level of representation seemed to be conflated with that of semantic level.

In the following sections of this introductory chapter I am going to demonstrate that there are empirical and clinical evidence that support this separation. As Jarvis and Pavlenko details in their 2008’s *Crosslinguistic Influence in Language and Cognition* these two levels of representation exists and are “distinct and susceptible to selective inhibition or pathological damage, with semantic knowledge vulnerable to anomia and aphasia, and conceptual knowledge unaffected by these conditions” (Lecours & Joanette, 1980; Caplan, 1992 as cited by Jarvis and Pavlenko, p. 119).

Apart from that, the two levels of representation also accomplish very diverse tasks. In a semantic level of representation we can find examples of implicit knowledge, such as the mapping between words and concepts that allow us to determine which and how many concepts are associated with what word (polisemy), as well as the connections between words that consent us to identify phenomena, such as collocation, word association, synonymy, and antonymy (Jarvis and Pavlenko, 2008). In a conceptual level of representation, conversely, we can find a different set of implicit knowledge, represented by the properties and the scripts associated with a particular category; the knowledge of how to recognize what member of these categories are prototypical, borderline or peripheral; and the knowledge that informs us on the internal structure of each category, and its links to other categories. This knowledge includes but is not limited to visual, auditory, perceptual, and kinesthetic information (Jarvis and Pavlenko, 2008).
Both levels of representation operate along a continuum called memory and that has at its two extremes something called *implicit memory and explicit memory*. Implicit memory contains that knowledge we might not be aware of; something we acquire incidentally, and that it is stored implicitly and used automatically. Implicit memory consists of the knowledge that *does not* require conscious executive control. On the other hand, explicit memory is the conscious, intentional recollection of previous experiences and information. In other words, explicit memory is that knowledge individuals are able to verbalize, because aware of it. From the point of view of a L2 speaker, learning explicit grammar rules is not the same as acquiring the correspondent implicit knowledge or competence (that allows one to speak automatically) these rules imply, (Paradis, 2004).

On this matter Pavlenko argues that “in the study of bilingualism, conflation of semantic and conceptual levels does not allow us to investigate contexts where meanings and concepts are at maximal contrast, such as foreign language (FL) vs. second language (L2) learning and use.” I would add ESL to the same list.

More precisely, Pavlenko also claims that L2 context of acquisition greatly affects the way L2 learners internalize vocabulary. For instance, in a study she conducted in 1997, FL and L2 Russian learners of English were asked to define the notions of *privacy* and *personal space*. Turned out the two groups were both able to define the culture-specific American term; however only the L2 learners were able to were able to use these words the same way native speakers would. Pavlenko, explains that this demonstrates that both groups had semantic representations of the two terms, but only one, the L2 learners group, whose classroom learning was supplemented by interactions and in a
naturalistic environment, had more than a linguistic mental representations, which includes imagery and scripts of the two words.

As a logical consequence, if we had to assume that meanings and concepts were interchangeable entities it would be as saying that culture and experiential differences across community of speakers do not affect the languages they speak. As Appel (2000) reinforces, in the Peer Commentaries in response to Pavlenko’s *New Approaches to Concepts in Bilingual Memory*, “The ultimate consequence is that the social and cultural context of bilingualism [would also be] neglected, resulting in a reduced view of bilingualism” (p. 5). In the same Peer Commentaries document however, researchers are clearly in disaccord with each others. Among those, for instance, De Groot (2000, p. 8) argues that semantic and conceptual representations are mutually intelligible in that both represent experiences; “where the term ‘experiences’ covers interactions of individuals with their external environment as well as internal thought processes that may lead to new knowledge.”

Finally, the debate seemed to be put to sleep when Paradis (2000, 22) intervenes asserting “It is worth nothing that conceptual mental representations (…) are not coextensive with the meaning of words. There are many concepts for which individuals have no words. For this reason, Paradis assumes that a “one-to-one correspondence” between concepts and words does not exist. Moreover, he observes that “the semantic constraints on possible referents (their lexical meaning) are not to be confused with conceptual representations multisensory units of meaning, independent of whether a corresponding word exists)” (p. 22). For example, people who speak a language other than English should still be able to buy a *mug* “on the basis of its perceived usefulness or
esthetic value” even if in their language doesn’t have a word corresponding to *mug* (p. 22). With this example, Paradis essentially bring to a close the debate on the concept vs. meaning debate. To conclude, the correspondence between meaning and concept would not only be theoretically impossible, but scientifically and empirically disproved.

**1.1.3.2.1.2. Wrong Assumption: “Bilinguals’ Conceptual Store is Static”**

Another step towards the recognition of concept as distinct entity is the acknowledgment that the conceptual level of representation is a dynamic “creature”, especially, I would add, when considering bilinguals. As Pavlenko (2000) explains, “following Weinreich (1953) and Ervin & Osgood (1954), many researchers present conceptual stores as static black boxes (p. 2)”. This is in many ways arguable. According to De Groot (2000), the very process of learning and forgetting constitute along arguments against the stativity of the conceptual store, and that regardless of the model of memory (monolingual or bilingual) the discussed assumption “is implausible and likely to be flawed” (p. 7). Paradis (peer commentaries of *New Approaches to Concepts in Bilingual Memory*, 2000) exemplify his opinion saying “The concept corresponding to the meaning of a word in L1 and that corresponding to its translation equivalent in L2 overlap more or less extensively; that is some of the same components correspond to both words, some to the L1 word only, others to the L2 word only. Not only this implies that the conceptual stores are dynamic entities because their content change over time, but they are also ‘fractionable’ because, by nature, they are not whole units but they are fractionated in smaller sections that do not get activated all at once” (p.22).

On the same topic, Dong, Gui, and McWhinney published interesting a very important study entitled *Shared and separate meanings in the bilingual mental lexicon*
(2005). In this study, the authors confirms that the bilingual mental lexicon is not static at all; in fact, after testing Chinese-English bilinguals on two experiments (a priming test and a ranking test) they found out that the process of learning a second language involves both processes that lead to conceptual convergence and processes that maintain conceptual differences. This, study, as I will discuss in the following chapter, has greatly inspired the current thesis because not only it offers a very comprehensive overview of the progress of bilingual cognitive research so far, but it also makes some important contribution to this body of research.

1.1.3.2.2. **Need for New Methodologies**

Despite the effort of most recent studies in linguistic anthropology and cognitive linguistics, in adopting approaches that promote linguistic relativity, sometimes referred as to as Whorf hypothesis, and bringing to attention the wide range of cross-linguistic and cross cultural differences in conceptual representations and categorization (…) research in bilingualism still suffers from “the lack of any but superficial acknowledgement of the linguistic and cultural specificity of conceptual representations” (p. 2).

With the newly acquired concept of “liquidity” of the bilingual’s conceptual stores, new research approaches and methodologies are necessarily called for. Appel (Peer Commentaries of *New Approaches to Concepts in Bilingual Memory*, 2000), for instance, explains that researchers have always “preferred highly controlled situations, often in laboratory settings, in order to collect enough data for sophisticated statistical procedures and to promote the reliability of their results” (p. 5). And what’s more, “social and cultural factors (…) [were] seen as interfering variables” (p. 5).
Conversely from what practiced by the traditional bilingual research, Pavlenko (2000) explains that these kinds of test, such as “picture naming, word association, word translation, and semantic differential tasks certainly access a semantic level of representation, but only a narrowly defined conceptual store” (p. 2). For this reason, she suggests that to fully access conceptual representations in bilingual speakers, researchers should supplement those tasks with methodologies such as *elicited language, role play, or object categorization*.

To conclude, I am too in favor of Pavlenko and Appel’s stands in that I believe that this type of approach, in which the focus is placed inevitably on the performance, does not offer any insight into the content and the real functioning of the bilingual memory, nor it could produce realistic findings in that these would be skewed by the fact they were de-contextualized from the very environment in which these were generated.

On this very topic, Ervin-Tripp (Peer Commentaries, of *New Approaches to Concepts in Bilingual Memory*, 2000) comments that “bilingual are not just a combination in one body of two monolinguals. The environment of bilinguals varies depending on their isolation, or participation in a bilingual community” (p. 11). In support of this view, the researcher also point out that Sociological research on immigrant and linguistic minorities “typically finds that social change in the source country has distanced the immigrants from those in their homeland, as they develop their own local culture” (p. 11). Why are these considerations important for the modern bilingual research and for the study here presented? Paradis gives a clear explanation in his peer commentary (2000, p. 23) as he states:
To the extent that all speakers of a linguistic community refer to the same concept when using a particular word, the speaker and the hearer will evoke the same mental representation. A speaker of that language as L2 might evoke a slightly (or not so slightly) different set of conceptual representations. Some concepts do not have a direct linguistic counterpart in a particular language, though attempts might be made to verbalize them through elaborate descriptions. New connotations, even entirely new meanings, may develop through acculturation, as demonstrated by some of Pavlenko’s clever experiments (Pavlenko, 1997).

1.1.4. Why my Study Addresses the Gap in the Research?

Our goal is to make a contribution to the modern bilingual research filling some of its gaps. Particularly, this thesis dissertation wants to raise awareness on the importance of culture in bilingual research introducing acculturation as a variable in the investigation of the nature of concepts by bilingual subjects. Treating acculturation as a variable will allow us to shed light on the crucial role of culture; and will contribute from both theoretical and methodological perspectives the gap in the research outlined in the precedent section.

The test we conceived for this study is two-phase test, and was designed to investigate whether conceptual relationships in bilingual and bicultural individuals are more likely to be retrieved when the tested verbs (head words) are presented in association with close synonyms or with preferred collocates. And also, to determine whether there is a direct correlation between these results and the degree of acculturation of the subjects tested. In order to do so, we advise the use of a questionnaire that assesses the degree of acculturation of the tested subjects.
Finally, the following chapter of this thesis will explore the development of the proposed instruments and their applications for the investigation of the role of acculturation in the bilingual lexicon.
Chapter II

2. The Instrument

2.1. An Overview

After introducing some relevant definitions, the previous chapter offered an overview of the evolution on bilingual research as well as its current challenges. In this chapter, I will present the development of a new instrument conceived for the investigation of the bilingual mental lexicon that was designed to address some of the shortcomings of currently-existing bilingual research.

The goal of this chapter is to describe this new tool of investigation that I hope will contribute to bridging the gaps met in traditional bilingual research, namely, the lack of consideration for cultural background and context of acquisition of the languages of bilingual subjects, and the lack of a distinction between conceptual and semantic representation. Particularly, this instrument should serve to investigate the differences between semantic and conceptual representations of words in the ESL speakers’ mental lexicon, revealing whether their experience in an L2 culture affects the pattern of acquisition of L2 concepts and meanings.

As amply demonstrated in priming tests done on bilinguals, longer response times correlate with the occurrence of an interference effect; on the other hand, shorter response times correlate with a facilitation effect. Both facilitation and interference are the results of a cognitive mechanism called “activation” that occurs in the mind of a person every
time two words are presented in association (Kroll & Stewart, 1994; Green, 1998; Hermans et al., 1998; Costa, Santesteban & Ivanova, 2006).

2.1.1. The ESL-Head-Word/Target-Word Instrument

In the table below are listed: the head words and target words featured in the ESL Head-Word/Target-Words Test.

Table 1.1: The lexical elements of the Head-Word/Target-Word Test: Below is the list of head words and their relative associated target words divided into the three categories of relationship: HW-synonyms, HW Collocate, and Mixed Unrelated.

<table>
<thead>
<tr>
<th>Head-Words</th>
<th>H-W/Synonym</th>
<th>H-W/Collocate</th>
<th>Mixed-Unrelated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. THROW</td>
<td>TOSS</td>
<td>BALL</td>
<td>CRY</td>
</tr>
<tr>
<td>2. STROLL</td>
<td>WALK</td>
<td>PARK</td>
<td>FORK</td>
</tr>
<tr>
<td>3. HUM</td>
<td>SING</td>
<td>SONG</td>
<td>PURSE</td>
</tr>
<tr>
<td>4. CHILL</td>
<td>COOL</td>
<td>WATER</td>
<td>READ</td>
</tr>
<tr>
<td>5. HEAT</td>
<td>COOK</td>
<td>MEAL</td>
<td>CELLPHONE</td>
</tr>
<tr>
<td>6. MARK</td>
<td>WRITE</td>
<td>NOTE</td>
<td>LIGHT</td>
</tr>
<tr>
<td>7. TOUR</td>
<td>VISIT</td>
<td>COUNTRY</td>
<td>PEPPER</td>
</tr>
<tr>
<td>8. GATHER</td>
<td>MEET</td>
<td>GROUP</td>
<td>SALARY</td>
</tr>
<tr>
<td>9. OFFER</td>
<td>DONATE</td>
<td>HELP</td>
<td>SEA</td>
</tr>
<tr>
<td>10. WIN</td>
<td>GAIN</td>
<td>MONEY</td>
<td>CURTAIN</td>
</tr>
<tr>
<td>11. DIVIDE</td>
<td>SEPARATE</td>
<td>PORTION</td>
<td>LIE</td>
</tr>
<tr>
<td>12. BOOK</td>
<td>RESERVE</td>
<td>TABLE</td>
<td>GARBAGE</td>
</tr>
<tr>
<td>13. BELIEVE</td>
<td>TRUST</td>
<td>PERSON</td>
<td>ENTERTAIN</td>
</tr>
<tr>
<td>14. SECURE</td>
<td>FASTEN</td>
<td>BELT</td>
<td>SWIM</td>
</tr>
<tr>
<td>15. LIVE</td>
<td>EXIST</td>
<td>LIFE</td>
<td>CUT</td>
</tr>
</tbody>
</table>

Note: HW=Head-words.
As one can see, the instrument uses a total of 15 head-words, which appear in the left column, numbered from 1 to 15. The head-words are verbs and were selected under one major criterion: high frequency. Verbs like *stroll, offer, live,* and *try,* are good examples of high-frequency verbs found in modern English.

In the next three columns, the target words appear divided into three categories: *head-word/synonyms, head-word/collocates,* and finally *mixed-unrelated.* They include 45 lexical items. If one starts reading from the left, (from the head-word column) the first item is *throw,* which is paired with the target words: *toss* (synonym); *ball* (collocate); and *cry* (unrelated verb). The idea was to find lexical items (high frequency verbs) that, if paired with a synonym and a collocate, would accomplish a process of association via a semantic relationship on one hand, and via a conceptual relationship on the other. A third category- mixed unrelated- is here used as a distracter, to mask the intention of the experiment.

Regarding the ESL Head-Word/Target-Word Test, it is essential to point out that it was designed to be employed in a two-phase experiment. The first phase would be that in which the instrument tests the relatedness of words pairs in the subjects’ minds. This phase of the study would be accomplished by a *pairs priming task.* In the priming task the subjects will have to assess the relatedness of pair of words displayed on a computer monitor by pressing keys (Y=Yes; N=No) on their computer keyboard. Since the number of possible pairs is rather high, the task would have to be subdivided into 3 mini sets-of 15 pairs each. Then, a list of all head the words and target words they identified as related would be shown to them following the completion of the priming experiment, so as to give them a chance for reviewing these pairs.
As for the second phase, constituted by the *retrieval task*, the subjects should be interviewed and asked to recall whatever they could remember being the first match they can think of for the same head words they were just showed. Just as with the classic priming paradigm, their response time should be timed and their answers should be recorded, making sure the subjects understand, for each head word tested, that only their first answer (the first head word-target word recalled) will be considered.

### 2.1.1.1. Ideal Subjects Profile

For the presented test, any adult second language learner could be tested. Of course using ESL learners will help researchers ensuring a certain degree of acculturation can be found. In fact, for as much as a second language learner can learn about specific culture practices, only those who experience their target language in the real context in which this is spoken will be able to internalize the language from a semantic and conceptual point of view (Pavlenko, 2009). As for their language proficiency, the ideal subject should have at least an intermediate level of proficiency in their L2.

### 2.1.2. Criteria Behind the Instrument Development

Apart from investigating the role of acculturation in the concepts development of ESL learners, the instrument I conceived was designed to investigate the activation processes induced by means of synonym and collocate target-words pairing. In other words, I am interested in finding out whether higher acculturated subjects are more likely to retain and retrieve pairs of words whose conceptual relationships are elicited by semantic links on the one hand, or conceptual links on the other. To accomplish this goal, the pair head-word/synonym and head-word/collocate were chosen to ultimately obtain
the activation of a semantic representation (for the head-word/synonym) and of a conceptual representation (for the head-word/collocate).

As Dong, Gui, & MacWhinney (2005) have made clear in their study *Shared and Separated Meanings in the Bilingual Mental Lexicon*, to obtain a conceptual activation, we need to choose carefully the relationship between the tested lexical items (p. 224). In introducing the first of their experiments Dong, Gui, & MacWhinney explain that they relied on Jackendoff’s (1990) theory of conceptual structure to create pairs of words who would elicit a conceptual representation (p. 223). For this reason, I decided to use one of their conditions, the *word-preferred value* (which corresponds to the pair constituted by a verb and one of its collocational words (e.g., *live-life*) in the design of the instrument proposed in this chapter, naming my condition the *verb-collocate* condition. Regarding the other two conditions, as we said before, *verb-synonym* would elicit a semantic representation because the association is one strictly based on semantic relationships; whereas for the third condition, the *mixed-unrelated*, we chose approximately an equal number of verbs and nouns that were unrelated to the head-word they are paired with.

According to many researchers (see e.g. Barsalou, 2003; Malt *et al.*, 2003) the nature of concepts is a context-dependent one. This means that depending on the context, different conceptual representations may be activated by the same words. By the same principle, I believe that when giving a pair of words, one’s mind will be able to activate a relationship that in some cases is not just semantic, but also conceptual. In the test I propose, in fact, by providing my hypothetical subjects with a pair of carefully matched words I expect to create contextual cues between each pairs that in turns will spark either a semantic or a conceptual linkage.
2.1.2.1. The Theories and Methodologies Behind the Instrument

The instrument I presented in this section of the paper was inspired by a specific category of cognitive tasks: *semantic priming*. In semantic priming experiments, participants are presented with one or two letter strings on a computer screen and they are asked to make a decision over the nature of the input. For instance, they can be asked to decide whether the word presented is a real word or a non-word (a “phonologically possible word,” Basnight-Brown & Altarriba, 2007) by pressing one of two keys of a computer or by pronouncing the word out loud. Most priming tasks are designed so that one word (the prime) appears first, followed by a second word that is either related or unrelated. The priming effect resulting from the task would see participants responding faster to words that were semantically related or commonly associated with each other. In other studies words were presented simultaneously, and research that employed this method demonstrated that pairs that were closely related were recognized faster than pairs that were unrelated (Meyer & Svanseveldt, 1971).

This priming paradigm has been widely used in cognitive psychology and in bilingual research because it allows one to explore how words are connected or stored in memory, and to determine, whether certain processes occur automatically or under conscious control. The priming task can be also used to investigate the storage of two languages by presenting its subjects with cross-language word pairs, but this is not the concern of my study which allow us to investigate the mental lexicon of ESL learners by testing them in their L2 (English) only. Instead, my focus is to investigate with which ease bilingual subjects are able to retrieve concepts and meanings in their L2 alone.
2.1.2.1.1. What are Concepts and how do Second Language Learners Acquire Them?

In the view adopted here, concepts are seen as multimodal mental representations that include visual (mental imagery), auditory (sound), perceptual (texture) and kinesthetic (sensory-motor) information stored in implicit memory (Malt et al., 1999, 2003). These representations are dynamic and as such are subject to developmental changes and generational and individual differences, that is differences between speakers who may have had different experiences with, knowledge of, or expertise in the area in question (Murphy, 2002). As Pavlenko also confirms (1999) a concept is one of the main components of a word, and it refers to that “non-linguistic multimodal information” acquired through the direct exposure to the world. Along with the conceptual component, the lexical and the semantic components are also considered constituents of words: the lexical component refers to their “word form”, the semantic, to the “explicit information” that put each word in relation to another.

When second language learners acquire new vocabulary these can be processed in two types of memory: implicit and explicit. Definitions of words learned explicitly are stored in explicit memory, while multimodal conceptual representations involving visual, kinesthetic and other types of information, need to be developed in implicit memory (Paradis, 1994 as cited by Pavlenko, 2009).

In extreme cases, cross-linguistic and cross-cultural differences makes this process of identification and categorization even more complex, because the limits and breath of association across languages can vary and will raise transferability issues. Research in SLA (second language acquisition) has amply demonstrated that sometimes learners are able to define a word explicitly but they do not possess the relative
conceptual representation that would allow them to map the new word onto its real-world referents (Pavlenko (1997, 2003); Driagina, 2007). This is referred to as “conceptual non-equivalence,” which is generally what cause L2 learners not able to use the words in the appropriate contexts. This occurs when you have an explicit definition in the absence of a multimodal conceptual representation.

However, this absence could always be fulfilled and eventually, the learners may internalize the category partially, applying the word to a limited range of objects or situations or fully learning how to use the word spontaneously in the same range of contexts as native speakers of the target language (Paradis, 1994). Thus, it seems that when learning new vocabulary (or L2 vocabulary), conceptual representations are involved in restructuring processes, rather than generative processes.

In conceptual restructuring the bilingual mind readjusts the category structure of and boundaries of that given concept in accordance with the constraints of the target linguistic category. This contrasts with the commonly accepted belief that the goal of adult L2 learning is to acquire new mappings between concepts and second language words (Kroll, 1993, p. 55).

As we argue in this paper, both semantic representations and conceptual are shaped by means of experience. Since the experience is acquired differently depending on the context of acquisition, what happens is that in bilingual individuals with experience in L2 a different variable comes into play: acculturation. As we anticipate, acculturation can influence greatly the already complex relations between meanings and concepts in the bilingual mental lexicon. It is on these assumptions that the Target-Word/Head-Word Test I am proposing in this chapter lays its foundation.
2.1.2.2. Measuring acculturation: The Abbreviated Multidimensional Acculturation Scale

To measure the degree of acculturation of second language learners I am here suggesting employing the Abbreviated Multidimensional Acculturation Scale Questionnaire (Zea, Asner-Self, Birman, and Buki, 2003). This questionnaire was chosen not only, for its claimed purpose, but also because it is most likely the most recent and updated questionnaire produced in research insofar. Among its feature components, its multidimensional internal structure includes a section dedicated to language competence.

The Abbreviated Multidimensional Acculturation Scale was developed in 2003 by Maria Cecilia Zea, a Psychology professor from the George Washington University, Kimberly K. Asner-Self (Department of Educational Psychology and Special Education, Southern Illinois University, Carbondale), Dina Birman (Department of Psychology, University of Illinois at Chicago), and Lydia P. Buki (Department of Educational Psychology, University of Illinois at Urbana-Champaign). This instrument was originally developed to measure the degree of Acculturation in immigrant subjects within the United States, such as Latinos, and tested in two experiments involving Latino subjects. The findings of both tests demonstrated the reliability of its internal three-dimension structure, and its validity in terms of convergence and discrimination values.

Among the possible dimensions involved in the process of acculturation, five emerge as the most relevant to researchers: behavior, cultural identity, knowledge, language, and values. To many researches the first four factors or dimensions express a superficial intermediate degree of immersion, whereas the fifth –values- may reflect a
more deeper degree of “immersion” (Kim & Abreu, 2001; Marin, 1998; Stephenson, 2000, as cited by Zea, 2003).

In Zea et al.’s Abbreviate Multidimensional Acculturation Scale three factors emerged as internal structure constituents: cultural identity, language competence, and cultural competence. The questionnaire is introduced by a brief note to the subjects that explains the nature of the questionnaire (see Appendix A). Later, the questionnaire develops its three dimensions. The first set of questions (1-12) investigates “cultural identity”; the second, “language competence,” and the third, “cultural competence.”

Each of them is headed by the same line of instructions. The instructions say: “Please answer the questions below using the following responses: 1 – not at all; 2 – a little; 3 – pretty well; 4 – extremely well” (see Appendix A). The answers of the Abbreviate Multidimensional Acculturation Scale are recorded by their subjects on a separate form.

As explained by Zea et al. (2003), this questionnaire is relatively short (42 items) and has been validated by both community and college student samples. According to its authors, this instrument is innovative and realistic because it was based on the model of acculturation, “which suggests that cultural competence and identity are distinct dimensions of acculturation with a particular individual who is competent in a culture not necessarily identifying with it, and vice versa” (p. 111). In addition, they propose a cultural competence dimension that includes knowledge about the culture along with the ability to function in it. Moreover, language competence is proposed as opposed to language preference as a factor of importance. Finally, it differs from the traditional six-level dimension scale questionnaires developed insofar because it excludes behavioral
acculturation in that, as it has been generally operazionalized, it reflects availability of items such as music and food (Birman & Trickett, 2001 as cited by Zea, 2003, p. 111).

As Zea and her associates conclude in their “The abbreviated multidimensional acculturation scale: Empirical validation with two Latino/Latina samples” (2003), this tool of investigation “can be used with immigrants from all parts of the world [as long as] the meanings of the scores [is] deciphered within this context” (p. 122).

2.1.2.2.1. Conclusive Remarks

For all the above reasons I believe that through my test and the use of the Abbreviate Multidimensional Acculturation Scale questionnaire I will be able to find out whether the experience of ESL subjects in a second language context, therefore their degree of acculturation, correlate with the way they access concept as opposed to just meaning. This said, If I had to speculate on the results of a test such as the one that will be proposed in the next chapter, I have reasons to believe that more highly bicultural subjects would averagely retrieve pairs whose association elicit conceptual representation easier than lower bicultural subjects; and vice versa, I believe lower bicultural subjects would averagely retrieve pairs whose association elicit semantic representation easier than more highly bicultural subjects. In other words, I believed that increased acculturation lead to increased conceptual representations.
Chapter III

3. A proposed Study

3.1. Introduction

After having laid out the theoretical framework at the base of this study, discussing the evolution of bilingual research and its current challenges; and most importantly, after having put forward and detailed the birth of a new instrument for the assessment of the bilingual mental lexicon (i.e. Head-Word/Target-Word), in this final chapter I will illustrate the potentials of the discussed instrument when applied to a likely subject group, that of ESL students of Chinese descendant.

3.2. The ESL Head-Word/Target-Word Test for Students of Chinese Descendant

With this two-phase test I intend to investigate whether concepts are more likely to be recalled faster by more highly acculturated Chinese-English bilinguals than lower acculturated Chinese-English bilinguals, and therefore whether acculturation plays a factor in the way concepts and meaning in the bilingual mental lexicon are retrieved, such as in ESL students of Chinese descent.

3.2.1. Rationale Behind the Proposed Study

The proposed study is both informed by and finds support from a series of methodologies (e.g. Dong, Gui, and MacWhinney, 2005); and theories and developmental cognitive considerations around the subject of L2 conceptual development put forward by

The goal of the proposed study is to raise awareness of the idea that there is a difference between conceptual and semantic representations and subsequently, between meanings and concepts, something traditional bilingual research has ignored for a long time (Potter et al., 1984; de Groot, 1992, 1993; Kroll & Stewart, 1994; Kroll & Tokowicz, 2005). To contribute bridging this gap, I am proposing the two-phase ESL Head-Word/Target-Word Test considerably inspired (at least in its methodological approach) by Dong, Gui, and MacWhinney 2005’s study entitled *Shared and separate meanings in the bilingual mental lexicon*.

3.2.2. **Context**

The ideal subjects for this study would be ESL Composition I students enrolled in one of the sections of English 1110 (course name at the University of Toledo, Ohio). English 1110 is a course all ESL students are required to take. The coursework for the class focuses on generating, developing, researching, and presenting ideas for several different writing assignments, including interview reports, response papers, proposal papers, and research papers.

The English 1110 students are students that have either passed the TOEFL (Test of English as a Foreign Language) receiving a score of at least 450, as well as an English 1110 passing score on the entrance exam; or they are students that have successfully completed the course English 1020 Writing and Grammar, and received an English 1110 passing score on the entrance exam. In both cases, the entrance exam is mandatory. Characteristic of ESL Composition I students include their relatively full immersion into
their target language (English or L2) socio-cultural context as they are likely to have been residing in the United States for at least a year or more. Many, in fact, have received an even longer exposure to the American English language and culture through their enrollment into the ALI (American Language Institute), a language intensive program that prepare prospective ESL university students. The American Language Institute holds six-month-long beginners to advanced grammar, writing, speaking, and listening classes for International students only.

For the above mentioned reasons, I believe ESL Composition I students are the perfect candidates for the test I am proposing since their language proficiency is overall high proficient in terms of both second language cognitive and lexical development.

3.2.2.1. Testing Location

This study would ideally take place at The University of Toledo, partly in regular classes, partly in one of the Laboratory of the Field House. For the actual test segment I would prefer to utilize the facilities of the Field House as the participants of this study are ESL students enrolled in ESL English classes held in the above mentioned building.

3.2.3. Subjects

The students enrolled into English 1110 course usually come from different regions of the world, the vast majority being of Asian or Middle Eastern descent. For my study I will look for volunteers among the Asian population available as it is generally the most represented in the various sections of ESL English Composition I at the University of Toledo. The subjects of my study would have to be between 18 and 25 years old, Chinese native speakers, proficient in English, and they would have to have
had at least five years of EFL (English as a Foreign Language) formal education and at least a year of ESL (English as a Second Language) instruction. Given the high number of Chinese descendant international students enrolled in ESL Composition I courses, I believe I would be able to find twenty volunteers for my test.

3.2.3.1. Recruitment of Subjects

I will be recruiting my subjects from the available sections of ESL English Composition (ENG-1110), as many as I can for each of the mentioned courses. To be able to do so I will have to request their teachers the chance to present my study to each class, where I will also circulate a sign-up sheet on which a plan of my study will give hours and dates concerning the following steps for those interested in participating. On this signup sheet, the interested students will be able to express their interest in participating in the proposed study by writing their names, email address and phone number (optional).

As a reminder, the students that signed up will be notified by email about their first convocation. In that occasion, the “Abbreviated Multidimensional Acculturation Scale Questionnaire” will be administered. This questionnaire is a 42-questions instrument of investigation that assesses the degree of acculturation of the individual who completes it. This will serve us creating a profile of the students participating in the proposed study. The students will be gathered in an available classroom at the University of Toledo’s Field House and introduced to the criteria behind the questionnaire in terms of the research goals. Before doing this, however, they will have to sign a consent form.

From this moment on the students would be officially considered subjects. Further, the questionnaires will have to be collected and reviewed by me and my
collaborators. Once each subject’s degree of acculturation is calculated, 20 students from the 1110 group will be chosen. In the selection process I will try to come up with a variety of results in terms of degree of acculturation so as to facilitate the data comparison in the post-phase of the study. Following this phase, the selected participants will be notified of their “candidature” and the date for our ESL Head word-Target word Test.

3.2.4. Procedures

For the two-phase test, the selected subjects will be called in to a computer laboratory with multiple stations at the University of Toledo Field House where I and my collaborators will distribute written instructions for the first phase of the ESL Head word-Target word test, the priming task.

3.2.4.1. The First Phase

For this first task, the subjects will have to assess the relatedness of pair of words displayed on a computer monitor by pressing a key on their computer keyboard to indicate whether or not they perceive the words to be related (Y=Yes; N=No). The experiment will utilize custom-built software for response monitoring and stimulus ordering on a Windows machine. For the first phase of this test, the subjects will be told to follow the instruction appearing on the screen of the monitor they have been assigned to. To ensure they have understood the instruction, and familiarize with the keyboard and its keys the subjects will go through a very short trial based on the actual Head-Word/Target-word Test.

After the trial, we will circulate and ask whether anyone has questions before the test starts. The test will be further divided in 3 sections with 5 minutes break in between.
In every set 15 different target words (5 headword+ 5 related-concrete/ 5 related-abstract/ and 5 mixed-unrelated) of the 45 target words will have to be tested with their relative head words. In each set the subject will be presented with a pair of head word +target word at a time. In every set, one at a time, the 5 headwords (in their 3 pairing conditions) will pop on the screen for a few milliseconds (ISI=150 milliseconds). After a 50 milliseconds ISI (or blank Inter-stimulus interval) the subject will be presented with a target word among the 15 selected. The total SOA, or Stimulus Onset Asynchrony will be 200 milliseconds (150+50 milliseconds). As suggested by Dong, Gui & MacWhinney (2005) (also see e.g. Altarriba, 1992; Zhou, Marslen-Wilson, Taft and Shu, 1999) an effective priming task should include a SOA measuring not more than 300 milliseconds. At this point the subjects will be asked to hit the keys Y or N in response to the (implied) question: “Are these two words related?” The target will then remain on the screen until the subject press any of the two keys (Y; N).

After the subjects complete each set of 15 pairs (head-words/target-words) the list of pairs they identified as related will be generated and shown to them one time, so as to give them a chance for reviewing their answers. Precisely, as they were told in the written instructions prior the test, this will be the time in which the subjects have to internalize their word pairs. At the end of the third and final set, and after the list of pairs resulting from the third set, a cumulative list will be generated and shown in a slide show mode.

3.2.4.2. The Second Phase

After a longer break (15 minutes), our subjects will be called back into the same room for the second phase of our test– the retrieval part. During this phase, the subjects will be presented with a new set of written instruction that explain the process in which
this second part is organized. In this phase, it will be important to make sure the subjects understand, for each head word tested, that only their first answer (the first head-word/target-word recalled) will be considered.

Two short trials of the retrieval test will be performed and the subjects will be given the chance to familiarize with the new testing process. Differently from before, this time they will be asked to say their answers out loud when asked by the instruction appearing on their computer screen. In order not to create confusion, the lab will accommodate five subjects at a time and each subject will be given a pair of headphones with built-in microphone. One by one, the 15 head words (see table 1.1) will appear in scrambled order and the student will be given a few seconds to recall its match (or pair) and say it out loud. Only their first answer will be recorded, as well as their response time. The whole test will take approximately 1 hour and 30 minutes for each subject.

3.2.5. Data Analysis

For this study, data will result from both the Abbreviated Multidimensional Acculturation Scale Questionnaire; from the training stimuli test accomplished through a priming task; and from the retrieval test, the “ESL Head word-Target word test”. The data considered will be: a) the reaction time recorded during the priming task for each pair (recognized as related or not), and the nature of their answers.

Separately, the reaction times resulting from the retrieval of each match (for the 15 head words tested), and the nature of their answers (divided into related-synonyms, related-collocate; and maybe mixed-unrelated), will be recorded and sorted. At this point the average of each participant’s reaction time will be calculated for each category of pair retrieved and recorded along with their total number of related-synonyms, related-
collocate, and mixed-unrelated instances, and of their acculturation score. Ultimately, I will rely on a comparison to calculate the performances of my subjects by computing the variables of mean reaction time score in the retrieval task with the nature of their answer, and their acculturation score.

3.3. Limitations of the Proposed Study.

Theoretically speaking, the study detailed in this third and final chapter presents four important methodological challenges, among which are: a) the innovative choice of its subject group, b) the limited number of subjects, c) the use of self-reporting in determining the degree of acculturation, and d) the low representative value of what is considered high and low degree of acculturation.

If we consider this study, as I do, as pertaining to bilingual research, the first challenge could come from the original choice of its subjects. In fact, although I believe that the definition of bilingual is intrinsically fuzzy and open to interpretation, to my knowledge ESL students have never been explicitly considered a bilingual subject group. As a result, I do not have any close comparison to make in terms of studies that have utilized the same population. In addition, the limited availability of potential volunteers could lead to unsatisfactory representation of the population in object (ESL students of Chinese descent).

The third limitation could be seen in the use of self-reporting when measuring the degree of acculturation of our ESL students with the Abbreviated Multidimensional Acculturation Scale Questionnaire (Zea et al., 2003). Questionnaires of this kind rely on self-reporting and are based on one’s perceptions, which research has, more or less disputably, found to be unreliable. On this matter, Cook and Campbell (1979) have,
indeed, pointed out that subjects (a) tend to report what they believe the researcher expects to see, or (b) report what reflects positively on their own abilities, knowledge, beliefs, or opinions.

Finally, the indexicality value of the scores coming from the Abbreviated Multidimensional Acculturation Scale Questionnaire could be not significant in terms of absolute high or low degree of acculturation. The measure of low and high will, in fact, be relative to the tested population.

3.4. **Summary of Thesis**

The study, here outlined as well as the design of the Head-Word/Target-Word Two-Phase Test were inspired from the study of Dong, Gui, and McWhinney (2005) that tested Chinese EFL to determine whether their two vocabularies (L1 and L2) was shared or separated at the conceptual level. However, the present study introduces a different approach for the investigation of the bilingual lexicon taking into account a subject group never before employed in bilingual research, constituted by the ESL students.

Most crucially, the study attempted to emphasize the importance of experience in an L2 context using acculturation as a variable in a test that explore the way ESL speakers retrieve and perceive relationships between lexical items and their relative semantic and conceptual representations.
References


Appendix A

*The Abbreviated Multidimensional Acculturation Scale Questionnaire.*

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**Abbreviated Multidimensional Acculturation Scale (Zea, Asner-Shift, Birmah, & Burls)**

The following section contains questions about your *culture of origin* and your *native language*. By *culture of origin* we are referring to the culture of the country either you or your parents came from (e.g., Puerto Rico, Cuba, China). By *native language* we refer to the language of that country, spoken by you or your parents in that country (e.g., Spanish, Quechua, Mandarin). If you come from a multicultural family, please choose the culture you relate to the most.

**Instructions:** Please mark the number from the scale that best corresponds to your answer.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly disagree</td>
<td>Disagree somewhat</td>
<td>Agree somewhat</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>

1. I think of myself as being U.S. American.
2. I feel good about being U.S. American.
4. I feel that I am part of U.S. American culture.
5. I have a strong sense of being U.S. American.
6. I am proud of being U.S. American.
7. I think of myself as being ________(a member of my culture of origin).
8. I feel good about being ________(a member of my culture of origin).
9. Being ________(a member of my culture of origin) plays an important part in my life.
10. I feel that I am part of ________(culture of origin).
11. I have a strong sense of being ________(culture of origin).
12. I am proud of being ________(culture of origin).

Please answer the questions below using the following responses:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all</td>
<td>A little</td>
<td>Pretty well</td>
<td>Extremely well</td>
</tr>
</tbody>
</table>

How well do you speak English:
13. at school or work
14. with American friends
15. on the phone
16. with strangers
17. in general

How well do you understand English:
18. on television or in movies
19. in newspapers and magazines
20. words in songs
21. in general

(Appendix continues)
Appendix A

*The Abbreviated Multidimensional Acculturation Scale Questionnaire*

Please answer the questions below using the following responses:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>A Little</td>
<td>Pretty well</td>
<td>Extremely well</td>
</tr>
</tbody>
</table>

How well do you speak your native language:
22. with family
23. with friends from the same country as you
24. on the phone
25. with strangers
26. on the phone

How well do you understand your native language:
27. on television or in movies
28. in newspapers and magazines
29. words in songs
30. in general

How well do you know:
31. American national heroes
32. popular American television shows
33. popular American newspapers and magazines
34. popular American actors and actresses
35. American history
36. American political leaders

How well do you know:
37. national heroes from your native culture
38. popular television shows in your native language
39. popular newspapers and magazines in your native language
40. popular actors and actresses from your native culture
41. history of your native culture
42. political leaders from your native culture