3-26-2015

Semantic Categorization in Portuguese-English Bilinguals

Lilian M. McLeod
Florida International University, Lmcle013@fiu.edu

DOI: 10.25148/etd.FI15050207

FLORIDA INTERNATIONAL UNIVERSITY

Miami, Florida

SEMANTIC CATEGORIZATION IN PORTUGUESE-ENGLISH BILINGUALS

A thesis submitted in partial fulfillment of

the requirements for the degree of

MASTER OF ARTS

in

LINGUISTICS

by

Lilian McLeod

2015

To: Dean Michael R. Heithaus
College of Arts and Sciences

This thesis, written by Lilian McLeod, and entitled Semantic Categorization in Portuguese-English Bilinguals, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this thesis and recommend that it be approved.

_____
Ana Gouvea

_____
Feryal Yavas

_____
Virginia C. Mueller Gathercole, Major Professor

Date of Defense: March 26, 2015

The thesis of Lilian McLeod is approved.

_____
Dean Michael R. Heithaus
College of Arts and Sciences

_____
Dean Lakshmi N. Reddi
University Graduate School

Florida International University, 2015

DEDICATION

I dedicate this thesis to my family and friends, especially my aunt Efigênia Bello, without whom I would never have been able to come to the United States.

ACKNOWLEDGMENTS

I wish to thank my thesis advisor Dr. Virginia C. Mueller Gathercole for her continuous guidance, patience and support throughout this rewarding process. Without her invaluable expertise in the field of bilingualism, her direction in the experimental design and statistical analysis, this thesis would not have been possible.

I would also like to thank my committee members, Dr. Feryal Yavaş and Dr. Ana Gouvea for their advice, encouraging words, and of course for their knowledge of Brazilian Portuguese, which was of great assistance with the choice of linguistic stimuli.

Additionally, I thank Dr. Hans Stadthagen-Gonzalez for his assistance with the script used in presentation of the stimuli in DMDX, and Tyler Stout for his help with the statistical analysis.

Lastly, I extend my deepest thanks to Ana Paula Fabian Freire for her immeasurable help in the translation of all forms and background questionnaire from English into Portuguese, as well as recruitment of Portuguese-English bilinguals. I thank Kelly Millard, for recording the English audio files which were central to this experiment. Lastly, I would like to thank Salvatore Callesano, Lydda Lopez and Kristin Mullen for their help with participant recruitment as well as their unwavering friendship and encouragement.

ABSTRACT OF THE THESIS

SEMANTIC CATEGORIZATION IN PORTUGUESE-ENGLISH BILINGUALS

by

Lilian McLeod

Florida International University, 2015

Miami, Florida

Professor Virginia C. Mueller Gathercole, Major Professor

The main purpose of this study was to investigate the cross-linguistic interactions in the semantic categorization of late Portuguese-English bilinguals. The lexical items used in this study have a wider range of applications in one language and narrower in the other. Three types of categories were examined: classical, homophones, and radials.

Late Portuguese-English bilinguals, as well as Portuguese and English monolinguals, were tested. After hearing a word, participants were asked to choose from a set of images, one that could be labelled as such.

Analyses showed that when tested in English, participants performed better when it was the wider language. Participants' performance was lower on classical categories than on homophone and radial categories.

TABLE OF CONTENTS

I-INTRODUCTION

The main purpose of the present study is to investigate the cross-linguistic interaction with respect to semantic categorization in late Portuguese-English bilinguals. The goal is to explore the organization of semantic categories in the bilinguals' two languages, where they differ in relation to their boundaries, and what types of categories as well as target items are most vulnerable to interlanguage influence.

The present study follows the premise that categories may be wide or narrow in the cross-linguistic context. A category is considered wide when one term in one language can be applied to two or more terms in the other language, thus having a 'wider' range of applications; for example, the English term *wall* may be used to refer to Portuguese *parede*, *muro* or *muralha*; conversely, a category is narrow when a term in another language must be split up into two or more terms in the target language, thus 'narrowing' its range of applications; for example, the Portuguese term *relógio* can be translated as both English *clock* and *watch*, meaning that the English terms have a narrower range of applications where one refers specifically to the smaller versions of the instrument, which could would be worn on the wrist or fit in a pocket (watch), while the other is expected to be larger, and could either belong on a wall or be a self-standing instrument (clock).

Keeping in mind the implications stemming from the literature in bilingual interaction, cross-linguistic conceptual representations, and bilingual semantic categorization, we will attempt to discover how these Portuguese-English bilinguals treat particular nouns in their respective languages and how they differ from their monolingual counterparts. Additionally, the findings of this study will test which target items are most

likely to succumb to cross-linguistic conflict and which types of semantic categories are most susceptible to interlanguage influence.

This thesis consists of five chapters. Following this introduction, Chapter II presents a review of the literature on bilingual interaction, cross-linguistic conceptual representations, semantic categorization, and categorization in the bilingual lexicon. Chapter III describes the methodological approach involved in this study. Chapter IV reports the main findings of from the data analysis, and Chapter V summarizes the findings of the study.

II- LITERATURE REVIEW

In this chapter, I present a review of the literature on bilingual interaction, cross-linguistic conceptual representations, semantic categorization, and categorization in the bilingual lexicon.

2.1 - Bilingual interaction

Contemporary linguistic research has been placing increasing emphasis on bilingualism and how the bilinguals' linguistic systems interact. Current trends found in this area of inquiry suggest that acquiring and using two languages is a process far more complex than just the previously accepted paradigm of substratum transfer in which the speaker's first language (L1) affects the acquisition and processing of the second language (L2). While the concept of L1 transfer is still significantly relevant, it is generally accepted today that bilingualism causes changes in the speaker's entire linguistic system, thus making bilinguals additionally subject to effects of the L2 on the L1 (e.g. Cook, 2003; Dussias, 2003; Van Hell & Dijkstra, 2002) as well as convergence of the two languages (Malt & Sloman, 2003; Pavlenko, 1999; Bullock & Gerfen, 2004 and Ameel, Malt, Storms, & Van Assche, 2009).

According to Paradis and Genesee (1996), there are three types of cross-linguistic influence: acceleration, delay and transfer. Acceleration and delay pertain mostly to work in bilingual first language acquisition (BFLA), suggesting that bilingual children do not develop their languages in the same way that monolingual children develop theirs. In the case of acceleration, it is believed that certain grammatical structures may be acquired

earlier when the bilinguals' two languages share similar structural properties, especially with respect to structures that emerge earlier in one of the languages when acquired monolingually (Paradis & Genesee, 1996; Kupisch, 2005). In the case of delay, slower linguistic development can be observed in the event that the bilinguals' two languages have different structures, thus involving separate paths of linguistic development. Patuto, Repetto and Müller (2011) argue that delay effects can be present depending on the language combination, while acceleration effects can be observed in all bilinguals regardless of the language combination.

As previously mentioned in chapter I, this investigation pertains mainly to cross-linguistic influence in late Portuguese-English bilinguals, therefore we will be mostly concerned with the third type of cross-linguistic influence, which is transfer.

Language transfer has been one of the main focuses in the field of second language acquisition (SLA) since its emergence; however, in the past few decades, its degree of contribution in the learning of a second language has been revised a number of times. In the 1950's language transfer was believed to be the most important factor in L2 acquisition as well as in the instruction of foreign languages. In the 1960's its importance decreased and was even denied by a number of scholars when learner errors began to be seen as a creative process rather than just transfer. More recently, a third stage in the study of language transfer has emerged; in this perspective, language transfer is acknowledged as an important factor in the second language acquisition process, however, it is believed to interact with a number of additional factors in a variety of ways not yet completely understood (Odlin, 1989).

Dulay, Burt, & Krashen (1982) defined language interference as the automatic transfer, due to habit, of the surface structure of the first language onto the surface of the target language. Lott (1983) defined interference as errors in the learner's use of the foreign language that can be traced back to the mother tongue. In this context, the speaker's knowledge and experience in their first language (L1) is expected to have an impact on their understanding of their second language (L2). Much like in the effects of acceleration and delay posited for simultaneous bilinguals, linguistic transfer in late bilinguals may have both positive and negative effects. In the event of negative transfer, the understanding of one language may hinder the acquisition process of the other language. For example, Malt and Sloman (2003) reported that L2 English learners (of various different linguistic backgrounds) demonstrated significantly different naming patterns for containers (i.e. bottles, jars, dishes) than those of English native speakers, even after many years of living in the United States. On the other hand, in the case of positive transfer; knowledge in one language can be employed to facilitate the development of the L2 skills. Grütter and Crago (2012) performed a study in which they analyzed Spanish- and Chinese-speaking French learners in their production of French object clitic constructions. They found that the Spanish-speaking learners produced clitics more often than the Chinese speakers and rarely omitted them, while the Chinese-speaking learners showed a significantly higher rate of omission. These results were attributed to positive L1 transfer since Spanish shares a similar clitic construction to French, while Chinese allows referential null objects.

Although native language transfer is recognized as playing an important role in the process of learning a second language, additional analysis of language transfer found that L2 learners do not seem to transfer all aspects of their native language in the acquisition of the L2 (Gundel & Tarone 1983; Adjemian 1983); as a matter of fact, learners demonstrated production patterns that were different from both the L1 and the target language. These observations gave rise to a subsequent theory which received significant attention for quite some time, the Interlanguage (IL) Hypothesis, which stated that L2 learners utilize a dynamic linguistic system different from both their first and second languages, although somehow still linked to both (Tarone, 1988). Originally proposed by Selinker (1972), IL examined the possible existence of an interlanguage in second-language learners who are past the optimal age (and thus can no longer be expected to rely on the then-popular nativist construct, the language acquisition device (LAD), which was proposed by Chomsky (1957) to be instrumental in the acquisition of a first language). The interlanguage system was proposed to encompass not only lexical, pragmatic and discourse levels, but also phonology, morphology and syntax. Selinker (1972) hypothesized that there were five psycholinguistic processes shaping interlanguage: (a) native language transfer, (b) overgeneralization, (c) transfer of training, (d) strategies of communication, and (e) strategies of learning.

A more recent alternative to the interlanguage theory is the notion of language convergence. Pavelnko (1999) defines convergence as a type of language change in which an intermediate system emerges in the bilingual mind, containing elements from both languages, having as an end result, a linguistic system that is different from either of

the languages when spoken by monolinguals. For example, Brown and Gullberg (2008) found that when tested on word choice and gesture in speech production in each language, Japanese-English bilinguals performed differently from both their Japanese and English monolingual counterparts. When tested in English, they encoded manner less frequently in speech than the monolingual English speakers did, and when tested in Japanese, they encoded manner in speech, unlike monolingual Japanese speakers, but often not in accompanying gesture, as monolingual English speakers do.

Although much of the work on language transfer has focused on knowledge of the L1 influencing that of the L2, recent studies have suggested that this is not the only direction in which transfer may occur. Cook (2003) argued that just as the L1influences the L2, the reverse is also true and that an emerging L2 may influence an already established L1. He further clarifies that this is not evidence of language loss or attrition, not even of advanced bilingualism, but rather the natural result of processing more than one language regardless of proficiency. Evidence of this premise was reported by Pavlenko and Jarvis (2000), who performed a study involving oral narratives on a group of 22 Russians who had learned English past the critical period and had lived in the United States for periods of between 3 and 8 years. The researchers found that 17 out of the 22 participants exhibited L2 influence in their use of the L1 (Russian) on different elicitation tasks. Among these 17 participants who exhibited L2-L1 transfer, 5 had only been in the United States for 3 years.

2.2- Cross-linguistic conceptual representations

Although much work has been done in past decades regarding cross-linguistic differences and transfer, its great majority has focused on phonological, morphological and lexical processing. Only in more recent years have researchers begun to examine conceptual representation and categorization in the cross-linguistic context. Initially, such work attempted to discover whether the bilinguals' two lexical systems shared the same conceptual store or if they each operated under their own individual stores (Keatley, 1992). Today it is generally accepted that while forms may differ across languages, meanings and concepts are largely shared (Kroll & Stewart, 1994). Justification for this position is found in the fact that bilinguals are able to translate between their two languages and also from evidence of language interference in picture naming tasks (Kroll & Sunderman, 2003). This intuition however proves to be problematic when we consider that there are certain words in one language that may have multiple translation equivalents in the other language (i.e. English *wall* can be translated as *parede*, *muro* or *muralha* in Portuguese), as well as there may be words in a language that cannot be translated at all (i.e. in the domain of emotions, the Portuguese word *saudade* - which mainly encodes the longing feeling one has when deprived of a loved one- has no translation equivalent in any other language in the world).

Because of such cross-linguistic differences, more recent work on concepts in the bilingual lexicon has begun to pay closer attention not only to the links between words and their meanings, but also to the structure of linguistic categories, looking at the mental representations that are linked to these lexical concepts and how these mental

representations are grouped together into broader classes. In this line of work, the question is no longer whether conceptual stores remain separate or are shared, but rather, what is separate and what is shared in particular concepts. For example, Malt, Soman, Gennari, Shi and Wang (1999) examined speakers of American English, Mandarin Chinese, and Argentinean Spanish with respect to the naming patterns for a set of 60 simple household containers. They found substantial differences in the linguistic category extensions across the speakers of the three languages. For the fifteen objects named container in English, four different names were used in Chinese; for the Spanish category that contained the nineteen objects called jar in English, also included six objects called bottle in English and three called container. In this paradigm, the aim is to understand the structure of linguistic categories in the mind, how exactly words are linked to real world referents, what the differences are between categories and their translation equivalents, and how categories in the bilingual mind compare to those of monolinguals.

Additional focus has been placed on whether fluent bilinguals possess a common memory system for both languages or an independent memory system for each language (McCormack, 1977; Snodgrass, 1984). Studies supporting the notion that the bilingual's two language representations are independent (Scarborough, Gerard, & Cortese, 1984) suggest that inter-language connections occur only on a lexical basis. On the other hand, studies supporting the idea of a shared conceptual knowledge for the bilingual's two languages (Chen & Ng, 1989; Meyer & Ruddy, 1974; Schwanenflugel & Rey, 1986; Tzelgov & Henik, 1989) argue that inter-language connections come from both lexical links and shared concepts. This type of research usually relies on reaction time tasks in

order to examine whether the competing lexicons share the same conceptual representation. Faster reaction times are believed to indicate stronger connections between word forms, and stronger inter-language connections are in turn taken to indicate shared meanings between the two forms.

According to Kroll & Tokowicz (2005), the bilingual's proficiency level in each language as well as other factors such as their level of activation in each language, the context of acquisition, the context of their use, and the similarity of word forms can be a factor in determining the strength of inter-language connections. The connection between equivalent forms will appear to be weak in the event that the learner is below an intermediate level in the L2 or is undergoing a process of L1 attrition, even in cases where there is similarity in meaning. In such cases, we would expect to find slower reaction times, while in the case of proficient bilinguals, we would expect the reaction times to be faster.

In an early paper, Potter, So, Von Eckardt, and Feldman (1984) proposed two hierarchical models of inter-language connections in the bilingual memory: The word association model and the concept mediation model. In the word association model, words in the L2 were believed to be directly linked to words in the L1. As discussed in the previous section regarding L1 transfer, such an association is believed to be helpful in the understanding and production of words in the L2. In the concept mediation model, L2 words are not directly linked to words in the L1, but instead, the words in the two languages are believed to be associated by common nonlinguistic concepts.

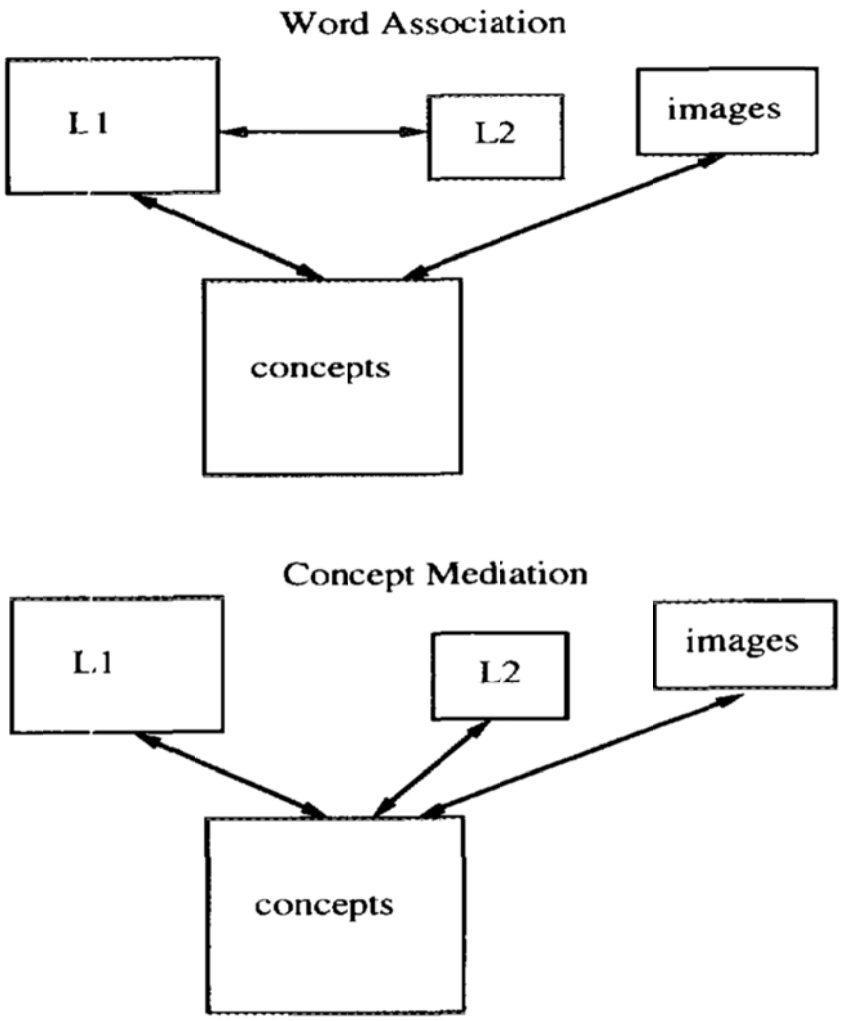

Figure 1- Word Association Model and Concept Mediation Model (Potter et al, 1984).

According to Potter et al. (1984), a well- documented difference between reaction times in the naming of pictures and translation of lexical items is consistent with these models and the distinction between lexical representations and their concepts. Words can be translated approximately 200-300 miliseconds faster than pictures of the same items can be named, indicating that lexical retrieval is faster than that of conceptual understanding (Potter and Faulconer, 1975). It was additionally reported however, that in tasks involving the matching of words or pictures to superordinate categories, which

would require an understanding of the stimulus concept instead of the overt naming of a lexical item, the recorded times were approximately the same for pictures as they were for words (e.g. Rosch, 1975; Smith & Magee, 1980), indicating that a lexical item can be accessed directly from a translation better than from a picture, since a picture would require conceptual understanding before it could be named. In the event, however, that the task requires conceptual understanding instead of naming, the processing required for both lexical items and pictures should be relatively the same since both pictures and words require conceptual access prior to lexical retrieval. In a category-matching task, Potter and Faulconer (1975) reported a 50 milisecond advantage for pictures over words, indicating that concept retrieval may be slightly better with pictures than words.

In other bilingual studies, Kroll and Stewart (1994) observed that participants were faster at translating words from the L2 into the L1 than from the L1 to the L2. They believed that this asymmetry in the translation experiments required some modification of both the word association model and the concept mediation model, since neither of the models accounted for directional asymmetry in translation tasks. To account for this, the researchers proposed a revised hierarchical model, in which both lexical and conceptual links are believed to be active in the bilingual memory, while the strengths of the inter-lingual connections may differ with fluency and language dominance. According to the revised hierarchical model, when someone acquires a second language past the critical period, a strong connection between the lexicon and conceptual memory is already established. During the initial stages of L2 acquisition, words are connected to this system by lexical links with the first language. As proficiency in the L2 increases, direct

conceptual connection will also be acquired; however, the lexical connections between L1 and L2 do not disappear once these conceptual connections have been formed. In this paradigm, the lexical connection from L2 to L1 is presumed to be stronger than that from L1 to L2, since L2 words were once directly connected to the L1. Additionally, the link from L1 to conceptual memory is believed to be stronger than that of L2 to conceptual memory, since it was the originally established connection.

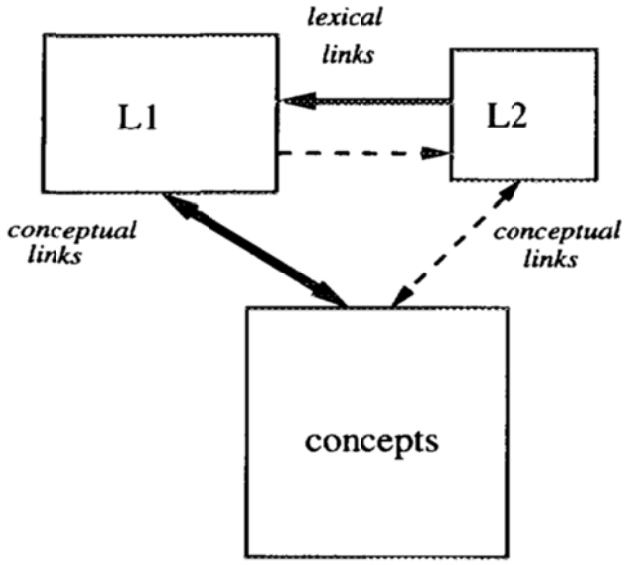

Figure 2- Revised Hierarchical Model (Kroll and Stewart, 1994).

2.3- Semantic Categorization

Categorization is one of the most basic features of human thought processes. Whenever we observe and process something as what it could represent, we are categorizing. It is as basic as looking at a puppy and knowing it's not a car or a chair, because it lacks the necessary conditions to be any of those things. Whenever we attempt to complete or even conceptualize an activity, we are categorizing; this is how the act of

singing cannot be mistaken for the act of swimming or cooking. The role of categorization is to allow us to treat different (and yet somehow similar) elements in an equivalent way, so that we may draw inferences from and communicate effectively about them (Hahn and Ramscar, 2001). As humans, we employ categorization countless times throughout our day, including categories of speech sounds, categories of words, conceptual categories, etc. Without categorization we would be unable to process the physical world as well as incapable of maintaining any type of intellectual function, therefore to understand how we categorize is to also understand how we think (Lakoff 1987).

According to MacWhinney (1987), there have been three major currents in categorization theory: The classical theory of categorization, prototype theory, and competition theory.

The classical theory of categorization, which began with Aristotle and continues to be discussed today to some degree, states that particular categories are defined by a set of attributes or shared properties, meaning that things can be classed together only when they share the necessary features. According to Taylor (1989), the classical theory can be described in four basic assumptions:

1) Categories are defined in terms of a conjunction of necessary and sufficient feature.

2) Features are binary.

3) Categories have clear boundaries.

4) All member of the category have equal status.

According to the classical theory of categorization, entities exhibiting all of the defining features of a category are necessarily full members of that category, while entities that not display all of the defining features are not. In this paradigm there cannot be varying degrees of membership and an entity cannot be a perceived as a better member of a category than another.

In the prototype theory, proposed by Rosch (1977), categories are no longer as rigid as in the classical theory. In this paradigm, some members are considered to be better illustrations of their category than others. Rosch's theory accounted for the categorization of real world referents as well as complex abstract notions by including human experience and imagination and leaving behind formerly accepted ideas which were tied to the classical view of categorization (Lakoff 1987).

The competition theory involves the main premise that in the decision-making processes there are various possible options which are believed to be essentially competing for each categorization decision, and the speaker is faced with the task of analyzing the potential of each possibility based on the cues that support its eligibility. This model deals with the analysis of how preexisting categories are able to extend themselves into new areas, allowing us to understand how humans are capable of assimilating new words, experiences and concepts into an already established framework (MacWhinney, 1987).

2.4- Categorization in the bilingual lexicon

In the cross-linguistic context especially, a number of possible relationships between categories may exist. Malt, Sloman & Gennari (2003) discussed four different categorization relationships that can be found across languages: 1) Same prototypes, varying boundaries, 2) Nestings, 3) Cross-cutting, and 4) Mix & Match.

The first relationship (same prototypes, varying boundaries) between categories of different languages involves the idea that speakers of all languages build their categories around the same prototypes, while the naming of borderline objects which are not closely associated with the category of other languages varies. Such a relationship is believed to indicate that linguistic categories may be universally formed around the same prototypes but vary more in the categorization of objects which are farther from the prototypes. This would imply higher level of influence of linguistic and cultural factors on the formation of linguistic categories, while still suggesting that they are bound by the same conceptual core.

The second cross-linguistic categorization relationship (nesting) occurs when one language makes finer distinctions within a domain than the other. One instance of a nesting relationship between semantic categories involves the presence of two or even more subsective categories in one language, within a larger supersective category in another language. Stepanova, Sachs and Coley (2006) performed an experiment using naming and sorting tasks with the use of short scripts with respect to situations involving jealousy and envy. The goal of this experiment was to analyze how English and Russian monolinguals as well as English-Russian bilinguals would categorize the two concepts. In

Russian the category *revnost* is equivalent to the English form *jealousy*, however the Russian form *revnost* is specific to the jealousy involving intimate relationships, such as being jealous of a lover or jealous of a sibling. In English however, the concept of jealousy can also be applied in the context of envy, where one could be jealous of another's possession or good fortune. As expected, the Russian monolinguals clearly differentiated *revnost* 'jealousy' and *zavist* 'envy', while the English monolinguals judged both *envy* and *jealousy* to be appropriate ways of describing the envy stories. The bilingual speakers, who were originally Russian and had learned English after the critical period, responded according to the language of the task: When tested in Russian, they differentiated between *revnost* and *zavist*, while in English they did not show the same distinction. On a triad sorting task, however, the participants were asked to choose two out of the three presented situations (jealousy, envy, and a control) that could possibly go together. On this task, the Russian monolinguals treated the three as being different, while the Russian-English bilinguals and the English monolinguals placed envy and jealousy together. This study showed that to Russian speakers, *ravnost* and *zavist* are categorically different, while for English speakers, the boundary between the categories is blurred. The bilinguals were capable of performing according to each language, maintaining the categories separate in Russian and accepting their overlap in English while performing the naming task, but in the similarity judgment the category boundary was not as clear.

On the basis of the Stepanova et al. (2006) results, Pavlenko (2009) suggested that L2 learning can be facilitated by a nesting relationship between categories through

positive L1 transfer of the same meaning. The L2 learners will later be expected to conform to the boundaries of the target language's linguistic categories by narrowing or widening them in accordance with the L2 constraints, as failure to do so would result in cases of L1 conceptual transfer, where categories in the target language are named (erroneously) in accordance to the L1. This transfer would be more apparent in cases where the L2 has the narrow category, such as an English speaker learning Russian and referring to both jealousy and envy as *revnost*. It is also expected that in the case that an L2 learner is successful in modifying the conceptual boundaries of the L2 category, the same L1 category will not be affected, therefore they should be able to perform accordingly in each individual language as did the bilingual participants in Stepanova et al (2006).

Another type of this subsective/supersective relationship among categories occurs in just the opposite direction, where one single category in one language can incorporate two or more categories in another language. An example of this can be seen in the English copula *to be*, which has as Portuguese equivalents *ser* and *estar*, or how the English verb *to know* has as Portuguese equivalents *saber* and *conhecer*. In these cases, speakers of one language are faced with the task of making a more complex distinction, as they are expected to conceptually contrast categories which are non-existent in their language. Following this premise, Gathercole and Moawad (2010) examined the interpretation of both Arabic and English words by Arabic-English bilinguals (early and late) as well as Arabic and English monolinguals. The lexical items used were semantically asymmetrical in the two languages, so the participants were expected to

decide which of a number of options could be thought of as representing a particular lexical item. These options included referents that would have been appropriate in one language but not in the other, as well as items that were systematically related in the two languages with proper referents. The results showed that when two categories in English (L2) corresponded to one narrower category in Arabic (L1), an overall lower performance was detected, suggesting that neither early or late Arabic-English bilinguals are capable of processing this fine-grained differentiations between the English categories which are not correspondent in Arabic.

The third possible relationship of Malt et al. (cross-cutting), suggests that different languages use more different linguistic categories, forming their categories around different extensions or combination of extensions. An example of such a relationship was explored by Malt et al. (1999) in the naming patterns for household containers by speakers of American English, Mandarin Chinese, and Argentinean Spanish where substantial differences were found in the linguistic category extensions across the speakers of the three languages.

The fourth and most complex possibility presented (mix & match) is that cross-linguistic categorization differences may not characterized solely by any of the previously mentioned ways, but rather a mixture of two or all three of them.

Keeping in mind the implications stemming from the literature presented in this chapter, the present investigation will attempt to discover how Portuguese-English bilinguals treat particular nouns in their respective languages and how they differ from their monolingual counterparts. Additionally, the findings of this study will test which

target items are most likely to succumb to cross-linguistic conflict and which types of semantic categories are most susceptible to interlanguage influence.

III – METHODOLOGY

The present chapter examines the interpretation of Portuguese and English words by late Portuguese-English bilinguals as well as Portuguese and English monolinguals. The lexical items used were semantically different with respect to their range of application in each of the two languages. A forced-choice task was administered to a total of 40 subjects, in which they were shown a series of slides and asked to choose from a set of pictures, which one(s) could be labelled by a given word. Some of the choices included items that would have been appropriate in one language but not the other.

3.1- Linguistic Stimuli

The stimuli consisted of 36 lexical items in each language that were different in their ranges of application. In each instance, a word in one language had wider application, meaning that one lexical item in one language would encompass two referents, labeled by two different lexical items in the other language. For example, the Portuguese term *relógio* incorporates what in English would be labeled either as a *clock* or a *watch*; Portuguese *escada* incorporates both English referents *stairs* and *step ladder*; On the other hand, the English term *brush* can correspond to both *pincel* (paint brush) and *escova* (hair brush); also the English term *knife* can refer to both *faca* (knife) and *canivete* (pocket knife). In half of the terms, Portuguese lexical items had a wider range of application (i.e., can be applied to a larger set of referents), while in the other half of the terms, English lexical items had wider application.

In addition to their ranges of applications, the lexical items were also chosen from three different category types, which were defined according to their usage in the wider

language. The used category types were classical, radial and homophones. As previously discussed in chapter II, the classical category in the wider language would imply that the referent possesses the necessary conditions which define it and grant it membership to a particular category. For example, the Portuguese term *escada* refers to a structure involving a number of steps which would lead to an elevated point (i.e. *stairs* and *step ladder*).

In the radial category, we can think of a central use of a word, which can be linked to extended and related uses. For example, Portuguese *boca* refers mainly to an anatomical mouth, however the use of the term has been metaphorically extended to refer to stove burners; also the Portuguese term *dente* refers to a tooth, and it has also been extended to refer to a garlic clove (*dente de alho*).

The homophone category differs significantly from both the classical and radial categories in the sense that in both of these category types, we find the presence of a single category with a single label; homophones, on the other hand, consist of one lexical item corresponding to two very different and possibly unrelated categories. For example, the Portuguese word *manga* refers to both English items *mango* and *shirt sleeve*. Also the English item *bat* can refer to both the nocturnal flying mammal (*morcego)* and the implement with a handle used for hitting a ball (*taco)*. There is no conceptual connection between the two categories nor are they similar in any way apart from how they sound.

Three category types can be perceived as lying on a continuum, with increasing conceptual distance between the two referents across the category types; in this respect, the classical items are conceptually close because they are semantically related and share

membership qualities, the radial items are farther apart than the classical items since their relation is not semantic but rather by extension; and the homophones are the farthest apart from one another since they share no semantic relation.

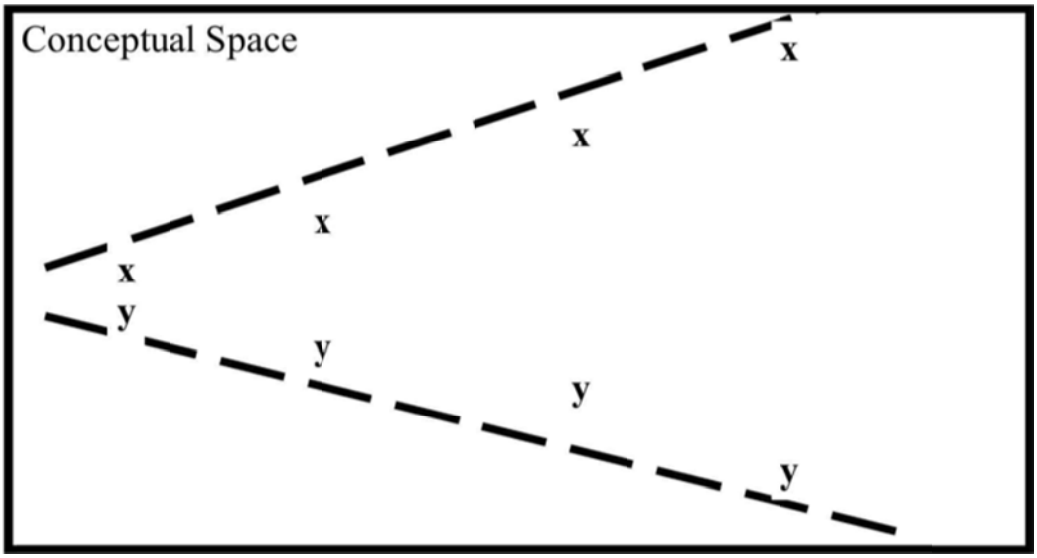

Figure 3- Category types in the conceptual space. (Gathercole, Stadthagen-Gonzalez, Perez-Tattam, & Yavas, 2013)

Figure 3, from Gathercole, Stadthagen-Gonzalez, Perez-Tattam, & Yavas (2013), shows a representation of the conceptual space and the increasing conceptual distance between two given lexical items in each category type. The three category types are displayed horizontally while the two competing target items in each category type are displayed vertically.

3.2- Nonlinguistic Stimuli

The nonlinguistic stimuli consisted of 72 PowerPoint slides presented to the participants on DMDX software, which is used to measure reaction times to visual and auditory stimuli. Each stimulus set contained four images, carefully designed to contain

one target item, one taxonomically linked item, one thematically linked item and one distractor item. The target items are those that could be labelled by the given word in the wider language (e.g. *dedos*) and by two words in the narrower language (e.g. *fingers* and *toes*). The taxonomically linked items are those which belong to superordinate categories to which the target items also belong. For example, the taxonomic links for the items fingers and toes are paws and claws, respectively. The thematically linked items are those which are related to the target items in some way; for example, the thematic links for fingers and toes are rings and sandals, respectively. The distractor items are not semantically related to the target, taxonomic, or thematic links in any way. A sample of the slide for *manga / mango* is shown in Figure 5.

The 72 slides were prepared in both Portuguese and English conditions. Half of the bilinguals were presented with an English version, and the other half were presented with a Portuguese version. The same slides were presented for the two languages and in each language the slides were presented with the appropriate word. Each participant was given one out of eight possible presentations. The slides were carefully balanced so that in each presentation, the items would appear in one of the four possible positions on the screen. Additionally, the 72 slides were randomized so that in each of the eight presentations they would occur in a different order.

3.3- Procedure

Each participant was presented with a set of 84 slides. 12 of these slides consisted of a practice session, allowing the participants to familiarize themselves with the procedures utilized in the experiment. The subsequent 72 slides consisted of the actual

experiment. The presentations were administered with the use of DMDX (Foster and Foster, 2003) reaction time software on a standard laptop computer. The participants were instructed via a screen message to press the space bar to start the experiment, at which time, a fixation point would appear at the center of the screen for 1 second. Following this, the participants heard the audio file consisting of the target word, after which the slide with the set of four pictures appeared. The participants indicated a response based on the position of each image on the screen by using the corresponding keys (D=top left, C=bottom left, K=top right, M=bottom right). Since the items on the screen were labelled as A, B, C and D, the keys on the computer used for the experiment were covered by stickers also labelled as A, B, C and D.

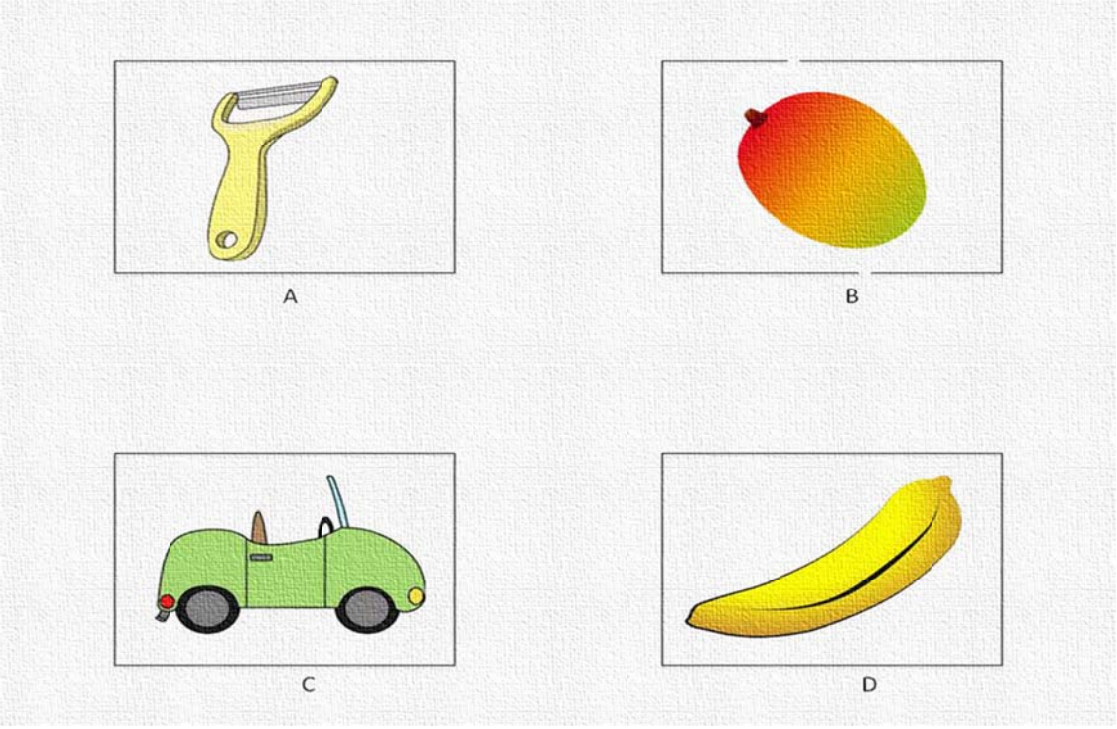

Figure 4-screenshot of the target item *manga*.

Each slide timed out automatically after four seconds, at which point, the word "NEXT" would appear on the center of the screen for 2 seconds, then the fixation point, and then the following image would appear. In the event that participants did not respond in the given four seconds, a 'no response' would be recorded. Three breaks were incorporated throughout the presentation, at which point, the participant was free to take a few moments to stretch their fingers or have a drink of water, and when they were ready, they pressed the space bar to continue the experiment.

3.4- Participants

A total of 40 participants were tested, of which 9 were monolingual English speakers, 9 were monolingual Portuguese speakers and 22 were late bilingual Portuguese-English speakers. The bilingual participants were divided into two groups, so that half of them were tested in English and the other half in Portuguese. All of the participants were tested in Florida, in the counties of Miami-Date, Broward, and Orange. Participants were either recruited from Florida International University or through personal contacts. None of the participants were offered any monetary compensation or extra credit on any of their courses. All of the participants are adults between 23 and 46 years of age (mean age: 30.35). A table with the participants' background information is provided in the appendix.

All participants had at least some college education. A linguistic background questionnaire was administered prior to the experiment in order to confirm whether or not they met the requirements for participation. The questionnaire included questions

regarding their foreign language proficiency, language upbringing and family members' linguistic backgrounds (see Appendix).

The monolingual participants reported zero or very little knowledge of the other language. The monolingual English speakers were all current or former FIU students, and were all tested on FIU premises. The monolingual Portuguese speakers were mostly tourists who happened to be associated with the bilingual participants in some way. Two of the monolingual Portuguese speakers actually reside in the United States; however, they have not learned English and are not exposed to it on a consistent basis. They do not use English at home or with friends, only Portuguese.

The bilingual speakers were all L1 speakers of Portuguese who had immigrated to the United States and learned English after the age of 6 (mean age of entry: 30.35). Among the three groups of participants, 27 of them were females and the remaining 13 were males. Although the Brazilian participants come from a total of nine different states in Brazil, it is important to point out that dialectal differences should not affect their performance on this task.

3.5- Predictions of this study

With respect to the languages in which the participants were tested, we predicted that the bilinguals should perform better in Portuguese than in English since Portuguese happens to be their L1 and they learned English after their linguistic-cognitive connections were already established. In other words, the bilinguals' performance in

Portuguese should not be the same as but closer to the Portuguese monolinguals than to that of the monolingual English speakers.

With respect to the category types, it was expected that the bilinguals should demonstrate best overall performance with the lexical items in the homophone groups since their meanings are not cognitively linked in any way and therefore should not carry over from one language to the other.

It was also expected that the worst performance should be observed in the classical category. This prediction stems from the realization that referents of classical items in the wider language are treated as 'the same' while in the narrow language they are treated as 'different'.

Regarding the radial category, the bilinguals should demonstrate intermediate performance between those demonstrated on the homophonic and classical categories. This prediction stems from the knowledge that radial categories are conceptually between homonym and classical items, with members that are conceptually distinct but are brought together by the language on the basis of some meaningful link.

When comparing the groups of participants, it was expected that the monolinguals would perform better than the bilinguals. This is because the bilinguals may use their competing knowledge of the two languages and experience influence from one language to another in their judgment of the given lexical items. More precisely, bilinguals may overextend terms in the narrow language and/or underextend terms in the wider language. We expected this performance to be especially present in the classical categories since

the competing lexical items were more closely related than in other category types. Additionally, since the majority of the bilingual participants learned English after the critical period, we would expect the influence to occur in the direction of the L1 to the L2.

With respect to width, we expected that the bilingual participants would perform better when English was the wider language, since it was predicted to be easier to go from a narrow L1 to a wider L2 category, than to go from a wide L1 to a narrower L2 category.

IV- RESULTS

In this chapter, I present the results obtained from two major analyses that were conducted. The first explored correct choices of the target items presented in each slide according to the language tested; the second dealt with the reaction times for the correct choices of target items.

4.1- Correct Choices

The first set of analyses examined the participants' performance on the target items T1 and T2. The responses were scored based on the language tested; participants were given a score of '1' for choosing the appropriate target item(s) according to the width of the item in the language tested, and a score of '0' otherwise. As discussed in the previous chapter, there were a total of six lexical items presented in each category type and width, with two possible targets (T1 and T2) associated with the wider category. T1 was the item common to both languages (i.e., the stairs for *escada* and *stairs*); while T2 should only be considered an appropriate target in the wider language (i.e. the label *stairs* is appropriate to a staircase but not a step ladder while *escada* is appropriate for both referents).

Results were calculated using a multivariate analysis in SPSS. For these analyses, language width (English wider than Portuguese [E>P] vs Portuguese wider than English [P>E]), word type (classical, homophones, radial), and target items (T1 and T2) were treated as within-subject variables, and participant group (monolingual, bilingual) was

between-subjects. We have analyzed the performance in each language separately; we will begin with English and afterwards discuss the performance in Portuguese.

4.1.1 English

An ANOVA with the variables above showed main effects of width, F (1, 18) = 5.14, p = 0.036, word type, F (2, 17) = 8.17, p = .003, and target item, F (1, 18) = 34.55, p < .001. The results additionally showed significant two- and three-way interaction effects: Word Type x Target, F (2, 17), p < .001, and Width x Target x Participant Group, F (1, 18) = 5.013, p = .038. There was also a near-significant interaction of Width x Target, F (1, 18) = 4.28, p = .053.

The main effect of width revealed that the participants performed significantly better on E>P (mean: 5.6 correct) than on P>E items (mean: 5.3). The effect of word type was due to lower performance on classical items (mean: 5.19) than on homophones (mean: 5.63) and radial categories (mean: 5.57), p = .002 and p = .039, respectively, pairwise comparisons with Bonferroni correction. The main effect for the target items revealed that the participants performed significantly better with T1 referents (mean: 5.85) than with T2 referents (mean: 5.10).

To explore the 2- and 3-way interactions, separate ANOVAs were conducted for each width, E>P and P>E, separately.

For the E>P items, an ANOVA in which word type, target, and participant group were again entered as variables revealed significant main effects for word type, F (2, 17)

= 4.50, p = .027, target, F (1, 18) = 20.16, p < .001, and a significant interaction of Word Type x Target, F (2, 17) = 5.35, p = .016.

Pairwise comparisons revealed that performance on the classical category was significantly lower (mean: 5.42) than on the homophone category (mean: 5.88), p = .025. Performance on the radial category items (mean: 5.57) did not differ significantly from either of these. The effect of target revealed that participants performed better with T1 referents (mean: 5.87) than with T2 referents (mean: 5.38). The interaction of Word Type x Target was due to the fact that performance on T1 items was similar across the word groups (mean: 5.75, 5.75, and 5.84, respectively, for classicals, homophones, and radials), whereas performance on T2 items was distinct across the word types (mean: 4.58, 5.71, 5.43, respectively).

For the P>E items, an ANOVA with word type, target, and participant groups as variables revealed significant main effects of word type, F (2, 17) = 3.88, p = .041, and target, F (1, 18) = 21.34, p < .001, and a near- significant interaction of Target x Participant Group, F (1, 18) = 4.30, p = .053.

The effect of word type revealed that performance was lower on classical items (mean: 4.96) than on homophones (mean: 5.37) and radials (mean: 5.57), p = .014 and p = .007, respectively. The effect of target revealed that performance was better with T1 referents (mean: 5.77) than with T2 referents (mean: 4.83).

The interaction of Target x Participant Group showed that while the monolingual and bilingual participants performed similarly with T1 referents (mean: 5.82, 5.73, respectively), the bilinguals performed worse than the monolinguals with T2 referents (monolinguals 5.30, bilinguals 4.36).

4.1.2- Portuguese

An ANOVA with language width (Portuguese wider than English [P>E] vs English wider than Portuguese [E>P]), word type (classical, homophones, radial), and target items (T1 and T2) as variables showed main effects of word type, F (2, 17) = 6.00, p = .011, target item, F (1,18) = 20.85, p < .001, and interactions of Target x Participant Group F (1, 18) = 11.43, p = .003, Word Type x Target, F (2, 17) = 5.87, p = .012, and Width x Word Type x Targets, F (2, 17) = 6.63, p = .007.

Pair-wise comparisons of word types revealed that participants' performance on the classical category (mean: 5.26 correct) was significantly worse than both the homophone (mean: 5.67) (p = .008) and radial categories (mean: 5.56) (p = .018).

The main effect of target items revealed that the participants performed significantly better with T1 referents (mean: 5.67) than with T2 referents (mean: 5.32).

To explore the two- and three-way interactions, separate ANOVAs were conducted for each width, P>E and E>P.

For the P>E items, an ANOVA in which word type, target, and participant group were again entered as variables revealed significant two-way interactions of Word Type x Participant Group, F (2, 17) = 4.95, p = .020, and for Word Type x Target Items F (2, 17) = 6.14, p = .010, and a near-significant interaction was found for the interaction of Target x Participant Group, F (1, 18) = 4.24, p = .054. These interactions were explored further by examining each word type separately.

For the classical and homophone items, an ANOVA in which targets were treated as within-subject and participant groups were treated as between-subject variables

revealed no significant main effects. For the radial items, an ANOVA again entered with variables above revealed a significant main effect of target, F (1, 18) = 15.34, p = .001, and a near significant interaction of Target x Participant Group, F (1, 18) = 4.34, p = .052.

The main effect of target items revealed that participants performed significantly better with T1 referents (mean: 5.96) than with T2 referents (mean: 5.01).

The near-significant interaction of Target x Participant Group indicated that while both monolingual and bilingual participants performed very well with T1 referents (mean: 6.00, 5.91, respectively), the monolingual participants performed much better with T2 referents (mean: 5.56) than the bilingual participants (mean: 4.46).

For the E>P items, an ANOVA with word type, target and participant groups as variables revealed a main effect of word type, F (2, 17) = 7.40, p = .005, target, F (1 18) = 9.13, p = .007, and an interaction of Word Type x Target, F (2, 17) = 3.60, p = .050. The effect of word type revealed that participants performed worse on the classical items (mean: 5.17) than on homophones (mean: 5.73) and radials (mean: 5.64). The effect of target revealed that participants performed significantly better on T1 referents (mean: 5.75) than on T2 referents (mean: 4.58). The interaction of word type x target showed that the lowest performance was on the T2 referents in the classical category (mean: 4.58).

In summary, the results for correct responses reported above suggest that, when English was the treatment language, participants performed better when English was wider than Portuguese; however, when Portuguese was the treatment language, no effect of width was found. In general all participants performed better on target item T1 than on

T2; however, we found that while monolinguals and bilinguals performed similarly on T1 items, the bilinguals scored much lower on T2 items than the monolinguals. This was true for both English and Portuguese.

4.2- Reaction Times

Reaction times were recorded for participants' choices of target items. In order to analyze reaction times, only the RTs for correct choices were scored. The average reaction times for the correct responses in each cell were entered, in miliseconds, by participant.

Results were calculated using a multivariate analysis in SPSS. For these analyses, word type (classical, homophones, radial), and target type (T1 and T2) were treated as within-subject variables, and participant group (monolingual, bilingual) was between-subjects. The reaction times were analyzed for each language (English, Portuguese) and language width (E>P, P>E) separately; we will begin with English and afterwards discuss the reaction times in Portuguese.

4.2.1- English

An ANOVA with the variables shown above revealed no main effects for either E>P or P>E. This suggests with respect to reaction times when English was the treatment language, all participants performed relatively the same.

4.2.2- Portuguese

For P>E, an ANOVA was conducted in which word type (classical, homonym, radial) and target items (T1 and T2) were treated as within-subject variables and

participant group (monolingual, bilingual) as between-subjects. Results showed a main effect of target, F (1, 18) = 12.25, p = .003, a two-way interaction of Word Type x Target, F (2, 17) = 12.29, p < .001, and a three-way interaction of Word Type x Target x Participant Group, F (2, 36) =3.37, p = .045.

The main effect of target reveals that participants showed significantly faster performance with T1 referents (mean: 1767.02 ms) than with T2 referents (mean: 1912.17 ms)

To further explore the interactions of Word Type x Target and Word Type x Target x Participant Group, follow-up ANOVAs were conducted by word type, with target and participant goup entered as variables.

For P>E classical items, there were no significant main effects. For the homophones there was a near significant interaction of Target x Participant Group, F (1, 18) = 4.06, p = .059. Monlingual and bilingual participants had similar reaction times for T2 referents; however, bilingual participants took longer to choose the T1 referents (mean: 2083.20 ms) than monolingual participants (mean: 1763.33 ms).

For radial items, results showed a main effect of target, F (1, 18) = 35.99, p < .001. This result indicates that participants take longer to choose T2 referents (mean: 2036.48 ms) than T1 referents (mean: 1601. 37).

For E>P items, an ANOVA was conducted in which word type and participant group were entered as variables. Results showed a significant effect of word type, F (2, 17) = 4.03, p = .037. Participants performed faster on homophones (mean: 1527.15 ms)

than on classical and radial word types (mean: 1735.84 ms, 1763.78 ms, respectively), pair-wise comparisons with Bonferroni corrections (0.46, .1.00 , respectively).

In summary, the results for reaction times reported above suggest that, when English was the treatment language, no significant differences were found among the participant groups, word type or target. However, when Portuguese was the treatment language, we found that when Portuguese was the narrow language, participants performed better on homophone categories than on classical and radial categories. Additionally, we found that when Portuguese was the wider category, participants took longer to choose T1 targets in the homophone and radial categories than monolingual participants.

V- DISCUSSION

In this chapter I present, first, a restatement of the aims and methodological approach of this study along with the predictions previously discussed in chapter III, followed by a summary of the key findings, and lastly, the limitations of this study.

5.1- Restatement of aims and methodology

The main purpose of this study was to provide an analysis of the treatment of lexical items in different semantic categories by late Portuguese-English bilinguals. The question explored here was whether the semantic organization of the categories in the participants' two languages would remain separate or if they would converge. If they did converge, we explored which category types would be more susceptible to interlanguage influence, and whether the target item common between the two languages (T1) or the one that was different (T2) would be more affected.

In order to examine this interaction, we tested a group of 22 late Portuguese-English bilinguals as well as 9 Portuguese and 9 English monolinguals. Half of the bilingual participants were treated in English and the other half in Portuguese. The linguistic stimuli consisted of thirty-six lexical items that were wider in one language and narrower in the other. Three types of categories were used: classical, homophones and radial. Each lexical item occurred twice in the presentation. In the wider language, it would be acceptable for both targets (T1 and T2), while in the narrower language, it would only be acceptable for one of the targets (T1).

As previously discussed in chapter III, this study was conducted bearing in mind a set of predictions stemming from previous studies and relevant literature:

1- Participants should perform better when treated in Portuguese rather than English since it is their L1.
2- Participants should demonstrate better overall performance on homophones since they are not semantically linked in any way.
3- The worst performance should be observed on the classical categories since referents in the wider language are treated as the same and in the narrow language as different.
4- We expected to find intermediate performance on the radial categories.
5- Monolingual participants should perform better than bilinguals since they will not be subject to language interference.
6- In the event of cross-linguistic influence, we expected that it would occur in the direction of the L1 to the L2, since the majority of the bilinguals learned English after the critical period.
7- We expected the bilinguals to perform better when English was the wider language rather than narrow, because it is theoretically easier to expand from a narrow L1 to a wider L2 than vice-versa.

5.2- Summary of findings

The findings of this study revealed that as was expected, when treated in English, participants performed better when English was the wider language, confirming the

hypothesis that it should be easier to go from a narrower L1 to a wider L2 than to go from a wider L1 to a narrower L2.

With respect to different category types, we found that as expected, participants generally demonstrated lower performance on the classical items than on the homophone and radial items. Additionally, participants showed better performance on T1 referents than on T2 target items. It is however interesting to notice that when tested in English, both monolinguals and bilinguals demonstrated similar performance, which could be indicative of a high degree of L2 proficiency in the bilinguals.

When the results were separated by language width, we found that regardless of whether English was the wider or narrower language, participants continued to exhibit very similar results, performing worse on the classical category than on the homophone and radial categories and performing better on T1 referents than on T2.

The analysis also showed that when English was in the wider context, participants performed very similarly on T1 referents across all three category types, while on T2 referents, they performed worse on classical items than on homophone and radial items. When English was in the narrow context, we found that monolingual and bilingual participants performed very similarly on T1 referents, whereas the bilingual participants demonstrated much lower performance with T2 referents than the monolinguals. This finding indicates that for the bilingual participants, Portuguese may still be their dominant language and that the cross-linguistic differences between T2 items may be locus of some carryover in the processing of the referents.

When Portuguese was the treatment language, participants once again performed worse on classical word types than on homophone and radials, and performed better with T1 referents than with T2 referents. These results were consistent whether Portuguese occurred in the wider or narrower context.

When Portuguese was the wider language, we found that monolingual and bilingual participant groups performed similarly on T1 items (just as they had when English was the treatment language), whereas with T2 items, the bilinguals' performance was much worse. This is of particular interest because it indicates that the interaction that these bilinguals are experiencing does not occur only in one direction merely affecting their results when English was the language of treatment, but rather that English is additionally influencing their Portuguese results with respect to the processing of T2 items.

Our analysis of the reaction times showed that when treated in English, participants showed very similar reaction times, which as discussed in the literature in chapter II, is taken to be indicative of advanced bilingualism. When treated in Portuguese, we found that when Portuguese was wider, participants showed lower reaction times on T1 referents than on T2. Further analysis of individual category types revealed no effects for the classical category. On the radial categories, however, participants took longer to choose referent T2 than T1 which was expected, since the T1 referent represents the core concept of the category while the T2 referent is an extension of the given concept. On the homophones, bilinguals took longer to choose referent T1 than monolinguals.

The findings presented in this study confirm that the organization of semantic categories in late L2 learners do converge and that inter-language influence is most likely to affect those categories that are closer in the conceptual space. Additionally, the results of this study support the notion that language interference may occur in the direction of the L1 to the L2 as well as in the direction of L2 to the L1, even in the case of late bilinguals.

5.3- Limitations of the study and future directions

The first and most important limitation of this study is the sample size. A larger group of participants may yield many more significant interactions and interesting findings contributing to a broader understanding of bilingual interaction in the categorization context.

Secondly, it would have been ideal to have the participants tested for their language proficiency in both languages so that the correctness and reaction time results could be correlated with their proficiency levels.

LIST OF REFERENCES

Adjemian, C. (1983). The transferability of lexical properties' in Gass and Selinker (eds.) 1983.

Ameel, E., Malt, B. C., Storms, G., & van Assche, F. (2009). Semantic convergence in the bilingual lexicon. Journal of Memory and Language, 60, 270-290.

Brown, A., & Gullberg, M. (2008). Bidirectional crosslinguistic influence in L1-L2 encoding of manner in speech and gesture: A study of Japanese speakers of English. Studies in Second Language Acquisition, 30(02), 225-251.

Bullock, B. E., & Gerfen, C. (2004). Phonological convergence in a contracting language variety. Bilingualism: Language and Cognition, 7(02), 95-104.

Bullock, B. E., & Toribio, A. J. (2004). Introduction: Convergence as an emergent property in bilingual speech. Bilingualism: Language and Cognition, 7(02), 91-93.

Chen, H. C., & Leung, Y. S. (1989). Patterns of lexical processing in a nonnative language. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *15*(2), 316.

Chen, H. C., & Ng, M. L. (1989). Semantic facilitation and translation priming effects in Chinese-English bilinguals. *Memory & Cognition*, *17*(4), 454-462

Chomsky, N. (1957). Syntactic Structures. The Hague: Mouton.

Cook, V. (Ed.). (2003). *Effects of the second language on the first* (Vol. 3). Multilingual Matters.

Dulay, H., Burt, M., & Krashen, S. (1982) Language two. New York: Oxford University Press.

Dussias, P. E. (2003). Syntactic ambiguity resolution in L2 learners. *Studies in Second Language Acquisition*, *25*(04), 529-557.

Foster, K. I., & Foster, J. C. (2003). DMDX: a Windows display program with milisecond accuracy. Behavior Research Methods, Instruments, and Computers, 35, 116-124.

Gathercole, V. C. M., & Moawad, R. A. (2010). Semantic interaction in early and late bilinguals: All words are not created equally. *Bilingualism: Language and Cognition*, *13*(04), 385-408.

Gathercole, V. C. M., Stadthagen-González, H., Tattam, R. P., Yavas, F. (2011). Semantic Organization in Bilinguals: Impact of co-construction of semantic and cognitive systems in simultaneous and early L2 bilinguals. Paper presented at colloquium on dynamic lexical interaction of L1 and L2. Oslo, June 17, 2011.

Gundel, J. K., & Tarone, E. E. (1983). Language transfer and the acquisition of pronominal anaphora. na.

Grüter, T., & Crago, M. (2012). Object clitics and their omission in child L2 French: The contributions of processing limitations and L1 transfer.*Bilingualism: Language and Cognition*, *15*(03), 531-549.

Hahn, U., & Ramscar, M. (2001). Conclusion: Mere similarity. *Similarity and categorization*, 257-272.

Keatley, C. W. (1992). History of bilingualism research in cognitive psychology.*Advances in psychology*, *83*, 15-49.

Kroll, J. F., & Curley, J. (1988). Lexical memory in novice bilinguals: The role of concepts in retrieving second language words. *Practical aspects of memory*,*2*(389-395).

Kroll, J. F., & Stewart, E. (1990). Concept mediation in bilingual translation.

Kroll, J. F., & Stewart, E. (1994). Category interference in translation and picture naming: Evidence for asymmetric connections between bilingual memory representations. *Journal of memory and language*, *33*(2), 149-174.

Kroll, J. F., & Tokowicz, N. (2005). Models of bilingual representation and processing. *Handbook of bilingualism: Psycholinguistic approaches*, 531-553.

Kupisch, T. (2005). Acceleration in bilingual first language acquisition. *Amsterdam studies in the theory and history of linguistic science series* 4, 270, 143.

Lakoff, G. (1987). Women, fire and dangerous things. Chicago: U.

MacWhinney, B. (1987). Applying the competition model to bilingualism.*Applied Psycholinguistics*, *8*(04), 315-327.

Malt, B. C., Gennari, S., Imai, M., Ameel, E., Saji, N., & Majid, A. (2014). Where are the concepts? What words can and can't reveal. Concepts: New Directions.

Malt, B. C., & Sloman, S. A. (2003). Linguistic diversity and object naming by non-native speakers of English. *Bilingualism: Language and Cognition*, *6*(01), 47-67.

Malt, B. C., Sloman, S. A., & Gennari, S. P. (2003). Universality and language specificity in object naming. *Journal of Memory and Language*, *49*(1), 20-42.

Malt, B.C., Sloman , S.A. , Gennari, S., Shi, M., and Wang, Y. (1999). Knowing versus naming: Similarity and the linguistic categorization of artifacts. *Journal of Memory and Language*, *40*, 230-262.

McCormack, P. D. (1977). Bilingual linguistic memory: The independence-interdependence issue revisited. *Bilingualism: Psychological, social, and educational implications*, 57-66.

Meyer, D. E., & Ruddy, M. G. (1974, April). Bilingual word recognition: Organization and retrieval of alternative lexical codes. In *annual meeting of the Eastern Psychological Association, Philadelphia*.

Odlin, T. (1989). *Language transfer.* Cambridge, UK: Cambridge University Press.

Paradis, J., & Genesee, F. (1996). Syntactic acquisition in bilingual children.*Studies in second language acquisition*, *18*(01), 1-25.

Patuto, M., Repetto, V., & Muller, N. (2011). Delay and acceleration in bilingual first language acquisition. *The Development of Grammar: Language acquisition and diachronic change. In honour of Jürgen M. Meisel*, *11*, 231.

Pavlenko, A. (1999) New approaches to concepts in bilingual memory. Keynote article. Bilingualism: Language and Cognition , 2, 3, 209-230.

Pavlenko, A. (2009). Language conflict in post-Soviet linguistic landscapes.*Journal of Slavic Linguistics*, *17*(1-2), 247-274.

Pavlenko, A., & Jarvis, S. (2002). Bidirectional transfer. *Applied Linguistics*,*23*(2), 190-214.

Potter, M. C., & Faulconer, B. A. (1975). Time to understand pictures and words.

Potter, M. C., So, K. F., & Von Eckardt, B. (81). Feldman, LB (1984). *Lexical and conceptual representation in beginning and more proficient bilinguals. journal of Verbal Learning and Verbal Behavior*, *23*, 23438.

Rosch, E. (1975). Cognitive reference points. *Cognitive psychology*, *7*(4), 532-547.

Rosch, E. (1977). Human categorization. *Studies in cross-cultural psychology*,*1*, 1-49.

Scarborough, D. L., Gerard, L., & Cortese, C. (1984). Independence of lexical access in bilingual word recognition. *Journal of Verbal Learning and Verbal Behavior*, *23*(1), 84-99.

Schwanenflugel, P. J., & Rey, M. (1986). Interlingual semantic facilitation: Evidence for a common representational system in the bilingual lexicon. *Journal of Memory and Language*, *25*(5), 605-618.

Selinker, L. (1972). Interlanguage. *IRAL-International Review of Applied Linguistics in Language Teaching*, *10*(1-4), 209-232.

Smith, M. C., & Magee, L. E. (1980). Tracing the time course of picture–word processing. *Journal of Experimental Psychology: General*, *109*(4), 373.

Snodgrass, J. G. (1984). Concepts and their surface representations. *Journal of Verbal Learning and Verbal Behavior*, *23*(1), 3-22.

Stepanova Sachs, O. & Coley, J. (2006). Envy and jealousy in Russian and English: Labeling and conceptualization of emotions by monolinguals and bilinguals. In Pavlenko (ed.), pp. 209–231.

Tarone, E. (1988). *Variation in interlanguage*. Hodder Arnold.

Taylor, J. R. (1989). *Linguistic categorization*. Oxford University Press.

Van Hell, J. G., & Dijkstra, T. (2002). Foreign language knowledge can influence native language performance in exclusively native contexts. *Psychonomic Bulletin & Review*, *9*(4), 780-789.

Vitkovitch, M., & Humphreys, G. W. (1991). Perseverant responding in speeded naming of pictures: It's in the links. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *17*(4), 664.

Weinreich, U. (1953). Languages in contact. New York: *The Linguistics Circle of New York.*

APPENDIX

Participants' background information

PARTICIPAN	SUBGROUP	AGE	GENDER	PLACE OF BIRTH	LENGTH OF TIME IN USA
CF	monolingual P	29	female	Rio Grand edo Sul, Brazil	"
EB	monolingual P	37	female	Rondonia, Brazil	"
GC	monolingual P	42	female	Maceió, Brazil	"
BC	monolingual P	34	male	São Paulo, SP Brazil	"
LS	monolingual P	29	female	Minduri, MG Brazil	"
LD	monolingual P	27	female	São Paulo, SP Brazil	"
LD	monolingual P	33	male	São Paulo, SP Brazil	"
AC	monolingual P	28	female	São Paulo, SP Brazil	"
JR	monolingual P	26	female	Minduri, MG Brazil	"
					"
NA	monolingual E	29	male	Miami, FL USA	"
KM	monolingual E	26	female	Miami, FL USA	"
JS	monolingual E	25	male	Miami, FL USA	"
HM	monolingual E	23	female	Toronto, ON CANADA	"
KL	monolingual E	24	male	Connecticut, USA	"
MA	monolingual E	30	male	Cincinnatti, OH USA	"
NS	monolingual E	25	female	Williamsburng,VA USA	"
HM	monolingual E	25	female	Toronto, ON CANADA	"
SB	monolingual E	28	female	Miami, FL USA	"
AF	bilingual	33	female	Rio grande do Sul, Brazil	10 years
MF	bilingual	38	male	Rio de Janeiro, Brazil	21 years
LA	bilingual	29	female	Florianópolis,SC Brazil	5 years
CR	bilingual	29	female	são Paulo, Brazil	23 years
AS	bilingual	32	female	Patos, Paraíba, Brazil	8 years
DB	bilingual	24	male	Salvador, Bahia Brazil	16 years
FL	bilingual	42	female		11 years
ML	bilingual	40	male	são Paulo, Brazil	25 years
DT	bilingual	31	male	Bello Horizonte, Brazil	18 years
BC	bilingual	46	female	Rio de Janeiro, Brazil	14 years
AS	bilingual	28	male	Recife, Pernambuco, Brzil	10 years
LF	bilingual	32	female	Porto Alegre, RS, Brazil	13 years
DF	bilingual	27	female	Recife, Pernambuco, Brzil	12 years
TN	bilingual	30	female	Niteroi, RJ, Brazil	10 years
KV	bilingual	32	female	são Paulo, Brazil	21 years
AC	bilingual	28	female	Minas Gerais, Brazil	20 years
DV	bilingual	31	female	Rio grande do Sul, Brazil	17 years
ED	bilingual	25	male	Rio de Janeiro, Brazil	19 years
KB	bilingual	26	female	são Paulo, Brazil	16 years
IA	bilingual	28	male	Volta Redonda, RJ, Brazil	14 years
SM	bilingual	36	female	são Paulo, Brazil	18 years
RP	bilingual	27	male	Rio Grande do Sul, Brazil	8 years

List of terms

English > Portuguese			
english label	portuguese label	taxonomic link	thematic link
Category 1-Classical			
brush	escova	comb	hair
brush	pincel	paint roller	paint can
wall	parede	column	door
wall	muro	fence	brick
knife	faca	scissors	cheese
knife	canivete	pliers	twig
guitar	guitarra	saxophone	speaker
guitar	violão	piano	flamenco dancer
gate	portão	window	driveway
gate	porteira	door	cow
truck	caminhão	train	logs
truck	caminhonete	helicopter	hey
Category 2-Homophones			
bat	taco	golf club	baseball
bat	morcego	owl	cave
chest	peito	back	lung
chest	baú	chair	key
pie	torta	salad	fork
pi	pi	delta	calculator
flower	flor	bush	watering can
flour	farinha	milk	cupcake tray
knight	cavaleiro	police officer	lance
night	noite	day	string quartet
sun	sol	Saturn	beach umbrella
son	filho	daughter	train
Category 3-Radial			
horn	chifre	hoof	matador
horn	trompeta	flute	music notes
cap	boné	hat	head

cap	tampinha	corkscrew	bottle
letters	letras	numbers	books
letters	cartas	boxes	stamps
paper	papel	blackboard	pencil
paper	jornal	television	newspaper
glass	vidro	shutters	curtains
glass	copo	tea cup	faucet
bow	laço	tie	present
bow	arco	spear	slingshot
PORTUGUESE > ENGLISH			
Portuguese label	English label	taxonomic link	thematic link
category 1- Classical			
escada	stairs	elevator	balcony
escada	step ladder	scaffolding	construction worker
relógio	clock	calendar	rooster
relógio	watch	bracelet	wrist
dedos	fingers	paw	rings
dedos	toes	claw	sandals
estante	bookcase	chair	books
estante	entertainment center	desk	DVD player
grampos	hair pins	head bands	hair rollers
grampos	staples	paper clips	pens and pencils
teto	roof	lid	nest
teto	ceiling	tent	ceiling fan
Category 2- Homophone			
vela	sail	paddle	anchor
vela	candle	gas lamp	match
banco	bank	hospital	money
banco	bench	chair	table
arco	arch	column	door
arco	bow	dart	target
cela	cell	dining room	handcuffs
sela	saddle	hat	muzzle
cauda	tail	whiskers	brush

calda	soup	sandwich	stove
manga	mango	peeler	banana
manga	sleeve	pants	washing machine
Category 3-Radial			
lampada	lightbulb	plug	night
lampda	lamp	carpet	fire
dente	tooth	tongue	tooth paste
dente (alho)	clove (garlic)	bell pepper	masher
chave	key	lock	door
chave (inglesa)	wrench	hammer	nut and bolt
caixa	box	bag	envelope
caixa	register	typewriter	wallet
boca	mouth	eye	strawberry
boca (fogao)	stove burner	fridge	pot
bico	beak	alligator	worm
bico	pacifier	rattle	crib

Questionnaire

We would be grateful if you could give us the following background information to help us with our studies. Please feel free to leave any item blank if you feel you would prefer not to answer.

Name: _____

Contact details (email and/or telephone):
_____

Are you: Male ☐ Female ☐ ?	Please indicate the areas where you have lived for significant periods (more than a year) of your life:
Were you born in the USA? Yes ☐ No ☐	
If you were not born in the USA: At what age did you move to the USA? _____ How long have you lived in the USA? _____yrs.	e.g.: Place: Salvador, Brazil dates: 1975-1993 Place: Brussels, Belgium dates: 1993-1999 Place: New York,USA dates: 1999-2005 Place: _____ Dates: _____ Place: _____ Dates: _____ Place: _____ Dates: _____ Place: _____ Dates: _____

Language Upbringing:

Which of the following languages do you speak? (Select all that apply and fill in the blanks)

☐ Portuguese
I began speaking Portuguese: (a) ☐ as a baby, (b) ☐ by age 2 (c) ☐ between 3 & 5 years of age, (d) ☐ in grade school, (e) ☐ later, around age ____.

☐ English
I began speaking English: (a) ☐ as a baby, (b) ☐ by age 2 (c) ☐ between 3 & 5 years of age, (d) ☐ in grade school, (e) ☐ later, around age ____.

☐ Other
language(s):_____

I began speaking this language at around age:

_____

What language(s) did you speak to your mother and/or father when you were a child (if applicable)?

MOTHER	FATHER
☐ Virtually 100% English	☐ Virtually 100% English
☐ About 80% English, 20% Portuguese	☐ About 80% English, 20% Portuguese
☐ About 60% English, 40% Portuguese	☐ About 60% English, 40% Portuguese
☐ About 50% English, 50% Portuguese	☐ About 50% English, 50% Portuguese
☐ About 40% English, 60% Portuguese	☐ About 40% English, 60% Portuguese
☐ About 20% English, 20% Portuguese	☐ About 20% English, 90% Portuguese
☐ Virtually 100% Portuguese	☐ Virtually 100% Portuguese
☐ Other combination. Please specify:_____	☐ Other combination. Please specify:_____
☐ N/A	☐ N/A

What language(s) did your younger/older siblings speak to you when you were a child (if applicable)?

YOUNGER	OLDER
☐ Virtually 100% English	☐ Virtually 100% English
☐ About 80% English, 20% Portuguese	☐ About 80% English, 20% Portuguese
☐ About 60% English, 40% Portuguese	☐ About 60% English, 40% Portuguese
☐ About 50% English, 50% Portuguese	☐ About 50% English, 50% Portuguese
☐ About 40% English, 60% Portuguese	☐ About 40% English, 60% Portuguese
☐ About 20% English, 80% Portuguese	☐ About 20% English, 80% Portuguese
☐ Virtually 100% Portuguese	☐ Virtually 100% Portuguese
☐ Other combination. Please specify:_____	☐ Other combination. Please specify:_____
☐ N/A	☐ N/A

What was the normal language of instruction in the primary and secondary schools you attended?

PRIMARY SCHOOL	SECONDARY SCHOOL
☐ Virtually 100% English	☐ Virtually 100% English
☐ About 80% English, 20% Portuguese	☐ About 80% English, 20% Portuguese
☐ About 60% English, 40% Portuguese	☐ About 60% English, 40% Portuguese
☐ About 50% English, 50% Portuguese	☐ About 50% English, 50% Portuguese
☐ About 40% English, 60% Portuguese	☐ About 40% English, 60% Portuguese
☐ About 20% English, 80% Portuguese	☐ About 20% English, 80% Portuguese
☐ Virtually 100% Portuguese	☐ Virtually 100% Portuguese
☐ Other combination. Please specify:_____	☐ Other combination. Please specify:_____
☐ N/A	☐ N/A

What is/was the language of instruction in the university/college you attend(ed) (if applicable)?

☐ Virtually 100% English
☐ About 80% English, 20% Portuguese
☐ About 60% English, 40% Portuguese
☐ About 50% English, 50% Portuguese
☐ About 40% English, 60% Portuguese
☐ About 20% English, 80% Portuguese
☐ Virtually 100% Portuguese
☐ Other combination. Please specify:_____
☐ N/A

What language(s) did you speak at primary school with your classmates when outside of the classroom?	Overall, what language(s) did you speak with most of your friends when you were a child?
☐ Virtually 100% English	☐ Virtually 100% English
☐ About 80% English, 20% Portuguese	☐ About 80% English, 20% Portuguese
☐ About 60% English, 40% Portuguese	☐ About 60% English, 40% Portuguese
☐ About 50% English, 50% Portuguese	☐ About 50% English, 50% Portuguese

☐ About 40% English, 60% Portuguese ☐ About 20% English, 80% Portuguese ☐ Virtually 100% Portuguese ☐ Other combination. Please specify:_____ ☐ N/A	☐ About 40% English, 60% Portuguese ☐ About 20% English, 80% Portuguese ☐ Virtually 100% Portuguese ☐ Other combination. Please specify:_____ ☐ N/A

Language Use Now

At present, at home, I speak

☐ A	☐ B	☐ C	☐ D	☐ E	☐ F
Only Portuguese	More P than E	P and E about equally	More E than P	Only English	Other/N.A.

At present, at work, I speak:

☐ A	☐ B	☐ C	☐ D	☐ E	☐ F
Only Portuguese	More P than E	P and E about equally	More E than P	Only E	Other/N.A.

At present, to my friends, I speak

☐ A	☐ B	☐ C	☐ D	☐ E	☐ F
Only Portuguese	More P than E	P and E about equally	More E than P	Only E	Other/N.A.

At present, my mother speaks to me in:

☐ A	☐ B	☐ C	☐ D	☐ E	☐ F
Only Portuguese	More P than E	P and E about equally	More E than P	Only E	Other/N.A.

At present, my father speaks to me in:

☐ A	☐ B	☐ C	☐ D	☐ E	☐ F
Only Portuguese	More P than E	P and E about equally	More E than P	Only E	Other/N.A.

At present, my siblings and I speak to each other in:

☐ A	☐ B	☐ C	☐ D	☐ E	☐ F
Only Portuguese	More P than E	P and E about equally	More E than P	Only E	Other/N.A.

At present, my friends speak to me in:

☐ A	☐ B	☐ C	☐ D	☐ E	☐ F
Only	More P than	P and E about	More E than	Only	Other/N.A.

Portuguese	E	equally	P	E	

How important is it <u>to you</u> to know Portuguese? ☐ Extremely important ☐ Very important ☐ Somewhat important ☐ Not important	How important was it <u>for your family</u> that you learned Portuguese? ☐ Extremely important ☐ Very important ☐ Somewhat important ☐ Not important
How important is it <u>to you</u> to know English? ☐ Extremely important ☐ Very important ☐ Somewhat important ☐ Not important	How important was it <u>for your family</u> that you learned English? ☐ Extremely important ☐ Very important ☐ Somewhat important ☐ Not important

On a scale of 1 to 4, how well do you feel you can …?

Understand Portuguese now:

☐ A	☐ B	☐ C	☐ D
I can understand basic words and expressions	I can understand simple conversations	I can understand extended conversations	I can understand virtually any kind of conversation

Speak Portuguese now:

☐ A	☐ B	☐ C	☐ D
I only know basic words and expressions	I can carry out simple conversations	I can carry out extended conversations	I can carry out virtually any kind of conversation

Read Portuguese now:

☐ A	☐ B	☐ C	☐ D
I can read basic words and expressions	I can read simple texts	I can read extended texts	I can read virtually any kind of text

Write Portuguese now:

☐ A	☐ B	☐ C	☐ D
I can write basic words and expressions	I can write simple texts	I can write extended texts	I can write virtually any kind of text

On a scale of 1 to 4, how well do you feel you can …?

Understand English now:

☐ A	☐ B	☐ C	☐ D
I can understand basic words and expressions	I can understand simple conversations	I can understand extended conversations	I can understand virtually any kind of conversation

Speak English now:

☐ A	☐ B	☐ C	☐ D
I only know basic words and expressions	I can carry out simple conversations	I can carry out extended conversations	I can carry out virtually any kind of conversation

Read English now:

☐ A	☐ B	☐ C	☐ D
I can read basic words and expressions	I can read simple texts	I can read extended texts	I can read virtually any kind of text

Write English now:

☐ A	☐ B	☐ C	☐ D
I can write basic words and expressions	I can write simple texts	I can write extended texts	I can write virtually any kind of text

General information

Please indicate your level of education:

☐ Primary education (Grade School)
☐ Secondary education (High School)
☐ University or college education up to year _____ or degree:_____
Major:_____
☐ Post-graduate education up to year _____ or degree: _____
☐ None of the above

Please indicate the level of education completed by your mother:

☐ Primary education (Grade School)
☐ Secondary education (High School)
☐ University or college education up to year _____ or degree:_____
Major:_____
☐ Post-graduate education up to year _____ or degree: _____
☐ None of the above

Please indicate the level of education completed by your father:

☐ Primary education (Grade School)
☐ Secondary education (High School)
☐ University or college education up to year _____ or degree:_____
Major:_____
☐ Post-graduate education up to year _____ or degree: _____
☐ None of the above

What is your present occupation (or if retired or unemployed, what was your last occupation before retiring or becoming unemployed)?

_____

What is your partner's present occupation (if applicable)?

_____

MOTHER	FATHER
What was your mother's occupation when you were a child? _____ Please indicate where your mother has lived _____	What was your father's occupation when you were a child? _____ Please indicate where your father has lived and when _____

Have you ever undergone speech or language therapy?

☐ Yes
☐ No

Have you ever been treated for a hearing problem?

☐ Yes
☐ No

Have you ever been treated for a vision problem?

☐ Yes
☐ No

Questionário

Muito obrigada pela sua participação e pelo seu fornecimento das seguintes informações. Se por qualquer motivo você não quiser responder a qualquer pergunta, por favor deixe-a em branco.

Nome:_____
_____

Informação para contato (e-mail):_____

Sexo: Masculino ____ Feminino ___	Por favor indique os lugares onde você viveu por um longo período (mais de um ano) de sua vida:
Você nasceu nos Estados Unidos? Sim__ Não__	
Se a resposta anterior for "não", por favor indique o seu país de nascimento: _____ Com que idade você se mudou para os Estados Unidos? _____ Há quanto tempo você vive nos EUA? _____ anos.	Por exemplo: Salvador, Brasil datas: 1975-1993 Bruxelas, Bélgica datas: 1993-1999 Nova York, EUA datas: 1999-2005 Lugar: _____ Datas: Lugar: _____ Datas: Lugar: _____ Datas: Lugar: _____ Datas:

Desenvolvimento Linguístico:

Quais das seguintes línguas você fala? (Selecione todas que se aplicam e preencha os espaços em branco)

___Português

Eu comecei a falar português (a) __quando bebê, (b) __aos 2 anos de idade (c) __entre 3 e 5 anos de idade, (d) __na escola primária, (e) __mais tarde, por volta dos ____ anos.

___Inglês

Eu comecei a falar inglês (a) __quando bebê, (b) __aos 2 anos de idade (c) __entre 3 e 5 anos de idade, (d) __na escola primária, (e) __mais tarde, por volta dos ____ anos.

___ Outra(s) língua(s): _____

Eu comecei a falar esta língua ao(s) _____ ano(s) de idade.

Que língua(s) você falava com sua mãe e/ou pai quando você era criança (se aplicável)?

MÃE	PAI
☐ Praticamente 100% Inglês	☐ Praticamente 100% Inglês
☐ Cerca de 80% Inglês, 20% Português	☐ Cerca de 80% Inglês, 20% Português
☐ Cerca de 60% Inglês, 40% Português	☐ Cerca de 60% Inglês, 40% Português
☐ Cerca de 50% Inglês, 50% Português	☐ Cerca de 50% Inglês, 50% Português
☐ Cerca de 40% Inglês, 60% Português	☐ Cerca de 40% Inglês, 60% Português
☐ Cerca de 20% Inglês, 80% Português	☐ Cerca de 20% Inglês, 80% Português
☐ Praticamente 100% Português	☐ Praticamente 100% Português
☐ Outra combinação. Por favor, especifique:_____	☐ Outra combinação. Por favor, especifique:_____

☐ N/A	☐ N/A

Que língua(s) seus/suas irmã(os) mais novos/velhos falavam com você quando você era criança (se aplicável)?

MAIS NOVO(S)	MAIS VELHO(S)
☐ Praticamente 100% Inglês	☐ Praticamente 100% Inglês
☐ Cerca de 80% Inglês, 20% Português	☐ Cerca de 80% Inglês, 20% Português
☐ Cerca de 60% Inglês, 40% Português	☐ Cerca de 60% Inglês, 40% Português
☐ Cerca de 50% Inglês, 50% Português	☐ Cerca de 50% Inglês, 50% Português
☐ Cerca de 40% Inglês, 60% Português	☐ Cerca de 40% Inglês, 60% Português
☐ Cerca de 20% Inglês, 80% Português	☐ Cerca de 20% Inglês, 80% Português
☐ Praticamente 100% Português	☐ Praticamente 100% Português
☐ Outra combinação. Por favor, especifique:_____	☐ Outra combinação. Por favor, especifique:_____
☐ N/A	☐ N/A

Qual era a língua (de instrução) normalmente usada na(s) escola(s) primária(s) e secundária(s) que você frequentou?

ESCOLA PRIMÁRIA (Ensino Fundamental)	ESCOLA SECUNDÁRIA (Ensino Médio)
☐ Praticamente 100% Inglês	☐ Praticamente 100% Inglês
☐ Cerca de 80% Inglês, 20%	☐ Cerca de 80% Inglês, 20%

Português ☐ Cerca de 60% Inglês, 40% Português ☐ Cerca de 50% Inglês, 50% Português ☐ Cerca de 40% Inglês, 60% Português ☐ Cerca de 20% Inglês, 80% Português ☐ Praticamente 100% Português ☐ Outra combinação. Por favor, especifique:_____ ☐ N/A	Português ☐ Cerca de 60% Inglês, 40% Português ☐ Cerca de 50% Inglês, 50% Português ☐ Cerca de 40% Inglês, 60% Português ☐ Cerca de 20% Inglês, 80% Português ☐ Praticamente 100% Português ☐ Outra combinação. Por favor, especifique:_____ ☐ N/A

Qual era a língua (de instrução) normalmente usada na(s) universidade(s) que você frequentou?

☐ Praticamente 100% Inglês

☐ Cerca de 80% Inglês, 20% Português

☐ Cerca de 60% Inglês, 40% Português

☐ Cerca de 50% Inglês, 50% Português

☐ Cerca de 40% Inglês, 60% Português

☐ Cerca de 20% Inglês, 80% Português

☐ Praticamente 100% Português

☐ Outra combinação. Por favor, especifique:_____

☐ N/A

Que língua(s) você falava com seus colegas durante a escola primária fora da	Em geral, que língua(s) você falava com a maioria de seus amigos quando criança?

sala-de-aula?	
☐ Praticamente 100% Inglês ☐ Cerca de 80% Inglês, 20% Português ☐ Cerca de 60% Inglês, 40% Português ☐ Cerca de 50% Inglês, 50% Português ☐ Cerca de 40% Inglês, 60% Português ☐ Cerca de 20% Inglês, 80% Português ☐ Praticamente 100% Português ☐ Outra combinação. Por favor, especifique:_____ ☐ N/A	☐ Praticamente 100% Inglês ☐ Cerca de 80% Inglês, 20% Português ☐ Cerca de 60% Inglês, 40% Português ☐ Cerca de 50% Inglês, 50% Português ☐ Cerca de 40% Inglês, 60% Português ☐ Cerca de 20% Inglês, 80% Português ☐ Praticamente 100% Português ☐ Outra combinação. Por favor, especifique:_____ ☐ N/A

Uso da língua hoje em dia:

☐ Atualmente, em casa, eu falo:

☐ A	☐ B	☐ C	☐ D	☐ E	☐ F
Somente Português	Mais Português do que Inglês	Português e Inglês igualmente	Mais Inglês do que Português	Somente Inglês	Outra/N.A.

Atualmente, no trabalho, eu falo:

☐ A	☐ B	☐ C	☐ D	☐ E	☐ F
Somente	Mais Português do	Português e Inglês	Mais Inglês do que	Somente	Outra/N.A.

Português	que Inglês	igualmente	Português	Inglês	

Atualmente, com meus amigos, eu falo:

□ A	□ B	□ C	□ D	□ E	□ F
Somente Português	Mais Português do que Inglês	Português e Inglês igualmente	Mais Inglês do que Português	Somente Inglês	Outra/N.A.

Atualmente, minha mãe fala comigo em:

□ A	□ B	□ C	□ D	□ E	□ F
Somente Português	Mais Português do que Inglês	Português e Inglês igualmente	Mais Inglês do que Português	Somente Inglês	Outra/N.A.

Atualmente, meu pai fala comigo em:

□ A	□ B	□ C	□ D	□ E	□ F
Somente Português	Mais Português do que Inglês	Português e Inglês igualmente	Mais Inglês do que Português	Somente Inglês	Outra/N.A.

Atualmente, meus irmãos e eu nos comunicamos em:

A	B	C	D	E	F
Somente Português	Mais Português do que Inglês	Português e Inglês igualmente	Mais Inglês do que Português	Somente Inglês	Outra/N.A.

Atualmente, meus amigos falam comigo em:

A	B	C	D	E	F

Somente Português	Mais Português do que Inglês	Português e Inglês igualmente	Mais Inglês do que Português	Somente Inglês	Outra/N.A.

<u>Para você</u>, quão importante é saber Português? ☐ Extremamente importante ☐ Muito importante ☐ Pouco importante ☐ Não é importante	Quão importante foi para seus pais você ter aprendido português? ☐ Extremamente importante ☐ Muito importante ☐ Pouco importante ☐ Não é importante
<u>Para você</u>, quão importante é saber Inglês? ☐ Extremamente importante ☐ Muito importante ☐ Pouco importante ☐ Não é importante	Quão importante foi para seus pais você ter aprendido inglês? ☐ Extremamente importante ☐ Muito importante ☐ Pouco importante ☐ Não é importante

Quão bem você acha que pode…?

<u>Entender</u> Português:

☐ A	☐ B	☐ C	☐ D
Eu entendo palavras e expressões básicas	Eu entendo conversas simples	Eu entendo conversas longas	Eu entendo praticamente todos os tipos de conversa

<u>Falar</u> Português:

☐ A	☐ B	☐ C	☐ D
Eu falo somente palavras e expressões	Eu posso manter conversas	Eu posso manter conversas longas	Eu posso praticamente manter qualquer tipo de conversa

básicas	simples		

Ler Português:

□ A	□ B	□ C	□ D
Eu leio palavras e expressões básicas	Eu posso ler textos simples	Eu posso ler textos longos	Eu posso ler praticamente qualquer tipo de texto

Escrever Português:

□ A	□ B	□ C	□ D
Eu escrevo palavras e expressões básicas	Eu posso escrever textos simples	Eu posso escrever textos longos	Eu posso escrever praticamente qualquer tipo de texto

Quão bem você acha que pode…?

Entender Inglês:

□ A	□ B	□ C	□ D
Eu entendo palavras e expressões básicas	Eu entendo conversas simples	Eu entendo conversas longas	Eu entendo praticamente todos os tipos de conversa

Falar Inglês:

□ A	□ B	□ C	□ D
Eu falo somente palavras e expressões básicas	Eu posso manter conversas simples	Eu posso manter conversas longas	Eu posso praticamente manter qualquer tipo de conversa

Ler Inglês:

☐ A	☐ B	☐ C	☐ D
Eu leio palavras e expressões básicas	Eu posso ler textos simples	Eu posso ler textos longos	Eu posso ler praticamente qualquer tipo de texto

Escrever Inglês:

☐ A	☐ B	☐ C	☐ D
Eu escrevo palavras e expressões básicas	Eu posso escrever textos simples	Eu posso escrever textos longos	Eu posso escrever praticamente qualquer tipo de texto

Informações Gerais

Por favor, indique seu nível de escolaridade:

- ☐ Educação primária (Ensino Fundamental)
- ☐ Educação secundária (Ensino Médio)
- ☐ Universidade ou outro tipo de Ensino Superior até o ano ____ou diploma:_____
  Especialização:_____
- ☐ Pós-graduação até o ano _____ ou diploma: _____
- ☐ Nenhuma das opções acima

Por favor, indique o nível de escolaridade completo de sua mãe:

- ☐ Educação primária (Ensino Fundamental)
- ☐ Educação secundária (Ensino Médio)
- ☐ Universidade ou outro tipo de Ensino Superior até o ano _____ ou diploma:_____
  Especialização:_____

□ Pós-graduação até o ano _____ ou diploma: _____

□ Nenhuma das opções acima

Por favor, indique o nível de escolaridade completo de seu pai:

□ Educação primária (Ensino Fundamental)

□ Educação secundária (Ensino Médio)

□ Universidade ou outro tipo de Ensino Superior até o ano _____ ou diploma:_____
Especialização:_____
_____

□ Pós-graduação até o ano _____ ou diploma:_____

□ Nenhuma das opções acima

Qual é a sua ocupação atual (se aposentado ou desempregado, qual foi a sua última ocupação antes de se aposentar ou ficar desempregado)?

_____

Qual é a atual ocupação do seu/sua parceiro(a) (se for o caso)?

_____

MÃE	PAI
Qual era a ocupação de sua mãe quando você era criança? _____ ___ Por favor indique onde sua mãe já morou e quando?_____ _____ _____ _____	Qual era a ocupação de seu pai quando você era criança? _____ _____ Por favor indique onde seu pai já morou e quando?_____ _____ _____ _____

Você já foi submetido(a) a terapias de fala ou língua?

___Sim

___Não

Você já foi tratado(a) por problemas de audição?

___Sim

___Não

Você já passou por algum tratamento de visão?

___Sim

___Não