PERCEPTION OF THE WORLD THROUGH LANGUAGE:
Do Spanish and English speakers perceive the world differently? A Review of the Literature on the Sapir-Whorf Hypothesis.

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By

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DEDICATION

This Master's report is dedicated to my loved ones because it was because of their support and patience that I found my way into completing this program and closing this stage of my life with what I believe to be a better version of myself, one that feels more in love with language.

I would also like to dedicate this report to all language enthusiasts who find language inspiring and fascinating!

ACKNOWLEDGMENTS

I would like to start by thanking the advisor of this report Dr. Tim Marr, because it was through his lessons that I was inspired to write about the Sapir-Whorf hypothesis. He guided me when ideas seemed confusing, and encouraged me to explore this topic and write about it with authority. Thanks for showing me that language teachers should talk, read, write and think of language first than anything else.

I want to thank all the professors that during the Master's program shared their knowledge and helped me to become a better teacher. Thanks to my classmates, who taught their teaching experiences and made classes an opportunity to learn from one another.

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Do Spanish and English speakers perceive the world differently? A Review of the Literature on the Sapir-Whorf Hypothesis.

I. ABSTRACT

Research on perception of the world through language as addressed by the Sapir-Whorf hypothesis have been presented since the 1940's and continues to be popular nowadays among linguists, psychologists, sociologists, and anthropologists. This review of the literature on the Sapir-Whorf hypothesis aims to explain the relevance of the weak version of the hypothesis, known as linguistic relativity, over the strong version of the hypothesis. In addition, a series of research studies supporting the hypothesis will be presented from three points of view: differences in lexis/semantics among languages, sociocultural aspects in language, and enhancement of cognitive ability. Subsequently, the two research questions of this report will be approached: *To what extent can it be said that Spanish speakers experience the world in a different way to English speakers? What possible applications in teaching can this hypothesis have?* Results of this literature review strongly suggest that different languages can influence the way speakers express, think about and perceive their reality, and that Spanish and English speakers can experience the world differently due to the linguistic features of its languages. The presented teaching applications target the development of intercultural competence, critical thinking, and social skills through the valuing of identity, the recognition of conceptual similarities and differences among languages, and the understanding of the power of language as a shaper of ideas to convince or accept others' beliefs.

Key words: Sapir-Whorf hypothesis, linguistic relativity, lexis, semantics, sociocultural aspects, cognitive ability, intercultural competence, critical thinking.

II. INTRODUCTION

Did you know that the Russian word *frukty* (in English *fruit*) excludes berries? Or that the Mandarin word *guǒ* (also *fruit*) includes nuts? When I first heard this a year ago, I couldn't stop thinking it was the most interesting fact about language that I could hear about. Professor Tim Marr, and supervisor of this report, was giving a course of the Master's Program in the Teaching of English as a Foreign Language at Icesi University in Cali-Colombia, called Language as a Meaning System, when he gave the example of *fruit* to illustrate the relationship between signifier and signified. The Sapir-Whorf hypothesis was mentioned and soon the question *"do we think of the world in a different way because of language?"* arose.

The idea of perception of the world through language and the different examples I heard of it, were the reasons why I decided to write my report on this topic. After reading from other studies about the Sapir-Whorf hypothesis I can say that I don't only find it fascinating, but also of great value for my own knowledge of the world, my way of thinking, and my teaching. Knowing about a topic like this should be of the interest of teachers, since it is a way of showing students that awareness of the differences in language can lead to the understanding of sociocultural differences.

I started reading articles related to linguistic determinism (the strong hypothesis) and linguistic relativity (the weak hypothesis) and found new examples of how perception of the world differs from language to language. Some studies focus on the differences in lexis/semantics where some words exist in a language but not in the other or where semantic categories differ from language to language causing alterations in meaning, leading to difficulties in translation and of course to differences in perception. Further research examples emphasize on sociocultural aspects, where depending on the language there can be some extra information that needs to be expressed or even a specific behavior that society adopts. The third focus I found, and one of the most explored one by linguists, psychologists and

anthropologists nowadays, was cognitive ability presenting the notion that different languages impart different cognitive skills. I decided to start collecting information on these three aspects and concentrate on what is close to me: perception differences between Spanish and English speakers.

Those in the field of linguistics that support the weak version of the Sapir-Whorf hypothesis, believe that language shapes perception of the world. Numerous studies that will be presented throughout this document, have been made to demonstrate how depending on language, perception differs. But how different is this perception between Spanish and English speakers? This master's report will be a review of the literature of the research made on the Sapir-Whorf hypothesis, and it will attempt to answer the following research questions: *To what extent can it be said that Spanish speakers experience the world in a different way to English speakers? What possible applications in teaching can this hypothesis have?*

In the section of research methodology, the reader will understand how this research was approached. A definition on review of the literature by Guevara (2016) and the methodological design proposed by Gómez (2015) will be described in order to illustrate the aim and steps followed in this report. In addition the reader will understand how the categorization was decided, what tools were used and the overall flow of the document.

The subsequent sections consist on the substantive element of the report, the review of the literature from the focuses of lexis/semantics, sociocultural aspects, and cognitive ability. First, the reader will be introduced to the Sapir-Whorf hypothesis by briefly describing its start and development (Koerner, 1992), illustrating the strong version known as linguistic determinism and the weak version known as linguistic relativity (Penn, 1972). In addition, Whorf's first example on linguistic relativity, that of the Hopi language, will be presented (Engle, 2016; Malotki, 1983). Afterwards the reader will be presented with an overview to the first reactions to the hypothesis (Kay

& Kempton, 1984; Penn, 1972), the weight of the weak version over the strong version (Hamans, 2006; Kay & Kempton, 1984; Latkowska, 2015; Penn, 1972), and its relevance on the contemporary research (Breveníková, 2018; Latkowska, 2015). In the following sections the categories of lexis/semantics, sociocultural aspects, and cognitive ability will be developed by illustrating the applicability of these concepts as categories and by presenting specific empirical evidence demonstrating the validity of the hypothesis. Later on, the reader will find a section on the research findings of the Sapir-Whorf hypothesis for Spanish and English speakers, giving examples of how speakers of these two languages perceive the world in a different way. A section focusing on the possible applications in teaching will be made and a final concluding section will summarize the major points presented on this review of the literature highlighting the answer to the research questions formulated before.

III. RESEARCH METHODOLOGY

A review of the literature is a qualitative secondary research about a specific topic where the author aims to present the research that has been done, the interpretation of the researchers and the methodology of the studies, as well as what is missing and what else can be done regarding the topic. (Guevara, 2016). This report follows the three phases proposed by Gómez (2015):

Planning: Once the Sapir-Whorf hypothesis was decided as the topic for this review of the literature, I started searching for related studies and found various research on cognitive ability. Although these were interesting I felt I needed a closer topic to my experience. That was when I thought of the question of how Spanish and English speakers perceive the world differently. The ideas of possible applications in teaching came up later.

Design and Research: As I read some of the studies, I started to organize the empirical evidence of the Sapir-Whorf hypothesis into categories. From the very start I decided to have two main categories: evidence of the hypothesis on various languages and evidence on perception for Spanish and English speakers. In addition, I decided to have as subcategories evidence that suggested differences in perception due to lexis, semantics, sociocultural aspects, and cognitive ability. I collected and organized the information in an Excel document taking into account the category, title, author, publication year, location of the article, a short description and direct quotations to facilitate the writing of the final document. Gómez (2015) calls this tool a bibliographical and analytical matrix. As I searched for examples I realized that not many of these focused only in semantics, reason why I decided to make only one category called lexis/semantics.

Analysis and Elaboration: The information in the matrix was analyzed and authors were compared in each category, in order to find similarities and differences useful for the writing process. This step is of great importance since a review of the literature should be written as a discussion of authors. The writing process was guided by the categories described before, adding an initial category destined to present the Sapir-Whorf hypothesis from its start until what it is said nowadays.

IV. THE SAPIR-WHORF HYPOTHESIS

The Sapir-Whorf Hypothesis as described in Koerner's essay (1992), got its basis on previous linguists such as Johann Gottfried von Herder (1744-1803) and Wilhelm von Humboldt (1767-1835). Edward Sapir (1884-1939) was influenced by Humboldt, who had the hypothesis that language is, in terms of perception, the means in which human beings construct themselves and the world. Years later, Sapir stated that human beings don't live in an objective world, but in one at the mercy of a particular language used as medium of expression. Also, that the real world is built upon the language habits of the group, meaning that human beings experience very largely what is experienced because language habits predispose interpretation. Sapir's work inspired Benjamin Lee Whorf (1897-1941), who believed that language was not just an instrument for voicing ideas, but a shaper of ideas, the program and guide of mental activity. The principal of relativity was introduced by Whorf in one of his papers in 1940, explaining that observers are not led to the same physical evidence or picture of the universe unless their linguistic backgrounds are similar. The concept of linguistic relativity explains that cognitive processes are different for each language, meaning that people who speak different languages see the world differently.

Whorf's first example on linguistic relativity in the 1930's (Engle, 2016) is the one of the Hopi language, a North American Indian language of the Uto-Aztecan family spoken in northeastern Arizona. As Engle explains from Whorf's example, the Hopi language has no concept of time as a grammatical category existing in every language. Instead of saying, "In two days we will…" the Hopi would say, "On the second we will…" This shows that for the Hopi time doesn't exist and therefore their language affects the way they perceive reality. As speakers of other languages where counting time is natural, the idea of the Hopi ignoring time as we perceive it, seems inconceivable. It is natural to ask ourselves, as probably Whorf did at the time, how do the Hopi perceive the world when they don't acknowledge time the way

we do? On the other hand, Malotki (1983) analyses the Hopi language thoroughly and demonstrates that the Hopi have technical concepts of time. Malotki explains that the Hopi map the concept of time onto space or that time moves through space. These statements would clearly show that Whorf was wrong, but what Whorf really meant was that the Hopi don't express time in *the same way* as other speakers.

As mentioned earlier, the Sapir-Whorf hypothesis consists of a strong version (linguistic determinism) and a weak version (linguistic relativity). Penn (1972) posits that wording on Whorf's papers is the cause of these two versions, since the hypothesis can be interpreted as language determines thought or language influences thought. Apparently, no statement to clear up this ambiguity can be found in Whorf's papers, although Herder, Humboldt, Sapir and Whorf did advocate the strong version in some of their works. The hypothesis received much attention during the fifties and sixties after Whorf's articles appeared (Penn, 1972) and after 30 years of the hypothesis being presented, Penn does a review of the empirical evidence for and against the hypothesis and concludes that it is only the weak version the one supported by evidence. Kay and Kempton (1984) support this idea by explaining that it is not possible to test the strong version "until a technique is developed for assessing the world view of people independently of the language they speak." (p.66). Over the years the strong version of the hypothesis has been discredited and the weak version has maintained its popularity among those who defend linguistic relativity.

One criticism found regarding the strong version of the Sapir-Whorf hypothesis is presented by Hamans (2006) who talks about Bernstein's theory before the sixties when dialects, non-standard, and minority languages were not yet accepted. Hamans (2006) explains that Berstein classified languages into having restricted and elaborated codes, where lower social classes used a restricted code and higher social classes a more developed, complicated and elaborated code. This means that if language determines perception of the surrounding world and interpretation of

reality as proposed by the strong version of the hypothesis, lower classes would be handicapped in social opportunities and logical reasoning (Hamans, 2006). This statement is clearly discriminatory or even racist since it posits the idea that speakers of languages that don't have complex codes are destined to have less opportunities and even to be less intelligent.

Now that the strong version has been rejected for its discriminatory point of view and for lack of empirical evidence; and that the weak version has received wide support through numerous studies since 1990 to 2015 (Latkowska, 2015), this literature of the review will focus only on the weak version of the Sapir-Whorf hypothesis. Breveníková (2018) supports the weak version of the hypothesis and gives value to it as a source of inspiration for the development of research in psychology, sociology, anthropology, and applied linguistics; leading to the discussion of the relationships between language, thought, and culture. As stated before, this review of the literature seeks to postulate possible applications in teaching, and the understanding of the relationships between language, thought, and culture could be the key for this goal. Breveníková (2018) believes this understanding is beneficial for learners and teachers, because learners can get a better insight of the use of language and teachers can get inspired in planning and developing language curriculum.

V. RESEARCH ON LEXIS/SEMANTICS

Lexis, as the available vocabulary in a language, and semantics as the meaning carried in these vocabulary, is the first category that this research wants to exemplify to support the hypothesis that language affects perception. Some studies (Casasanto, Boroditsky, Phillips, Greene, et al., 2004; Cibelli, Austerweil, Griffiths & Regier, 2016; Everett, 2017; Frank, Everett, Fedorenko & Gibson, 2008; Kay & Kempton, 1984; Masuda, Ishii, Miwa, Rashid, et al., 2017; Tseng, Carstensen, Regier & Xu, 2016) focus on the differences in lexis/semantics between languages, where some words exist in a language but not in the other or where even when a

word exists in both languages the meaning is different. This not only leads to difficulties in accurate translation, but it also changes the way people perceive the world.

Language divides experiences into semantic categories (Tseng et al., 2016), as happens with the example of *fruit*. A Russian speaker might not necessarily label berries in the same way an English or Spanish speaker would probably do, since a Russian speaker wouldn't necessarily regard *strawberries* as 'fruit-like', while English and Spanish speakers would automatically label it into the semantic category *fruit*. In this case the relationship between signifier and signified may seem similar between the two languages, but it is actually different, it is not the same semantic space. This example of differences in semantic categories from language to language is a way of evidencing that language may affect perception. In addition, the following questions could help the reader understand the relevance of this category: are blue and green two different colors? An English speaker would say yes, but what happens in the case of a language that uses one word to refer to both colors? Does this mean that grass and sky have actually the same color?

Kay and Kempton (1984) designed an experiment to test the Sapir-Whorf hypothesis by testing differences in color between English and Tarahumara (Uto-Aztecan language spoken in northern Mexico). In the experiment, colors blue and green were used to show that English speakers could differentiate these two colors because they have both words *blue* and *green* while Tarahumara speakers don't have this lexical distinction, they use the same word *siyóname* for both colors. The results supported the weak version of the hypothesis and lead to the conclusion that linguistic categorization has an effect on thinking and perception. Similar to this experiment, Cibelli et al. (2016) reviews previous studies made by Debi Roberson in 2000 and 2005, where differences in colors across English, Berinmo (Papua New Guinea), and Himba (Namibia) languages are analyzed. In this study the words *blue* and *green* were used for English, *wor* (to cover *yellow, orange,* and *brown*) and *nol*

(to cover *green, blue,* and *purple*) for Berinmo, and *dumbu* (to cover *yellow* and *beige*) and *burou* (to cover *green, blue,* and *purple*) for Himba. In these studies, Berinmo speakers named colors *nol*, and Himba speakers named colors *burou* for both English colors *blue* and *green*, as shown in Figure 1, just as happened with the Tarahumara language. Cibelli et al. (2016) concludes that the results from these studies are consistent with the Sapir-Whorf hypothesis. It can be said that even though speakers of languages are physically capable of differentiating colors when seeing them, not having different words to express these colors evidences that it is unimportant or unnecessary to distinguish them, leading to the statement that differences in the lexical categories of color affect the way we perceive or think of the world.

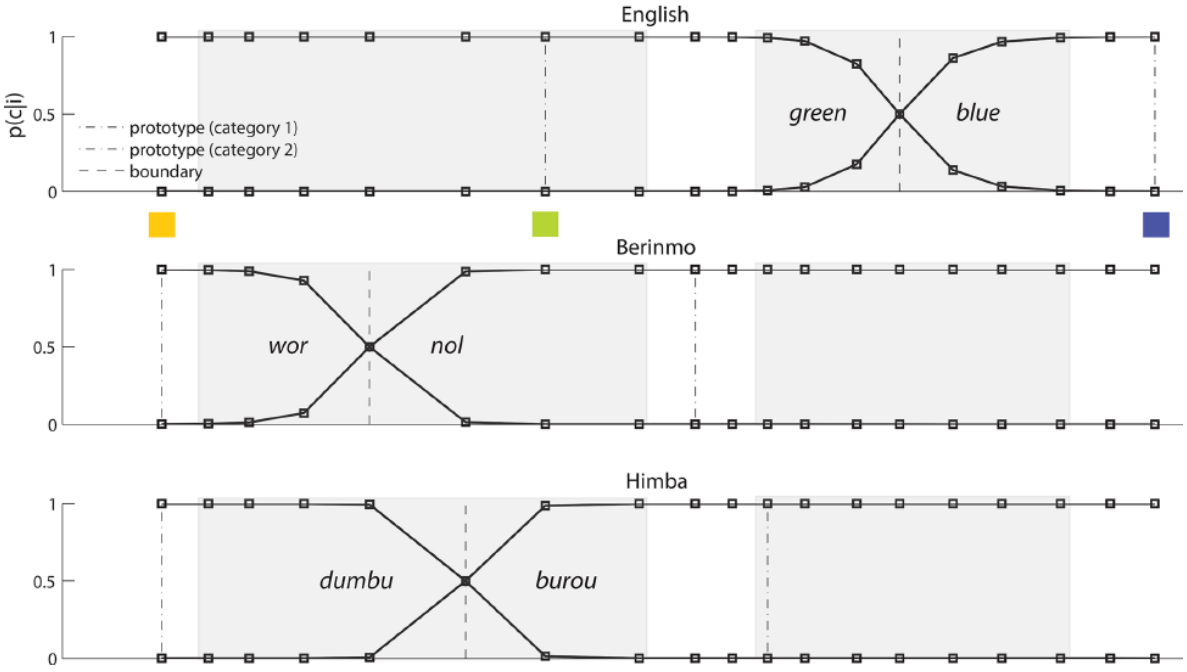

Figure 1. English, Berinmo and Himba categories plotted against a spectrum of hues from dark yellow (left) through green and blue (right). This evidences that *nol* and *burou* words are used to refer both to *green* and *blue*. (Cibelli et al., 2016, p.11)

A study examining perception in similarity of pairs of objects for English and Japanese speakers provided supporting evidence of the Sapir-Whorf hypothesis

(Masuda et al., 2017). Table 1 shows the two sets of stimuli used, one consisted of two objects with two linguistic categories in English but only one in Japanese; and another that consisted of two objects with two linguistic categories in Japanese but only one in English. Results showed that different linguistic categories of the native languages influenced participants' judgements on the similarities of objects, labeling objects as more similar when they were in the same linguistic category, than when they were in different linguistic categories. This means that perception is influenced by the use of different words across languages, two objects that can be equal in one language can be different in another. Some of the pairs of objects presented in Table 1 illustrate this idea, for example an English speaker easily differentiates the words *mustache* and *beard*, but a Japanese speaker uses the same word *hige* for both English words. Would this mean that Japanese speakers perceive a mustache and a beard as the same body parts?

Objects distinct in English concepts, but not in Japanese concepts (DE):	
(1) beak–bill (kuchibashi–kuchibashi), (2) beans–peas (mame–mame), (3) breadcrust–ear (mimi–mimi), (4) bubbles–foam (awa–awa), (5) chair–stool (isu–isu), (6) crab claw–scissors (hasami–hasami), (7) fang–tusk (kiba–kiba), (8) clock hand–needle (hari–hari),	(9) horns–antlers (tsuno–tsuno), (10) mouse–rat (nezumi–nezumi), (11) mustache–beard (hige–hige), (12) fingernail–claw (tsume–tsume), (13) thumb–big toe (oyayubi–oyayubi), (14) trunk–nose (hana–hana), (15) watch–clock (tokei–tokei), (16) web–nest (su–su).
Objects distinct in Japanese concepts, but not in English concepts (DJ):	
(1) fukuro–kaban (plastic bag–bag), (2) gen–ito (music string–string), (3) geto–mon (gate–large gate), (4) gunte–gomutebukuro (gardening gloves–rubber gloves), (5) hake–fude (paint brush–writing brush), (6) hei–saku (large wood fence–metal fence), (7) jaguchi–totte (water faucet handle–handle on a cup), (8) kankisen–senpuki (exhaust fan–room fan), (9) kikyu–fusen (large balloon–small balloon),	(10) kitte–hanko (postage stamp–stamp), (11) mizu–oyu (cold water–hot water), (12) naifu–hocho (knife–large knife), (13) shokkaku–antena (insect antenna–electronic antenna), (14) kara–kora (snail shell–turtle shell), (15) suiheisen–chiheisen (horizon over water–horizon over land), (16) suzu–kane (large bell–small bell), (17) tsubasa–hane (large wing–small wing), (18) ude–hijikake (arm–arm part of an armchair).

Table 1. List of paired objects. (Masuda et al., 2017, p.4)

Everett (2017) also defends linguistic relativity and presents an overview of research studies related to time, space and quantity in American indigenous languages, supporting the idea of language as an influencer of perception. Some of these research studies focus on the Piraha tribe from Brazil who live in the Amazon rainforest (Frank et al., 2008). The Piraha language has words for numbers as follows: *hói* (one), *hoí* (two), and *baágiso* (many), but these words may also be used in terms of size: *hói* (small), *hoí* (somewhat larger), and *baagiso* (cause to come together) as explained by Frank et al (2008) from a study made by Everett in 2005. In an experiment from Frank's et al. (2008) study, 6 adult Piraha speakers were asked to answer "*how much/ many is this?"* by starting with one spool of thread and adding one at a time until ten spoons. Other 4 participants were asked the same, starting with ten spools until one spoon. In the increasing elicitation task, the word *hói* was used to express *one*, *hoí* was used to express *two* or *more*, and *baágiso* was used to express quantities of *three* or *more*. On the other hand, in the decreasing elicitation task, *hói* was used to express quantities as large as *six*, *hoí* was used to express quantities between *four* and *ten*, and *baágiso* was used to express quantities between *seven* and *ten*. This showed that none of the three Piraha words was used consistently to express quantity across the two tasks, as shown in Figure 2, leading to the conclusion that the Piraha language has no absolute lexis like *one*, and that the three words used by the Piraha speakers could be better compared to words such as *few* or *fewer* (Frank et al., 2008). From the point of view of a Spanish or English speaker, it seems that numbers are an everyday necessity to express quantity not just when counting objects, but also when ordering in a restaurant, paying with money, grading students' work, and many other situations; the idea of not having numbers would be impossible to think of! This can suggest that Piraha speakers think and perceive the world differently to English and Spanish speakers, since for them exact numbers to indicate quantity are not a necessity, there is no use in having them.

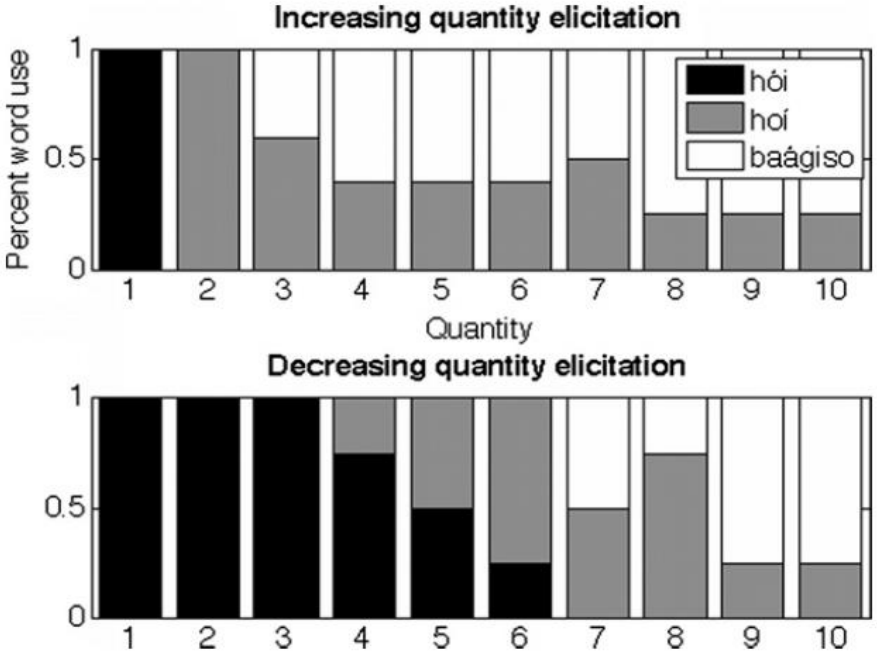

Figure 2. Results on the proportion of Piraha words *hói*, *hoí*, and *baágiso* used by Piraha speakers in increasing and decreasing quantity elicitation tasks. (Frank et al., 2008, p.820)

A study that illustrates how differences in semantic categories from different languages affect perception, analyzed five languages in their spatial relations (Tseng et al., 2016). The participants were native speakers of each of the following languages: Dutch (Netherlands), English (United States), Chichewa (Malawi), Mandarin (China), and Maihiki (Peruvian Amazonia); Maihiki speakers were tested in Spanish since their native language is endangered and has few speakers. Participants developed a pile-sorting task and a naming task using spatial relation scenes that represented the relationship between a figure object and a ground object, as shown in Figure 3, from where the authors concluded that language has "a small but significant role in shaping spatial similarity judgements" (p. 2236). As it can be seen in Figure 3, the Chichewa language uses the word *mu* to refer to both English words *around* and *inside*; the word *pa* for both *on* (object on top of other) and *through*, but replacing *on* for *ku* in the case of an object attached to other as the picture of the balloon. Mandarin uses even less categories than English and

Chichewa, using the word *shang* to refer to the English words *on* and *around*; and the word *li* for both *through* and *inside.* The categorization differences between English and Chichewa seem broad since Chichewa doesn't differentiate the words *around* and *inside*, while an English speaker would find it inconceivable to indicate an idea such as *the necklace is inside her neck*, instead of *around her neck*, it is not visually possible, perception is affected. On the other hand, the categorization used in Mandarin seems to be more general, but still affects perception since an English speaker would not find completely accurate to say *the necklace is on her neck*, instead of *around her neck*. This is persuasive evidence of how differences in categorization from language to language affect speakers' perception of reality.

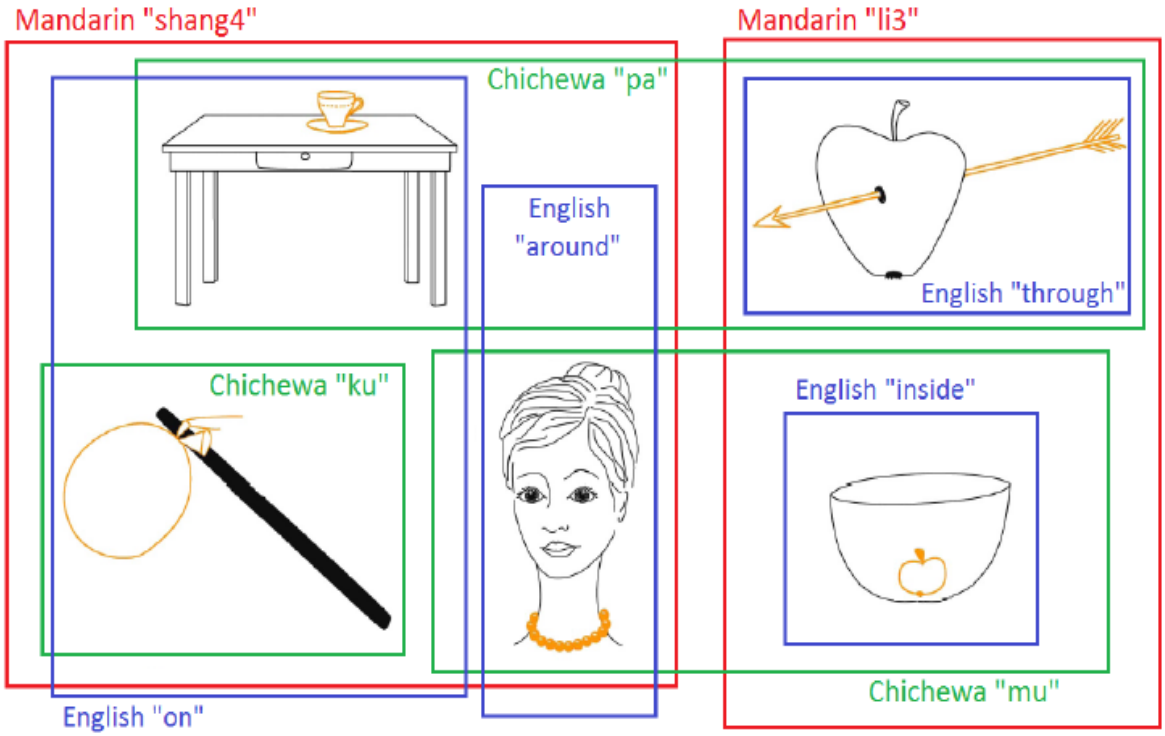

Figure 3. Cross-linguistic naming variation in the spatial domain. Each scene depicts a spatial relation between a figure object (in orange) and a ground object (in black). The scenes are grouped differently by different languages. (Tseng et al., 2016, p.2232)

Time mapping can also be compared in English and Aymara (language spoken in the Andes: Bolivia, Perú, Argentina, and Chile), where for English speakers the future is in front of them and the past behind, while for Aymara speakers it's the opposite (Everett, 2017). English speakers use words as *front* or *behind* when talking about the future or the past, respectively, but the direct translations to Aymara carry a different meaning. The Aymara word *nayra* (English: *front*) is used to talk about events that happen in the past, and the word *qhipa* (English: *behind*) is used to refer to events in the future. In addition, Everett (2017) explains that during the study motion sensors detected how English speakers swayed backwards while speaking of past events, and swayed forward while speaking of the future; opposite to the movement made by Aymara speakers. A direct translation from Aymara to English or vice versa would be impossible when talking about time since these words carry different meaning and are used in completely contrary ways for communication.

English, Indonesian, Greek, and Spanish speakers estimate time in different ways (Casasanto et al., 2004). English and Indonesian map time onto linear distance (*long* time), while Spanish and Greek onto quantity (*much* time). English speakers can use the word *long* and *short* for indicating time or length, but Greek speakers would only use the corresponding translation of these two words *makris* and *kontos* to talk about length, preferring to use words such as *poli* to indicate something that lasts *much* time. The authors conducted two experiments to determine if this difference in time mapping affected speakers' temporal thinking when estimating time while overcoming spatial interference. The results showed that these two metaphors of time as distance and time as quantity from their native languages, affected dramatically the mental representations and estimation of time (see Figure 4), and concluded that our native language influences the representations we build for speaking, remembering, acting, and even perceiving the world.

	Distance	Quantity
English	long time	much time
Indonesian	waktu panjang	waktu banyak
Greek	makry kroniko diatstima	poli ora
Spanish	largo tiempo	mucho tiempo

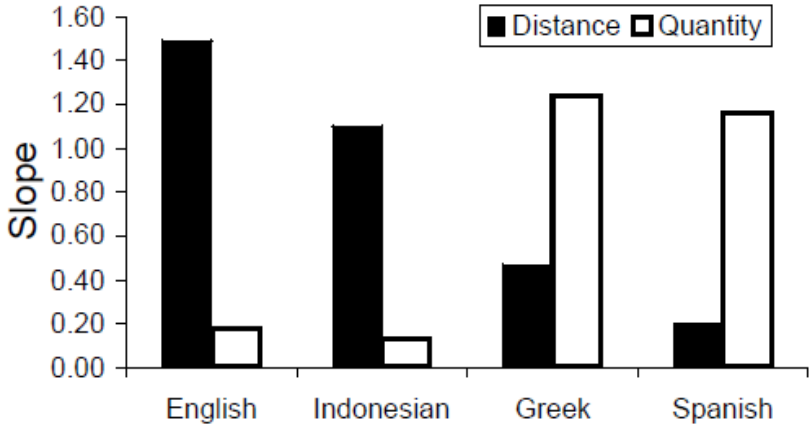

Figure 4. Distance and quantity metaphors in time, and their interference on time estimation. (Casasanto et al., 2004, p.188, 190)

In this section, empirical evidence on color, objects, quantity, spatial relations, and time has been presented to explain how differences in lexis/semantics across languages affect perception. From these studies it has been evidenced that speakers of different languages can perceive or think of the world differently because they don't use certain words or have different semantical categories, meaning that for certain languages some words are irrelevant or don't need to have a special category. For English speakers expressing a difference in colors such as blue and green, distinguishing a clock from a watch, using numbers in daily life activities, and representing space and time through metaphors is useful and necessary, but for speakers of other languages this may be completely irrelevant in their perception of reality. The major problematic regarding lexis/semantics differences is the one of translation, since words may not exist or have a different meaning in another language. Translation and bilingualism are two topics used by those who don't support the Sapir-Whorf hypothesis, claiming that if the hypothesis is true, translating and learning another language would be impossible. However this can be easily

solved because it has been through language awareness and intercultural awareness that translation and learning of another language is possible, without leaving aside our identity and the notion that our native language shapes our perception.

VI. RESEARCH ON SOCIOCULTURAL ASPECTS

Language and thought are tightly linked to culture and society, which is a reason why a section on sociocultural aspects must be prevailing to illustrate how language also affects specific behaviors adopted by people from different cultural backgrounds. In some cases language carries some extra information that for that specific language must be said, while for others it may not be necessary. In other cases, speakers access their culture to be able to communicate something through a language, even when it's not their native language. Several studies regarding sociocultural aspects (Bassetti & Nicoladis, 2016; Boroditsky, 2001; Boroditsky, 2011; Everett, 2017; Fausey, Long, Imanori & Boroditsky, 2010; Fuhrman & Boroditsky 2010; Spencer, 2019) will be presented to support the premise that language affects perception.

Boroditsky (2011), assistant professor of cognitive psychology in Stanford University, presents an example to explain how languages carry sociocultural information by describing the information that the utterance "*I saw Uncle Vanya on 42nd street*" expresses in different languages. In Mian (language spoken in Papua New Guinea) the verb would tell if this action happened in a recent or distant past, while in Indonesian the verb wouldn't tell if the event already happened or is still coming up. If we were to compare this to English, the verb indicates that the event has happened, but it doesn't indicate if it was recently or long ago. In Russian, the verb reveals the gender of the speaker (Boroditsky, 2011), which does not happen in English or Spanish. In Mandarin, words for maternal and paternal, relationship by blood or marriage exist, and this has to be specified when talking about family

members (Boroditsky, 2011), whereas in English or Spanish the word *uncle* is sufficient. This particular example shows how different languages can give information that some cultures would consider necessary just because their language indicates so, while other languages don't evidence a need for sharing this information.

In a study, Boroditsky (2001) compares English and Mandarin time mapping, where English speakers talk about time as if it was horizontal, while Chinese speakers do it as if it was vertical even when using English. To show this, participants had to judge the truthfulness of sentences (for example, March is earlier than April). The results (see Figure 5) showed that when using words such as *after* and *before* (horizontal spatial metaphors) both English speakers and Chinese bilinguals responded faster by using a horizontal prime instead of a vertical prime, meaning that they did some specific gestures or movements indicating horizontality. On the other hand, when words such as *earlier* and *later* (neutral spatial metaphors) were used, English speakers followed a horizontal prime, and Chinese bilinguals followed a vertical prime, using gestures or movements indicating verticality. The research concluded that the native language is a powerful shaper of thought as in the weak version of the hypothesis, but not entirely a determiner of thought as the strong version suggested. From this study, it can be seen how speakers access to their own culture in order to express ideas in their own native language or in a different language.

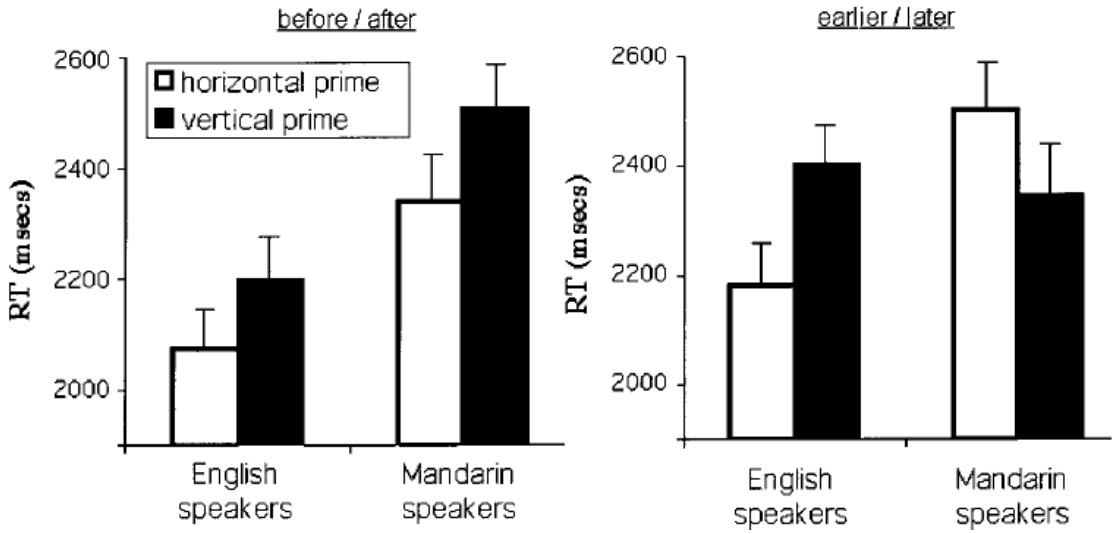

Figure 5. Response time in seconds to temporal *before/after* questions (left) and to temporal *earlier/later* questions (right). (Boroditsky, 2001, p. 10, 11)

In Everett's study (2017) mentioned in the previous section, time mapping for English and Aymara show differences in how these speakers refer to the past and the future in opposite ways, and even differences on how they move when talking about time. The reason why this happens comes from their own culture and beliefs, from where it can be said that language and perception are tightly connected. Everett (2017) uses the action of walking to explain how English speakers talk about time: thinking of the place they are getting to symbolizes future, and as they walk time goes by and it's left behind, symbolizing past. In contrast, Aymara speakers' expression of time comes from the idea that the past is known because it has been seen with their eyes, the past is in *front* of them; while the future is unknown, they haven't seen it, therefore it's *behind* them (Everett, 2017). In this example the presence of cultural beliefs in language is clear, leading to the idea that language carries some extra information that can influence behavior (moving forwards or backwards when talking about time) and more importantly perception.

Another important behavior seen in Everett's study (2017) was the fluency of Aymara speakers, where elders who only spoke Aymara were compared to younger bilingual

speakers of Aymara and Spanish. Aymara monolinguals showed to be more fluent while speaking than Aymara bilinguals. In contrast to Boroditsky's study (2001) were Chinese bilinguals showed the influence of their native language, Aymara bilinguals could express future to be in front of them and past to be behind them, adopting the Spanish (also English) gestures. Nonetheless, the influence of Aymara as the native language was evident in fluency since monolingual elders showed to be more fluent than bilinguals (Everett, 2017). This study strongly suggests that the native language affects perception of the world, that language can influence the way people see time, the way people make gestures or movements, the fluency of people while speaking, in other words, that language influences the way people think and shape ideas.

Bassetti and Nicoladis (2016) review research on how speaking a language that indicates gender can affect the way speakers think. In various languages nouns designate gender, and affect gender in adjectives, articles and pronouns that accompany those nouns. For example in Spanish "*la casa roja*", has a feminine article, noun, and adjective, while in *"el carro rojo",* the article, noun, and adjective are masculine. Some of the languages that have a feminine, masculine, and sometimes neuter gender are French, German, Italian, and Spanish; and this is less frequent in other Indo-European languages such as Russian (Bassetti & Nicoladis, 2016). The review mentions several studies to illustrate that gender categories affect the speaker's categorization, which also affects perception of the masculinity and femininity of referents. For example, the neuter *butterfly* in English is feminine in Italian (*la farfalle*), and masculine in German (*der Schmetterling*) and French (*le papillon*), this affects perception since the butterfly is seen by some as feminine and by others as masculine. The same happened for Italian and Portuguese speakers when judging similarities between animals (words, not pictures), where animals were judged as more similar if they had the same grammatical gender (Bassetti & Nicoladis, 2016). Although these cases don't profoundly exemplify how sociocultural aspects in language influence perception, Bassetti and Nicoladis (2016) argue that grammatical gender is one of the ways "in which cultural attitudes are communicated

and passed on through generations." (p.7), and that it affects real life behavior. This can be seen in the representation of abstract concepts as time or faith, when consumers prefer a product where the grammatical gender matches the connotation of the product (*Aizo* for a beer, *Aiza* for a cocktail), or even by attributing sex-specific properties to animals. Gender in language is linked to people's lives to the point that grammatical gender is part of sexist language, as argued by the Royal Spanish Academy (Bassetti & Nicoladis, 2016). The information that a language carries, such as gender, can have great impact in life and perception of the world, not only because it makes us think of our surroundings as feminine and masculine, but also because it can lead to the discussion if it is possible that through language we are being sexist or not.

Describing events through language in relation to memory, can also serve as evidence to support the claim of the weak Sapir-Whorf hypothesis that language influences perception (Fausey et al., 2010). In this study, the authors talk about the construction of agency guided by patterns in culture for English and Japanese speakers. In the first experiment, English and Japanese speakers watched a series of videos with intentional and accidental events, for example a man breaking a pencil and looking satisfied, and a man writing with a pencil that breaks accidentally and surprises him. Participant explained *what happened*, in the case of intentional events speakers of both languages answered "He broke the pencil", but in accidental events Japanese speakers preferred to answer "The pencil broke." Fausey et al. (2010) compared English and Japanese descriptions of intentional and accidental events, the former concluded that both languages are equally agentive and the latter concluded that Japanese was less agentive than English. In the second experiment, participants read instructions and completed a non-linguistic agent memory task using the same videos of the first experiment; participants then had to decide *who* did these events. When the eye-witness memory was analyzed, English and Japanese speakers remember the agents of intentional events, but in accidental events English speakers remember the potential agents better than Japanese

speakers (Fausey et al., 2010). The results of the first and second experiments are shown in Figure 6. To conclude, this study showed how language serves to blame or exculpate someone of a specific event, this is persuasive evidence that suggests that language can even influence our judgement. The same behavior as Japanese can be seen in Spanish speakers where language is less agentive than English, as will be explained in a subsequent section.

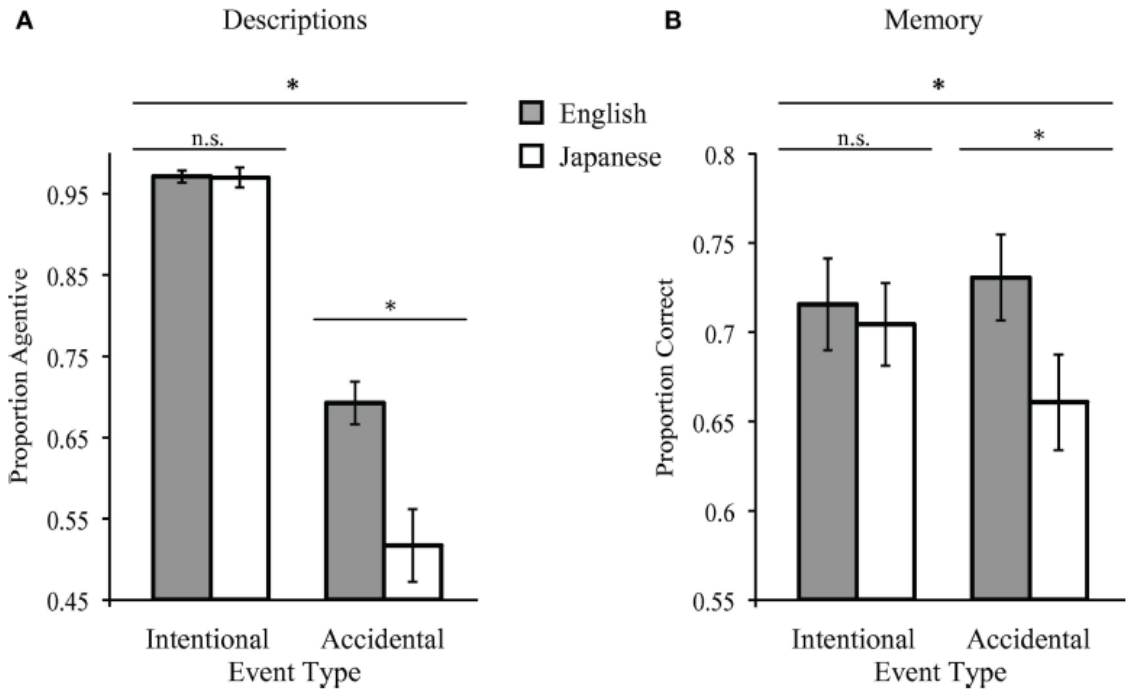

Figure 6. Graph A shows results of the first experiment, where descriptions of intentional and accidental events were compared. Graph B shows results of the second experiment, where the English speakers remembered better the agents of intentional and accidental events. (Fausey et al., 2010, p.5)

Native language and writing systems determined by society and culture can also influence perception. A study carried out by Fuhrman and Boroditsky (2010) compares spatial representations of time made by English and Hebrew speakers with the objective to show that participants accessed their cultural background to construct these representations of time. In this case, English and Hebrew speakers were not influenced by their native languages, but rather by the direction of their

scripts: Hebrew script written from right to left and English script written from left to right. In the first experiment, participants had to arrange pictures in a temporal sequence, English speakers arranged pictures from left to right and Hebrew from right to left, evidencing the effect of their own writing directions to represent time. In the second experiment, participants had to judge the temporal order of two pictures shown one after the other, deciding if the second picture represented an event that happened earlier or later than the first picture. To respond, participants used two adjacent keyboard keys, the left one labeled as *earlier* and the right one labeled as *later*. The third experiment was developed in the same way as the second experiment, but Fuhrman and Boroditsky (2010) decided that instead of labeling the keyboard keys with the words *earlier* and *later*, two different colors (white and black) had to be used in order to see if results from the second experiment were being affected by the linguistic labels. The results of these two experiments (see Figure 7) showed that English speakers were faster to judge the picture as earlier when the *earlier* response corresponded to the left key than with the right key; and Hebrew speakers responded faster when the earlier response corresponded to the right key than the left key. When earlier corresponded to the opposite direction of writing, right for English and left for Hebrew, the response took longer, because participants were accessing their cultural background, the writing direction of their native language was interfering with their responses (Fuhrman & Boroditsky, 2010). It can be stated from this study that the writing system of a language is a cultural feature that has an effect on speakers' representations and perception of time.

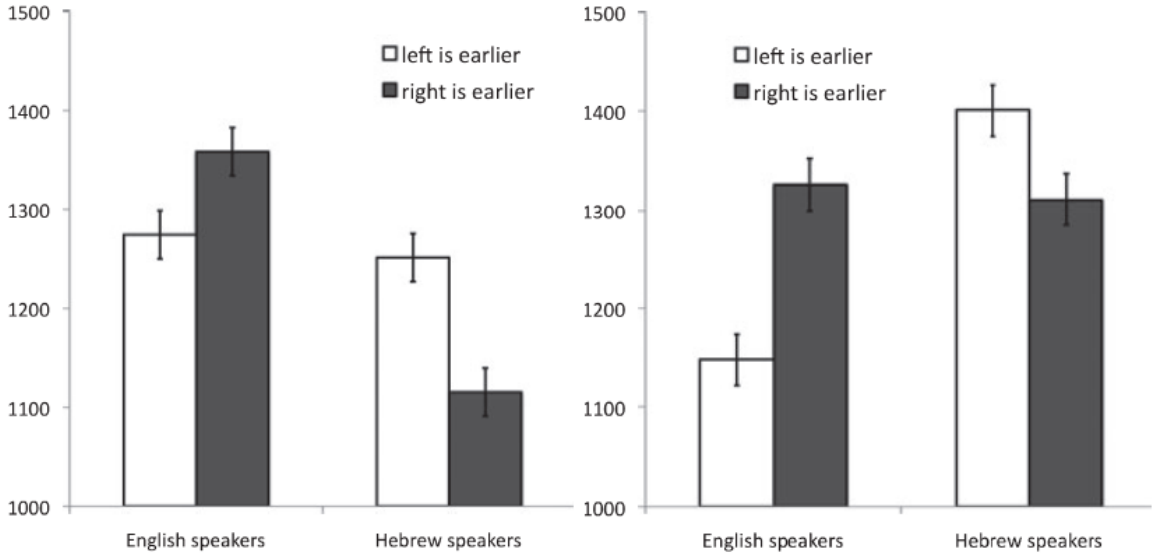

Figure 7. Results of experiments 2 (left) and 3 (right). The Y-axis presents reaction time in milliseconds. (Fuhrman & Boroditsky, 2010, p. 1439, 1442).

Spencer (2019) writer for the online BBC news in Africa explains that in Kiswahili (language spoken in East African countries such as Tanzania) there is no word for Down's syndrome, and because of this Swahili speakers use other words to try to explain this medical condition. Even though this seems just as a difficulty in translation due to the inexistence of a word in the language, it has a deeper impact in society's perception. Spencer lists the different terms used to describe this condition as follows: *mlimbuko dalili dumazi* according to the Swahili dictionary is used for disabled people, where *dumazi* can be translated as *dwarf*, an incorrect translation of the word down as short, when actually the syndrome's name comes from the doctor who first observed this condition, John Langdon Down. Another term used is *taahira* (also *mazazeta* and *zuzu*), its equivalent in English is *retard*, an offensive insult that has not been replaced with *"learning disability"* as it has in English. The term *mtindio wa ubongo* is the most accepted one, but not completely accurate since it means *cerebral palsy*, which is a different medical condition. Finally, the term *ndondocha,* slang meaning *zombie* or person who has been possessed or cursed to be mentally disabled. Perception about this particular medical condition is so affected by the fact that the term doesn't exist in the language, or by the fact that

other inappropriate Kiswahili terms are used, that it seems that Down's syndrome doesn't exist in Tanzania, when it actually does. This happens because babies that are born with this condition are hidden by their parents due to shame of being accused of witchery, of sacrificing their child's mental capabilities for money. This example strongly proposes that language can even affect our beliefs and the perception of a whole community, to the point that members behave in the way society demands, by judging and excluding others.

Sociocultural aspects are immersed in language, which is a reason why cultural information is expressed through language while speaking or writing, and behaviors from the native language are adopted while using a language. Empirical evidence from studies in time metaphors, fluency, gender, agency, writing system orientation and beliefs have been presented in order to exemplify how sociocultural aspects in language affect the way speakers of different languages perceive the world. Through these studies, it has been validated that our native language influences how we think of time by making gestures or movements, how we can be more or less fluent when our native language interferes with a second language that expresses ideas is a different way, how gender and construction of agency can affect our opinion and judgement about our surroundings, how our native writing system orientation affects our response when orienting in a different way, and even our beliefs and behaviors in our community. Our native language is a strong shaper of ideas as Whorf expressed, and even if we are fluent bilingual speakers using a second language, our brains will recall and use information from our native language.

VII. RESEARCH ON COGNITIVE ABILITY

One of the most interesting focuses explored nowadays by researchers is how language influences cognitive ability or how different languages impart different cognitive skills. Different studies have been made to support the statement that language affects cognitive ability (Boroditsky, 2011; Fuhrman & Boroditsky, 2010;

Goddard, 1995; Guiora, 1983; Michael, 2002; Tulviste, 2019). To illustrate this perspective, Boroditsky (2011) gives the example of a 5 year old girl in Pormpuraaw (aboriginal community in Cape York, northern Australia) who can point north with precision and no hesitation when asked to do so. This same exercise had different results when scholars from Stanford, Harvard, and Princeton Universities were asked to point north. Apparently, the eminent scientists struggled with the task, some didn't point north, and others had to think for a while before pointing at possible directions. Boroditsky (2011) argues that these differences in cognitive ability happen because of language.

Boroditsky (2011) firmly believes that language affects perception of the world. In her research, she explains how speakers of Kuuk Thaayorre in Pormpuraaw don't use words such as *right* or *left* (relative spatial terms) to indicate position of objects, but cardinal directions. While English uses cardinal directions for large spatial scales, Kuuk Thaayorre uses them for all scales, for example: the cup is *southeast* of the plate. Speakers of Kuuk Thaayorre must be oriented at all times to be able to speak properly, concluding that language is the reason why a 5 year old girl can be more oriented than scientists from prestigious several universities. Boroditsky mentions other studies by Levinson and Haviland that have demonstrated that speakers of languages that use cardinal directions are well oriented and can keep track of their location even when they are in unfamiliar places. These speakers can be better oriented than speakers that live in these places but don't speak these types of languages. The use of these languages obliges speakers to train these cognitive skills, therefore it can be concluded that languages can enhance cognitive ability.

Prominent cognitive skills can be evidenced in space, but also in time (Boroditsky, 2011). Speakers of Kuuk Thaayorre were asked to arrange pictures with temporal progressions (for example a man aging) indicating the correct temporal order. While English speakers arranged the pictures from left to right and Hebrew speakers from right to left as in their writing systems (Fuhrman & Boroditsky, 2010), Kuuk Thaayorre

speakers arranged pictures from east to west. This happened every time, even though each person was tested twice facing different cardinal directions, meaning that when facing north the arrangement was from right to left and when facing south from left to right. The Kuuk Thaayorre speakers were not told what cardinal direction they were facing, but they knew it and constructed their representation of time correctly according to their language. It would be possible to raise the question: would English, Spanish or Hebrew speakers be able to always state where north is as the Kuuk Thaayorre speakers can? Once again the example of the Kuuk Thaayorre language supports the premise that speakers have developed their cognitive skills because of the language they use and that their reality or perception of the world is better described in terms of cardinal directions that in any other way.

The grammatical features of a language influence cognition in children when classifying objects, as described in an experiment by Carroll and Casagrande in 1958 (Tulviste, 2019). All young children start by classifying objects in the basis of color and as they grow up, they start doing it by shape. In the case of the Navajo language (Native American language from the United States), verbs related to the manipulation of objects have diverse suffixes to indicate the shape of the object that is being manipulated. Navajo speakers need to pay attention to shapes to be able to speak their language properly, just as the Kuuk Thaayorre need to pay attention to cardinal directions. Having this said, since English doesn't require the speaker to give information about shape, the study aimed to test that Navajo children transitioned from classifying by colors to classifying by shape earlier than Anglophone children. The results confirmed this hypothesis, leading to the conclusion than language influences cognitive development (Tulviste, 2019). This study shows how being a speaker of a language that requires to use determined features, affects our perception in terms of what is more important to express or represent, and enhances cognitive skills even during the first stages of life.

Goddard (1995) review's a study about grammatical categories and cognition made by Lucy in 1992. In his study, Lucy compares English and Yucatec Maya (southeastern Mexico) languages to test the notion that differences in language shape thinking, and states two hypothesis regarding how the way speakers process information about objects is affected by linguistic differences. The first hypothesis is that English speakers attend more to numbers than Yucatec speakers, since number marking is obligatory in English for nouns referring to people, animals, and objects, while in Yucatec it's not necessary because nouns are neutral or semantically indeterminable as to number. The second hypothesis is that English speakers classify by shape while Yucatec speakers classify by material composition. During the study participants were shown a series of objects, first a single object and then two different objects, and they had to determine which of the two objects was more similar to the first one. For example, if speakers were presented with a cardboard box, English speakers would choose the object with the shape of a box, while Yucatec speakers would choose any object made of cardboard. These results confirmed the hypothesis stated by Lucy, leading to the conclusion that grammatical structure influences cognitive activity. In this case, where participants only had the task of selecting an object and didn't even need to speak, it is observable how the categorization inherent to their native language is evidenced in their cognitive processes.

A research comparing Hebrew, English, and Finish children aimed to show that differences in language affect cognitive ability when needed to determine gender (Guiora, 1983). As explained before in this document, some languages mark gender as feminine, masculine or neutral, while other languages don't mark gender at all. In this study, Guiora (1983) explains that Finnish has no gender marking, Hebrew marks gender (even the word "you" is different depending on gender), and English is in between. Because of this, it was expected that Hebrew-speaking children could identify gender earlier than English-speaking children, and even earlier than Finish-speaking children. The results showed that children growing up in a Hebrew-

speaking environment could identify their own gender about a year earlier than Finnish-speaking children; and that English-speaking children where somewhere in the middle, concluding that in fact language can even affect how quickly children can recognize if they are male or female (Guiora, 1983). This research study suggests that the differences in gender information carried in language can affect children's cognitive ability to identify their own gender.

Michael (2002) reformulates the Sapir-Whorf Hypothesis as *discursive relativity* explaining that relation between language and thought must also cope with differences in patterns of use in the course of interaction. Also, that language is a structured resource used to communicate, and that this structure affects the cognitive process of the interacting group, even when the individual processes are not affected. To support these ideas, Michael (2002) carried out a study on collaborative problem-solving interactions among engineering students. Through videotaping, two groups of students were analyzed while they developed a computational trajectory (a series of algebraic and arithmetic calculations) to get to an answer. In a first interaction, request for information takes place and when a divergent point in calculation arises the two students work their way back to fix it and then continue working individually. In a second interaction, one student narrates step by step while the others can give suggestions, criticisms and information during the process. The conclusion of the study posits that communication happened in different ways leading each group to produce different distributed cognitive processes (Michael, 2002). Tulviste (2019) also reformulates the linguistic relativity hypothesis as *activity relativity*, and claims that cognitive processes are much more dependent on activity (activities of a community) than on language. Despite the fact these studies do not claim to support the Sapir-Whorf hypothesis and don't compare differences in two or more languages, it does illustrate how through social interaction (language use or community activities), thought (cognitive processes) are affected.

The differences found in cognitive ability, skills and processes across languages can be attributed to linguistic differences as stated by Boroditsky (2011). In this section, research studies on space, time, classification of objects, gender, interaction, and community activities have been presented to support the hypothesis that language enhances cognitive ability. The evidence collected in these studies shows how language structures force speakers to be more oriented, to be able to give a specific relevance to categorization, to do cognitive processes in earlier stages of life or in different ways through interaction and every day activities in a community.

VIII. DIFFERENCES IN PERCEPTION FOR SPANISH AND ENGLISH SPEAKERS

Previous sections have shown some of the empirical evidence, in various languages, gathered by researchers who concluded that language influences thought as the weak version of the Sapir-Whorf hypothesis claims. In order to approach the first research question, "*to what extent can it be said that Spanish speakers experience the world in a different way to English speakers?"* this section will focus on several research studies (Bassetti & Nicoladis, 2016; Boutonnet, Athanasopoulos & Thierry, 2012; Casasanto, et al., 2004; Fausey & Boroditsky, 2011; Flaherty & Richardson, 1996; Flaherty, 2000; Naigles & Terrazas, 1998) that support the linguistic relativity hypothesis regarding differences in Spanish and English. Once this section is concluded, it will serve the purpose of highlighting some of the possible teaching applications to present in the following section.

As presented in earlier sections, perception of time may differ from language to language, supporting the idea that language affects perception of the world. Casasanto et al. (2004) showed how Spanish speakers map time onto quantity (much) while English speakers map time onto linear distance (long), affecting mental representations and estimation of time. The authors' results (see Figure 8) led them to the conclusion that language can shape perception. As it can be seen in Figure 8,

these results do not mean that Spanish speakers don't use expressions such as *"Esperó largo tiempo"*, or *"I don't have much time"* for English speakers, but it is unlikely that native speakers use such metaphors of time. What these results may suggest is that if Spanish speakers perceive time as quantity, then time must have a weight or value, as implied in the Spanish expression *"el tiempo es oro"* (time is gold). Also, that if English speakers perceive time as distance, then time moves in space and, as stated by Everett (2017), as people walk forward, time passes by. It would be interesting for future research to test if Spanish speakers perceive time as profitable, as if having more time means having the opportunity of making more money; and if English speakers perceive time as walkable, as if running means time passes by faster.

	Distance	Quantity
English	long time	much time
Spanish	largo tiempo	mucho tiempo

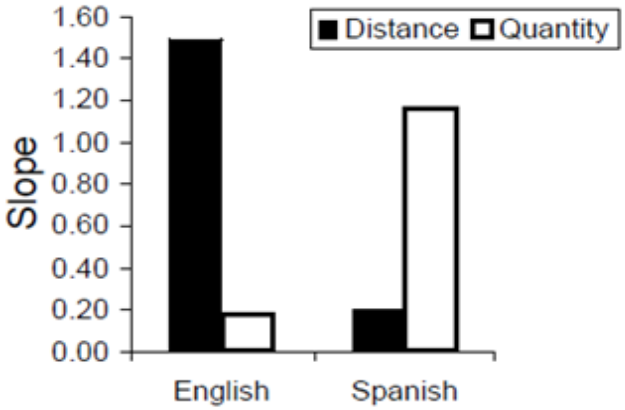

Figure 8. Distance and quantity metaphors in time, and their interference on time estimation. (Adapted from Casasanto et al., 2004, p.188, 190)

Additionally, spatial relations vary between Spanish and English, causing possible differences in perception of reality. Flaherty and Richardson (1996) designed an experiment to show how Spanish and English speakers expressed spatial relations

differently when using their native language compared to when using a second language (English for Spanish speakers and Spanish for English speakers). To do so, 213 university students were divided into six groups depending on the language and level of proficiency in the second language used to answer the task (see Table 2). Three pictures with objects and people in spatial relations to one another were shown, these could be interpreted in two ways, deictically (from the observer) or intrinsically (from the object). Participants completed a questionnaire choosing the correct word (behind, in front of, in, etc.) to complete sentences, taking into account the spatial relations they observed in the three pictures. The results showed that Spanish speakers answering in their native language (group 1) preferred a subject-oriented description (deictic) while English speakers (group 2) equally used the subject-oriented and object-oriented descriptions. Groups 3, 4, 5, and 6 showed a trend of becoming more similar to the language they were learning as their level of competence in the language improved. The authors concluded that there is a correlation between language and the preference on how to describe spatial relations, and that language influences the way we classify what we perceive. In this sense, it can be suggested that because of differences in semantic categories created by our language, we shape and express our ideas in different ways.

Group 1	(N=61):	Spanish native speakers, answering in Spanish;
Group 2	(N=71):	English native speakers, answering in English;
Group 3	(N=26):	Spanish native speakers, with basic level English, answering in English;
Group 4	(N=19):	Spanish native speakers, with advanced level English, answering in English;
Group 5	(N=11):	English native speakers, with basic level Spanish, answering in Spanish;
Group 6	(N=25):	English native speakers, with advanced level Spanish, answering in Spanish.

Table 2. Quantity of students, native language, level of proficiency in the second language, and preferred language to answer. (Flaherty & Richardson, 1996, p.5)

Influence on perception because of differences in gender between languages has also been presented in this document. Bassetti and Nicoladis (2016) explain that Spanish carries feminine and masculine gender in articles, adjectives, and pronouns, while English does not have a grammatical gender system. Nonetheless, English monolingual speakers share intuitions on how to assign gender, as illustrated with an example from Bodenhausen's study in 2012 (Bassetti & Nicoladis, 2016), where English speakers showed a tendency for thinking of odd numbers as masculine and even numbers as feminine. Flaherty (2000) studied Spanish and English through two tasks: a gender assigning task and an attributions assigning task to test how gender influenced the speakers' responses. For both tasks, each participant received an identical booklet (see Figure 9) of 20 cartoons with 10 animate and 10 inanimate referents (no colors were used, instructions were written in the native language). In task 1, participants assigned a name to each cartoon and marked if they were male or female by circling a boy or a girl. In task 2, participants marked each item on the following scales: low-high, hot-cold, small-big, beautiful-ugly, and sad-happy, associated with femaleness and maleness respectively.

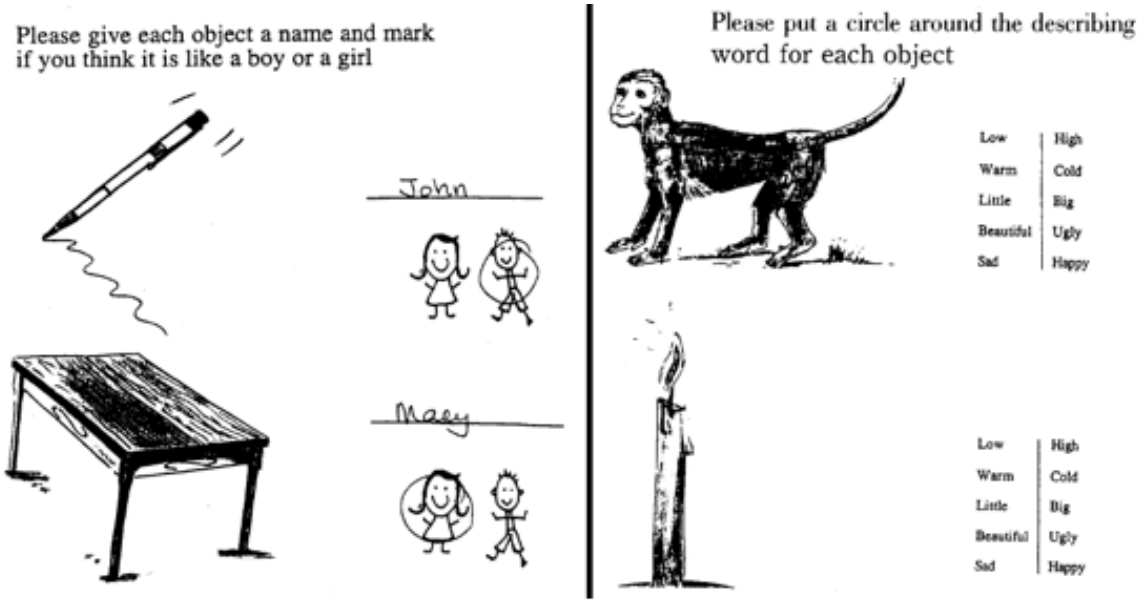

Figure 9. Sample of booklet. (Flaherty, 2000, p.4)

The results, as shown in Table 3, showed that Spanish speakers were influenced by the grammatical gender (of the Spanish language) when assigning gender, as well as when assigning attributions, being this relationship weaker than the grammatical gender and gender assignment relationship. In the case of English there was a significant relationship between the gender and attributions assigned to the cartoons. It was concluded that Spanish speakers were influenced by grammatical gender, while English speakers were influenced by attributes, leading to the idea that gender is a classification system that offers the possibility of classifying reality in this way (Flaherty, 2000). Boutonnet et al. (2012) analyze gender in Spanish-English bilinguals and concludes that native Spanish bilingual speakers access grammatical gender in categorization tasks in a spontaneous and unconscious way, providing support to the linguistic relativity hypothesis. Accessing to the native language in order to express ideas is a way of acknowledging that language influences thought, as stated in this document from studies presented in previous sections. On the contrary, as studied by Bassetti and Nicoladis (2016) native English bilingual speakers with high levels of exposure to Spanish recalled better the names of inanimate objects that were consistent with the grammatical gender of Spanish (Patrick for the masculine *corn*) than those that were inconsistent with the grammatical gender (William for the feminine *beach*), showing that learning an additional language can influence thinking (Bassetti & Nicoladis, 2016). In this case, native English bilingual speakers are not influenced by their native language when expressing gender in a second language as Spanish, because English does not carry gender; on the contrary the second language adds and influences cognition, thinking, and perception.

Noun	Gender of noun	Assigned Gender	Attributes
Watch	M	M	F
Bird	M	F	F
Car	M	M	NEITHER
Tiger	M	M	M
Sun	M	F	M
Monkey	M	M	F
Airplane	M	M	M
Tree	M	M	M
Elephant	M	M	M
Fish	M	M	F
Banana	M	M	F
Snake	F	F	F
Bed	F	F	M
Cup	F	F	F
Teapot	F	F	F
Frog	F	M	F
House	F	F	M
Candle	F	F	F
Flower	F	F	F
Moon	F	F	M

Noun	Assigned Gender	Attributes
Watch	M	F
Bird	F	F
Car	M	M
Tiger	M	M
Sun	F	M
Monkey	M	F
Airplane	M	M
Tree	F	M
Elephant	M	M
Fish	NEITHER	F
Banana	F	F
Snake	M	M
Bed	F	F
Cup	F	F
Teapot	F	F
Frog	M	NEITHER
House	NEITHER	M
Candle	F	F
Flower	F	F
Moon	F	M

Table 3. Predominant responses for gender assignment (task 1) and attributes assignment (task 2) for Spanish speakers (left) and English speakers (right). (Flaherty, 2000, p.5, 6)

As explained by Bassetti and Nicoladis (2016) in previous sections, grammatical gender reflects in our attitudes and it can even affect our behavior. Spanish speakers are strongly influenced by grammatical gender in their language when deciding on the gender and attributions of objects, animals and concepts; and these decisions may have consequences on what is nowadays considered to be inclusive, exclusive, sexist, etc. In fact, the concept of inclusive language has been of great controversy for Spanish speakers since feminists claim that masculine words are exclusive of women and that both genders should always be mentioned, as in *"niños y niñas"*, instead of only *"niños"* to refer to mixed groups with both genders. The Royal Spanish Academy rejects the idea of inclusive language (including double gender, the use of 'x', '@' and 'e') since masculine words function as inclusive when used to refer to mixed groups, and argues that the problem is to confuse grammar with sexism (National Geographic, 2018). Not all speakers agree with this statement, Latins is the United States are leading a movement called Latinx where the 'x' not only includes both genders, but also is inclusive of gender non-conforming people

(Jackson, 2018). These statements proposed by the Royal Spanish Academy and its opponents suggest that language is such a strong shaper of ideas that it can affect how we think of sexism or even if we are being sexist or not as we speak. Apparently, it seems that English speakers may not be as affected by this controversy as Spanish speakers because of the lack of grammatical gender in the English language.

A year after studying English and Japanese differences in eye-witness memory of intentional and accidental events (Fausey et al. 2010), the same study published for Spanish and English speakers (Fausey & Boroditsky, 2011). In this study two tasks were tested: in the first task, 29 Spanish speakers and 68 English speakers watched 16 videos of intentional and accidental events (see Table 4 for some examples) where a man interacted with an object and reacted differently for each type of event. Participants then had to describe *what happened*. As a result (see Figure 10), Spanish and English speakers described intentional events in a similar way, and accidental events in a different way (English speakers used more agentive descriptions). The second task was designed to evaluate if results of the first task were due to differences in memory. In this task 109 Spanish speakers and 113 English speakers (that didn't do the first task) watched the same videos and had to say *who* did the events. Results (see Figure 10) indicated that Spanish and English speakers remembered the agents of intentional events equally well, but accidental agents were remembered better by English speakers. Fausey and Boroditsky (2011) concluded that results on eye-witness memory for each event may be influenced by linguistic patterns that differ from language to language since speakers remembered different details about the same events. Remembering *who* or *what,* arranges with how we describe events in our language community, and it can make a "difference between a life behind bars or getting away with murder, between being falsely accused or exonerated." (Fausey & Boroditsky, 2011, p.155). In the case of Spanish and English it was suggested by the results of the study that Spanish speakers are less judgmental than English speakers, and that it can be possible that during an

accidental event an English speaker points out who committed the accident. It is precisely through language that we can make ourselves innocents, guilty, or even blame others for different events, because language can carry information of what happened or who was involved. As it was mentioned before, language is such a powerful shaper of ideas that it can even influence our judgement.

Action	Intentional	Accidental
Crumple can	Crumples can on floor by stepping on it	Turns to walk and crumples can on floor by stepping on it
Knock box	Faces table, knocks box off table	While gesturing, knocks box off table, reaches to grab it
Open door	By turning doorknob, opens door	By leaning too hard against door, opens it and stumbles
Drop keys	Drops keys onto table	Attempts to put keys on table, but drops them on floor
Break pencil	Sits at table, breaks pencil in half	Sits at table, breaks pencil in half while writing
Crack egg	Takes egg from carton, cracks it against bowl	As picking up egg from carton, cracks it against bowl
Close drawer	Faces table with open drawer, closes it with knee	Turning away from table with open drawer, closes it with knee
Pop balloon	Pops balloon using tack	Reaches to put tack in container, pops balloon during reach

Table 4. Intentional and accidental events stimuli. (Adapted from Fausey & Boroditsky, 2011, p.152)

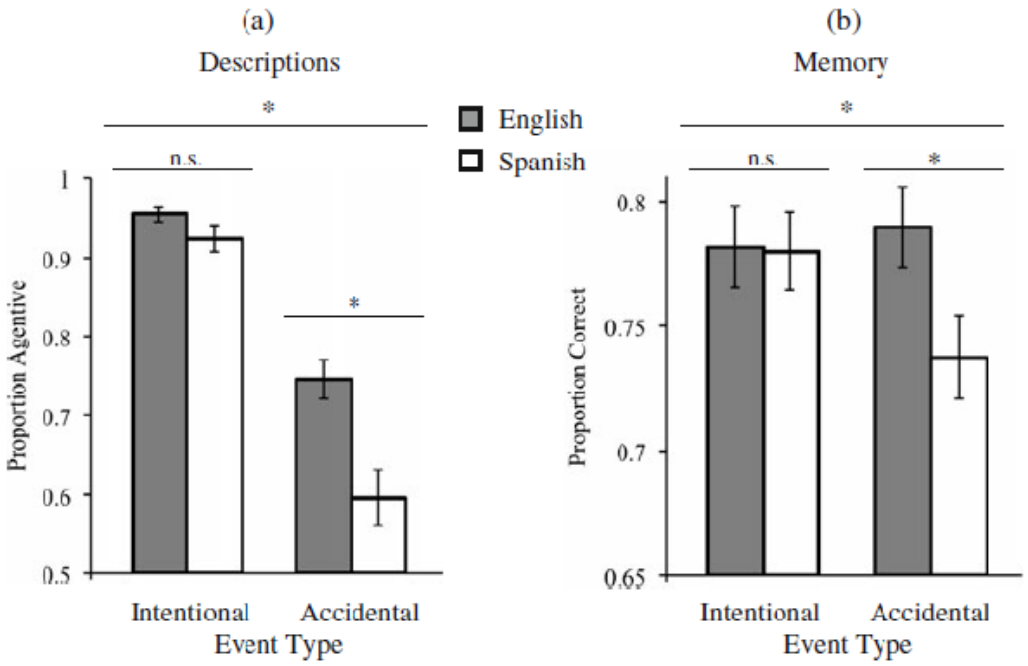

Figure 10. Graph (a) shows results of the first task, where descriptions of intentional and accidental events were compared. Graph (b) shows results of the second task, where the English speakers remembered better the agents of intentional and accidental events than Spanish speakers. (Fausey & Boroditsky, 2011, p.154)

A study on the influence of language on motion-verb generalizations was carried out to test how Spanish and English speakers interpreted novel (nonsense) verbs (Naigles & Terrazas, 1998). Spanish and English speakers talk about motion verbs in different ways, Spanish verbs encode the path of motion (meaning that there has to be reference to the path in which the action is being performed) while English verbs encode the manner of motion (where the language has to acknowledge how the action is carried out). The authors conducted two experiments: in Experiment 1, ten Spanish speakers and ten English speakers watched pairs of videotaped events on side-by-side screens, of an individual performing a motion event that involved both path and manner, an example is shown in Table 5. Trials 1, 2, and 3 are teaching trials, where the novel verb was introduced; trial 4 was the familiarization trial; and trials 5 and 6 were the test trials. During these trials one screen showed the original manner of motion over a new path and the other screen showed a new manner of motion over the original path. The audio for the familiarization trials was nondescript, but for the test trials the experimenter asked the participants to choose which screen showed the labeled motion event. In Experiment 2, ten speakers of each language participated in the path-frame condition, and eleven in the manner-frame condition. The same stimuli and audios from Experiment 1 were used, as well as the same procedure.

Trial	Video 1	Audio	Video 2
1	Woman skips toward tree	English: Look, she's kradding! Spanish: ¡Mira, ella está mecando!	Blank
2	Blank	English: See, she's kradding! Spanish: ¡Ves, ella está mecando!	Woman skips toward tree
3	Woman skips toward tree	English: Hey, she's kradding! Spanish: ¡Oye, ella está mecando!	Woman skips toward tree
4	Woman marches toward tree	English: Look, they're different now! Spanish: ¡Mira, ahora están diferentes!	Woman skips away from tree
5	Woman marches toward tree	English: Where's she kradding? Spanish: ¿Dónde está mecando ella?	Woman skips away from tree
6	Woman marches toward tree	English: Where's she kradding? Spanish: ¿Dónde está mecando ella?	Woman skips away from tree

Table 5. Videotape layout. (Naigles & Terrazas, 1998, p.364)

The results from Experiment 1 (see Figure 11) were not the expected, since both Spanish and English speakers assumed that novel motion verbs encoded manner of motion (Naigles & Terrazas, 1998). The authors explain this could had happen because the short sentences used in the experiment did not mention ground and that paths of motion usually occur in reference to some ground, in contrast to manners of motion that can be given without the reference of ground; making it easier for participants of both languages to interpret novel verbs as referring to manner. Because of this, appropriate manner and path frames were given in Experiment 2. Results of Experiment 2 (see Figure 11) showed the intended effects, where participants chose the manner screen more often in the manner condition, and the path screen more often in the path condition. Also, that Spanish speakers preferred choosing the path screen over the manner screen while English speakers preferred choosing the manner screen over the path screen. Naigles and Terrazas (1998) concluded that these results serve as evidence to support that speakers' interpretations of novel verbs were influenced by language, since responses were consistent when the semantic implications of the frame were in accordance to the patterns of the language, and responses were ambivalent when there was no consistency between the semantic implications and the patterns of language. This research study advocates to the idea that our native language can affect the way we interpret movement around us even when using new lexical items that don't belong to a particular language.

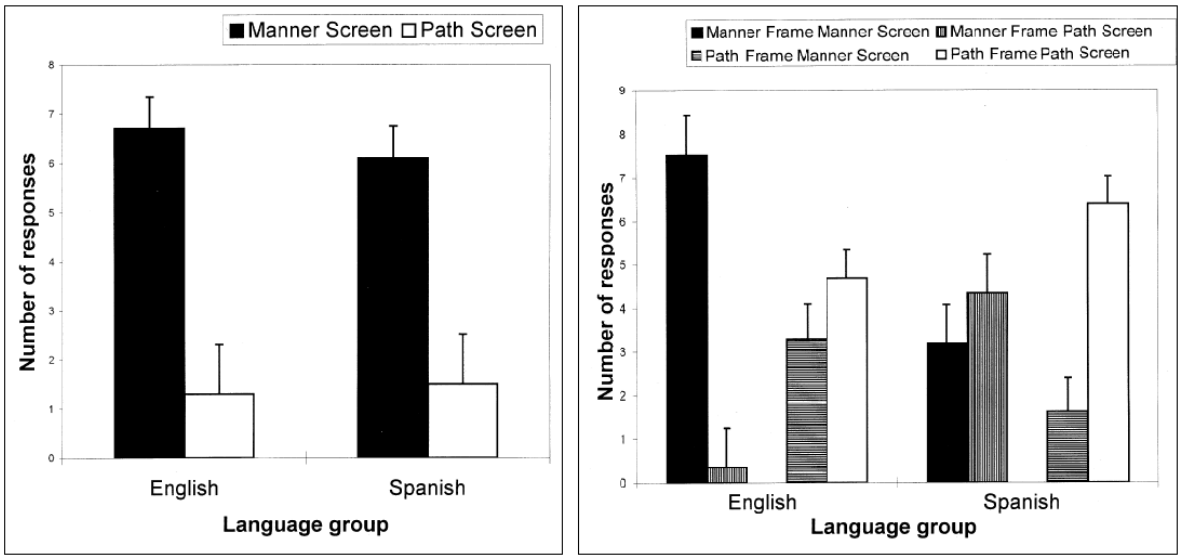

Figure 11. Results of Experiment 1 (left) where black bars replicate pointing at the manner screen and white bars at the path screen. Results of Experiment 2 (right) where black bars replicate pointing motion as manner on a manner screen, vertical-lined bars motion as manner on a path screen, horizontal-lined bars motion as path on a manner screen, and white bars motion as path on a path screen. (Naigles & Terrazas, 1998, p.366, 368)

Even though Spanish and English have different backgrounds, the first one as a Romance language and the second one as a Germanic language, their mutual influence and borrowings have made them be similar in many ways: the same alphabet (except for the letter *ñ* in Spanish), lexis (true cognates), syntax (word order is subject-verb-object, word order is different for the adjective in relation to the noun). Nonetheless, it can be suggested that these similarities may not be sufficient when the differences between these languages lead to differences in perception. In this section, research on time, space, gender, agency, and motion have been presented to illustrate how differences between Spanish and English influence the way their speakers may think and perceive the world. Conclusions of these studies have shown that Spanish speakers prefer to express time as quantity, to explain spatial relation from a subject-oriented description, to include gender in their communication, to omit being judgmental in accidental events, and to talk about motion in relation to path. On the other hand, English speakers prefer to see time as

distance, to describe spatial relations equally from the subject or object point of view, to overlook gender, to remember the agents even when events are accidental, and to express motion in relation to manner. These differences may be powerful enough to change people's way of thinking from language to language, because the native language strongly influences perception and in other cases because learning a second language that adds features to the language can affect the way speakers make sense of their reality.

IX. APPLICATIONS IN TEACHING

After reviewing several research studies supporting the linguistic relativity version of the Sapir-Whorf hypothesis in various languages and mainly between Spanish and English, it becomes necessary to think of the relevance of this topic in the area of language teaching. To approach the second research question, *What possible applications in teaching can this hypothesis have?* this section of applications in teaching will present various authors (Breveníková, 2018; Kramsch, 2013; Mokuoane & Moeketsi, 2018; Raina, 2018; Ramacciotti & Eccles, 2019; Soritova, 2014;) that proclaim that awareness on the language can foster linguistic and intercultural awareness for both learners and teachers. In addition, I will develop a vocabulary list presenting differences between Spanish and English, based on my own experience with English as my second language, with Spanish as my native language from my birth country Colombia, and as an English teacher. The list will present words in Spanish with no direct translation to English, but giving possible alternatives to each, Spanish words that can be translated into two English concepts (explaining when each concept can be used), and also two Spanish words that can be translated into only one English concept, based on Masuda's (2017) study. This list may serve as a tool for linguistic awareness among learners and teachers.

In her paper, Breveníková (2018) reviews different authors from the areas of anthropology, psychology, and applied linguistics to support the weak version of the

Sapir-Whorf hypothesis and present the relationship between language, thought and culture as beneficial in the learning of language. The author believes that learners can get a better insight of the use of language and that teachers can plan and develop language curriculum taking into account this relationship. Understanding this relationship may also help to solve problems among communities where people with different languages, manners of communication, politeness, and cultures live side by side; because it is precisely language the main mediator between individuals and society (Breveníková, 2018). If language learners are able to realize that there is a connection between language, thought and culture, it would be easier for them to understand that learning a language is not a matter of direct translation but of language use, and that communication is the final purpose of learning a language. Being aware of this becomes even more relevant for language teachers who must teach language while thinking of developing not only linguistic competence, but also sociolinguistic and intercultural competences in their students. Awareness of differences in language and perception could be the first step towards addressing the need of including teaching of intercultural competence in curriculum and class planning.

Teachers are experts in teaching linguistic competence by explaining grammatical structures, practicing pronunciation and showing new vocabulary to students, and role games, greetings, conversations and transactional activities enhance the sociolinguistic competence; but when it comes to intercultural competence there is a lack of knowledge on how to approach it. Kramsch (2013) attempts to answer to the question of how can teachers develop learners' intercultural competence in order to make them cultural mediators without falling into stereotypes or threatening learners' own identity. To do so, the author talks about the relationship between language and culture by doing a review of the literature on this topic. It is necessary to understand that "part of what it means to learn someone else's language is to perceive the world through the metaphors, the idioms and the grammatical patterns used by the other" (Kramsch, 2013, p.61-62). Additionally, the author presents

Halliday's 1978 description of language as having a triple relation to social reality, where language *represents*, *expresses* and *is a metaphor* of reality, since it is iconic of the group of beliefs and practices that we know as 'culture' (Kramsch, 2013). What the author wants to point out is that when using a language speakers see themselves from the outside, a point from where they not only use the language correctly, but also reflect on their own experience. Then, culture in language learning has to be approached as a way of making meaning through the use of language and that intercultural competence could be achieved by focusing on knowledge of ourselves and others, skills to discover, interact, interpret and relate, critical cultural awareness, political education relativizing self and valuing others (Kramsch, 2013). Thinking of ways to include the enhancement of these skills in language lessons would be key to develop the intercultural competence that can make language learners communicate in a world with such varied perceptions of reality.

In order to enrich intercultural competence in language learners it is imperative for learners to know about their own cultural identity, as mentioned by Kramsch (2013). To illustrate this perspective, Mokuoane and Moeketsi (2018) examined the relationship between the language and culture of the Basotho people (Free State providence of South Africa and Lesotho) and aimed to demonstrate that language defines culture. Through interviews and group discussions, participants were requested to give information about their lives regarding gender, age, highest qualification, and cultural clan. Some of the questions were: *What is the procedure followed at the birth of children? What rites are performed from an early age up to puberty? What is the value of the initiation school? Why is the name of the father-in-law not pronounced? What games do Basotho girls and boys play?* Mokuoane and Moeketsi (2018) interpreted each answer and concluded that language and culture are connected, that speakers' culture and identity are defined by the language they speak, that the Basotho way of thinking is influenced by the Basotho language, and that preservation, practice, and transmission of language, culture and identity can ensure the survival of the Basotho language. In addition, the authors specified that

being aware of and preserving language, culture and identity prevents speakers of projecting their values onto others, and reinforces others' sense of identity. A final statement says "If there was only one language spoken by all people around the globe, there would have been only one culture governing the behavior of all." (Mokuoane & Moeketsi, 2018, p. 28). This study serves the purpose of highlighting learners' own identity as a valuable feature not only to preserve one's culture and language, but to develop the intercultural competence necessary to understand others.

Another study aiming to illustrate the implications of the Sapir-Whorf hypothesis in language teaching, analyses the relationship between language, thought and learning (Ramacciotti & Eccles, 2019). The relationship between these three concepts is explained by the authors by stating that learning encompasses language, thinking, perception, attention and memory, and that we are capable of knowing our thoughts, which we understand and give meaning through learning, by conceptualizing them through language. Ramacciotti and Eccles (2019) review some of the literature regarding the linguistic relativity hypothesis and conclude that the earlier an L2 is learned, the more experience the learner will have with the conceptualizations (time, space, agency, etc.) of that language and therefore this experience will shape thought. It is stated in this study that interactions are necessary to acquire the ability to communicate our thoughts and opinions, and to understand those of others. Also, that our cognitive abilities and world view are shaped by social relationships, formal instruction and the culture in which we are immersed. From Kramsch (2013), and Ramacciotti and Eccles (2019) research, it could be said that interacting with others while reflecting on one's own experience and valuing others' culture, is essential to achieve effective communication among speakers of different languages. Regardless of the language that is been studied, interaction with people from varied cultural backgrounds is necessary during the process of language learning.

As previous authors did, Raina (2018) also reviews some of the literature on the Sapir-Whorf hypothesis and posits some of its implications for language pedagogy. Before doing so, the author explains how teachers are usually worried with identifying areas of ease and difficulty due to structural similarities and differences among languages, and proposes a neo-Whorfian perspective to change the approach on structure. The neo-Whorfian perspective gives pedagogical interest to linguistic diversity in terms of conceptual similarities and differences among languages, rather than an emphasis in structure. Accordingly, the neo-Whorfian perspective gives teachers the possibility of identifying areas of ease and difficulty due to conceptual similarities and differences, meaning that it would be easier to learn areas that are conceptually translatable than those that are untranslatable (Raina, 2018). Expressions, idioms, grammatical gender, causal relations; conceptual, time, and space metaphors could all be acknowledge as areas of difficulty that need attention. In this order of ideas, Raina (2018) posits two implications of the linguistic relativity hypothesis for the language classroom: bringing the source language back, and focusing on conceptual similarities and differences between the source and target languages instead of the structural ones. The author's statements clearly invite language teachers to use learners' L1 as a tool to develop learners' intercultural competence by recognizing similarities and differences not only in linguistic patterns, but more importantly in what we could call perceptions of the world.

Now that some teaching applications of the Sapir-Whorf hypothesis in terms of awareness, intercultural competence, identity, interaction, and the neo-Whorfian perspective have been brought up; it is fundamental to help language learners understand that it is probable that no matter how proficient they become, there will be no absolute understanding of another culture (Soritova, 2014). Kramsch (2013) herself states that even though culture is tied to the characteristics of a native language, it has been through language use and aspects such as lingua franca, that the idea of associating a specific language to a specific culture has become a

challenge. In a world where English is used as a lingua franca by speakers of varied native languages, it is impossible for English teachers to determine one culture of English to address during classes, therefore it must be known by teachers and learners that intercultural competence is necessary and that complete understanding of other cultures can't be entirely achieved. Soritova (2014) focuses on the inseparability between language and culture, and highlights culture as a main factor of misinterpretation of information. The author reinforces the statement that it is impossible to be in the shoes of a native speaker and fully understand him or her since language affects how we think, and speakers of different languages perceive the world differently, as the Sapir-Whorf hypothesis states. Language influencing perception is a phenomenon that generates difficulties and misunderstanding among cultures, in some cases there are words that are untranslatable and in other cases, where words are translatable, a shift in meaning leads us to conclude that knowing the meaning of a word it's not enough and the extent in which we can transfer this meaning gains relevance (Soritova, 2014). Just as Ramacciotti and Eccles (2019), Soritova (2014) also believes that being immersed in the language environment and culture can help achieve effective communication. Knowing that being proficient and that developing intercultural competence will not necessarily make learners understand other cultures entirely, can relief learners from the pressure of not knowing the meaning of several expressions and metaphors of the language they are learning. This aspect can improve learners' attitudes and motivation towards learning a language, and also teachers' feelings of achievement.

Having words that are untranslatable because lexis may exist in one language but not in the other, and that there are words that can even be translated into two words in another language, led me to the idea of creating a vocabulary list (see Table 6). This list shows differences between Spanish (from Colombia) and English and has the purpose of being a tool for linguistic awareness among learners and teachers. The list presents words in Spanish with no direct translation to English, giving possible alternatives to each. In addition, it shows Spanish words that can be

translated into two English concepts (explaining when each concept can be used) and also two Spanish words that can only be translated only into one English concept.

Spanish Word / Words	**English Translations**	**Alternatives in English**
Abanico (*n*) Ventilador (*n*)	Fan (manual) Fan (aparato)	
Acicalarse (*v*)		Clean yourself up / get tidied up (limpiarse a si mismo)
Adormecer (*v*)		Send to sleep / put to sleep (provocar el sueño) Numb (entumecer)
Aguja (*n*)	Clock hand (del reloj) Needle (para coser / jeringa)	
Ajeno (*adj*)		External (externo a uno mismo) Someone else's (perteneciente a alguien más) Unconnected (no conectado a uno mismo) Unaware / oblivious (no se tiene conciencia sobre ello)
Anteayer (*adv*)		The day before yesterday (el día antes de ayer)
Arrastrarse (v) Gatear (*v*)	Crawl (moverse pegado al suelo) Crawl (moverse sobre las manos y las rodillas)	
Asa (*n*) Grifo (*n*)	Handle (del pocillo) Handle (del agua)	
Atinar (*v*)		Nail it / succeed (lograr algo) Come up with / find (acertar)

		Hit (dar en el blanco) Guess (adivinar)
Aturdir (*v*)		Disturb / Bother (molestar)
Aturdirse (*v*)		Be stunned / be shocked (confundirse)
Bolsa (*n*) Maleta (*n*) Paquete (*n*)	Bag (plástica) Bag (de carga: cartera, maletín, equipaje) Bag (de comida: papas fritas, dulces)	
Bomba (*n*)	Bomb (explosivo) Pump (máquina para bombear) Balloon (globo)	
Caparazón (*n*) Cáscara (*n*) Concha (*n*)	Shell (de las tortugas, langostas y cangrejos) Shell (de los huevos, frutas y vegetales) Shell (de los moluscos como el caracol)	
Colmillo (*n*)	Fang (afilado: perro, serpiente) Tusk (largo: elefante)	
Convivir (*v*)		To live together (vivir con alguien) Getting along with (llevársela bien)
Cuernos (*n*)	Horns (curvos y puntiagudos: toro, cabra, girafa) Antlers (ramificados: reno, venado, ciervo)	
Dedo (*n*)	Finger (de la mano) Toe (del pie)	
Dedo gordo (*n*)	Thumb (de la mano) Big toe (del pie)	
Desvelar (*v*)		Keep awake (mantener despierto)
Desvelarse (*v*)		Be unable to sleep (no poder dormirse)
Empalagoso (*adj*)		Overly sweet (demasiado dulce) Over-sentimental (muy cariñoso)

Estrenar (*v*)		To wear / use for the first time (ropa u objetos) To break in (zapatos nuevos que se deben ajustar)
Estadounidense (*adj*)	American (americano-americana)	from the United States (de Estados Unidos)
Friolento (*adj*)		Gets cold easily (le da frio fácilmente)
Gajo (*n*)		Slice (rodaja / rebanada) Section (sección)
Ganar (*v*)	Win (premio, competencia) Earn (dinero)	
Garras (*n*) Pinzas (*n*)	Claws (de mamíferos y aves) Claws (de la langosta y el cangrejo)	
Madrugar (*v*)		Get up early (levantarse temprano)
Manco (*adj, n*)		One-armed (que tiene un brazo) One-handed (que tiene una mano)
Mimar (*v*)		Pamper (dar comodidad / malcriar)
Pasado mañana (*adv*)		The day after tomorrow (el día después de mañana)
Pico (*n*)	Beak (de las aves) Pick (herramienta para cavar) Peak (la cumbre de una montaña) Bit (una pequeña cantidad)	
Provecho –sacar provecho- (*v*) Provecho (*adj*) Provecho –buen provecho- (*exp*)		To benefit (beneficiarse) To profit (lucrarse) To take advantage (aprovecharse) Useful (útil) Enjoy your meal (disfruta tu comida)
Puente 'festivo' (*n*)		Long weekend (fin de semana largo)
Querer (*v*)		To love (amar) To like (gustar)

Reloj (*n*)	Watch (para usar en la muñeca) Clock (de pared)	
Tocayo (*n*)		Homonym (homónimo)
Trasnochar (*v*)		Stay up all night (quedarse despierto toda la noche)
Tuerto (*adj, n*)		One-eyed (que tiene un ojo) Blind in one eye (que es ciego de un ojo)
Vela (*n*)	Sail (del barco) Candle (de cera)	

Table 6. Spanish and English differences in the translation of words.

To conclude this section I want to bring up one fascinating example from the world of books, where fiction sometimes becomes reality. Breveníková (2018) gives the example of George Orwell's novel *1984* where the use of a language called *newspeak* was used as a thought control technology. Speakers of *newspeak* were unable to think outside the narrow vocabulary given by the language and this prevented them to have dangerous opinions or thoughts in their minds. This example illustrates how language can affect thought, in this case the way people think of politics and their government. Nowadays this can be seen in the language used in advertising and political campaigns (Breveníková, 2018) where people is persuaded to purchase goods or vote for candidates through the use of language. Helping learners analyze language beyond its linguistic features and fostering awareness on the *intention* of what it is expressed through language is a way of enhancing learners' critical thinking. Through the reading and analysis of advertisements, letters, and opinions from the social media, teachers can illustrate to learners how language can be persuasive to the point of changing the way people think about certain topics, and therefore help students to be critical on what they accept to believe.

The topic of politics can be also targeted through language lessons, an example of this is the Model United Nations (MUN) where learners debate on real life world issues regarding politics and economy. Understanding politics, analyzing others'

speech, and taking part in the use of language to convince others develops learners' life skills. Through this activity learners would not only increase their linguistic knowledge, but also they will improve in their critical thinking, collaboration, communication, leadership and social skills. In this case, the Sapir-Whorf hypothesis as resembled in Orwell's novel must be highlighted as a useful tool to teach students about the power of language to shape others' ideas.

X. CONCLUSIONS

The Sapir-Whorf hypothesis has been of great interest in the fields of psychology, sociology, anthropology, and applied linguistics since it first appeared in the 1940's, and continues to be debated among those who support it and reject it. The strong version, linguistic determinism, is pretty much discarded nowadays because it not only presents a racist point of view where less complex languages seem to subdue its speakers to having less opportunities or to being less intelligent, but also because there is no technique that can test people's perception separately from their language in order to prove that language determines thought. On the other hand, the weak version, linguistic relativity, has been widely supported by research studies on lexis, semantics, sociocultural aspects, and cognitive ability, evidencing that having different linguistic backgrounds can lead to having different pictures of the world, as stated by Whorf.

Research studies regarding differences in lexis and semantics have shown that having or not having certain lexical elements can affect how we perceive the world, and have also supported the notion that our experiences are classified by our native language into semantic categories. Those against the hypothesis have argued that differences in lexis and semantics would make impossible to translate or learn another language, however it is because of linguistic awareness, intercultural awareness, and the understanding of identity and language as a shaper of ideas, that translation and learning another language is possible. Some of the studies

shown in this review of the literature have illustrated lexical differences in color and numbers, where some languages have few words to describe the variety of these two lexical categories. These studies leads us to the idea that some languages find irrelevant describing in detail the color of objects or using numbers in daily activities such as counting objects or paying for goods. Other studies have shown that language divides how we see objects, their space relations, and time mapping into semantic categories. In this case, as Sapir stated, we are at the mercy of our language, it is because of language and its categories that we may describe objects as being similar one to another, the spatial relations among them, and how we even perceive time.

Sociocultural aspects carried in our language can also affect our view of the world. In some cases, speakers give information through the grammatical features of the native language, as happens with grammatical gender where perception of femininity and masculinity can lead us to prefer some products or even think or not in a sexist way. Also, as it happens with the construction of agency where the way we speak about events can make us blame or exculpate someone, meaning that how we express through language can also influence our judgement. In other cases, speakers access their cultural background in order to express their representations of time, as happens when speakers of Aymara are influenced by their cultural beliefs to talk about the past and the future or when they use English as a second language and their fluency diminishes, or when speakers of English and Hebrew are affected by the direction of their script when deciding a sequence of events. In other cases, the cultural background of speakers can even affect their behavior by moving forward or backwards when talking about time or when a whole community can discriminate a person with Down's syndrome just because there is no medical word to address this condition in a specific language. As it can be evidenced in these studies, the sociocultural features immersed in our language are capable of affecting the way we behave, express and think of the world.

Studies in cognitive ability have been made to support the Sapir-Whorf hypothesis by the premise that our language can impart different cognitive skills. Speakers of Kuuk Thaayorre have demonstrated that for them, perception of the world is better described in terms of cardinal directions that in any other way, reason why their space relations and time mapping are influenced by their language. Speakers of languages that use cardinal directions have shown to be better oriented than speakers of other languages, even in unknown settings. Just as Kuuk Thaayorre speakers need to be oriented since they are kids in order to speak correctly, speakers of Navajo need to pay attention to the shape of objects to speak properly. In this case, Navajo children show to develop their cognitive skills when classifying objects, faster that children from other languages. Gender studies have also evidenced that children from languages with grammatical gender can identify their own gender in earlier stages that children from other languages. These studies strongly suggest that in fact different languages can impart different cognitive skills, and that some languages can develop cognitive ability in earlier stages of life than other languages. Cognition can also be affected through language use and through the activities we develop in community, where interaction with others can affect our perception.

The first research question, *to what extent can it be said that Spanish speakers experience the world in a different way to English speakers?* was targeted in this document from studies in time mapping, spatial relations, grammatical gender, construction of agency and motion-verb interpretations; concluding that Spanish speakers appear to perceive the world differently from English speakers, in a small number of ways, because of the linguistic features of its languages. Spanish speakers prefer to represent time in terms of quantity, express space relations from a subject-oriented perspective, classify according to gender rather than attributions, be less judgmental, and describe motion according to its path; while English speakers prefer to represent time in terms of distance, express space relations from either a subject or object-oriented perspective, classify according to attributions due

to a lack of grammatical gender, remember the agents of events, and describe motion according to its manner. All of these differences lead us to the conclusion that Spanish speakers perceive the world in a different way to English speakers because of the language they speak. Moreover, that influence of language in the way we think is so strong that it can affect if we are being sexist when not using inclusive language, or if we are labeling someone as guilty or innocent just because of how we describe events, which is also evidenced when we decide to describe movement thinking of path or manner. Bilinguals in these two languages also show that native language continues to affect how we express even when using the second language, but that when the native language doesn't have certain features, the second language adds not only linguistically, but also in perception of reality.

When addressing the second research question, *what possible applications in teaching can this hypothesis have?* it was found that the main goal in teaching to understand how language affects perception, should be targeting intercultural competence. Teachers should aim to help students understand that learning a language is a matter of using language to communicate effectively with an intention, as mediators among cultures that can interact, reflect, and value; and not just a matter of translating and acquiring knowledge of linguistic features. This way teachers would have to include in their curriculum and planning the development of intercultural competence, but how can this be done? It is necessary to include culture in language learning as a way of getting meaning by perceiving the world through the metaphors, idioms, and grammatical patterns of the other language, by knowing others and more importantly ourselves. Identity is a main factor in the development of intercultural awareness, reason why teachers must guide learners in the awareness and preservation of their own identity, preventing the use of stereotypes, the projection of own values on others and reinforcing others' sense of identity. It is important for teachers to bring back the native language to the classroom since learners' mother tongue is part of their identity and a tool to understand conceptual similarities and differences among languages, a way of recognizing similarities and

differences in perceptions of the world. Teachers can also use the premise of language as a shaper of ideas to work on learners' social skills, critical thinking, collaboration, communication, and leadership by illustrating learners on how language can be as persuasive on thought and helping them on becoming critical thinkers on what they accept to believe from others. It is relevant to state that learners should be able to recognize that no absolute understanding of others' cultures will be achieved since language affects how we think and therefore it is not possible to think as a native speaker. This statement could be positive because it can help learners to feel relieved from the pressure of achieving the native model, motivated and with positive attitudes towards the learning of a language; and also it can help teachers to feel successful in their practice.

XI. REFERENCES

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