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## Bilingualism and Emotion: How do Spanish-English Bilinguals Experience the Two Languages Differently?

Caitlyn Whitesell

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**Bilingualism and Emotion:  
How do Spanish-English Bilinguals Experience the Two Languages Differently?**

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PSYC 496, Honors

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### Abstract

Previous literature has suggested that bilingual people react to emotional statements with varying degrees of intensity due to their personal experience with each language. Potential factors affecting emotional differences between languages included fluency, culture, age of acquisition, amount of exposure, language learning environment, and motivation. Isolating the impact of these factors on emotional experience challenges research because the factors cannot be easily controlled or separated. The current study investigated how the factors of age of acquisition, length of language exposure, and language-learning environment played a role in emotional reactions to similar stimuli by manipulating the language of the emotional stimuli, Spanish or English. Participants were Spanish-English bilinguals, 20 children and 41 adults, proficient in understanding both languages at the level of a typical children's story. Each participant watched six cartoon stories, three in Spanish and three in English, where one story in each language was either designed to induce positive emotion, negative emotion, or neutral emotion. Participants rated emotions by indicating which face on a Likert scale best matched how the story made them feel. This information, combined with the participant's reported language background information, reported on a language history survey, served as the basis of analysis. Overall, there was a slight preference of Spanish as the more strongly emotional language despite the dominant proficiency being in English,  $M = -0.27$ ,  $SD = 1.07$ . Length of Spanish exposure was significantly correlated with Spanish emotional difference, and there was a trend between childhood home language dominance and emotional language difference with Spanish-dominant participants having more emotional responses in English on average than English-dominant participants,  $F(1, 57) = 4.47$ ,  $p = 0.04$ .

*Keywords:* bilingualism, emotion, language, exposure, age of acquisition, environment

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## **Bilingualism and Emotion: How do Spanish-English bilinguals experience the two languages differently?**

### **1. Introduction**

Anecdotally, many bilingual individuals report that events *feel different* in one language compared to another. Sometimes this means a person feels more or less connected to an event depending on the language, and sometimes this means that an individual holds a general mood towards hearing either of the languages. Regardless, this difference in feeling between languages has not only raised questions about the experience of speaking multiple languages, but also about the relationship between language and emotion in general. Quantifying this relationship and finding a way to compare experiences did not come easily due to the differences between the experiences of individuals, even if they shared the same two languages, in this case, Spanish and English. In the introduction to this study, the term *emotional difference* refers to the potential variation in feeling emotion across two or more languages that a person speaks. In the study description itself, the difference score is used as a way to measure the emotional difference between languages for a bilingual individual.

### **2. Background**

#### **2.1 Describing Bilingualism**

Each bilingual individual has a linguistic history that is different from that of others, and all typically developing children are born with the ability to learn one or more languages when adequately exposed to any human language (Chomsky, 1999). Due to the range of experiences within bilingual populations, multiple terms have been generated to generalize across different bilingual experiences. Some people learned two languages at the same time from a young age; this type of bilingualism is called *simultaneous bilingualism* according to Montrul (2013). Other bilinguals learned one language at home and another in school, with separate language learning environments and different ages of first exposure to either language. Even others learned their second language after moving to a new country or region. Both of these experiences are called *sequential bilingualism*, given that one learned their first language, and afterwards, their second. There is also a distinction between *early* and *late bilingualism*, depending on when the second language was learned, before or after the age of approximately ten to twelve years of age. Simultaneous bilinguals are early bilinguals, but a sequential bilingual can be either depending on the age of second language acquisition. (Montrul, 2013)

Other ways of classifying bilingual people is with the frequency of use of one language or another, as well as the environment of acquisition, discussed briefly earlier. Also, the linguistic competence in one language or another could vary for each bilingual individual. Sometimes, an individual could fluently and equally communicate and understand both languages, known as a *balanced bilingual*. It is also possible for an individual to have understood a language without being able to speak it, or to simply have had different levels of dominance in one language versus another, being an *unbalanced bilingual*. (Montrul, 2013)

The category of individuals that understood but could not communicate in a language often does not receive the title of “bilingual,” but in this research, a bilingual was defined as an individual who understood Spanish and English as it was presented in the stories used in the experiment. This included individuals who did not perfectly speak one of the two languages. Each of these distinctions and categories of bilinguals should be considered equal. This research



did not make value judgements about one language or another, nor about the levels of proficiency held by the participants. Terms such as “unbalanced bilingual” did not hold a negative or lesser connotation, but they existed only to distinguish this group as having a linguistic and representational difference from “balanced bilinguals” for experimental purposes. All bilinguals were linguistically equal and deserving of the title of “bilingual” and the identity that this term could hold for them.

Given the diversity in language backgrounds of bilinguals, it was difficult to determine a single factor that explains why one language could be more emotional than another. Perhaps a language was more emotional because the individual was more dominant or fluent in that language in the moment, perhaps it was because the language was learned in childhood, perhaps it was something inherent about the language, or perhaps it was something different causing this variation within a population. Linguistic and psychological research like that of Shin & Kim (2017) posited that more than one factor contributed to the emotional differences between languages. In their investigation, the focus factors included the age of acquisition and the environment of acquisition.

## **2.2 Bilingual Cognition**

Bilingual people have the capability to take in information in multiple languages, challenging traditional monolingual models of the brain, requiring additional research to understand the underlying cognitive systems for bilingual children and adults. One of the original perspectives of the cognition involved with bilingualism was that the brain has two separate systems of knowledge and memory, tied to one of the two languages understood by the individual. Linguists Sapir (1929) and Whorf (1940) hypothesized that thought was tied to language in that the language used to think determines the way of thinking and the knowledge acquired. Other folk psychology theories questioned if being bilingual takes mental space that could otherwise be occupied with other facets of knowledge (Macnamara, 1967). This theory, popular towards the end of the twentieth century, caused damage to bilingual communities. It often led to bilingual parents choosing not to teach the minority language to their children (Beardmore, 2003). This also reinforced the prejudices against native-speakers of minority languages and resulted in linguistic discrimination or assumptions that non-native-speakers of the majority language were less intelligent than native-speakers.

This study hinged on a different theory of bilingual cognition termed the linguistic interdependence hypothesis by Jim Cummins (1979). This hypothesis created a cognitive model of bilingualism that looked like two overlapping “icebergs.” Although the visible knowledge, or the part of either iceberg above the water, may look like two separate pieces of knowledge at times, it actually stems from the same “common underlying proficiency,” sharing the same information that was just expressed in different ways depending on the language. In this way, the knowledge gained in one language was encoded in a mental space shared by both languages, and it was accessible regardless of the language the individual used, as long as the vocabulary to express the ideas encoded was learned for both languages. Knowledge transferred almost effortlessly between languages. (Cummins, 1979)

The linguistic interdependence hypothesis was supported by additional research that found information learned in one language transferred and supported knowledge in the other language. Beyond the idea of simple language transfer, research supported the idea that knowledge gained in either language spoken by the learner could transfer to the other language, meaning that the transfer was bidirectional, and information could transfer not only from a

weaker or equal language to a stronger or equal language, but also from the stronger language to the weaker language given the proper linguistic support. Further support for bidirectional transfer was built by the meta-analysis of research performed by Hammer, Hoff, Uchikoshi, Gillanders, Castro and Sandilos (2014) with dual language learners, or children who were learning two first languages, simultaneous bilinguals. The study performed by these researchers investigated the transfer of phonetic knowledge to more broad knowledge like history facts between languages for bilinguals, finding that there was evidence for two separate linguistic systems rooted in a shared cognitive base of knowledge. (Hammer et al., 2014)

This research supported education programs such as Herrera's bilingual education for English language learners (2016). These programs were rooted in supporting students whose first language was not English by allowing them to receive new information and process it in their first language, even if they only were evaluated on that knowledge in their second language. Research-based practices like these highlighted the practical importance of investigating topics such as the interlinguistic transfer of cognitive systems, theory of mind in this case. Without evidence-based practice that allowed students to begin learning new material in their first language, educators would instead wait to teach students basic skills like reading, math, and science until they gained the proper level of academic proficiency in their second language. Gaining this level of language, also known as "Cognitive Academic Language Proficiency," in a new language takes at least seven years (Cummins, 1979). If time was spent waiting for language skills to develop in the new language, these students would lose quality educational experience and the opportunity to learn new information that matched their level of intelligence and interest in their first language. (Cummins, 1979; Collier & Thomas, 2004)

### ***2.2.1 Emotion and Psychological Distance***

Understanding more deeply how language transfer works for emotional processing, could help us better understand how this system presents in bilingual individuals and how the system is related to language. Bilingual people have multiple languages in which they can express their ideas and feelings. Intuitively, each language provides a different lens through which these individuals perceive the world; thus, the language of an event could change the way in which a bilingual individual reacts. In fact, studies investigating this intuition supported the possibility that bilingual speakers with high proficiencies in both languages tended to have more emotional reactions in their first language (L1) than in their second language (L2) (Thoma & Baum, 2018).

Bilingualism looked different for each individual in this study, however. For some, the difference between an L1 and an L2 was large, requiring greater cognitive effort and perhaps occurring in two distinct situations with a strong preference for using the L1 over the L2. In instances where this difference was large, there was often less automatic language according to an individual, often the L2 or beyond (LX) compared to processing in the L1. This could cause a slow-down or a less strong emotion, but it was possible to find other important contrasts that made this rule less consistent. This slow-down, or *psychological distance* created different experiences in either language, but for some individuals, especially for those who did not have such a dramatic difference between their L1 and L2, the reason for greater psychological distance in L2 than in L1 was less obvious. Theories posited that the age of acquisition combined with the duration of exposure and/or the learning environment of the language could explain this emotional difference, but there was also strong scientific evidence for factors such as culture affecting this difference as well. (Thoma & Baum, 2018)

## 2.3 Factors with Emotional Influence for Bilinguals

### 2.3.1 Fluency

A possible explanation for the differences in the emotional reactions between a bilingual's languages is the relative fluency of each language. Dewaele's (2008) research about the words "I love you," supported the idea that greater fluency in a language led to greater emotional response in the language. According to the theory, this relationship between fluency and emotion reduced need for cognitive resources used to interpret and communicate in the language in which that individual had a fluent competency. By having a more efficient system for language processing, there was more mental space and faster reaction time for emotions compared to a language processing system that was less fluent or slower. Slower language processing and the resulting slowed reaction time produced a psychological distance between a language and emotional reaction (Shin & Kim, 2017; Dewaele, 2008).

Studies investigating psychological distance reaffirmed that emotions tended to be stronger in an individual's first language, the language that is traditionally more fluent, than in the second, third, or fourth language. In research done by Shin and Kim (2017), individuals confronted with moral questions in their second language displayed a greater level of objectivity, or of making less emotionally based decisions than in their first language. This research supported the hypothesis that emotional reactions were strong in the first language of the individual, perhaps because a fluid understanding (in the L1) was automatic in a way that was not always true for the L2. Often, decreased fluency in a language resulted in a slower emotional reaction and often decreased strength of emotion due to the need to think more deeply about *what it means* instead of the instantaneous and almost unconscious interpretation in L1. (Dewaele, 2008)

### 2.3.2 Culture

Dewaele (2008) investigated self-reported emotions of bilinguals who spoke 77 languages, and found that generally, multilinguals reported feeling an emotional statement more strongly in their first language than their second language. Sometimes, there were cultural differences that changed this "rule." An example of these differences in which the L2 created stronger emotions than the L1 was in a study that evaluated bilinguals who speak Arabic and English. These individuals reported stronger feelings of shame and guilt in English than in Arabic despite Arabic being their L1 (El Alaoui, Pilotti, Mulhem, Tallouzi, & Al Mqbas, 2017). The authors explained this as a cultural difference that resulted from the difference between individualist English-speaking cultures like the United States and English and collectivist Arabic-speaking cultures like Saudi Arabia where this study was performed (El Alaoui et al., 2017).

### 2.3.3 Age of Acquisition

Although some theories posited that the culture or language itself could create emotional differences between emotional responses in their languages for bilinguals, the majority of theories explaining the emotional difference focused on unique qualities of the speaker. An example of a quality contributing to emotional differences between languages was whether or not the speaker learned the language during their critical period. According to a study by Morgan and Kegl (2006), learning a language within the critical period is crucial for acquiring other cognitive abilities, like theory of mind—a key aspect of social cognition. Theory of mind

is the understanding that other people have a perspective and thoughts different from their own. Understanding theory of mind was important to understanding the emotions of others, and perhaps connections with an individual's own emotions also form during this critical period of language learning.

Morgan and Kegl's (2006) results showed that the critical learning period for language ends around ten years of age. Beyond ten-years-old, if an individual had not begun to learn a language, they showed difficulties with both language acquisition and theory of mind. The study followed a group of Deaf people in Nicaragua that joined together at a school to learn Nicaraguan Sign Language. If these people, who did not have access to a signed language, received no linguistic input before the age of ten, they were more likely to perform worse on cognitive tests such as theory of mind. Thus, it is likely that also during this critical period, cognitive functions like the emotionality of language are gained through language like theory of mind, as both are keys to social cognition (Morgan & Kegl, 2006).

#### ***2.3.4 Amount of Exposure***

However, perhaps the period of language acquisition does not account for emotional differences for bilinguals. During the critical period for language, cognitive functions such as theory of mind develop, providing evidence of its importance in understanding emotion and social cues. However, there was also evidence that information learned in one language supports another. Furthermore, it was not that a non-native speaker cannot understand emotional content in their L2, or that they did not feel anything as a result of events that occur in their L2, it was only that it could feel less strong or take more time to interpret and react. Next, it could be that with more time spent speaking and interpreting a language, speakers acquire greater ease in emotional transactions in their L2 even if it was learned after the critical period. (Shin & Kim, 2017)

It is possible that these individuals only need more time to reach the same level of emotional response as L1 speakers, or that they needed to collect more emotional experiences in that language. By investigating beyond age of acquisition and comparing it with number of years of exposure, this research dove deeper than previous research. (Shin & Kim, 2017) Possibly the amount of exposure combined with the age of acquisition could be a key point in the emotional differences between languages, or it could perhaps make up for late learning with enough exposure. If time and exposure were key elements to the emotionality of language, then there would be variation in the population of bilinguals regarding whether or not there was a deeper emotional connection to one language or another. (Kazanas & Altarriba, 2016)

#### ***2.3.5 Language Learning Environment and Motivation***

Most likely, not only does intensity of emotion depend on the amount of exposure or the perfect time to learn a language, but also the language-learning environment, which is deeply tied into the factor of time (Harris, C. L., Ayçiçeği, A., & Gleason, J. B., 2003). Language learned in the classroom was not experienced as strongly as a language that the learner had a greater motivation to speak (Collier & Thomas, 2004). If the motivation for learning a language was out of necessity to speak it, language learning could occur faster than if a language was learned only to fulfill a requirement. As a result, Spanish-speaking children that learned English in the United States normally speak English better than their English-speaking counterparts speak Spanish after learning it as a second language. The motivation was greater for learning English than for learning Spanish. As the majority language, learning English could feel

necessary for everyday life. As this could affect the fluency of the L2, it could also affect emotions in that language for a bilingual. (Bialystok, Peets & Moreno, 2014)

The assumption is that the language producing stronger emotional reactions is the one associated with social interactions and the less emotional language would be the one associated with school and the learning environment. This assumption was intuitive for native speakers of the dominant language, English, who spoke Spanish for almost exclusively academic purposes. However, for native speakers of the minority language, Spanish, the separation was less clear. These individuals likely have emotional experiences in Spanish if they speak it with their family at home, but they could also have emotional experiences in English. This could occur with friends or adults, even in their school environment, often in the L2, making the separation between “scholarly” language and “social” language less easy for native speakers of the minority language. Even more factors complicate the distinction between “scholarly” and “social” language. Brase and Mani (2017) showed that the “language learning environment” was complex because the language learned in school may also be learned in other environments, especially in the case of native minority language speakers learning the majority language. A speaker of Spanish often learns English across environments in the United States, not just in the classroom, even if they have no exposure to English at home. Plus, many foreign language classrooms, relevant to English native speakers learning Spanish in this case, have adapted more “naturalistic” methods, focusing on conversation and more “social” topics. As a result, even formal classroom learning resulted in a more “native” acquisition of the language, and likely more similar emotional reactions between the L1 and L2 if language learning environment was an important factor in emotionality of language. (Brase & Mani, 2017).

## 2.4 Existing Literature

In Thoma and Baum’s (2018) experiment, in which each participant received an emotional evaluation in their first language, German, and another in their second language, English, it was difficult to see if the emotional differences resulted from age of acquisition or language learning environment. The majority of the participants learned English in school, later in life and in a distinct language learning environment. Regardless, the results indicated that the emotional reaction from the participants did correlate with the language in which the information was received. In order to compare the emotional differences between languages, they compared the difference in the pupil dilations given the language of presentation. This measure, supported by previous investigations, was indicative of emotional change or reaction. The results indicated that participants had greater emotional reactions in their first language, their pupils dilated more in the German trials than the English. This study attributed the results of the procedure to the faster processing of information in the first language, intensifying the reaction to the stimulus, but it did not explain which factor has greater force in this difference (Thoma & Baum, 2018).

Another study investigated taboo words, negative valence words, positive valence words, and neutral words, comparing the skin-conductance rate after hearing words in their first language, Turkish, and their second language, English. Each type of word had higher skin conductance ratings in the first language than in the second language (Harris, Aycıçeği, & Gleason, 2003). In the first language, there was a greater difference between neutral words and taboo and negative words, but in the second language, skin conductance rating did not vary between reading neutral words and other words. This study did not, however help separate the factors that make a language “native” to the speaker such as fluency, language learning environment, or time of exposure (Harris et al., 2003).

On the emotional Stroop task, in which monolinguals took more time to say the color ink when the word written was negative or taboo than positive or neutral (MacKay et al., 2004), bilinguals did not experience as clear of a difference between languages. Studies with bilingual participants showed that the emotional Stroop results were reproduced in both languages, showing that a bilingual can experience the effects of emotion on cognition in multiple languages with little difference between the languages. (Sutton, Altarriba, Gianico, & Basnight-Brown, 2007). As mentioned previously, this consistency between languages demonstrated evidence that balanced bilinguals, like those in this study, appeared to have two first languages instead of a first and second language. Although they spoke Spanish as their L1 and English as their L2, they used both frequently in daily life.

The study by Anooshian and Hertel (1994), shows that when participants received a list of a mix of emotional and neutral words in their first and second language, they more often remembered emotional words than neutral words in their first language. For second languages, however, they remembered emotional and neutral words equally. The participants in this study spoke Spanish and English, learning to speak both before the age of nine years, supporting the idea for that sequential bilinguals and a second language was less emotional than the first language, regardless of whether the language was learned during the critical period or not (Anooshian, & Hertel, 1994). However, the study did not mention or investigate effects of language learning environment, which may account for this emotionality difference.

#### ***2.4.1 Context for This Study***

Overall, the literature provided little analysis that separates factors such as age of acquisition and language learning environment when investigating how they affect the emotion experienced in one language or another. These possibilities are not always separate but investigating them individually on a deeper level helps to better understand differences in emotion for bilinguals. Language learning environment, with a strong tie to the motivations of learning a language, and the years of language input, with an emphasis in the age of acquisition—during or after the critical period for language—likely both have an effect on the strength of emotional reaction to an experience with regard to the language in which it occurred. Being bilingual is complicated and cannot be reduced to a collection of numbers and points in a body of research but investigating emotions in this empirical way helps with the understanding of what it means to be a bilingual individual and allows for the sharing of ideas and personal experiences.

Research by Dylman and Bjärtå (2018) served as a structural base for the procedure of this study. In this investigation, Dylman and Bjärtå examined the emotional intensity of distressing texts versus neutral texts in Swedish versus English. The results supported the hypothesis that the L1 of an individual evokes stronger emotional reaction than the L2. This study presented the distressing and neutral texts in Swedish or English and then required that the participants understood the information of each text by having them answer comprehension questions in Swedish or English before self-reporting on their emotional state by using the Subjective Units of Distress scale. The experiment had a variety of manipulations of languages in which each participant received a distressing and neutral text in either language twice and the comprehension questions in either the language of the text or the opposite language. Overall, the highest self-reports of distress were associated with reading the text in Swedish and answering comprehension questions in Swedish, the participants' first language, showing a decrease in the amount of distress even after reading the passage in Swedish and simply thinking about it in

English before rating their emotions. This shows that even simply completing questions in a second language, English, after reading a text in the first language, Swedish, can result in less strong emotions. Supporting the idea that a second language results in greater psychological difference, in this case, reducing levels of distress (Dylman & Bjärtå, 2018). These results matched earlier findings that evidence the L2 as less emotionally intense than the L1 (Shin & Kim, 2017).

Given the literature on bilingualism and emotion, I predicted that emotional reaction varies depending on the language and whether it is an individual's L1 or L2. In the following study, I compared emotional reactions to short emotional stories in Spanish with similar stories in English. By including participants of various ages, I investigated if age of first exposure and childhood language exposure played an important role in this process, or if years of exposure to the language played a role. If childhood language exposure was more strongly correlated, children with less overall language exposure but earlier language exposure should have experienced emotions more deeply, relative to their neutral baseline, than adults with more experience and a later age of first exposure, much like how Morgan & Kegl's (2006) participants varied on theory of mind tasks depending on the age of acquisition of language.

### 3. This Study

Participants in this study watched six videos, three videos in Spanish and three in English falling into one of three categories: happy, sad, or neutral. After they responded to a comprehension question and a Likert emotion face scale depicting various emotions, a simpler but similar procedure to Dylman y Bjärtå's (2018) study, designed for children. With the combination of this information and the information on a Language History survey about the participants, I examined separate factors about their backgrounds in a way that Dylman and Bjärtå did not in their analysis.

I anticipated multiple possible findings. If there was no variation between languages for happy and sad stories across languages, for example, if the participants rated sad stories the same regardless of language and happy stories the same regardless of language, no further analysis would be necessary, providing evidence that emotion does not vary between Spanish and English. If all participants trended in the same direction, for example, all found Spanish sadder and happier than English, then there would be evidence for a more emotional language overall. Given variation between participants, the most likely outcome, further analysis would help draw conclusions about the data.

If no significant difference existed in the emotional response difference between languages given childhood home language exposure of the participants, then language learning environment would be evidenced to not relate to the emotional strength of the language. In this case, support would exist that age of first language exposure is also not a significant factor because this variable is based on childhood exposure before age ten. A second analysis, however, based on age of first exposure (before or after age ten) could look at this more directly, dividing the participants in two groups (pre-ten and post-ten) instead of three in the home childhood exposure (mostly English, equal amounts of both, and mostly Spanish). If the results followed the precedent set by the literature, this null hypothesis would be rejected.

An additional variable of interest was length of exposure to Spanish. If length of exposure to Spanish, or generally more experiences of emotional events in Spanish, were an important factor to emotional differences between languages, there would be a significant relationship between these two variables. I hypothesized that age of first exposure, and likely

childhood home exposure group, would have a significant effect on emotional differences between languages. I considered that length of exposure to the language could also impact this, but not as strongly as the previous two factors. I based this hypothesis on the study by Morgan and Kegl (2006) which found age of first exposure to sign language significantly correlated with success on theory of mind tasks, yet length of language exposure did not significantly correlate with success on those tasks.

Overall, I anticipated to find that one of these variables, or both childhood home exposure and age of first exposure, significantly affected emotional intensity between the two languages. Perhaps this would explain emotional differences between languages, if they exist in this population, and help to establish more information about what it means to be bilingual.

### **3.1 Method**

#### **3.1.1 Participants**

The Child Language Lab recruited 61 bilingual Spanish-English participants, both children ( $n=20$ , 4;0-12;1) and adults ( $n=41$ , 18;1-22;6), in the Williamsburg, Virginia area. Child participants were recruited by outreach to local preschools and daycares such as Williamsburg-James City County Community Action Agency (Headstart programs) as well as through recruitment at local elementary schools with high Spanish-English bilingual populations: Clara Byrd Baker Elementary and James River Elementary. Adult participants were recruited through outreach to William & Mary students through the SONA research system and through direct contact with Spanish-English speaking individuals at the university. Students recruited from the SONA system were enrolled in introductory Psychology or Linguistics courses and were required to complete a minimum number of research participation hours as a course assignment. Participants were considered bilingual if they had exposure to both Spanish and English according to a survey reported by the participants or by the participants' parents or guardians. This bilingual criterion was also verified by the participants' above-chance ability to answer comprehension questions correctly to material presented in either language.

#### **3.1.2 Materials**

Materials included six video stories designed for young children in both Spanish and English created by the researcher (see Appendix A). The stories were categorized by their emotional valence: positive, negative, or neutral, and included two of each type to make up the total of six videos. The positive stories included a story about going to a friend's birthday party and a story about going to the carnival. Negative stories were written about hearing that a close friend is moving away and losing a pet dog in the park. The neutral stories incorporated everyday occurrences that include both a "like" and a "dislike" for the characters in the story. These materials were translated from English to Spanish by the researcher and cross-checked for grammatical correctness, similarity of information conveyed, and how natural the language sounds by four native Spanish-English bilingual adults recruited from William & Mary including one student and three professors in the Hispanic Studies and Linguistics departments.

Audio material was a recording of these stories by the same female native Spanish-English speaking student from William & Mary. She was recorded reading all six stories in both languages on the same day in a quiet recording studio to ensure similarity of voice, accent, inflection, and volume across languages and stories. The same individual was recorded asking the comprehension questions for each story in each language as well as asking the emotional rating questions. Comprehension questions were simple, binary questions in which the



participants either had two options to choose from such as, “Is Sarah moving to a farm or to the city?” or they were yes/no questions such as, “Did the kids get the teddy bear?” The emotional rating questions were consistent after each story, changing only based on the language of the story, “How does this story make you feel?” and “¿Cómo te hace sentir esta historia?” to maintain consistency across each video.

The visual stimuli were created using Microsoft Paint by the experimenter and the same main characters were used throughout to ensure that the visual stimuli were not more interesting in one story or another (see Figure 1 and Figure 2). The same visual materials were used in both languages, changing only the audio recording for the stimuli across languages. The videos were compiled of these images and audio together using iMovie. Six additional short “resolution” videos for each main story in each language were created. The resolutions tied up the stories, leaving “sad” stories with a positive ending after emotional assessment.



Figure 1. Happy emotion visual stimulus.



Figure 2. Sad emotion visual stimulus.

When wireless Internet capabilities were accessible, participants were presented the stimuli and test information through Qualtrics online data software. This survey was used to

record their data as well, and participants either selected the option they found appropriate or young participants who could not read would point or verbally respond, allowing the experimenter to select the appropriate option for them in Qualtrics. In some schools where testing took place, Internet access was variable or non-existent; in this situation, the participant viewed the same videos and listened to the same audio material in a slideshow PowerPoint presentation format. This happened only once, and this participant's data were manually recorded by an experimenter based on their pointing or verbal response. Two conditions were used based on random choice so that some participants received one set of stories in English, happy 1, neutral 1, and sad 1, for example and the other in Spanish, happy 2, neutral 2, and sad 2, and other participants received the opposite, happy 1, neutral 1, and sad 1 in Spanish and happy 2, neutral 2, and sad 2 in English. Additionally, Qualtrics randomized the order of the video stories prior to each presentation, and the order of the PowerPoint video stories were randomized prior to creation, thus the order of happy, sad, and neutral videos in either language was random. The video stories were embedded in the Qualtrics survey and the PowerPoint, requiring that the participant or experimenter click to the next screen and click play to begin each video.

The comprehension questions and the scale questions following each video story appeared on a new screen. A text version of each question appeared, along with an audio version that could be clicked once to play aloud. All child participants listened to the audio version of the question regardless of reading ability, and adult participants had the option of listening to audio recording or just reading the question. All audio recordings of the questions were recorded by the same native English, native Spanish bilingual female speaker who recorded the audio portions of the video stories. Following the questions, a short resolution video to the stories appeared in the same way as the original stories, embedded in the Qualtrics survey or PowerPoint, so that the sad stories would have a happy ending, and the neutral and happy stories would have a clear conclusion. After the resolution of each block, the next Qualtrics or PowerPoint was the next video story, until all six were completed.

The participant responded to all emotion questions, "How does this story make you feel?" and "¿Cómo te hace sentir esta historia?" using the same non-linguistic emotion-face Likert scale with seven points varying in degrees of frowning to neutral to smiling (see Figure 3). In the Qualtrics version of this experiment, used with most participants, the question and scale were embedded in the Qualtrics survey appeared on the page with the audio, and the participant had the opportunity to rate the story by selecting the emotion-face on the screen. In the PowerPoint version of the experiment, used when wireless Internet was unavailable, the screen appeared with only the questions listed above with the audio. This version used a color-printed version of the scale, matching the digital version (Figure 3), and placed on the table in front of the computer, requiring the participant to point to the relevant emotion face to indicate rating.



**Figure 3.** Non-linguistic emotion-face scale.

Each adult participant or the parent or guardian of the child participants responded to a Language History Survey, created by the researcher to detail as much about an individual's

relationship with each language as possible (see Appendix B). The questions included self-report (or guardian report for children) of reading, writing, listening, and speaking abilities in each language. Self-reports of proficiency have been used previously as valid measures of proficiency in bilinguals (Marian, Blumenfeld & Kaushanskaya, 2007). I did not use an existing language history questionnaire in hopes of creating a more concise survey which was intended to appear non-threatening to my participants. This survey also included reported age of exposure to each language, environment of use and exposure before and after the age of ten years, and identification with being labeled a speaker of either language. The participant, or parent of the participant, had the option to complete the survey in Spanish or English to increase accessibility to all people involved. These surveys were translated into Spanish from English, and they were assessed for wording, grammar, and accuracy to the original by a native Spanish-English bilingual professor at William & Mary who has years of experience working in sociolinguistics.

### 3.1.3 Procedure

This study used a methodology similar to that of Dylman & Bjärtå (2018) with changes to allow for child participants as well as adults. These changes included shifting from reading emotionally valenced vignettes to watching emotionally valenced cartoon vignettes, shifting from the complex emotion of distress to “positive” and “negative” emotions generally, and the focus on assessing within one language at a time instead of also considering the effects of processing information in the opposite language.

To begin this study, in a quiet room with few distractions, the experimenter trained the participant on how the survey works. In English, the experimenter explained the concept of the emotion face Likert scale to the participant, allowing for two opportunities to practice using the scale before beginning the study. During this training, the experimenter asked the participant “Can you think of something that happened this week that made you feel really happy? What was it?” Next, the experimenter asked the participant to choose “the face that most closely matches” how that event made the participant feel. The experimenter then asked the participant to think about “something else that happened this week that was happy, but maybe not quite as happy as the first thing” and asked again for the participant to rate how that made them feel using the scale. This allowed the experimenter to ensure the participant’s understanding of the task, regardless of age.

After completing the training on the Likert scale questions, the participant proceeded to watch one of six cartoon stories. These stories were presented in a random order, half in Spanish and half in English, organized so that each participant viewed one of each type of “valence” story in either language. Due to the randomization of the stories, some participants began in Spanish and yet others began in English, and all had equal chance of viewing positive, negative, or neutral stimuli in any order. Adult participants were allowed to complete the experimental section independently of the experimenter, using headphones if two participants were testing in the same room. Child participants were guided through the entirety of the experiment by the experimenter.

Following the initial video stimulus for each story, the participant was given the corresponding comprehension question followed by the emotional rating test question. Both questions were presented in the same language as the corresponding stimulus. Before proceeding to the next stimuli, the participant watched the short video resolution to the story, presented in the same format as the original stimulus. The resolution helped provide closure to the story and allowed for negative valence stories to end on a positive note, preventing any resulting distress.

Upon completion of all six stimuli presentations and the corresponding questions and resolution videos, adult participants completed the Language History Survey, detailing the nature of their relationship with each language. Child participants had their parents complete this survey prior to the in-person study, when signing of the consent forms. Once finished, the participant received either a sticker if they were a child, or research credit if they were a student at William & Mary.

### 3.1.4 Analysis

Using the data collected in Qualtrics, the recorded verbal responses to PowerPoint stimuli, and the written responses to the Language History Survey, an analysis was conducted to determine the relationship between specific qualities related to bilingualism and the related emotional ratings for those individuals.

The recorded responses to the emotional Likert scale for the “happy” and “sad” stories, which were converted from the seven faces to numerical scores 1 to 7 from left to right, were used to calculate an *emotional difference score* in each language. This score was calculated by subtracting the “sad” score from the “happy” score within each language. For example, if the participant rated the sad Spanish video as emotion face three and the happy Spanish video as emotion face six, the *Spanish emotional difference score* for this individual was three. An *overall emotional difference score* was calculated by subtracting the Spanish emotional difference score from the English emotional difference score. Thus, participants with a higher emotional difference score in Spanish than in English had a negative overall score, participants with equal Spanish and English difference score had an overall score of zero, and participants with a higher emotional difference score in English than in Spanish had a positive overall score. Overall scores closer to zero expressed less difference between the two languages.

Other scores used in data analysis included the *proficiency difference score*. This measure was calculated by subtracting the self-reported or guardian-reported “understanding spoken Spanish” (rated on a scale of zero to four) from “understanding spoken English.” Again, negative values indicated greater proficiency in understanding Spanish and positive values indicated greater proficiency in understanding English, zero indicated equal strength in each language, and distance from zero indicated stronger differences between Spanish and English proficiencies.

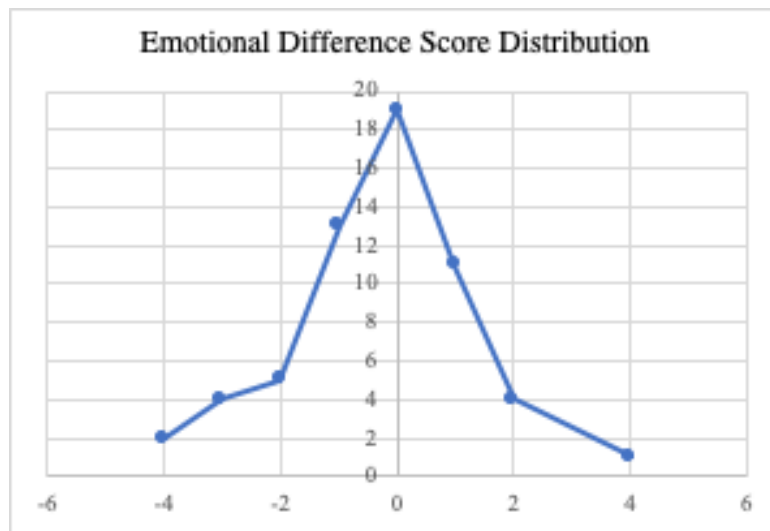
Multiple groups for analysis were formed from using responses to the Bilingual Language Survey. Two distinguishing factors that created three groups each for further analysis were *language exposure groups*. Participants were divided into Spanish dominant exposure, English dominant exposure, and equal amounts of Spanish and English exposure according to their responses to questions about their childhood *home exposure* and their childhood *school exposure*. Given that the test was conducted in Virginia in the United States where English is the main language of schools, we predicted that analysis of school exposure groups would be more difficult because most participants were most likely to all have English dominant school exposure. Home exposure groups were more likely to vary than school exposure groups. Notably, home exposure groups were also hypothesized to hold more weight in predicting emotional differences between languages than school exposure groups due to the emotional nature of the home environment, making home exposure groups the critical factor in this study.

I anticipated that there would be a significant effect for childhood home language exposure and age of first exposure to Spanish on emotional difference scores. I anticipated that length of exposure to Spanish could also lead to trends in the anticipated direction, more Spanish

leading to deeper Spanish emotion, but I did not anticipate this factor serving a key role in emotional variation for the language, given the findings of Morgan & Kegl's (2006) study which reported significant effects for successful performance on theory of mind tasks related to age of acquisition of language but not to length of exposure to language.

### 3.2 Results

No participants were excluded from all analyses; however, participants would be excluded from any individual analysis for the following reasons: missing data point needed for analysis, higher sad scores than happy scores (one child participant), or the primary use of a third language (not English or Spanish) in the childhood home language exposure analysis (three adult participants). The mean emotional difference score for the participants indicated that overall the participants felt somewhat more deeply in Spanish than in English, nearing the range of emotional equilibrium ( $M = -0.27$ ,  $SD = 1.07$ ). One child participant was excluded from this result due to reversed scores, "happy" scores on sad stories and "sad" scores on happy stories. These initial descriptive statistics immediately indicated that the results did not seem to support the main hypotheses. English was the dominant language for this population, all participants were exposed to English before age ten, and nearly half, 28 out of 61, participants reported hearing mostly English in their childhood homes. However, there were differences overall which merit further analysis. Most participants had emotional difference scores at or near zero, but the variation of differences merits further analysis.



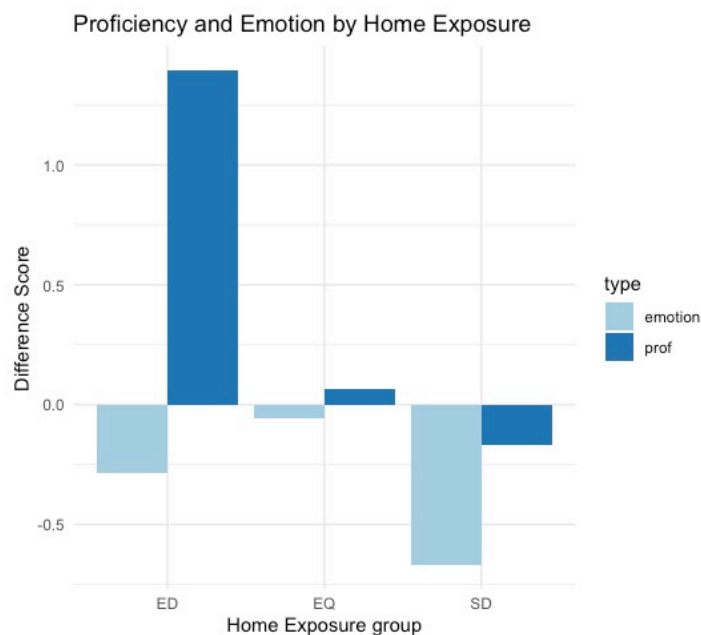
**Figure 4.** The  $x$  axis represents the emotional difference score. The  $y$  axis represents the number of participants with that score.

#### 3.2.1 Childhood Home Exposure Group Analyses

Investigations regarding language learning environment focused on *home exposure groups* because nearly all participants were English dominant in *school exposure* except one participant that was Spanish dominant and eight participants receiving equal amounts of each language in school exposure, making analysis difficult due to such unequal groups. For home exposure groups, 28 participants had English dominant exposure, 18 participants had equal exposure, 11 had Spanish dominant exposure, and three had a dominant language other than

Spanish or English, excluding them from this analysis. Two additional participants were excluded from analysis due to missing data.

To analyze the significance of the relationship between home exposure and emotional difference, experimenters first conducted a one-way ANOVA comparing the three groups' relationship with the proficiency difference score. Childhood home language dominance groups were significantly related to proficiency difference scores in the anticipated direction; Spanish dominance was associated with higher Spanish proficiency than English, English dominance was associated with higher English proficiency than Spanish, and equal exposure fell in the middle,  $F(3, 55) = 19.83, p < 0.001$ . A similar one-way ANOVA compared the three home exposure groups' effects on the overall emotional difference score. The prediction for this analysis was that participants with Spanish dominant exposure would have emotional differences leaning towards more extreme responses in Spanish, a negative emotional difference score. There was no clear correlational trend between home language exposure groups, but Spanish dominant exposure had the most negative mean and equal exposure had a mean near zero. An analysis of variance showed no significant main effect of home language exposure group on overall emotional difference score.



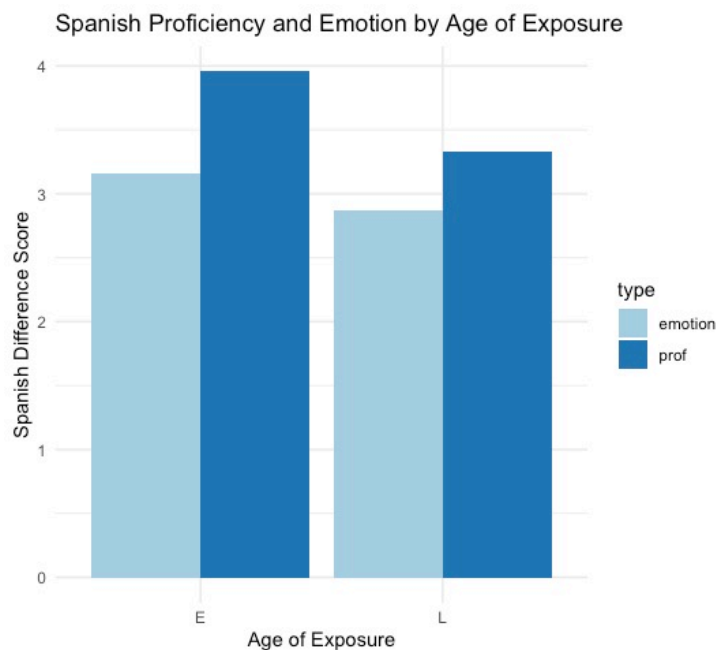
**Figure 5.** Overall emotion difference score and overall proficiency difference score by childhood home exposure group.

### 3.2.2 Age of First Exposure to Spanish Analyses

All participants received English input prior to the age of ten-years-old, meaning analysis comparing age of first English language exposure groups, before or after ten years, was not possible with our sample given that all were in the same group, early English exposure. For first exposure to Spanish, 46 participants' first exposure occurred before age ten and 15 participants' first exposure after age ten. As stated earlier, this experiment was interested in discovering

differences in emotional reports between language, dependent on whether participants had exposure to language during the critical period, prior to age ten according to Morgan & Kegl (2006). Exposure to the language prior to age ten was predicted to lead to more native-like acquisition, and likely greater emotional response in that language.

Age of first exposure to Spanish was significantly correlated with Spanish proficiency ratings in the anticipated direction, Spanish early exposure had higher proficiency scores than Spanish late exposure,  $F(1, 59) = 5.06, p = 0.03$ . One participant was excluded from this analysis due to missing data. This confirms the hypothesis that fluency, measured here by greater Spanish proficiency, was related to age of first exposure to the language. The means for Spanish emotional difference scores were very similar for both groups. Early Spanish exposure had a score of 3.16 and late Spanish exposure had a score of 2.87 for Spanish emotional difference. On the surface, this appeared to confirm the hypothesis that earlier first exposure to a language (Spanish) led to a greater emotional difference than later first exposure to that language. However, an analysis of variance showed no significant main effect of age of first Spanish language exposure, before or after ten years, on Spanish emotional difference score despite trending in the anticipated direction.



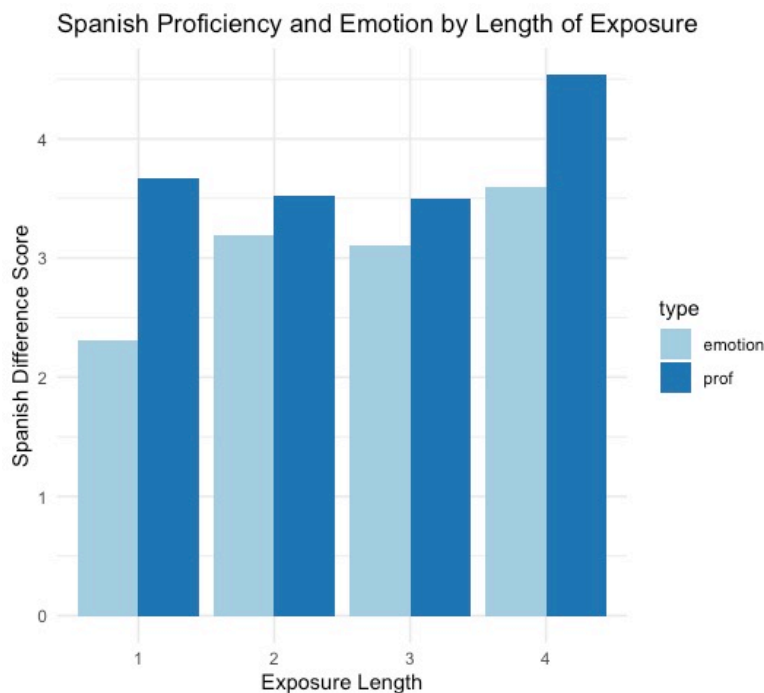
**Figure 6.** Spanish emotion difference score and Spanish proficiency score by age of first exposure to Spanish group.

### 3.2.3 Spanish Length of Exposure Group Analyses

To calculate the length of exposure to each language, the age of first exposure score was subtracted from the age of the participant at the time of testing. Spanish length of exposure groups had more equal variation than English length of exposure groups. For Spanish, group one (1-5 years) had 15 participants, group two (6-10 years) had 21 participants, group three (11-15 years) had 10 participants, and group four (16+ years) had 15 participants. For English, group

one had 14 participants, groups two and three each had 6 participants, and group four had 34 participants. As over half of the participants were in group four for English, I investigated only Spanish length of exposure groups for analysis.

Much like childhood home exposure group with proficiency difference and age of first Spanish exposure with Spanish proficiency, a one-way ANOVA found that length of language exposure significantly correlated with the Spanish proficiency score in the anticipated direction, with more years of Spanish exposure leading to higher Spanish proficiency ratings,  $F(1, 59) = 6.94$ ,  $p = 0.01$ . Additionally, this factor significantly correlated with the Spanish emotional difference score in the anticipated direction, greater difference between Spanish emotional ratings as years of exposure increase,  $F(1, 57) = 4.47$ ,  $p = 0.04$  (see Figure 7). One participant was excluded from the proficiency analysis and three participants were excluded from the emotion analysis due to missing data.



**Figure 7.** Spanish emotion difference score and Spanish proficiency score by length of Spanish exposure group.

## 4. Discussion

### 4.1 Findings

In addition to investigating emotion, this study confirmed multiple language exposure factors including childhood home language exposure, age of first exposure, and length of exposure significantly correlate with proficiency measures in the language or comparative proficiency measure across both languages for bilinguals. This replication of valid proficiency measures indicated that questions such as those in the language background survey furthered findings by Marian, Blumenfield & Kaushanskaya (2007) that self-reports of proficiency accurately measure language abilities. Beyond this, analyses found that home exposure group



(English or Spanish dominant or equal amounts of each) significantly correlated with proficiency difference score as well as Spanish proficiency score. This analysis confirmed that using a difference score for proficiency, and likely for emotional ratings (the emotional difference score), is a valid measurement.

The first finding of comparisons between language and emotion was that emotional differences do occur between Spanish and English in this sample. Some individuals experienced deeper emotion in Spanish, 24 participants, some in English, 16 participants, and some experienced emotion very similarly across the two languages, 19 participants. This supports previous findings which find emotional differences between languages for many individuals, and it appears to support my hypothesis that some individuals with similar experiences in Spanish and English could experience emotion similarly across the languages (Thoma & Baum, 2018; Harris et al., 2003; Anooshian & Hertel, 1994; Shin & Kim, 2017; Sutton et al., 2007).

Another relevant and anticipated finding is one of overall English dominance in reported language background information. This finding was logical given that the study was conducted in Virginia public schools and at William & Mary where the majority language is English, and most classes are thus conducted in English. Overall English dominance also presented an issue by inflating the size of English dominant groups in analyses. Despite this English inflation, the overall emotional difference mean leaned towards Spanish having greater emotional strength. This finding leads to a consideration that perhaps Spanish is a more emotional language; however, this preference was too slight to make sufficient claims. However, a slight English emotional bias would be expected given the English dominant environment and experiences of participants, not a Spanish emotional bias.

My initial hypotheses were based in existing bilingual emotion literature and the concept of a language as a lens through which to see the world, built by experiences related to the language. Although I failed to find significant results to support emotional differences between language in relation to the childhood home language exposure and age of first exposure to Spanish, I did find that length of exposure to Spanish significantly related to Spanish emotional difference. This finding supports the conclusions of previous researchers, that bilinguals have varied emotional experiences depending on the extent to which the language was used, typically in terms of day-to-day life instead of language history (Dylman & Bjärtå, 2018).

Contrary to the original hypotheses of this study, length of Spanish language exposure was correlated with emotional differences and childhood home language exposure and age of first exposure to Spanish were not related to these differences. The findings of Morgan and Kegl (2006) that age of acquisition play a key role in performance in theory of mind tasks and that length of exposure do not could not be extended to emotional experience, although both theory of mind and emotion are involved in social cognition. Further studies may find significant findings implicating emotion of language to learning experience, but this data supported that years of experience in a language creates this crucial emotional deepening of a language. Those speakers with more exposure to Spanish feel more deeply in Spanish, experiencing less psychological distance in the language.

#### **4.2 Implications for Theory**

This cognitive emotion research with bilinguals did not only provide information about bilinguals but also about the general processes that apply to monolinguals. For example, the Sapir-Whorf hypothesis stated that the language spoken might affect thought (Sapir, 1929; Whorf, 1940; Lucy, 1992). By investigating this with bilingual individuals, researchers have a

point of comparison between languages within the same individual, holding more factors constant than comparing languages across different individuals. Links between emotion and language support the idea that thought and mental processes can be affected by language. However, interpreting this as a support that language had determined thought would neglect key elements of the bilingual experience and the existing evidence of bilingual transfer between languages (Cummins, 1979). The findings did not suggest that language was strictly tied to thought as Sapir (1929) and Whorf (1940) assumed, but instead support that associations formed within languages through experience can lead to different lenses through which to view the world. Over time, with more exposure to emotional content, these lenses develop and allow for changing reactions to stimuli.

Furthermore, the results of this experiment supported literature surrounding emotion in bilinguals, but with exceptions. Emotional variation did occur between languages within the same individual, but these variations did not always occur in the anticipated direction in support of the psychological distance theory proposed by Thoma & Baum (2018). Most literature supported that the L2 or weaker language was also less emotional than the L1 or stronger language (Shin & Kim, 2017; Dewaele, 2008). However, English was the more frequently used language or the L1 for most and Spanish was the more emotional language in my study. This could provide evidence that Spanish is a more emotional language than English, or the findings could be skewed by personal experiences in Spanish leading to more emotional reactions in the language. Further analysis and additional studies would need to occur to support either of these claims.

### **4.3 Applications of this Research**

Studies on emotions in humans apply to multiple practical fields: pedagogy, psychology, the general study of health, and more through the power that emotion has over motivation, attention, learning, and memory (Tyng, Amin, Saad & Malik, 2017). My study validated the importance of language for reasons of emotional connection by showing that individuals varied on emotional differences between languages. This additional information about the connection between emotions and language merited support for greater availability of resources in languages other than English.

An example of greater linguistic accessibility would be supporting students speaking non-English languages in schools by allowing them to use their own language on assignments. This could enrich bilingual individuals' emotional experience (Recéndiz & Míguez Fernández, 2013). Other areas that could benefit from this research include psychotherapy and psychiatry. Research-driven therapeutic methods for bilingual people could include discussing the client's emotional relationship with a language given the diversity shown by the participants in this study. Therapy in a second language could result in greater psychological distance between the patient and the event or feeling they discuss (Thoma & Baum, 2018). This could decrease distress if discussing a traumatic event in a person's second language compared to their first. In contrast, receiving therapy in a second language could make the experience less therapeutic, or could make it more difficult to treat and diagnose a patient. Some psychiatrists note psychologically distant individuals were more easily attributed with psychopathic labels, possibly skewing diagnoses for individuals assessed in a second language (Marcos, 1976). In any case, emotion research emphasized the importance of these conversations about the personal implications of bilingualism emotion for choosing the best option for clients of psychotherapy

and psychiatry (Byford, 2015). The integration of this information could encourage an upsurge in bilingual therapy options, for example.

#### 4.4 Future Directions

Follow-up studies should consider larger sample sizes. More equal groups of Spanish and English dominance in childhood home language exposure and more equal proportions of children to adults, if possible, may also lead to stronger findings. More equal home exposure groups could be achieved by using a mass survey to identify individuals or by recruiting in two separate populations drawing individuals for comparison.

Additional considerations for future studies should also be included. Bilinguals in this study may have experienced shame surrounding speaking a minority language, Spanish, particularly if this was their first language. The subordination of a language, Spanish in the case of the Virginia and the U.S., resulted from damaging social hierarchies that identified the language and the identities associated with it as less valuable than English, the dominant language of the area (Beardsmore, 2003). The participants in this study came from different backgrounds and brought varying levels of privilege to the study. Children recruited in high-poverty areas such as the Williamsburg Grove community at James River Elementary School and Head Start offer a different perspective on the linguistic hierarchy than a William & Mary student who learned Spanish as a second language in school. In my experience, Latinx heritage Spanish-speakers rarely received praise for being bilingual, yet White English-speakers learning Spanish in school often received feedback as being intelligent for learning a second language. Even the same language, Spanish, has a different value when considering the race, ethnicity, and native language of the speaker. If the relationship between emotion and language resulted from personal experiences, this difference in the power dynamics of language likely influenced this, adding complexity.

Given these complexities related to privilege and social dynamics of language, future studies should investigate more specific populations, or consider focusing directly on the relationship between language power dynamics and differences in emotional response between languages. By focusing on a more precise population, likely outside of Williamsburg, Virginia, where there are more similarities within a community of bilinguals could allow for a focused look at the factors that I considered without the confounding variable of these social dynamics. I considered identification with “Spanish-speaker” or “English-speaker” as important elements of the language background survey. Additional questions to investigate the social power dynamic should include considerations of race and ethnicity identification, but most importantly, reported experiences surrounding the language. These “experience” questions should include whether or not the participant experienced discrimination for speaking Spanish and how often. This could provide more information on this issue, possibly adding to the full picture of the relationship between emotion and bilingualism.

Beyond the above proposed cognitive psychology extensions of this experiment, the topic of emotion and its relationship with bilingualism may best be approached from another perspective. Using personality psychology or sociolinguistic methods of investigation instead of cognitive models like mine may allow for more data and explanation of differences, especially considering the complexity of emotion and the difficulty of studying emotion based on simple Likert scale questions. Investigations based in interview questions such as in the study conducted by Dewaele in 2008 would add additional information to this issue. Focusing on a specific population, such as Spanish-English bilinguals, or even a more specific population like

Spanish-English bilinguals in a specific community with a common culture, may help to narrow the results more than Dewaele's original study.

## 5. Conclusions

I anticipated that the participant factors of language learning environment, referred to in this study as childhood home exposure group and age of first exposure to Spanish to be significantly correlated with the overall emotional difference between languages. The anticipated direction was that those participants with Spanish dominant home exposure during childhood and Spanish exposure before age ten would experience emotion more deeply in Spanish, or have a higher Spanish emotional difference than English emotional difference, compared with those participants with English dominant home exposure or first exposure to Spanish after age ten. I also considered that length of exposure to the language (Spanish) could lead to the language being more emotional due to an increase of experience and a lessening of psychological distance from the language.

Overall, the results of my research did not directly support the initial hypotheses. However, it did support the additional consideration that an increase in length of exposure to a language could lead to a deepening of emotional experience in the language. This finding supported that psychological distance was a result of lack of experience in the language, and with time, words in a language develop to have a deeper emotional impact.

The results were limited by working with an English-dominant population in Virginia that included a diverse range of participant backgrounds which failed to account for the possible variation of the social and cultural implications of each language. Further research considerations and expanded testing could allow for greater validity and consideration of these limitations. By encouraging the study of bilingual populations, I encouraged representation across other areas of psychological research. My bilingual-focused work at William & Mary in the Child Language Lab led to a focus of recruitment on diverse populations, which could create more diverse participant pools for future experiments in the lab.

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## Appendix A: Scripts of Audio Stimuli

### 7.1 English stories

#### 7.1.1 *Happy 1: Birthday Party Story*

Mom: Riley! Eva! It's almost time to go!

Riley: Today is Mateo's birthday! I want to surprise him with noise makers and confetti!

Eva: I want to eat birthday cake and break open the pinata!

Riley: I wonder if Mateo will be surprised!

Eva: Me too! He will love our present, a book about cats! Cats are his favorite animal.

Riley: I bet! Let's go get ready for the party now!

\*scene shifts to new location, Riley and Eva are hiding\*

Someone whispers: He's here!

Everyone: \*jumps from hiding\* SURPRISE!!!

\*image of Mateo looking surprised\*

Mateo: WOW! Thanks everyone! \*Mateo hugs Riley and Eva\*

Riley: Here! We got you a present!

\*Mateo opens the present\*

Mateo: Wow! Thanks! Cats are my favorite!

Eva: I knew it! He likes our present!

Mateo: Let's eat some cake!

\*Happy birthday song playing while Mateo blows out candles\*

\*Scenes of kids eating cake and talking about how it is yummy\*

\*Scenes of kids breaking open the pinata full of candy, talking about their favorite candies\*

#### *Happy 1: Comprehension Question.*

Q: Does their friend get a cat book or dog book?

A: Cat book

#### *Happy 1: Resolution.*

Mateo: Thank you guys so much for coming to my party! I love your gift, and I can't wait to read it!

Eva: You're welcome! Thank you for letting us play with you! I like eating cake and breaking open pinatas! Happy birthday, Mateo!

Riley: Happy birthday Mateo! It's great that you liked our gift.

\*Kids hug and Eva and Riley begin to walk home\*

#### 7.1.2 *Happy 2: Amusement Park Story*

Riley: Eva, do you remember what we are doing now?

Eva: We are leaving soon for the amusement park! What is your favorite thing to eat there?

Riley: I like eating cotton candy and popcorn!

Mom: Eva! Riley! Time to go!

\*scene changes to the amusement park\*

Both kids: WOW!

Eva: Let's go to the merry-go-round!

Riley: Okay!

\*run to the ride\*

Riley: I am going to ride the unicorn!

Eva: I'm going to ride the dinosaur!

Riley: Cool!

\*Riley and Eva run to the dart game\*

Riley: I want to win the big teddy bear!

Eva: Okay! Let's try!

\*Riley throws darts, is close but doesn't hit the target in the middle\*

Riley: Your turn, Eva!

\*Eva throws darts, makes the target on her second try\*

Eva: Yay!

Riley: Good job Eva!

Eva: Here! You can have the bear; I know you wanted it!

Riley: Wow! Thanks, Eva!

***Happy 2: Comprehension Question.***

Q: Did the kids get the teddy bear?

A: Yes

***Happy 2: Resolution.***

\*Eva and Riley on the Ferris wheel with the teddy bear and cotton candy\*

Eva: The town looks so small from the top of the Ferris wheel!

Riley: I can see the house from here.

\*Eva and Riley get of the ride and walk with Mom\*

Mom: Did you have a good time?

Both: Yes!

***7.1.3 Sad 1: Lost Dog in Park Story***

\*dog approaches Riley in her room\*

Eva: Riley! I think it is time to walk Rosco!

Riley: Okay! I will go get his leash!

\*Eva petting Rosco until Riley arrives with leash\*

Eva: What a good boy!

Riley: Rosco seems super energetic today!

Eva: It has rained a lot lately, so he hasn't been able to go on long walks like usual!

Mom: Maybe you two should take Rosco to the park since it is so nice outside today!

Riley: Yes! I like the park!

\*Riley, Eva, and Rosco walking through the park, Rosco pulling hard on the leash\*

Eva: I think Rosco wants you to go faster Riley!

Riley: I'm too tired!

Eva: Oh, come on, Riley! Let's run a little bit!

Riley: Okay! Let's run to that tree!

Eva: Let's go!

\*Riley and Eva run with Rosco, Rosco pulls Riley a different direction and Riley and Eva chase after him, but fall down\*

Riley: Rosco!



Eva: Let's go through the bushes! We can catch up to him!  
 \*Riley and Eva climb through the bushes, but they do not see Rosco\*  
 Eva: Rosco! Where are you?  
 Riley: I can't believe we lost Rosco! Where could he have gone?  
 Eva: What do we do? He's not on this side of the bushes or the other side.  
 Riley: I miss him. Eva, we have to find him before we go home.

***Sad 1: Comprehension Question.***

Q: Where did the kids go? The mall or the park?  
 A: The park

***Sad 1: Resolution.***

Eva: I have an idea! Did you bring any of his favorite treats?  
 Riley: Yes, but they are just for dogs and Rosco isn't here.  
 Eva: But we can use the treats to get Rosco back! He can smell them from across the house, maybe he can smell them from here! Rosco! I have your treats!  
 Riley: Rosco! Rosco!  
 \*Rosco runs up and eats treat, Eva grabs the leash and Riley hugs Rosco\*  
 Riley: I'm glad you're safe! Don't run away again!

***7.1.4 Sad 2: Friend Moves Away Story***

\*Eva and Riley playing with dinosaurs\*  
 Mom: Eva! Riley! Sara is here!  
 \*Riley and Eva look at each other\*  
 Eva: I didn't know our friend Sara was coming! It will be so good to see her!  
 Riley: Sara is great! I want to play with her today!  
 \*Eva and Riley walk to main room\*  
 Riley and Eva: Hi, Sara!  
 Sara: Hi!  
 Eva: We didn't know you were coming over today! Do you want to play dinosaurs with us?  
 Sara: Sure, but there is something I have to tell you two first.  
 Riley: What do you want to talk about, Sara?  
 Sara: Well, my mom got a new job in the city.  
 Eva: Sounds exciting!  
 Sara: I think she is excited, but it means that we have to move.  
 Riley: You're moving to the city?  
 Sara: Yes, and my mom says it means that we won't see each other as much anymore.  
 Eva: I really like playing with you.  
 Riley: You make great dinosaur noises. I am going to miss seeing you.  
 Sara: I am going to miss you two also. I wish we could still play every Friday like we usually do.  
 Eva: Me too!

***Sad 2: Comprehension Question.***

Q: Is Sara moving to a farm or the city?

A: The city

***Sad 2: Resolution.***

Sara: Even though we can't see each other all the time, we can still play now!

Riley: Also, maybe we could call or video chat on Fridays so that we won't miss you so much!

Eva: I like that idea! Can we call you, Sara?

Sara: That would be good!

\*Kids hug and then begin playing with dinosaurs\*

***7.1.5 Neutral 1: Lunch at Home Story***

Mom: Riley! Eva! Time for lunch!

Riley: Hi Mom! What are we having for lunch today?

Mom: Chicken nuggets and vegetables and chips!

Eva: I am so hungry! Ready to eat chicken nuggets!

\*Kids eating\*

Mom: Don't forget to eat your broccoli!

Riley: But I don't want broccoli!!

Eva: Me either. We already ate all our chicken nuggets and chips.

Mom: Broccoli and carrots make you strong and healthy!

Riley: But they're yucky!

Eva: Come on Riley! I think we can do it!

\*Kids eat broccoli\*

Riley: All done!

Mom: Thank you! Now you can have a treat today! What dessert do you want?

Eva: I like chocolate chip cookies!

Riley: Me too! Can we make some?

Mom: Yes! Let's make cookies!

***Neutral 1: Comprehension Question.***

Q: What are Eva and Riley doing? Playing a game or eating lunch?

A: Eating lunch

***Neutral 1: Resolution.***

Riley: Mmm the cookies smell so good!

Eva: Look how golden they are!

Mom: They look ready to eat! Are you ready to have a cookie?

Both: Yes!

\*Kids eating cookies\*

***7.1.6 Neutral 2- Getting Ready for Bed Story***

Mom: Riley! Eva! It's time to get ready for bed!

Riley: Pajama time!

Eva: Let's get ready! I think I will wear my penguin pajamas.

Riley: I will wear my frog pajamas!

Mom: Now that you're wearing your pajamas, it's time to brush your teeth!

Eva: I don't want to brush my teeth!

Riley: Me either!

Mom: We have to keep your teeth clean for the dentist!

\*grumpily brushing teeth\*

Mom: Thank you for brushing your teeth even though you did not want to. It is good for you! Do you want to choose a bedtime story, now?

Both: Yes!

Riley: I want to hear the dinosaur book!

Eva: I want to hear that one too! Let's read it!

Mom: Okay, let's read Dinosaurs in the Park. Once upon a time there was a family of dinosaurs that lived in a little house...

***Neutral 2: Comprehension Question.***

Q: Are they getting ready for bed or are they waking up?

A: Getting ready for bed

***Neutral 2: Resolution.***

Mom: After playing in the park for hours and hours, the dinosaurs were ready to go home.

Eva: The little dinosaur looks so sleepy!

Riley: I'm sleepy too!

Mom: It sounds like my little dinosaurs are ready for bed!

Eva: Good night, Mom! Good night dinosaurs!

Mom: Good night Eva and Riley!

Riley: Good night!

***Test question after each story/ comprehension question***

How does this story make you feel?

**7.2 Historias en Español**

***7.2.1 Feliz 1: Cuento sobre la fiesta de cumpleaños***

Madre: ¡Riley! ¡Eva! ¡Ya casi es la hora de salir!

Riley: ¡Hoy es el cumpleaños de Mateo! ¡Quiero sorprenderlo con cornetas y confeti!

Eva: ¡Quiero comer torta de cumpleaños y romper la piñata!

Riley: Hm, me preguntó si Mateo se sorprenderá con nuestro regalo.

Eva: ¡Yo también! ¡A él le encantará nuestro regalo, un libro sobre gatos! Los gatos son su animal favorito.

Riley: ¡Seguro que sí! ¡Vámonos ya para prepararnos para la fiesta!

\*la escena cambia a un lugar nuevo, Riley y Eva se esconden\*

Alguien susurra: ¡Ya llegó!

Todos: \*salen de sus escondites\* ¡SORPRESA!

\*imagen de Mateo con cara de sorpresa\*

Mateo: ¡GUAU! Gracias a todos. \*Mateo abraza a Riley y Eva\*

Riley: ¡Mira! ¡Te trajimos un regalo!

\*Mateo abre el regalo\*

Mateo: ¡Que genial! ¡Gracias! ¡Los gatos son mis animales favoritos!

Eva: ¡Lo sabía! ¡Le gusta nuestro regalo!

Mateo: ¡Vamos a comer torta!

\*Cantan la canción del cumpleaños mientras Mateo sopla las velas\*

***Feliz 1: Pregunta de comprensión.***

P: ¿Su amigo recibe un libro sobre gatos o un libro sobre perros?

R: Un libro sobre gatos

***Feliz 1: Resolución.***

Mateo: ¡Muchas gracias por venir a celebrar mi cumpleaños! ¡Me encanta el regalo, y tengo muchas ganas de leerlo!

Eva: ¡De nada! ¡Gracias por jugar con nosotros! ¡Me encanta comer torta y romper piñatas! ¡Feliz cumpleaños, Mateo!

Riley: ¡Feliz cumpleaños, Mateo! Qué bueno que te gustó nuestro regalo.

\*Los niños se abrazan, y Eva y Riley empiezan a caminar a casa\*

**7.2.2 *Feliz 2: Cuento sobre el parque de atracciones***

Riley: ¿Eva, recuerdas qué es lo que vamos a hacer ahora?

Eva: ¡Nos vamos muy pronto al parque de atracciones! ¿Qué es lo que más te gusta comer allí?

Riley: Me gusta comer los dulces y las palomitas.

Mom: ¡Eva! ¡Riley! ¡Es hora de irnos!

\*escena cambia a un parque de atracciones\*

Ambos niños: ¡GUAU!

Eva: ¡Vamos al carrusel!

Riley: ¡Claro!

\*corren al carrusel\*

Riley: ¡Yo me voy a subir al unicornio!

Eva: ¡Yo me voy a subir al dinosaurio!

Riley: ¡Genial!

\*el tiovivo da la vuelta, mostrando niños sonriendo\*

\*Riley y Eva corren al juego con los dardos\*

Riley: ¡Quiero ganar ese oso gigante!

Eva: ¡Bien! ¡Tratemos de ganarlo!

\*Riley tira los dardos, se acerca, pero no le da al centro\*

Riley: ¡Te toca a ti, Eva!

\*Eva tira los dardos, acierta a la segunda vez\*

Eva: ¡Hurra!

Riley: ¡Buen trabajo, Eva!

Eva: ¡Toma! ¡El oso es para ti; yo sé que tú lo querías!

Riley: ¡Guau! ¡Gracias, Eva!

***Feliz 2: Pregunta de comprensión.***

P: ¿Los niños obtienen el oso?

R: Sí

***Feliz 2: Resolución.***

\*Eva y Riley subidos en la rueda con el oso y algodón de azúcar\*  
 Eva: ¡El pueblo se ve tan pequeño desde aquí arriba!  
 Riley: Yo puedo ver nuestra casa desde aquí.  
 \*Eva and Riley bajan de la rueda de la fortuna y caminan con Mamá\*  
 Madre: ¿Lo pasaron bien?  
 Ambos: ¡Sí!

### 7.2.3 *Triste 1: Cuento sobre el perro perdido en el parque*

\*el perro se acerca a Riley en su cuarto\*  
 Eva: ¡Riley! ¡Creo que necesitamos pasear a Rosco!  
 Riley: ¡Bien! ¡Voy por su correa!  
 \*Eva acaricia a Rosco hasta que llega Riley con la correa\*  
 Eva: ¡Que buen perrito!  
 Riley: ¡Parece que Rosco está lleno de energía hoy!  
 Eva: ¡Ha llovido mucho últimamente, entonces no ha podido dar paseos largos como hacemos normalmente!  
 Madre: ¡Quizás deberían llevar a Rosco al parque ya que hace un día tan lindo hoy!  
 Riley: ¡Sí! ¡Me gusta ir al parque!  
 \*Riley, Eva y Rosco caminando por el parque, Rosco tirando fuertemente de la correa\*  
 Eva: ¡Creo que Rosco quiere que tú vayas más rápido, Riley!  
 Riley: ¡Estoy demasiado cansado!  
 Eva: Oh, ¡Riley! ¡Vamos a correr un poco, di que sí!  
 Riley: ¡Está bien! ¡Corramos hasta el árbol!  
 Eva: ¡Vamos!  
 \*Riley y Eva corren con Rosco, Rosco tira a Riley hacia una dirección nueva y Riley y Eva corren detrás del perro, pero se caen\*  
 Riley: ¡Rosco!  
 Eva: ¡Vámonos por el bosque, es más corto! ¡Podemos alcanzarlo!  
 \*Riley y Eva van por el bosque, pero no ven a Rosco\*  
 Eva: ¡Rosco! ¿Dónde estás?  
 Riley: ¡No puedo creer que hemos perdido a nuestro querido Rosco! ¿Adónde puede haber ido?  
 Eva: ¿Qué hacemos ahora? No está al otro lado y no está en el bosque.  
 Riley: Lo extraño mucho. Eva, tenemos que encontrarlo antes de regresar a casa.

#### *Triste 1: Pregunta de comprensión.*

P: ¿Adónde se han ido los niños? ¿Al centro comercial o al parque?  
 R: Al parque

#### *Triste 1: Resolución.*

Eva: ¡Tengo una idea! ¿Has traído una de las galletitas favoritas de Rosco?  
 Riley: Sí, pero son solo para los perros y Rosco no está aquí.  
 Eva: ¡Sí, pero, podemos usar las galletitas para encontrar a Rosco! ¡Como las huele desde el otro lado de la casa, quizás pueda olerlas desde aquí! ¡Rosco! ¡Tengo tus galletitas favoritas!  
 Riley: ¡Rosco! ¡Rosco!

\*Rosco corre hacia ellos y come una galletita, Eva agarra la correa y Riley abraza a Rosco\*

Riley: ¡Qué bueno que estés a salvo! ¡No te vayas de nuevo!

#### **7.2.4 Triste 2: Cuento sobre la amiga que se muda**

\*Eva y Riley juegan con dinosaurios\*

Mamá: ¡Eva! Riley! ¡Sara está aquí!

\*Riley y Eva se miran entre ellos\*

Eva: ¡No sabía que nuestra amiga Sara iba a venir! ¡Qué bueno que ella está aquí!

Riley: ¡Sara es genial! ¡Quiero jugar con ella hoy!

\*Eva y Riley entran el cuarto\*

Riley y Eva: ¡Hola, Sara!

Sara: ¡Hola!

Eva: ¡No sabíamos que ibas a venir hoy! ¿Quieres jugar a los dinosaurios con nosotros?

Sara: Claro, pero primero hay algo que tengo que decirles.

Riley: ¿De qué quieres hablar, Sara?

Sara: Pues, mi madre consiguió un trabajo en la ciudad.

Eva: ¡Suenan emocionante!

Sara: Sí, creo que está emocionada, pero eso significa que tenemos que mudarnos.

Riley: ¿Te vas a mudar a la ciudad?

Sara: Sí, y mi mamá me dice que eso significa que ya no podemos vernos tanto.

Eva: Pero, a mí me gusta mucho jugar contigo.

Riley: Tú haces muy bien los ruidos de los dinosaurios. Te voy a extrañar mucho.

Sara: Yo también los voy a extrañar. Me gustaría que pudiéramos continuar jugando juntos todos los viernes como siempre.

Eva: ¡A mí también!

#### **Triste 2: Pregunta de comprensión.**

P: La amiga, Sara, ¿se muda a una granja o a la ciudad?

R: A la ciudad

#### **Triste 2: Resolución.**

Sara: ¡Aunque no nos podemos ver todo el tiempo, todavía tenemos tiempo para jugar ahora!

Riley: ¡También, quizás podríamos llamarte o hacerte una llamada de video los viernes para que no extrañarte tanto!

Eva: ¡A mí me gusta mucho esa idea! ¿Te podemos llamar, Sara?

Sara: ¡Sí, sería genial!

\*Se abrazan los niños y empiezan a jugar con los dinosaurios\*

#### **7.2.5 Neutral 1: Cuento sobre almorzar**

Mom: ¡Riley! ¡Eva! ¡Es la hora del almuerzo!

Riley: ¡Hola Mamá! ¿Qué almorzamos hoy?

Mom: ¡Unos trocitos de pollo y algunos vegetales y chips!

Eva: ¡Tengo mucha hambre! ¡Estoy lista para comer los trocitos de pollo!

\*Niños comiendo\*

Mom: No se olviden de comerse el brócoli.  
 Riley: ¡Pero no quiero comer brócoli!  
 Eva: Yo tampoco. Ya comimos los trocitos y chips.  
 Mom: ¡El brócoli y las zanahorias hacen que tengan fuerza y buena salud!  
 Riley: ¡Pero son asquerosos!  
 Eva: ¡Vamos Riley! ¡Podemos hacerlo!  
 \*Los niños comen brócoli\*  
 Riley: ¡Ya terminamos!  
 Mom: ¡Gracias! ¡Ahora pueden tener un postre! ¿Qué quieren comer?  
 Eva: ¡Me gustan las galletas de chocolate!  
 Riley: ¡A mí me gustan también! ¿Podemos tener algunas?  
 Mom: ¡Si! ¡Hagamos galletas!

***Neutral 1: Pregunta de comprensión.***

P: ¿Que hacen Riley y Eva? ¿Juegan un juego o almuerzan?  
 R: Almuerzan

***Neutral 1: Resolución.***

Riley: ¡Mmm las galletas huelen ricas!  
 Eva: ¡Miran como ya están doradas!  
 Mom: ¡Están listas para comer! ¿Quieres comer una?  
 Both: ¡Si!  
 \*Comiendo galletas\*

***7.2.6 Neutral 2: Cuento sobre acostarse***

Mom: ¡Riley! ¡Eva! ¡Es casi la hora de acostarnos!  
 Riley: ¡La hora de pijamas!  
 Eva: ¡Vámonos a prepararnos! Creo que yo llevaría mis pijamas con pingüinos.  
 Riley: ¡Y yo llevaré mis pijamas con ranas!  
 Mom: ¡Ahora que andan las pijamas puestas, vayan a cepillarse los dientes!  
 Eva: ¡No quiero cepillarme los dientes!  
 Riley: ¡Yo tampoco!  
 Mom: ¡Tenemos que mantener sanos los dientes para el dentista!  
 \*cepillan los dientes protestando\*  
 Mom: Gracias por cepillarse los dientes, aunque no querían hacerlo. ¡Es bueno para la salud! ¿Quieren elegir una historia ahora?  
 Both: ¡Si!  
 Riley: ¡Quiero escuchar el libro de dinosaurios!  
 Eva: ¡Yo quiero escucharlo también! ¡Lo leemos!  
 Mom: Bien, leamos Dinosaurios en el Parque. Alguna vez, había una familia de dinosaurios que vivían en una casita pequeña.

***Neutral 2: Pregunta de comprensión.***

P: ¿Se están preparando para acostarse o se están despertando?  
 R: Están preparando para acostarse.

***Neutral 2: Resolución.***

Mom: Después de jugar en el parque por horas y horas, estaban preparados para regresar a la casa.

Eva: ¡El dinosaurio pequeño tiene mucho sueño!

Riley: ¡Yo tengo sueño también!

Mom: ¡Me suena que mis propios dinosaurios pequeños están listos a dormir!

Eva: ¡Buenas noches, Mama! Buenas noches, dinosaurios

Mom: ¡Buenas noches, Eva y Riley!

Riley: ¡Buenas noches!

***Pregunta de examen después de cada historia/ pregunta de comprensión***

¿Como te hace sentir esta historia?



**Appendix B: Bilingual Language Surveys****8.1 Bilingual Language Survey (Adult)**

Name of participant	Date of birth of participant	Today's date
<hr/>		
<hr/>		
At what age(s) were you first exposed to these language(s)?		
Spanish:	<hr/>	
English:	<hr/>	

**For all scale questions, please indicate your answer as a mark on the line below the question.**

Please fill out this section about your language experience **from birth to age ten:**

Please talk about the **location(s)** that you used this language below.  
 Please think about the languages you used at **home** before the age of ten.

How much exposure did you have in Spanish and English **at home**?

---

Only Spanish	Mostly Spanish	Equal amounts of Spanish and English	Mostly English	Only English
--------------	----------------	--------------------------------------	----------------	--------------

How often did you speak Spanish and English **at home**?

---

Always Spanish	Often Spanish	Equal amounts of Spanish and English	Often English	Always English
----------------	---------------	--------------------------------------	---------------	----------------

Is there any additional information you would like to add about languages used **at home** before the age of ten-years-old?

Please think about the language(s) you used in **school** before the age of ten.

How much exposure did you have in Spanish and English **at school**?

---

Only Spanish	Mostly Spanish	Equal amounts of Spanish and English	Mostly English	Only English
--------------	----------------	--------------------------------------	----------------	--------------

How often did you speak Spanish and English **at school**?

---

Always Spanish	Often Spanish	Equal amounts of Spanish and English	Often English	Always English
----------------	---------------	--------------------------------------	---------------	----------------

Is there any additional information you would like to add about languages used **at school** before the age of ten-years-old?

Please fill out this section about your **current** language use and exposure:

Please talk about the location(s) where you use this language.

*Please think about the languages you use at **home**.*

How much exposure do you have in Spanish and English **at home**?

---

Only Spanish	Mostly Spanish	Equal amounts of Spanish and English	Mostly English	Only English
--------------	----------------	--------------------------------------	----------------	--------------

How often do you speak Spanish and English **at home**?

---

Always Spanish	Often Spanish	Equal amounts of Spanish and English	Often English	Always English
----------------	---------------	--------------------------------------	---------------	----------------

Is there any additional information you would like to add about languages used **at home** currently?

*Please think about the language(s) you use at **school or at work**.*

How much exposure do you have in Spanish and English **at school or work**?

---

Only Spanish	Mostly Spanish	Equal amounts of Spanish and English	Mostly English	Only English
--------------	----------------	--------------------------------------	----------------	--------------

How often do you speak Spanish and English **at school or work**?

---

Always Spanish	Often Spanish	Equal amounts of Spanish and English	Often English	Always English
----------------	---------------	--------------------------------------	---------------	----------------

Is there any additional information you would like to add about languages used **at school or work** currently?

Are there any language(s) other than Spanish and English that you are exposed to or use for an extended amount of time? If so, how much are you exposed to other languages?

*Please answer the following questions about reading, writing, listening, and speaking in **Spanish**.*

How comfortable are you doing the following?

Reading in Spanish

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

Writing in Spanish

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

Speaking in Spanish

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

Understanding spoken Spanish

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

*Please answer the following questions about reading, writing, listening, and speaking in **English**.*

How comfortable are you doing the following?

Reading in English

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

Writing in English

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

Speaking in English

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

Understanding spoken English

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

How much do you identify with the term “Spanish-speaker”?

---

Not at all

A little bit

Somewhat

A lot

A great deal

How much do you identify with the term “English-speaker”?

---

Not at all

A little bit

Somewhat

A lot

A great deal

Is there other relevant language background information that you would like to share?

## 8.2 Bilingual Language Survey (Children)

Name of participant	Date of birth of participant	Today's date
<hr/>		
At what age(s) was your child first exposed to Spanish and English?		
Spanish:	<hr/>	
English:	<hr/>	
What is your relationship to the child participating in this study?		

**For all scale questions, please indicate your answer as a mark on the line below the question.**

**Feel free to consult your child if you're unsure about any of the questions, we want the most accurate picture of their language background possible.**

Please fill out this section about **your child's** current language use and exposure:

Please talk about the location(s) where your child uses this language.

*Please think about the languages your child uses at **home**.*

How much exposure does your child have in Spanish and English **at home**?

---

Only Spanish	Mostly Spanish	Equal amounts of Spanish and English	Mostly English	Only English
--------------	----------------	--------------------------------------	----------------	--------------

How often does your child speak Spanish and English **at home**?

---

Always Spanish	Often Spanish	Equal amounts of Spanish and English	Often English	Always English
----------------	---------------	--------------------------------------	---------------	----------------

Is there any additional information you would like to add about languages used in your **home** and with your child?

*Please think about the language(s) your child uses at **school**.*

How much exposure does your child have in Spanish and English **at school**?

---

Only Spanish	Mostly Spanish	Equal amounts of Spanish and English	Mostly English	Only English
--------------	----------------	--------------------------------------	----------------	--------------

How often does your child speak Spanish and English **at school**?

---

Always Spanish	Often Spanish	Equal amounts of Spanish and English	Often English	Always English
----------------	---------------	--------------------------------------	---------------	----------------

Is there any additional information you would like to add about languages your child uses **at school** currently?

Are there any language(s) other than Spanish and English that your child is exposed to or uses for an extended amount of time? If so, how much are they exposed to other languages?

*To the best of your knowledge, please answer the following questions about reading, writing, listening, and speaking in **Spanish**.*

How comfortable is your child doing the following?

Reading in Spanish (if applicable)

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

Writing in Spanish (if applicable)

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

Speaking in Spanish

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

Understanding spoken Spanish

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

*To the best of your knowledge, please answer the following questions about reading, writing, listening, and speaking in **English**.*

How comfortable is your child doing the following?

Reading in English (if applicable)

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

Writing in English (if applicable)

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

Speaking in English

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------

Understanding spoken English

Not at all	A little bit	Somewhat	Very	Extremely
------------	--------------	----------	------	-----------



How much does your child identify with the term “Spanish-speaker”?

Not at all

A little bit

Somewhat

A lot

A great deal

How much does your child identify with the term “English-speaker”?

Not at all

A little bit

Somewhat

A lot

A great deal

Is there other relevant language background information that you would like to share about your child?

## 8.3 Resumen de la historia lingüística para los bilingües (Adulto)

Nombre de participante hoy	Fecha de nacimiento	Fecha de hoy
¿Cuántos años tenía usted cuando tuvo su primer contacto con estos idiomas?		
Español:	_____	
Ingles:	_____	

**Para todas las preguntas de escala, por favor indique la respuesta como huella sobre la línea debajo de la pregunta.**

Por favor complete esta sección sobre su experiencia lingüística **desde su nacimiento a tener diez años**.

Por favor, cuéntenos sobre el/los **lugar(es)** donde usted use estas lenguas  
*Por favor piense en las lenguas que usó usted en **la casa** antes de la edad de diez años.*

¿Cuánta exposición tuvo usted en español e inglés **en la casa**?

Siempre español	Muchas veces español	Partes iguales de español e inglés	Muchas veces inglés	Siempre inglés
-----------------	----------------------	------------------------------------	---------------------	----------------

¿Con que frecuencia habló usted español e inglés **en la casa**?

Siempre español	Muchas veces español	Partes iguales de español e inglés	Muchas veces inglés	Siempre inglés
-----------------	----------------------	------------------------------------	---------------------	----------------

¿Hay información suplementaria sobre las lenguas que usó usted **en la casa** antes de la edad de diez años?

*Por favor piense en las lengua(s) que usó usted en **la escuela** antes de la edad de diez años.*

¿Cuánta exposición tuvo usted en español e inglés **en la escuela**?

Siempre español	Muchas veces español	Partes iguales de español e inglés	Muchas veces inglés	Siempre inglés
-----------------	----------------------	------------------------------------	---------------------	----------------

¿Con que frecuencia habló usted español e inglés **en la escuela**?

Siempre español	Muchas veces español	Partes iguales de español e inglés	Muchas veces inglés	Siempre inglés
-----------------	----------------------	------------------------------------	---------------------	----------------

¿Hay información suplementaria sobre las lenguas que usó usted **en la escuela** antes de la edad de diez años?

Por favor complete esta sección sobre su experiencia lingüística **actual**.

Por favor cuéntenos sobre los lugar(es) donde usa usted esta lengua.

Por favor piense en las lenguas que usa usted **en la casa**.

¿Cuánta exposición tiene usted en español e inglés **en la casa**?

Siempre español	Muchas veces español	Partes iguales de español e inglés	Muchas veces inglés	Siempre inglés
-----------------	----------------------	------------------------------------	---------------------	----------------

¿Con que frecuencia habla usted español e inglés **en la casa**?

Siempre español	Muchas veces español	Partes iguales de español e inglés	Muchas veces inglés	Siempre inglés
-----------------	----------------------	------------------------------------	---------------------	----------------

¿Hay información suplementaria sobre las lenguas que usa usted **en la casa** actualmente?

Por favor piense en las lengua(s) que usó usted en **la escuela o al trabajo**, antes de la edad de diez años.

¿Cuánta exposición tiene usted en español e inglés **en la escuela o al trabajo**?

Siempre español	Muchas veces español	Partes iguales de español e inglés	Muchas veces inglés	Siempre inglés
-----------------	----------------------	------------------------------------	---------------------	----------------

¿Con que frecuencia habla usted español e inglés **en la escuela o al trabajo**?

Siempre español	Muchas veces español	Partes iguales de español e inglés	Muchas veces inglés	Siempre inglés
-----------------	----------------------	------------------------------------	---------------------	----------------

¿Hay información suplementaria sobre las lenguas que usó usted **en la escuela o al trabajo** actualmente?

¿Hay otra(s) lengua(s) a parte del español o del inglés que usa usted durante mucho tiempo?  
¿Cuánta exposición tiene usted a esta(s) lengua(s)?

*Por favor conteste las siguientes preguntas sobre leer, escribir, escuchar, y hablar en **español**.*  
 ¿A qué grado está su niño/a cómodo/a haciendo las siguientes actividades?

Leer en español

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

Escribir en español

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

Hablar en español

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

Entender el español hablado

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

*Por favor conteste las siguientes preguntas sobre leer, escribir, escuchar, y hablar en **inglés**.*  
 ¿A qué grado está usted cómodo/a haciendo las siguientes actividades?

Leer en inglés

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

Escribir en inglés

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

Hablar en inglés

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

Entender el inglés hablado

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

¿A qué grado identifica usted con el término “Hispanohablante”?

---

Para nada

Un poco

En parte

Mucho

Extremadamente

¿A qué grado identifica usted con el término “Anglohablante”?

---

Para nada

Un poco

En parte

Mucho

Extremadamente

¿Hay otra información sobre sus experiencias lingüísticas relevantes que usted quiere compartir?

## 8.4 Resumen de la historia lingüística para los bilingües (Niños)

Nombre de participante hoy	Fecha de nacimiento	Fecha de
<hr/>		
¿Cuántos años tenía su niño/a cuando tuvo su primer contacto con estos idiomas?		
Español:	<hr/>	
Inglés:	<hr/>	

**Para todas las preguntas de escala, por favor indique la respuesta como huella sobre la línea debajo de la pregunta.**

**Por favor hablar con su niño/a si usted se siente inseguro/a sobre cualquier pregunta. Queremos la representación más adecuada de sus experiencias lingüísticas.**

Por favor complete esta sección sobre la experiencia lingüística **actual** de su niño/a.

Por favor cuéntenos sobre los lugar(es) donde usa su niño/a esta lengua.

Por favor piense en las lenguas que usa usted **en la casa**.

¿Cuánta exposición tiene su niño/a en español e inglés **en la casa**?

Siempre español	Muchas veces español	Partes iguales de español e inglés	Muchas veces inglés	Siempre inglés
-----------------	----------------------	------------------------------------	---------------------	----------------

¿Con que frecuencia habla su niño/a español e inglés **en la casa**?

Siempre español	Muchas veces español	Partes iguales de español e inglés	Muchas veces inglés	Siempre inglés
-----------------	----------------------	------------------------------------	---------------------	----------------

¿Hay información suplementaria sobre las lenguas que usa su niño/a **en la casa** actualmente?

Por favor piense en las lengua(s) que usó su niño/a en **a la escuela**, antes de la edad de diez años.

¿Cuánta exposición tiene su niño/a en español e inglés **en la escuela**?

Siempre español	Muchas veces español	Partes iguales de español e inglés	Muchas veces inglés	Siempre inglés
-----------------	----------------------	------------------------------------	---------------------	----------------

¿Con que frecuencia habla su niño/a español e inglés **en la escuela**?

Siempre español	Muchas veces español	Partes iguales de español e inglés	Muchas veces inglés	Siempre inglés
-----------------	----------------------	------------------------------------	---------------------	----------------

¿Hay información suplementaria sobre las lenguas que usó su niño/a **en la escuela** actualmente?

¿Hay otra(s) lengua(s) a parte del español o del inglés que usa su niño/a durante mucho tiempo? ¿Cuánta exposición tiene su niño/a a esta(s) lengua(s)?



*Por favor conteste las siguientes preguntas sobre leer, escribir, escuchar, y hablar en **español**. ¿A qué grado está su niño/a cómodo/a haciendo las siguientes actividades? (Si es relevante)*

Leer en español

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

Escribir en español

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

Hablar en español

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

Entender el español hablado

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

*Por favor conteste las siguientes preguntas sobre leer, escribir, escuchar, y hablar en **inglés**. ¿A qué grado está su niño/a cómodo/a haciendo las siguientes actividades? (Si es relevante)*

Leer en inglés

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

Escribir en inglés

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

Hablar en inglés

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

Entender el inglés hablado

Para nada	Un poco	En parte	Mucho	Extremadamente
-----------	---------	----------	-------	----------------

¿A qué grado identifica su niño/a con el término “Hispanohablante”?

Para nada

Un poco

En parte

Mucho

Extremadamente

¿A qué grado identifica su niño/a con el término “Anglohablante”?

Para nada

Un poco

En parte

Mucho

Extremadamente

¿Hay otra información sobre las experiencias lingüísticas relevantes de su niño/a que usted quiere compartir?