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GRAMMATICAL ACCEPTABILITY AMONG SPANISH MONOLINGUAL AND
SPANISH-ENGLISH BILINGUAL CHILDREN:

THE ACQUISITION OF *SER* AND *ESTAR*.

By

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ABSTRACT OF THE DISSERTATION

Grammatical acceptability among Spanish monolingual and Spanish-English bilingual children:

The acquisition of *ser* and *estar*.

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Dissertation directors:

Jennifer Austin and Liliana Sánchez

This dissertation investigates patterns of grammatical acceptability of copular verbs in obligatory contexts among Spanish monolingual and Spanish-English bilingual children. In Spanish, *ser* must be paired with a DP complement and *estar* with an adjectival passive. I question whether the two populations of speakers will demonstrate similar patterns of acceptability with the copulas, and whether or not each group's pattern changes as the children age. I also investigate the potential effect of initial age of onset to English as a contributing factor in the bilingual speakers' patterns of acceptability. Two experimental measures were created to empirically test these questions, a forced-choice, grammaticality judgment task (Unsworth, 2014) and a ternary-Likert acceptability judgment task (Katsos and Bishop, 2011).

There were 91 participants in this dissertation study (57 Spanish monolingual speakers (4;6-10;9, $M = 7;6$) and 34 Spanish-English bilingual speakers (4;6-12;2, $M = 8;5$) with 13 adult, Spanish-dominant controls. Results from the two experimental tasks show that monolingual and bilingual children differ in their patterns of acceptability of

ser and *estar* with obligatory predicates. From the earliest age of testing, monolingual children are shown to accept *ser* with DPs and *estar* with adjectival passives but older participants continue to demonstrate variability in their acceptability of *estar* + adjectival passives. Bilingual children also show high levels of acceptability of grammatical *ser* and *estar* with their complements from the earliest age of testing, with increased acceptability of *ser* + DP with age. Both younger and older bilingual children show similar variability with *estar* + adjectival passives, demonstrating a preference for overgeneralization of *ser* in these cases. The present research did not reveal robust findings due to the initial age of onset among the bilingual speakers.

The results from the two tasks provide a baseline of data highlighting the differences in acceptability between two populations of child Spanish speakers, as well as a locus for overgeneralization of the copulas, based on their underlying linguistic structure.

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DEDICATION

To Joe and Annie, Ray and Ena.

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CHAPTER 1: INTRODUCTION

1.1 Introductory remarks

This dissertation investigates the representation of syntax and the lexicon in the mind of both monolingual and bilingual children as they acquire Spanish. It is concerned with how lexical items interact with the specification of syntactic features, and the role that cognitive maturity and input exposure play in this process. In particular, this dissertation examines patterns of grammatical acceptability with the Spanish copulas *ser* and *estar* in two obligatory contexts among bilingual and monolingual Spanish-speaking children. These two populations provide a baseline for understanding language acquisition as it occurs in separate language-exposure contexts.

Language acquisition is a dynamic and cognitive process that involves both internal and external mechanisms to proceed (de Villiers and de Villiers, 1973; Dulay and Burt, 1974a/b; Grosjean, 2015; Kroll and Stewart, 1994; Meisel, 2001; Putnam and Sánchez, 2013; Sánchez, to appear). Studying child language acquisition allows us to understand language as a capacity that is innate to all, under typically developing conditions. By accounting for external factors such as age and linguistic environment, we can come to understand the process of acquisition in a more in-depth and detailed fashion (Paradis, 2011).

The study of the Spanish copulas provides insight into the process of language acquisition in developing grammars as well as the contribution of age and language exposure to the representation of syntactic and semantic properties. In Spanish, the dual copulas, *ser* and *estar* represent singular ‘to be’ in English as seen in (1) a and b with ‘to be’.

- (1) a. This is a cat
 This be-PRES.3SG a cat
 ‘This is a cat.’
- b. The glass is full
 The glass be-PRES.3SG full
 ‘The glass is full.’

In Spanish, only *ser* can be used in the context of (a) above, and only *estar* can be used in the context of (b), as seen here (1c-d):

- c. Éste es/ *está un gato.
 This be-PRES.3SG a cat.
 ‘This is a cat’
- d. El vaso está/ *es lleno.
 The glass be-PRES.3SG full
 ‘The glass is full’

The syntactic approach assumed in this dissertation argues that *estar* is specified for aspect and that *ser* devoid of aspect and left unmarked (Camacho, 2012a; Fernandez Leborans, 1995; Lema, 1992; Schmitt, 1992, 2005; Schmitt and Miller, 2007). This particular approach leaves open the possibility for *ser* to be overgeneralized to *estar*-only complements which will be argued further in Chapter 2.

Children’s grammars are assumed to be built gradually through the interaction of abstract grammatical knowledge and lexical concepts, all while respecting structural economy; as their grammar develops so does the child’s language. Both monolingual children, and bilingual children who are acquiring two languages simultaneously, go

through a similar process of language development. Bilingual children, who are acquiring languages sequentially, have an initial, monolingual-like, process of language acquisition, with the later introduction of a second language (Lightbown and Spada, 2006; Montrul, 2004).

Primary Linguistic Development (PLD) occurs roughly during ages (0-3;0). During this time, child grammars progress from one to two-phrase utterances to telegraphic speech and their ability to judge and interpret grammatical syntactic and semantic contexts is evident (Chomsky, 1995; O’Grady and Whan Cho, 2009; Radford, 1995, 1996, 2000). In typical development, language acquisition proceeds in a series of familiar sequences. Around age 3;0, both simultaneous bilingual and monolingual children have acquired gender and number agreement in Spanish, as well as semantic intuitions and simple syntactic structures, such as active sentences (Austin, 2009; de Villiers and de Villiers, 1972; Montrul, 2009; O’Grady and Whan Cho, 2009; Rothman et al., 2016). During later linguistic development (after age 3;0, until approximately 13;0), more complex linguistic structures emerge, such as passives in English and the subjunctive in Spanish, and a (monolingual) child is argued to acquire the majority of their language at this time. (Alonqueo and Soto, 2013; Montrul, 2009; Silva-Corvalán, 2014; Perez-Cortes; 2016; Rothman, 2016).

As will be addressed in Chapter 3, while early productions of *ser* and *estar* are evident during PLD in both simultaneous bilingual and monolingual Spanish, speaking children, adult-like comprehension appears to emerge during later development. Patterns of overgeneralization have been attested in early language acquisition in both bilingual and monolingual populations. For example, among both bilingual and monolingual

Spanish-speaking children, evidence of using the masculine gender markers as a default form (in contexts where feminine markers are required) is common (Cuza and Perez-Tattam (2016); Licerias et al., 2008; Montrul and Potowski (2007)).

It has been argued that bilingual children may experience “incomplete acquisition” during linguistic development, due to the suppression of linguistic input in one of their languages (Montrul, 2002; 2008; Polinsky, 2006; 2011; Silva-Corvalán, 2016). Other researchers argue that bilingual grammars are not a result of an incomplete acquisition process, rather that the activation of underlying grammar may fluctuate over the course of a bilingual’s lifetime (Putnam and Sánchez, 2013; Sánchez, to appear). This dissertation focuses on the process of language acquisition that is ongoing in two populations of children, and not the outcome or final-state of their grammar. However, the data from this study point to a continued-variable approach to bilingualism (Putnam and Sánchez, 2013; Sánchez, to appear). This assumes that variation and suppression of aspectual feature activation in Spanish due to the increased activation of English, may have an overall effect on the mental representation of the Spanish copulas in the mind of a bilingual speaker.

1.2 Statement of research

There has been a fair amount of research on *ser* and *estar* in studies with child production and interpretation (Holtheuer, 2011; Silva-Corvalan and Montanari, 2008; Silva-Corvalán, 2014; Schmitt and Miller, 2007) however there is a lack of research that has focused on children’s acceptability of the copulas in contexts where the verbs are not interchangeable. Importantly, two groups of previous research form the basis for the

present dissertation. Both lay the groundwork for the question of development and understanding of the copulas among both child populations as well as the contribution of initial, age of exposure in the bilingual population. First, research from Holtheuer, Miller and Schmitt (2011), Schmitt and Miller (2007), and Requena, et al. (2015) found that children (M=4;0) interpret *estar* to be more restrictive than *ser* in cases where either copula can be used with the same predicate. They also found that copula interpretations become more adult-like as the child gets older. Second, Valenzuela et al. (2015) found adult Heritage Speakers (HS) of Spanish¹ to accept *ser* and *estar* in ungrammatical constructions: *estar* with stative passive constructions containing agents, (**La cena está preparada por Mike*/ “Dinner is prepared by Mike”) as well as *ser* with passive adjectival complements (**El gato es muerto*/ “The cat is dead”). This indicates variability in the use of both copulas among HS adults, along with crosslinguistic influence from English *be* and will be discussed further in Chapter 3.

These studies have inspired further questioning into the linguistic development in both monolingual and bilingual populations. The following will be investigated: the potential difference in the two populations’ grammatical acceptability of *ser* and *estar*, whether or not acceptability shifts as a function of age, and if a bilingual’s exposure to two languages may cause a differential outcome in their pattern of acceptability.

This dissertation fills a gap in the current literature on the acquisition of *ser* and *estar* among both monolingual and bilingual children. To my knowledge, no previous research has investigated the comprehension of the lexical meaning of the two copulas in contexts in which they are not interchangeable in Spanish monolinguals or Spanish-

¹ A Heritage Speaker (HS) is defined here as someone who has acquired a non-socially dominant language as well as the language of majority society (Montrul, 2008; Pascual y Cabo and Rothman, 2013; Pérez-Cortes, 2016; Putnam and Sánchez, 2013).

English bilinguals. The wide age range of participant groups studied here helps to account for patterns of development as they occur across childhood.

I investigated the acceptability patterns of *ser* and *estar* in two populations of children. The copular constructions involved predicates that only form with *ser*, or *estar*, but not both (“obligatory predicates”) (Camacho, 2012a; Luján, 1981; Marín, 2009). The predicates tested were DPs and adjectival passives (2-3):

(2) *ser*-only predicates (DP): *un gato* “a cat”, *un perro* “a dog”, *un caballo* “a horse”, *una gallina* “a hen”, *una vaca* “a cow”, *una cebra* “a zebra”, *una biblioteca* “a library”, *una escuela* “a school”, *una playa* “a beach”, *un cine* “a movie theater”, *un parque* “a park”, *un supermercado* “a supermarket”

(3) *estar*-only predicates (adjectival passives): *abierta* “open”, *cerrada* “closed”, *vacío* “empty”, *lleno* “full”, *sucio* “dirty”, *limpio* “clean”

I questioned whether the patterns of understanding would be similar or different between monolingual and bilingual children and whether age was a contributing factor to these patterns. Additionally, I questioned whether age of exposure played a role in the acceptability of *ser* and *estar* for bilinguals. I utilized both quantitative and qualitative approaches to collect and analyze data. Two experimental contexts were created to test speaker acceptability of *ser* and *estar* with obligatory predicates. I utilized an interactive design that involved both cartoons and puppets that are appropriate to the participant’s age and attention span. An extensive language background questionnaire was adapted to not only collect information about a participant’s linguistic history but also their linguistic input and output.

The data from this dissertation support a theoretical analysis that is based on the distinction of the copulas, where *estar* is marked for aspect and *ser* is not (Camacho, 2012a; Fernandez Leborans, 1995; Lema, 1992; Schmitt, 1992, 2005; Schmitt and Miller, 2007; Zagona, 2013). Furthermore, the data informs on the nature of monolingual and bilingual language development in children. While speakers demonstrate early distinction between the copulas, the age of the speaker as well as their language environment contribute to their acceptability of *ser* and *estar* in predicate constructions. Importantly, the structure of *ser* and *estar* as well as attested cases of overgeneralization in other areas of monolingual and bilingual Spanish grammar motivate the patterns of overgeneralization observed in participants' grammar in this investigation. Additionally, it is argued that continued suppression of aspectual feature activation due to increased exposure to English among bilinguals may contribute to their mental representation of *ser* and *estar*.

The following is an outline of the study: In Chapter 2 discussion of relevant linguistic theory on the structure of *ser* and *estar* will be presented. Chapter 3 reviews previous literature on the acquisition of copular structures among both monolingual and bilingual children and adults. In Chapter 4, I present the research methodology, including the research questions, hypotheses and predictions guiding this dissertation, and in Chapter 5 I discuss the results and analyses of the experimental methodology. Chapter 6 presents a discussion of the implications of the results as well as concluding remarks on the acquisition of *ser* and *estar* in obligatory contexts among bilingual and monolingual speakers.

CHAPTER 2: ANALYSIS OF THE COPULAS *SER* AND *ESTAR*

2.1 Introduction

In this chapter I present relevant theoretical approaches that account for the division of *ser* and *estar* in obligatory contexts: *ser* with DP predicates (a cat, a dog, a horse, a chicken) and *estar* with adjectival passives (open, closed, full, empty), as in (4 a-b):

- (4) a. La ventana está [APabierta]
 The window be-PRES.3SG open
 ‘The window is open.
- b. Éste es [DPun gato].
 This be-PRES.3SG a cat
 ‘This is a cat.’

The syntactic analysis assumed in this dissertation is one that views *ser* and *estar* as lexical units at the syntax-semantics interface. Both verbs are stative: *ser* is an empty copula devoid of semantic content, while *estar* carries a lexical aspectual feature that is checked by its complement. Both *ser* and *estar* possess subcategorization restrictions for specific complements (4 a - b). This analysis has been argued by Schmitt (1992, 2005), Schmitt and Miller (2007) and more recently, Camacho (2012a). This argument has also been adopted in the acquisition work done by Valenzuela et al. (2015). Chapter 2 presents a variety of proposals that offer a (recent) overview of copular division in formal linguistic theoretical literature as well as argue the case for the verb-based, aspectual approach that is applied here.

Marta be-PRES.3SG sick

‘Marta is sick.’

- (6) a. Mi abuelo está muerto

My grandfather be-PRES.3SG dead

‘My grandfather is dead.’

- b. Su tía es joven

Her aunt be-PRES.3SG young

‘Her aunt is young.’

The following section presents the specific complements that can and cannot occur with either copula. In (7 a-d), only *ser* can take CP clefts, DPs, NPs, and eventive passives that include an agent. In (8 a-c) only *estar* can take locational PPs, serve as a progressive auxiliary, and take adjectival (stative) passives (Zagona, 2002, p. 47; Bruhn de Garavito and Valenzuela, 2008; Fernández Leboráns, 1995; Levin and Rappaport, 1986; Valenzuela et al., 2015; Varela, 1992; Zagona, 2013).

(7). Complements of *ser*:

- a. ____CP (clefts)

*Lo que piensa es/ *está [que debe practicar].*

‘What she thinks is [that she should practice].’

- b. ____DP (equational sentences)

*El siete es/ *está [un número impar].*

‘Seven is [an odd number].’

- c. ____NP (predicate nominals)

*María es/ *está [doctora].*

‘María is (a) [doctor].’

- d. ____eventive passives + agent

*The dinner es/ *está preparada por Anne.*

‘The dinner is prepared by Anne.’

(8) Complements of *estar*:

- a. ____PP

*El lápiz está/ *es [en la mesa].*

‘The pencil is [on the table].’

- b. progressive auxiliary

*Michael está/*es comiendo.*

‘Michael is eating.’

- c. ____stative passive

*La cena está/*es preparada.*

‘The dinner is prepared.’

In this dissertation, the copulas under investigation are limited to *ser* with DP complements and *estar* with adjectival passives (AP). As shown above, these complements are not interchangeable with either copula.

Adjectival passives are marked for perfectivity, yielding a temporal interpretation. Bosque defines adjectival passives as perfective states that have been changed or interrupted (Bosque, 1990, p. 178; Camacho, 2012a). Zagana (2013) argues that predicates that form with *estar* are marked for the uninterpretable feature [*uP*]. The implications of this feature checking are discussed in section 2.2.3.2.

In a predicate-based analysis of *ser* and *estar*, adjectives can be split into two

classes: scalar or non-scalar. Spanish scalar adjectives allow for degree modification (más X/ “more X”) and are divided on the basis of their correlation to open-scale/relative or closed-scale/absolute. An open-scale/ relative adjective (*gordo* “fat”; *delgado* “skinny”) depends on its context and requires a standard of comparison to determine its value (a between-individual comparison). Closed-scale/ absolute adjectives are not dependent on context and are only available with *estar*. These adjectives hold a within-individual comparison and are held to either the minimal or maximal value of comparison on the degree scale (*lleno* “full”, *vacío* “empty” (Gumiel-Molina and Pérez-Jimenez, 2012; Kennedy and McNally, 2005; Seuren, 1973).

DP complements are only available with *ser*, and denote an imperfective/ reading, which is not bounded by time (Marin, 2009). If a DP complement is preceded by the preposition *de*, then it is grammatical with *estar*, but not *ser*, and indicate a perfective reading (Roby, 2009; Camacho, 2012a):

- (9) a. Peters es/ *está el gobernador
 Peters be.IL/*is.SL the governor
 ‘Peters is governor’
- b. Peters está/*es de (*el) gobernador desde 2010
 Peters be.SL/*is.IL of (*the) governor since 2010.
 ‘Peters is acting/serving as governor since 2010’

DP predicates are ‘identificational’ ‘defining’ or ‘qualitative’ in nature, thus only combine with *ser* (Fernández Leborans, 1999; Roy, 2013). Nominals, regardless

of whether or not they have an indefinite article can never take *estar*³.

In the following sections, I will outline several theoretical approaches to the copulas that were addressed above. My goal is to offer a theoretical account that demonstrates the copulas at the syntax and semantics interface, in order to understand the complexity involved in acquiring *ser* and *estar*. In Chapter 5, the theoretical analysis of *ser* and *estar* will be discussed in light of the dissertation data.

2.2.1 Non-aspectual Analyses of *ser* and *estar*

2.2.2.1 *An individual and stage-level distinction*

An individual-level/ stage-level (IL/SL) analysis establishes *ser* and *estar* as stative verbs that take either IL (*ser*) or SL (*estar*) predicates (Carlson, 1977; Diesing 1990, 1992; Kratzer, 1989, 1995; Marín, 2009; Zagona, 2002). Individual-level (IL) predicates correspond to permanent states, and stage-level (SL) predicates typically correspond to temporary states (Carlson 1977).

Marín (2009) considers the division between IL and SL to simply be that of ‘boundedness,’ where IL states are unbounded, thus “temporally persistent” while SL states are bounded in time (Marín, 2009, p. 3). Kratzer (1989, 1995), Diesing (1990, 1992) and Zagona (2002) propose that the IL/SL distinction is represented in the syntax; the subjects of IL-predicates are generated in [Spec, IP] and the subjects of SL-predicates in [Spec, VP]. Kratzer proposes that the difference between the two predicates comes from their argument structure: the interaction between the arguments and the copular

³ Roy (2013) argues a semantic view of *ser* that defines the copular verb as non-dense and maximal, meaning that it cannot take a temporal limitation or aspectual marking. She argues that *ser* is ‘maximal’ and “refers to the biggest eventuality where predicate-P holds.” So if “Anne is in a maximal eventuality of being an actress”, there is no bigger eventuality for Anne to fit in (Roy, 2013, p. 45).

verbs is compositional and aspectual, specifying that SL-predicates (predicates that take *estar*) have an external argument and IL-predicates (predicates that take *ser*) do not (Krazter, 1989).

Diesing (1990, 1992) accounts for the difference between SL and IL predicates based on the properties of the Infl associated to each predicate. Favoring an IL/ SL analysis of the copulas are examples like (10 a-b), where (a) shows an essential property that belongs to Ana, while (b) shows a transitory property belonging to Eduardo:

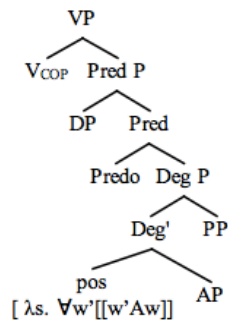
- (10) a. Ana es simpática.
 Ana be-PRES.3SG nice.
 ‘Ana is nice.’
- b. Eduardo está cansado.
 Eduardo be-PRES.3SG tired
 ‘Eduardo is tired.’ (Roby, 2009, p. 39).

2.2.2.2 Aspectual Composition with adjectival predicates

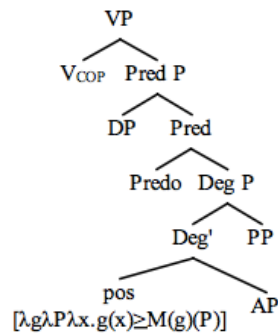
Gumiel Molina and Pérez-Jimenez (2012) and Gumiel Molina, Pérez-Jiménez, and Moreno-Quibén (2015) argue that the gradability of an adjective (see section 2.2) expressed through a functional head, determines the spell-out of either *ser* or *estar*. Crucially different from the aspectual approaches, in theirs there are no lexical or syntactic differences between either of the copulas (V_{ser} or V_{estar}). The copulas are both empty verbalizers: *estar* combines with closed scale/ absolute adjectives and *ser* with open scale/ relative adjectives (Gumiel Molina, Pérez-Jiménez, and Moreno-Quibén, 2015). Additionally, the relative/absolute distinction is not an inherent lexical property of

the adjective. The verbs have aspectual and tense operators that can connect with the set of events that are carried on a Predication Phrase (PredP). *Estar* is spelled out when PredP includes a comparison class that has stages (11 a); *ser* is spelled out in all other cases (11 b).

(11) a. (*estar*)⁴:



b. (*ser*)⁵:



Again, the crucial component for their analysis is the presence of the *pos* morpheme⁶, which semantically triggers the mapping of either *ser* or *estar* (Gumiel

⁴ *pos*: $C = \lambda s. \forall w'[[w'Aw]]$; “*x* is R(ealized) as *s* at *w'* & $P(x)/x$ is related to *P* at *s* in *w'*”. “For every typical world *w'*, the individual *x* has a realization *s* and *x* normally manifests/is/in/related to *P* at *s* in *w'*.” (Gumiel Molina, Moreno-Quibén, Pérez-Jiménez, 2015).

⁵ *pos*: $[[[Degpos]]] = \lambda g\lambda P\lambda x.g(x) \geq M(g)(P)$; “the function *M* sets the standard degree to which the reference degree (i.e. the degree assigned to the individual by the function) is compared and is considered “function over gradable properties [*g*] and comparison class properties [*P*].” (Gumiel Molina, Moreno-Quibén, Pérez-Jiménez, 2015).

⁶ “The *pos* morpheme derives properties of individuals from measure functions and also introduces the standard of comparison needed to evaluate the property via the relation *R*, (39). *R* is the relation that holds between the degree returned by the measure function $g(x)$ and the standard of comparison, *d*. Since the

Molina, et al., 2015; Kennedy, 2007; Kennedy and McNally, 2005).

This proposal shows that the comparison class (*pos*) is severed from AP, implying that the relative/absolute distinction of an adjective is not lexically marked⁷. The subject of predication conditions the alternation between *ser* and *estar*. Additionally, DP in spec,PredP provides property P to form either comparison class.

Under a predicate-based analysis of *ser* and *estar*, a child is tasked with acquiring the semantic restrictions associated with the adjectival predicates that specify either *ser* or *estar*. At this point in time, the proposal by Gumiel-Molina, et al. is not theoretically descriptive enough to account for the properties in question in this dissertation, particularly concerning DP predicates. Their analysis leaves room for empirical testing of adjectival predicates that appear with *ser* or *estar* at a later date.

In a predicate-based analysis, *ser* and *estar* do not contain semantic content, *estar* is the result of a spell-out with absolute adjectives in a within-individual comparison, and *ser* is the spell out with relative adjectives in a between-individual comparison. This contrasts with a strict-aspectual approach, which emphasizes that the difference in meaning between *ser* and *estar* is carried in the verbs. *Ser* is imperfective and represents an unrestricted time period. *Estar* is perfective and indicates an event, with a beginning, transition state, and an end (Luján, 1981; Roby, 2009). On the other hand, a partial

relation R depends in part on the scale structure of the adjective (remember the correlation between closed-scale adjectives and absolute standards and open-scale adjectives and relative standards), there is an interaction between the pos morpheme and the scale structure of the adjective.” (p. 15)

[[pos]] = $\lambda g \in D_{\langle e, d \rangle} \lambda d \lambda x [\mathbf{R}(g(x))(d)]$

⁷ A between-subjects, relative (*ser*) reading would yield this semantic interpretation of *pos*: $[[[Degpos]]] = \lambda g \lambda P \lambda x. g(x) \geq M(g)(P)$; “the function M sets the standard degree to which the reference degree (i.e. the degree assigned to the individual by the function) is compared and is considered “function over gradable properties [g] and comparison class properties [P].”

A within-subjects, absolute (*estar*) reading would yield this semantic interpretation of *pos*: $C = \lambda s.$

$\forall w'[[w'Aw]; “x \text{ is R(ealized) as } s \text{ at } w' \& P(x)/x \text{ is related to } P \text{ at } s \text{ in } w']]. “For every typical world } w', \text{ the individual } x \text{ has a realization } s \text{ and } x \text{ normally manifests/is/in/related to } P \text{ at } s \text{ in } w'.”$

aspectual approach states that *ser* is devoid of semantic content and *estar* is associated with a STATE sub-event, or aspectual specification, thus always carries a ‘temporariness’ implicature (Camacho, 2012a; Fernández Leborans, 1995; Lema, 1992; Schmitt, 1992; Schmitt and Miller, 2007; Zagana, 2013). The aspectual approaches to *ser* and *estar* are presented in the following section.

2.2.3 Aspectual Analyses of *ser* and *estar*

2.2.3.1 Full aspectual distinction

Luján (1981) and Roby (2007) argue for a syntactic analysis of the copulas, based on a binary, semantic distinction of aspect [\pm perfective]. Luján’s (1981) work established the basis for aspectual arguments of *ser* and *estar*. She argues that the [\pm perfective] distinction is classified as a grammatical aspectual distinction: *ser* carries an imperfective aspectual feature and is understood to be an “opposite value” of *estar* thus [-perfective]. Additionally, predicates with *ser* must be [-perfective], denoting an unrestricted number of delimited time periods, represented in (12).

$$(12) \quad A(x) \text{ at times } t_j \dots t_{j+k}$$

“Predicate *A* applies to an individual *x* across a period of time that does not have an assumed beginning or end” (Lujan, 1981, p. 177).

Estar predicates a [+perfective] aspectual feature and denote a perfective state, made up of a transition and end state ([+ perfective]), represented in (13).

$$(13) \quad A(x) \text{ at time } t_j$$

“Predicate *A* applies to an individual *x* at one time period, where the beginning and end are accounted for” (Lujan, 1981, p. 177).

According to Lujan, the perfective feature values of *ser* and *estar* overlap. This is referred to as “partial synonymy”: *ser* is made up of a series of delimited events or time periods (or a series of ‘*estar*’) but this relationship cannot exist in the reverse (Luján, 1981). The partial synonymy of the copulas is represented in (14).

(14) $A(x) \text{ at times } t_j \dots t_{j+k} \supset A(x) \text{ at time } t_j \vee t_{j+1} \vee t_{j+2} \dots \vee t_{j+k}$ (Luján, 1981, p. 177)

Example (15 a-b) illustrates the concept of *ser* encapsulating *estar*, but not the other way around, given the true and false nature of the statements (Luján, 1981):

- (15) a. Sara está hermosa porque es hermosa
 Sara be-PRES.3SG beautiful because PRO ser-PRES.3SG beautiful
 ‘Sara is/looks beautiful because she is beautiful (as a person).’ (True)
- b. Sara es hermosa porque está hermosa
 Sara be-PRES.3SG beautiful because PRO estar.3.SG. beautiful
 ‘Sara is a beautiful (as a person) because she is/looks beautiful.’ (False)

This partial synonymy accounts for the predicates discussed in this dissertation that indicate a perfective state. In the case of the predicate adjectives in (16 a-b), expressions with *ser* occur, which indicate a result or change of state (17 a-b):

- (16) a. Está abierto
 PRO be-PRES.3SG open
 ‘It is open.’
- b. Está cerrado
 PRO be-PRES.3SG closed

‘It is closed.’

(17) a. Ha sido abierto

PRO be-PPFV.3SG opened

‘It has been opened.’

b. Ha sido cerrado

PRO be-PPFV.3SG opened

‘It has been closed.’

Luján argues that (16 a-b) do not necessarily assume (17 a-b): perfective states do not necessarily assume or are associated with changes of states or actions (Luján, 1981, p. 183), but that (17 a-b) do indicate (16 a-b), thus:

(18) a. Ha sido abierta → está abierta (*It has been opened* → *it is open*)

b. Está abierta ⇏ Ha sido abierta (*It is open* ⇏ *it has been opened*)

Along with other researchers, Battersby (2017) argues that Luján conflates different layers of aspect, including perfectivity (grammatical, outer, or viewpoint aspect) and telicity (*Aktionsart*, inner, or situational aspect) (Battersby, 2017, p. 15).

Roby’s (2009) analysis of *ser* and *estar* adapts Luján’s [\pm perfective] argument and applies a *compositional* aspect approach, accounting for both external and internal aspect with the copulas. Roby argues that aspect is a lexical feature of *ser* and *estar* (*ser* is specified for the [-perfective] functional feature, *estar* is specified for [+perfective]) Both verbs do not depend on other grammatical elements to exist as such. Roby argues that the aspectual feature specification on *ser* and *estar* cannot be altered when in co-composition with other aspectual elements. Therefore, predicates with *estar* will always maintain a [+perfective] state and *ser* readings will maintain a [-perfective] one (Roby,

2009, p. 135). Related to this, he argues that aspectual feature specification denoted by past tense verbal inflection is represented under INFL, and the entire sentence is represented as the inflectional phrase of IP. Because inflectional aspectual morphology operates separately from the copulas, this indicates the presence of lexical aspect (Roby, 2009, p. 133). Like Luján, Roby argues that a [-perfective] state can be represented by a [+perfective] one, resulting in the change of copula to resolve potential ungrammaticality (19 a-b). This exemplifies a case of *coercion*⁸:

- (19) a. Juan es inteligente
 Juan be-PRES.3SG intelligent
 ‘Juan is intelligent (/is an intelligent person).’
- b. Juan está inteligente hoy
 Juan be-PRES.3SG intelligent today
 ‘Juan is intelligent today (/is being intelligent today).’

For noun or determiner phrases, Roby argues that only *ser* is grammatical and denotes imperfective predicates. The example in (20 a) demonstrates an *attributive predication*. The use of *ser* here means that Guillermo is a member of a class and this membership holds over an extended period of time (Roby, 2009, p.150)

- (20) a. Guillermo es médico
 Guillermo be-PRES.3SG doctor
 ‘Guillermo is a doctor.’

⁸ Escandell-Vidal and Leonetti (2002, p.163) define *coercion* as “a reinterpretation process set up to eliminate the conflicts between the semantic content of a constituent and the requirements of other elements in the same construction.”

If *estar* is to be used, then the ungrammaticality has to be resolved syntactically by introducing a prepositional phrase. This constitutes another form of *coercion* (21).

- (21) a. Guillermo está de médico.
 Guillermo be-PRES.3SG of doctor
 ‘Guillermo is acting/ serving as doctor.’ (Roby, 2009, 151).

To review, as opposed to *ser* being vacuous (Camacho, 2012a; Schmitt, 1992, 2005; Schmitt and Miller, 2007), both Luján (1981) and Roby (2009) argue that *ser* and *estar* are marked for an aspectual feature specification (specifically the [\pm perfective] functional feature specification coming from Roby’s argument). Additionally, the partial synonymy that exists from *ser* to *estar* is a logical assumption that is carried over from what is true of perfective/ imperfective events: if *ser* and *estar* are aspectual then they must have temporal reference. This partial synonymy is seen when comparing Spanish past tense forms—preterite and imperfect. The simple (perfective) preterite and imperfect are also partially synonymous, where the former implies the latter, but not the other way around (22 a-b).

- (22) a. Cant-aba \rightarrow Cant-ó.
 Sing-IMP.3SG Sing-PRET.3.SG
 ‘Was singing/ used to sing \rightarrow sang.’
 b. Cantó— \nrightarrow Cantaba.
 Sing-PRET.3.SG Sing-IMP.3SG
 ‘Sang \rightarrow Was singing/ used to sing.’

Roby argues that a [+perfective] functional feature analysis is theoretically parsimonious in that it does not require additional feature projections to be acquired by children.

Therefore, to acquire the *ser/ estar* distinction, children only need to acquire [+ perfective] feature specification⁹ (Roby, 2009, p. 140).

Certain aspects of Roby's proposal have been criticized in other theoretical literature on copula distinction in Spanish. Camacho (2012a) argues against Roby's claim that the [+ perfective] feature specification is the same as the preterite/ imperfect aspectual distinction in Spanish: although all verbs appear in all tenses of language, not all predicates can appear with both *ser* and *estar*. Because of this asymmetry, Camacho argues that the aspectual specification of the copulas must be, at least, partially distinct from that of the preterite/imperfect contrast.

Battersby (2017) further argues Roby's analysis that [+ perfective] functional feature specification of the verb phrase can have scope over the [+ perfective] lexical feature of the copulas. In cases like (23 a-d), both preterite and imperfect are grammatical with *ser* and *estar*.

- (23) a. El día fue bonito.
 The day be-PRET.3SG beautiful
 'The day was beautiful.'
- b. El día era bonito.
 The day be-IMP.3SG beautiful
 'The day was beautiful.'
- c. El día estuvo bonito.
 The day be-PRET.3SG beautiful
- d. El día estaba bonito.
 The day be-IMP.3SG beautiful

⁹ Verkuyl's *The Plus Principal* (1987) maintains that all verbs maintain constant aspectual values.

‘The day was beautiful.’

Battersby argues that the combination of [copula + adjective] and the grammatical aspect that is given by the preterite and imperfect tense in (24 a-d) is not a result of grammatical aspect taking scope over the entire phrase. Rather, this is a “partial neutralization” of the difference in meaning between *ser* and *estar* and a result of semantic composition of the lexical items in the phrase (Battersby, 2017, p. 16).

2.2.3.2 Partial Aspectual Distinction

Both Luján (2009) and Roby (2009) have greatly contributed to an argument in favor of an aspect-based distinction of *ser* and *estar*. Another approach consists of a partial aspectual analysis of the copulas, where *ser* is left unmarked and *estar* is specified for aspect (Camacho, 2012a; Fernandez Leborans, 1995; Lema, 1992; Schmitt, 1992, 2005; Schmitt and Miller, 2007).

Lema (1992) Schmitt (1992) and Fernández Leborans (1995) were early proponents of a partial aspectual distinction of *ser* and *estar*: *ser* is an empty copular verb, devoid of semantic content, while *estar* carries an internal, aspectual distinction. In a more recent version of this proposal, Schmitt and Miller (2007) argue for this distinction as an implicature tied to the choice of the copula. The basis for this claim comes from counterintuitive evidence for the temporary/ permanent difference related to the semantic meaning of the copulas: *joven* (‘young’), and *nueva* (‘new’) are non-permanent adjectival predicates that tend to only form with *ser*. *Muerto* (‘dead’) is a permanent state and only forms with *estar* (Schmitt and Miller, 2007).

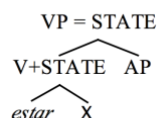
Schmitt and Miller (2007) propose that the temporary/ permanent distinction is

not a part of the semantics of the verbs (though the two remain “semantically distinct”) (Lema, 1992; Schmitt 1992; Schmitt, 2005). Both *ser* and *estar* are considered states (Smith, 1991). *Ser* is semantically empty and considered a state by default (given Santos’ 1991 dual-definition of statehood: for *ser* this means the verb is “atemporal,” in opposition to events, presupposing time to be actualized (Bach, 1981; Santos, 1991; Schmitt and Miller, 2007). *Ser* can be modified by an “aspectual operator” (including covert and overt adverbs such as hoy ‘today’) to create a temporary interpretation of the *ser* + predicate construction, as seen in (24 a-b).

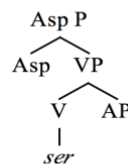
- (24) a. *María es* *alta*.
 María be-PRES.3SG *tall*
 ‘Maria is tall.’
- b. *María es* *alta* *ahora*.
 María be-PRES.3SG *tall* *now*
 ‘María is tall now.’

Estar contributes a subevent, STATE to the VP (25 a and b):

(25) a.



b.



In 25 (a), the verbalizing element (VP) has an aspectual subevent, state (the implication is that property X holds at time t) which is spelled out as *estar*. Because of the subevent property in the VP, the predicate is considered temporarily anchored

(Schmitt and Miller, 2007, p. 1913). In (b), there is no aspectual subevent, so *ser* is the spellout. Here, the implication is that property X holds independent of time.

Schmitt and Miller (2007) assume that *ser* is “flexible regarding its event type properties” and can take an inchoative reading in the presence of covert/overt adverbs, while *estar* is always considered a state and because of this, has an “implicature of temporariness”. They theorize that a child then needs to calculate the implicature that is associated to the choice of copula. Concerning the acquisition of *estar*, the child needs to know to find the interval of time in which a property holds and refer to the same time interval that is being used by the adult. For *ser*, the child needs to know that a property is atemporal and the circumstances that adverbials (either covert or overt) can be applied to make *ser* inchoative.

Based on these assumptions, they offer three requirements necessary to for a child to acquire *ser* and *estar*:

- (1) determine that the two copulas are semantically distinct and understand the selection restrictions associated with *estar*;
- (2) use the pragmatic implicatures associated with the choice of each copula (this refers to when the copulas can be exchanged with gradable adjectival predicates);
- (3) determine the interval in which the property is being evaluated in the way an adult does for each of the two copulas. (Schmitt and Miller, 2007).

Camacho (2012a) also argues for a partial aspectual distinction, however, he incorporates assumptions from Fernandez Leborans (1995) and Zagana (2013). Here, *ser* remains an empty copula, while *estar* is marked for situational/ lexical aspect. Unlike Schmitt and Miller (2007), where the subevent STATE contributes to the VP, Camacho

argues that *estar* selects for an unbounded, progressive aspect projection. *Estar* still encodes for a bounded event (Roby, 2009), but Camacho argues that this includes both a beginning and end boundary. Like Zagana (2013), this means that *estar* is encoded for an uninterpretable prepositional feature [*uP*] with the value [*inch*] (*inch*=inchoative aspect denotes the beginning of an event). Complements of *estar* are marked for [*INCH*] and an [*uP*] needs to be checked on *estar*. *Estar* checks for boundaries (*lleno* (full), *vacío* (empty), *abierto* (open), *cerrado* (closed)) but not for changes of state (refer to 12-14 above). This accounts for the ungrammaticality of *estar* with *ser* complements, as *ser* complements would need to be checked for [*INCH*].

To summarize Camacho's (2012a) analysis, *estar* carries an aspectual feature specification that must be checked by its complement. This interaction between copula and predicate helps us to understand why certain expressions are not interchangeable with *ser* and *estar*. Additionally, *ser* remains open and not specified for a [-Perfective] feature. Camacho argues that a [-Perfective] feature specification on *ser* would mean that the DP would also need to be marked for [-Perfective] feature specification, which is unjustified. The grammatical phenomena in question here, as well as the pattern of acquisition, are reported here in section 2.2.3.2 (see also Battersby's 2017 argument, see section 2.2.1.1 above).

2.3 Revisiting theoretical predictions for the acquisition of *ser* and *estar*

Both predicate and verb-based distinctions of *ser* and *estar* help inform us on the nature of the copulas as well as how they interact with their predicates. As stated in section 2.1 of this chapter, the theoretical analysis assumed in this dissertation is in line with Camacho's (2012a) analysis of *ser* and *estar*, where *ser* is devoid of semantic

material, and *estar* is marked for lexical aspect. The implications of Camacho's analysis indicate that a child would need to acquire the semantic distinction between *ser* and *estar* along with the aspectual feature specification needed to license *estar* and its predicates. Theoretically, it would be likely that a child would acquire and produce *ser* before *estar* and even apply *ser* to *estar*-only predicates, given the open, unbounded nature of *ser*. *Estar* with its predicate would emerge later.

2.3 General Conclusions

In this chapter, I have reviewed proposals that account for the relationship between *ser* and *estar* and their complements. The application of adjectival predicates and DP structure was focused on, and the theoretical implications for child acquisition were discussed. This dissertation assumes a theoretical analysis that argues for the aspectual feature specification of *estar* and leaves *ser* devoid of *aspect* (Camacho, 2012a; Zagana, 2013). In the following chapter, I discuss literature connected with both child monolingual and bilingual acquisition and comprehension of *ser* and *estar* as it relates to both production and experimental contexts.

CHAPTER 3: ACQUISITION OF THE COPULAS *SER* AND *ESTAR*

3.1 Introduction

The purpose of the following chapter is to review relevant work on language development patterns in monolingual and bilingual children. This literature establishes the baseline of how language(s) develop in the mind of an individual. Additionally, this section covers work mainly dealing with linguistic effects of bilingualism and language exposure in order to consider their impact on bilingual language acquisition.

3.1.1 Terminology: bilingual language acquisition in the United States

Monolingual children receive their primary input from a single language and bi-/multilingual children have two/ multi- languages as sources of primary input.

The developmental patterns of bi/multi-language acquisition have become an increasingly studied phenomenon in the past several decades. There are several different manners to categorize bilingual individuals, including dominance, competence, memory organization, and linguistic environment, to name several (Austin, Blume, and Sánchez, 2015; Meisel, 2011). For this dissertation, the question of age is relevant concerning acceptability patterns of *ser* and *estar*. In this case, the bilingual participants are classified as either acquiring English simultaneously or sequentially with Spanish. Simultaneous bilingualism is the case where a child is exposed to two languages during Primary Linguistic Development (PLD) between birth and approximately 3;0. Sequential (also known as successive or consecutive) bilingualism occurs when there is exposure to one language during PLD, and then

another language is introduced during later linguistic development, after 3;0 (Austin, Blume, and Sánchez, 2015; Meisel, 2011; Montrul, 2009, 2014; O’Grady and Whan Cho, 2009; Unsworth, 2012).

In the case of the United States, many children that are growing up as simultaneous bilinguals are acquiring the majority language of society, English, and a minority language at the same time at home, which is Spanish in this case. Sequential bilinguals in the US are first exposed to the minority language at home, Spanish, and then later introduced to English, usually in formal education contexts. For both simultaneous and sequential bilingualism, the minority languages that are maintained by parents in the home (and possibly the surrounding community) is considered the “heritage language” of the child. Heritage Speaker (HS) is an individual who has grown up acquiring both the family heritage language as well as the language of majority society (Montrul, 2008; Pascual y Cabo and Rothman, 2013; Pérez-Cortes, 2016; Putnam and Sánchez, 2013).

The following examples of circumstances that characterize simultaneous bilingualism in the US:

- (1) one parent speaks only a minority language to the child, the other parent speaks only English, and the parents speak English to each other;
- (2) both parents speak both the minority language and English to the child and both to each other;
- (3) and/ or (2) with the addition of live-in relatives (grandparents for example) who only speak the minority language.

The following circumstances could also characterize sequential bilingualism

in children in the US:

- (1) a child is born in a different country and then moves to the US with his/her parents and starts school after the age 3;
- (2) A child is born in the US to minority-language speaking parents who only speak that language at home, the child then begins preschool or kindergarten in English, at around 3;0 or 4;0 years of age).

In both cases (1) and (2) for sequential bilingualism, the minority language is likely maintained in the home. In this dissertation, an individual's bilingualism is considered sequential if the second language was introduced to the child after the age of 3 (Meisel, 2011; Schwartz, 2004; Unsworth, 2012). Adult L2 acquisition is a form of sequential bilingualism, as well as child L2 acquisition via school enrichment or bilingual immersion programs (Austin, Blume, and Sánchez, 2015).

3.1.2 Acquiring DP and adjectives in Spanish

Both DP and adjectival predicates are acquired early in Spanish monolingual language acquisition (Montrul, 2004). Acquiring both requires learners to understand that determiners are pre-nominal and that adjectives are often post-nominal. Along with the two properties themselves, learners must also acquire number and gender agreement between determiners, nouns, and adjectives (Montrul, 2004). Monolingual Spanish speaking children begin to produce NPs with “determiner-like elements” around age 2;0 with evident gender and number markers (López-Ornat, 1997) (26 a):

- (26) a. mano (adult: la mano)
- The-F.SG hand-F.SG

‘The hand.’

Adjectives have been found to be produced around the same time with correct gender/ number markings (López-Ornat, 1997) (27 a):

- (27) a. Mamá guapa
 Mom pretty-F.SG
 ‘Pretty mom.’

While errors in gender and number are present early, monolingual children have been found to fully produce determiners and gender/ number agreement with adjectives by age 3;0 or 4;0 (Hernández Piña, 1984; Lleó, 2001a,b; López-Ornat, 1997; Montrul, 2004). Simultaneous bilingual children (Basque-Spanish) have been found to have a similar pattern of development in DP acquisition (Barrena, 1997; Montrul, 2004).

3.2 The acquisition of *ser* and *estar* in monolinguals and bilinguals

The distinction between *ser* and *estar* requires the child to acquire their syntactic and lexical-semantic features. Among monolingual and bilingual speakers, it seems likely that there would be difficulty interpreting the distribution of both copulas, given the complexity of the structures in which they occur. Among bilinguals this is further complicated by the parallel acquisition of unmarked English *to be*. In terms of natural speech data, children growing up in monolingual and bilingual environments with multiple copular systems are shown to produce both copulas from an early age in an adult-like manner and with relatively few errors (Irish: O’Toole and Fletcher, 2010; Basque: Larrañaga and Guijarro-Fuentes, 2012; Spanish: Sera, 1992, Holtheuer, 2009,

Silva-Corvalán, 2014). On the other hand, experimental data from both bilingual and monolingual environments (elicited production, picture matching tasks with monolingual children: Holtheuer, Miller and Schmitt, 2011; Schmitt and Miller, 2007; Requena et al., 2015 and grammaticality judgments and acceptability judgments with HS adults: Valenzuela, et al., 2015), show that the understanding of multiple copulas systems emerges later in childhood and may be affected by English input later in adulthood. Hendriks and Koster (2010) suggest that production may precede comprehension in specific areas of language acquisition due to their yet-to-develop pragmatic knowledge¹⁰, immature cognitive abilities and asymmetries in between production and comprehension of the grammatical phenomenon in question (Hendriks and Koster, 2010).

3.2.1 Monolingual Production Data in the acquisition of *ser* and *estar*

In spontaneous speech data, young monolingual children have been found to produce *ser* and *estar* contrastively. The first part of Sera's (1992) study analyzed the spontaneous speech of two monolingual boys (1;6-3;6) and their parents from the Linaza CHILDES corpus. She tabulated the number of times *ser* and *estar* appeared with nominals, adjectives, locations, and auxiliaries. The majority of utterances came from the adults in this analysis. She found that both children and adults only used *ser* with nominal predicates and *estar* as auxiliaries (the use of the opposite copula, in either case, would be considered non-target use). *Estar* was used with the majority of locatives, and the use of *ser* and *estar* was split among the adjectival predicates. The second part of this study analyzed the speech produced elicited by the book *Frog, Where are You?* by Mercer

¹⁰ Evidenced in work done by Bloom, et al., 1994 in Delay of Principal B Effect and SVO word order by Chapman and Miller, 1975.

Mayer (1969). Participants included 51 monolingual Spanish children (N=11, M=3;11/ N=12, M=4;7/ N=11, M=5;6; N=12, M=9;7) and five adults. Sera observed similar results from the Frog Story, as with the CHILDES data, but with lower instances of *ser* produced overall. *Ser* was only produced with nominals, *estar* only as auxiliaries and with locations, and both *ser* and *estar* with adjectives. In both the CHILDES and the Frog Story data sets, Sera found that there was little overlap in the types of adjectives used with *ser* and *estar*. From the list of adjectives that appeared with *ser* or *estar*, the younger CHILDES participants (1;6-3;6) produced *lleno* (full), *sucio* (dirty) and *muerto* (dead) with *estar*. The older frog story participants (see ages above) produced *abierta* (open), *llena* (full), and *vacío* (empty) with *estar*. These adjectival predicates are argued to only occur with *estar* in the theoretical literature. They are of interest because they are one of the foci of this dissertation.

Holtheuer (2009) examined 11 monolingual Chilean-Spanish children and the input they received from their parents and caretakers. Her data supports Sera's study; there were no instances of *estar* with nominal predicates in child or adult speech, and *ser* was never used as an auxiliary in the progressive by adults (though minimally by children) (Holtheuer, 2009). Holtheuer largely focused on adjective types that co-occurred with the copulas in the child/adult monolingual speech production data. She found both children and adults produced slightly more instances of *ser* than *estar* with adjectives. When specific adjective (*estar*-only/ *ser*-only predicates) were analyzed, both adults and children produced *estar* with more specific adjectives. The adjectival participle *roto* 'broken' (which is not grammatical with *ser*) was produced with *estar* by one of the youngest participants (1;11 years of age). The older the children got, the more instances

of *estar*-only adjectives observed (*lleno* (full); *vacío* (empty)). The modifier *más* (more) demonstrated an interesting pattern with *ser*, not *estar*, indicating that children are selective in their use of the copulas. Holtheuer suggests that around 3;0 children become more ‘innovative’ in their use of *ser* and *estar* with adjectives. Several children in her study (starting at ages 1;10 to 3;6) produced errors of commission with *ser* in progressive auxiliary context and *ser* for the location of non-object subjects (with AdvP) (28-29), which was not found in adult input:

(28) Aquí es comida

Here be-PRES.3SG food

‘Here is the food.’

(29) Es comiendo plátano.

Be-PRES.3SG eating-AUX banana.

‘He is eating a banana.’ (Holtheuer, 2009).

This data shows that monolingual children produce *ser* and *estar* similarly to their adult input and that attention is paid to specific adjectives that pair with only one copula. Sera’s (1992) data tells us what early production looks like in monolingual children. Children do produce copula + predicate constructions in non-adult like ways. Holtheuer’s data also reveals the patterns present in early production and shows that monolingual children make innovative errors in their production. Holtheuer, argues that this is evidence for the underlying structure of grammar and that there is ‘more’ involved in the acquisition of copulas (and grammar in general) than speaker input (Holtheuer, 2009).

3.2.2 Bilingual Production Data in the acquisition of *ser* and *estar*

Silva-Corvalán (2014) analyzed spontaneous speech samples from two bilingual brothers, Nico and Brennan who are growing up as simultaneous bilingual speakers of Spanish and English in the US (Silva-Corvalán classifies the participants as ‘heritage speakers-to-be’ (p. 358)). The children had relatively low error rates in their copula selection from the ages of 1;6-5;11, however only “clear” productions of *ser* and *estar* were accounted for in her data, utterances with [e] were considered to be reduced versions of *ser* or *estar* and therefore “ambiguous.” Silva-Corvalán observed that when a syntactic cue was regular in the input, the children did not make copula selection errors, except in few instances. The examples below show the child’s incorrect use of *ser* with a locative predication (30), *estar* with a DP (31) and *ser* with a progressive structure (32) (C=caretaker; B=Brennan; N=Nicolas, from Silva-Corvalán, 2014, p. 250):

- (30) C: *¿Dónde pusiste tus calcetines?*
 ‘Where did you put your socks?’
 N: *Son en mi drawers.*
 ‘They’re [*ser*] in my drawers.’
- (31) B: *Y después podía hablar cuando yo estaba un sol.*
 ‘And then I was able to speaker when I was [*estar*] a sun.’
- (32) B: *Yo soy hablando de los árboles.*
 ‘I’m [*ser*] speaking of the trees.’

There were instances of *estar* extended into *ser* contexts with predicate adjectives. The younger brother, Brennan, had a higher frequency of overextension in *estar*, which Silva-Corvalán interpreted as his lower exposure to Spanish and his lower frequency of language use.

Overextension of *estar* has been seen in other work by Silva-Corvalán (1986, 1994, 2001, 2006), specifically in her research with *ser* and *estar* in bilingual, Mexican Spanish and English-speaking adults growing in LA. Here *estar* was used with predicate adjectives where *ser* should occur among monolingual speakers of Spanish (Silva-Corvalán, 2001). In her (1994) study, Silva-Corvalán found that adult bilinguals born in the US extended *estar* with predicate adjectives into *ser* contexts (33):

(33) *Rasgos de ella? Mira, la nariz de ella no es como la mía: está un poco grande... Yo digo que la mía [la nariz] está chistosa...*”

“Her features? Look, her nose isn’t like mine, it is_{estar} a little big... I’m saying that mine [nose] is_{estar} funny...” (p. 321).

In (33) *estar* is used with predicate adjectives to describe the inherent nature of the noses of two people. These are contexts where *ser* would be observed in Spanish-majority spoken settings. Silva-Corvalán (2014) has said that this extension is a representation of a ‘continuous’ process of syntactic-semantic extension that has occurred throughout the history of Spanish. Her (1994) study included Mexican Spanish bilinguals, while her grandchildren in the (2014) study were in contact with a Chilean dialect of Spanish. Silva-Corvalán does not attribute the children’s few non-target productions of *ser* and *estar* to crosslinguistic influence from English. She argues that this is because their performance was similar to results seen in monolingual studies (i.e., early distinction of the copulas with minimal, non-adult like productions) (Sera, 1992; Ponce Romero, 2008; Holtheuer, 2009).

Liceras, et al. (2011) analyzed English production data from Becker’s (2004) copula study and Spanish-English simultaneous bilingual children from the FerFuLice

Corpus in CHILDES (MacWhinney, 2000) in order to study overt copula realization in English in the two populations. Children in both studies were between ages 2;0-3;4. Their results show that Spanish-speaking bilingual produce more overt copulas in English with nominal (IL) and locative (SL) predicates compared to monolingual English-speaking children in early childhood. This was also the case for IL and SL adjective production in English. The authors conclude that Spanish has an accelerating influence on the production of English copulas in early childhood, where omission is usually seen (Becker, 2004). This study gives compelling evidence towards the directionality of language influence, as mentioned previously: here Spanish is shown to accelerate (Paradis and Genesee, 1996) the production of *be* in several predicate types, aiding in the child's temporal anchoring abilities with different predicates (Liceras, et al., 2011).

In summary, production data from monolingual children have shown that they use the copulas commonly with nominal, locative and adjectival predicates and that there are errors along their development path. Data from bilingual children show that children correctly use copula + adjective constructions around 3;0 with some errors, including overextension of *estar* into *ser* contexts. Additional data show that bilingual Spanish may boost English language development, which Liceras et al. (2011) attribute to crosslinguistic influence (CLI). Data from Spanish speaking bilingual adults has shown further evidence of CLI from their L2 (English) in transferring the lack of aspectual feature specification in their L1 (Spanish). These results show the complicated relationship between the lexical item and its underlying semantic features. Table 1 summarizes these results:

Table 1.

Monolingual and Simultaneous Bilingual Production Data Summarized

| Author | Speakers | Data |
|------------------------|---------------------------------|--|
| Sera (1992) | Monolingual children | <ul style="list-style-type: none"> -Ages (1;6-3;6) -Nominals only with <i>ser</i> -Locatives only with <i>estar</i> -Adjectives with <i>ser/ estar</i> -Little overlap in the types of adj. used with the copulas |
| Holtheuer (2009) | Monolingual children | <ul style="list-style-type: none"> -Ages (1;10-3;7) -<i>ser</i> and <i>estar</i> distributed evenly with adjectives -adverbial modifiers used more with <i>ser</i> -errors of commission with <i>ser</i> |
| Silva-Corvalán (2014) | Simultaneous bilingual children | <ul style="list-style-type: none"> -Ages (1;0-6;0) -90% rate of accuracy with <i>ser</i> and <i>estar</i> by 3;0 -minimal errors found, some overextension of <i>estar</i> with predicate adj |
| Silva-Corvalán (1994) | Bilingual HS adults | <ul style="list-style-type: none"> -overextension of <i>estar</i> with predicate adjectives in <i>ser</i> contexts |
| Liceras, et al. (2011) | Simultaneous bilingual children | <ul style="list-style-type: none"> -English monolingual and Spanish-English bilingual (2;0-3;4) -Spanish boosts copula production in English, may help with temporal anchoring of copula with predicates |

3.2.3 Monolingual Experimental Data in the acquisition of *ser* and *estar*

What follows is a brief overview of experimental data in copula acquisition among monolingual Spanish speaking children. This summary helps to pinpoint what children may understand about the use of *ser* and *estar*, and what areas of comprehension

may take longer to emerge, compared to what is known by their adult counterparts.

The experimental work done with monolingual Spanish speaking children has been conducted by Schmitt and Miller (2007), Holtheuer, Miller and Schmitt (2011) and Requena, et al. (2015). They investigated children (averaging 4;5-7;4 years of age) and their understanding of the distribution of *ser* and *estar* with open-scale/relative adjectival predicates (fat/ skinny; tall/ short) that are available with either copula (as in example 7 d and 8 b above), however with pragmatic conditions that restrict their use depending on the context. This research has shown that by the age of 5, children demonstrate pragmatic inferences about the copulas with scalar adjectival predicates and that they select a transitory reading with *estar* over *ser* when the copulas are presented in isolation (Requena et al., 2015). The most recent work (Requena et al., 2015) indicates that until around age 7;0 children interpret the copula differently from adults. In summary, monolingual children between the ages of 4;0 and 7;0 show understanding of *ser* and *estar* and that the copulas are encoded separately, even when their predicates are interchangeable. In Requena et al.'s (2015) work, children seem to understand the use of *estar* with open-scale/relative adjectival predicates and can interpret their transitory properties.

3.2.4 Bilingual Experimental Data in the acquisition of *ser* and *estar*

The only previous research (to my knowledge) that tests HS knowledge of the Spanish copulas is from Valenzuela et al., 2015, who tested Spanish-speaking HS adults that grew up in both Canada and the US. The researchers found that adult HS bilinguals who grew up in the US widely accepted *estar* in stative passive constructions when tested

in a scalar, acceptability judgment task (34):

(34) ✓La cena está preparada

The dinner be-PRES.3SG prepared.

‘Dinner is_{estar} prepared.’ (stative passive)

They also accepted *estar* in stative passive constructions with agents which is ungrammatical (35):

(35) La cena está preparada (*por Mike)

The dinner be-PRES.3SG prepared (by Mike)

‘Dinner is_{estar} prepared by Mike.’ (stative passive)

Also, this group did not fully reject *ser* with ungrammatical passive adjectival complements that are grammatical only with *estar* among dominant Spanish speakers

(36):

(36) *El gato es muerto

The cat be-PRES.3SG dead

‘The cat is_{ser} dead.’

Overall, the US HS performed significantly lower than the Canadian HS in their acceptability of sentences in six of the ungrammatical test contexts: (*ser* + imperfect; *estar* + agent; *estar* + preterite, ungrammatical *ser* with adjectives, and ungrammatical *estar* with adjectives). Spanish monolinguals correctly rejected ungrammatical *ser/estar* constructions with the predicates above mentioned. The authors attributed a potential loss of aspectual features associated with the copulas among the HS adults in the US, due to increased exposure to English along their course of development (Spanish input tends to decrease once children reach school-age, as mentioned previously). The Canadian

speakers of Spanish were also highly proficient speakers of French. Valenzuela, et al. (2015) hypothesize that English input would not have been as extensive as it was for US HS. Therefore, if English is the source of influence in the loss of aspectual feature specification on *estar*; less English input would have helped in the maintenance of Spanish.

Monolingual children between 4;0 and 7;0 years of age demonstrate a distinction between the copulas with interchangeable predicates and their interpretations become more adult like the older the child. Adult bilingual HS from the US show increased variability with *ser* and *estar* by accepting the copulas with ungrammatical predicates. Table 2 summarizes the experimental results from monolingual Spanish adults and children and bilingual, HS adults.

Table 2.

Experimental results of child vs. adult interpretations of ser and estar summarized

| Monolingual Schmitt and Miller (2007); Holtheuer, Miller and Schmitt (2011); Requena, et al. (2015). | Adults | Children |
|---|--|--|
| <i>Ser</i> | Permanent interpretation preferred but transient possible when tested in <i>estar</i> contexts | In most cases, both temporary and permanent interpretations possible at chance level in pragmatically enriched contexts. |
| <i>Estar</i> | Temporary or transient interpretation preferred | Temporary or transient interpretation preferred and becomes less restrictive as a function of age. |
| Bilingual Valenzuela, et al., 2015 | Adults (HS) | Children |
| <i>Ser</i> | Largely accepted <i>ser</i> in adjectival compliments that only appear with <i>estar</i> (considered ungrammatical). | N/A |
| <i>Estar</i> | Largely accepted <i>estar</i> in ungrammatical, stative, passive constructions with agents. | N/A |

A review of the previous literature shows that monolinguals produce copular utterances with several different types of predicates from an early age and have relatively few errors or overlap. In an experimental setting, younger monolingual children show an understanding of *estar* and use it to represent a temporary or transitory interpretation, while their use of *ser* mostly remains at chance level. In this case, *ser* may be less stable early in monolingual Spanish-speaking children. Child bilingual production data has shown initial separation of the copulas with overextension of *estar* to *ser* contexts among bilingual speakers growing up in the US; as a result, *ser* may also be less stable for child

bilinguals. Though the same can be said for child monolinguals, the monolingual results come from production data and the bilingual results from experimental work, thus making it hard to draw a comparison between the two populations. The following section discusses literature related to bilingual language development.

3.4 Bilingual language acquisition and crosslinguistic influence

Ser, *estar*, and *to be* constitute separate lexical entries made up of their own syntactic and semantic configurations. Following Caramazza (1997) and Jiang (2000), I will assume that there are two levels of lexical entries, the lemma level, and the lexeme level. Perfective features of *estar* and its complements are located at the lemma level where syntactic and semantic features are specified (Caramazza, 1997; Jiang, 2000). The morphological/ phonological/ orthographical variants of a word are located at the lexeme level (Caramazza, 1997; Jiang, 2000). Concerning acquisition of the copulas, a speaker is tasked with having to acquire the syntactic, semantic, and lexical selection restrictions *ser* and *estar* (with their predicates), along with the lexical items themselves. For bilingual speakers, transfer from English could affect the underlying representation of these features (at the lemma level) in the Spanish copulas. Additionally, during bilingual language acquisition, the strength and activation of lexical items and their lexico-semantic components in the Spanish (L1/LA¹¹) of a child may change due to crosslinguistic influence. This could result in the reconfiguration of the child's linguistic knowledge (Austin, Blume, and Sánchez, 2015; Cuza, 2016; Hopp and Putnam, 2015).

¹¹ Following Perez-Cortes (2016), L1 and LA will be used to refer to the heritage languages of speakers. L1 will be used to refer to the heritage language of sequential speakers, while LA will be used to refer to the heritage language of simultaneous speakers. L2 and LB refer to English, or the language of majority society.

Over the recent years in bilingual heritage language acquisition studies, many authors have suggested that the different outcomes of HS grammars are due to incomplete acquisition or attrition that can occur in childhood (Montrul, 2002; 2008; Polinsky, 2006; 2011; Silva-Corvalán, 2016). Montrul (2009) states that although it is unclear as to when in childhood the L1/LA is considered “acquired,” changes in the input can cause the L1 to regress (attrition) or not continue to develop (incomplete acquisition). As mentioned previously, Primary Linguistic Development (PLD) occurs in the first several years of a child’s life, with later language development occurring after approximately 3;0 until 13;0 years of age. Structures acquired in primary linguistic development are less likely to be ‘lost’ compared to what is acquired during later linguistic development (Anderson, 2001; Merino, 1989; Montrul, 2009; Silva-Corvalán, 2003). Based on this hypothesis, gender/number agreement as well as use of the past tense would be better maintained among bilinguals because they are acquired early. The acquisition of subjunctive in complements and matrix clauses as well as the *ser/ estar* distinction are shown to be acquired after age-seven and even as late as 9;0-11;0 (Alonqueo and Soto, 2012; Perez-Cortes, 2016; Pérez-Leroux, 1998; Requena et al., 2015).

During the preschool and primary school years, a child heritage learner may not fully acquire many aspects of grammar in their L1/LA (Montrul, 2009). ‘Attrition’ has been observed in adult HS who fully acquired their L1/LA as children, however they show divergent knowledge due to the increased exposure to their L2/LB (Putnam and Sánchez, 2013). Both Montrul (2009) and Polinsky (2006) use the term ‘incomplete acquisition’ to describe the outcome of the limited level of acquisition that can occur in

preschool and school-aged children. Incomplete acquisition has been argued for adult HS who are assumed to have received reduced or partial input in the L1/LA as a child.

Competing theories problematize the notion of incomplete acquisition from the type input the HS receives (Pascual y Cabo and Rothman, 2012). Being exposed to differential and varying levels of input does not have to be considered as inhibited linguistic development, but as Sánchez (2012) states, an alternative path of development, one that indicates a natural, but differential path for the bilingual (Pascual y Cabo and Rothman, 2012).

Putnam and Sánchez (2013) have put forth a model of language that aims to account for patterns observed in the oral production and comprehension data of HSs. Their model takes into account the variables of input, acquisition, as well as language processing at both the lexeme and lemma levels in order to connect the activation of lexical items with the activation of their functional features (FF) (Austin, et al., 2015; Putnam and Sánchez, 2013). In their proposal, the continual activation of certain lexical items or formal features in the dominant language of the HS (English in this case) is said to affect the bilingual grammar over time; this could lead to the transfer or re-assembly of functional features (FF) from the L2/LB to the phonetic form (PF) and semantic features of the L1/LA (Putnam and Sánchez, 2013). Inhibition of the weaker language (L1/LA) over long periods of time can account for differential production and comprehension in the HS.

A child growing up bilingual in Spanish and English, acquiring *ser*, *estar*, and *to be*, must assign the appropriate (morpho)phonological form (lexeme level) to the appropriate underlying representation, including the syntactic and semantic features

(lemma level) of the copulas. Increased activation and strength of English, as well as its lack of specification in English to be in combination with either DP or perfective closed/absolute adjectives, may affect the speaker's interpretation and activation of *ser* and *estar* with the same predicates in Spanish.

As I reviewed above, experimental data from adult HS bilinguals suggests a loss of aspectual feature specification associated with the copulas, due to the influence of English (Valenzuela et al., 2015). In this case, bilingual HS children may not be developing along a similar trajectory as their monolingual counterparts. Valenzuela et al (2015) made the argument that bilingual speakers have difficulty activating PF features that express certain semantic/ pragmatic conditions that are commonly associated with *ser* and *estar* among monolingual speakers of Spanish (p. 499). It could be the case that increased access and use of their English L2 system (which lacks + aspectual feature distribution) contributes to the transfer (Paradis and Genesee, 1996) of the lack of this feature specification in their L1.

Importantly, the focus of this study is the process of language acquisition in young, bilingual children, not the eventual outcome or result. Following other models of generative grammar (Chomsky, 1965; 1995), I do not consider the frequency and subsequent processing of input to be the sole determiner in acquiring a language. Only relying on the frequency of input to explain the lack of acquisition of certain features in bilingual speakers may be insufficient (Putnam and Sánchez, 2013, p. 480). Rather, the frequency of processing for comprehension and production purposes may play a larger, more important role (p. 480). Input, by itself, is not responsible for language acquisition; rather, it provides the activation of underlying grammar (p. 480-481).

Crosslinguistic influence (CLI) of English to Spanish (including ‘transfer,’ ‘acceleration’ and ‘delay’ of features between the L2/LB and the L1/LA of a speaker) may further support the process of acquisition occurring in the bilingual participants. Previous research from Cuza and Perez-Tattam (2015) and Cuza (2016) has shown that the combined factors of crosslinguistic effects, the structural complexity of the grammar in question, as well as language activation by the participant, all play a role in structuring a bilingual’s grammar. The participants in both studies were US-born, bilingual Spanish-English children with similar ages to those in this study. If the participants do not demonstrate a specification between *ser* and *estar* in the present study, it would be aligned with the conclusions made by it could corroborate the results from Cuza and Perez-Tattam (2015) and Cuza (2016). Here, it could be the case that transfer from English, or additional external effects such as age of onset and the languages in the child’s input and output have affected their underlying representation the copulas. In the next section, I review previous work dealing with language exposure in bilingual language acquisition.

3.4.1 Crosslinguistic influence

The following section is a review of studies on crosslinguistic influence in bilingual language acquisition; It is important to add the effect of input quality and quantity to the debate on how languages interact in the bilingual mind. As stated previously, the language exposure bilinguals receive plays a crucial role in their language development. A reduced amount of input may contribute to differing levels of activation of certain features in their L1 (Paradis and Genesee, 1996; Putnam and Sánchez, 2013)

and a different rate of language acquisition overall (Gathercole, 2007). Input type, as well as output by the child, is controlled for in the present study; mother and child-directed speech were accounted for in the language background questionnaire.

Austin (2009) and Unsworth (2014) examine the effects of input on bilingual speaker development. Austin (2009) looked at the acquisition of verbal agreement morphology via the production of Root Infinitives (RIs) in young Spanish-Basque simultaneous bilinguals (2-3;5 years old), compared to both Spanish and Basque monolinguals. She found that there was a great amount of variance in the expression of RIs by bilingual children in their Basque, however not due to CLI effects of the child's Spanish or Basque systems. Austin argues that this was due to the reduced exposure the child receives, both due to the type of school program (bilingual in Spanish and Basque, or monolingual Basque) they were a part of and the parental input at home.

Unsworth (2014) measured input effects among Dutch-English simultaneous bilingual children (5;0-17;0 years old) from results of two comprehension tests looking at syntactic gender concord and (compositional) semantic scrambling in Dutch. She found that the percentage of time a child was exposed to Dutch predicted their accuracy on the gender comprehension task; the more exposure to Dutch, the better they performed in the task, compared to monolingual speakers of Dutch. The data from the test on scrambling showed no effects from input exposure in the bilingual comprehension data, compared to monolingual Dutch speakers. The contrast in children's performance highlights the importance of looking across grammatical domains to determine how bilingual systems develop. In Dutch, gender concord proceeds on a word-by-word basis for neuter nouns, (Unsworth, 2014, p. 184). Scrambling in Dutch is based on interpretative constraints

where the child needs to learn that it is optional, and that word order is restricted to the interpretation.

Unsworth's study specifically addresses how language exposure affects grammatical domains differently; effects may be seen in one area and not in another. The same has been said for CLI differences. Zwainziger, et al. (2005) found no effects of crosslinguistic transfer in the morphosyntactic omission of objects in the English or Inuktitut among English-Inuktitut simultaneous bilingual children (1;8–3;9) growing up in Canada. Here, the authors concluded that previously identified areas of CLI in other language pairings are not necessarily universal across all language pairings and that the language pair, the grammatical properties, and language dominance may all be necessary factors to consider in CLI.

Syrett et al., 2017 further shows that different properties under question may not necessarily be subject to crosslinguistic influence. The Spanish quantifier *algunos* generates a scalar implicature that implies “some, but not all” and is not present in English. In their study, sequential bilingual speakers (3;7-5;3) interpreted the scalar implicature associated with *algunos* at the same level as monolingual Spanish speaking children (3;3-4;9) and did not show evidence of CLI.

These studies point to the intricate nature of crosslinguistic influence as well as how it may not be necessarily present across all structures that are in contact between language pairings. The acquisition of aspectual feature specification on *estar* may be challenging for bilingual participants, considering this is not reinforced with singular English *be*, therefore crosslinguistic influence may further contribute to different patterns of acceptability among bilingual children.

In summary, there is potential for a bilingual speaker's development in one or both of their languages to be affected by the context in which they are acquired, whether or not the child is acquiring their languages sequentially or simultaneously. Language activation via its use by the speaker and input exposure may play a role crosslinguistic influence in the process of acquisition. The present study is adding to the growing body of research that is considering the effect of the previously mentioned factors in hopes to represent bilingual grammar better as it is in the process of being acquired.

3.5 General Remarks

The data collected from this study form a baseline for understanding the acquisition of *ser* and *estar* in different linguistic contexts. The inclusion of age as a variable aims to contribute to the understanding of the development of linguistic intuitions overall. The role of age of exposure can help us understand development in bilingual language contexts here in the US and how it affects adult HS grammars. Research on bilingual, HS adults and children also remains sparse with little availability for comparison across studies. Bilingual natural speech data from HS adults have shown an extension of *estar* into *ser* contexts (Silva-Corvalán, 1994). Adult bilingual data, from experimental contexts, has shown that there is a lack of aspectual feature specification associated with the copulas, due to the influence of English. Adult experimental bilingual data indicates that adult HS grammars may reflect a shift in Spanish functional features and their phonetic form (PF, lexeme level), resulting in what looks like a 'loss' of aspectual feature specification in the speaker's Spanish (Putnam and Sánchez, 2013).

The following chapter details the research questions, hypotheses, and predictions that frame this dissertation. The experimental methodology will then be explained.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

This dissertation is concerned with language development in Spanish monolingual and Spanish-English bilingual children. Specifically, it investigates how lexical items interact with the specification of syntactic features and the role that cognitive maturity and initial age of exposure play in this process. The purpose of this dissertation was to investigate patterns of acceptability of *ser* and *estar* among Spanish monolingual and Spanish-English bilingual children. To that end, I utilized a methodology that allowed me to assess speaker's judgments of these lexical items in contexts in which one copula was licensed, but the other was not. As was discussed in Chapter 2, DP predicates are only available with *ser* because they are not marked for the uninterpretable feature [*uP*]. *Ser* remains unspecified. Adjectival predicates that denote a perfective state are marked for [*uP*], thus are available with *estar*. *Estar* selects for a progressive aspectual projection and is encoded for [*INCH*], which involves a beginning boundary (Camacho, 2012a; Zagana, 2013). The task of the child is to understand the semantic distinction between *ser* and *estar* as well as have acquired the appropriate syntactic projections of *estar* and its complements.

Previous research has provided insight into the distribution of the copulas via production studies (Holtheuer, 2009; Sera, 1992; Silva-Corvalán, 2014). In comprehension studies, monolingual children had shown early distinction of the copulas when they were paired with adjectival predicates that overlap (Holtheuer, Miller, and Schmitt, 2011; Schmitt and Miller, 2007). This distinction became increasing adult-like as children got older (Requeña et al., 2015). Finally, experimental research with adult HS

using an acceptability judgment task has shown that there may be variability in acceptance of *ser* and *estar* with obligatory predicates (Valenzuela et al., 2015). While this research has shed light on general patterns of production, interpretation, and acceptance of *ser* and *estar* in both young and old monolingual and bilingual populations, little is known of the acceptance of the copulas in young populations where there is no grammatical overlap. In this respect, the present study provides a valuable contribution to understanding the nature of monolingual and bilingual children's understanding of *ser* and *estar*. The inclusion of two acceptability tasks provides greater insight into speaker understanding of the copulas when they are asked to make two different kinds of judgments about them. Variables such as chronological age and age of initial exposure to English increase our understanding of these factors in speaker acceptability.

This chapter describes the methodology used in this dissertation. The research questions, hypotheses, and subsequent predictions that direct this study are presented first, followed by a detailed description of participant demographics and language proficiency, as well as the two experimental tasks. The following chapter will provide an in-depth analysis of the experimental tasks.

4.2 Research Questions and Hypotheses

The three research questions that guide this study and are presented here, as well as the hypotheses and predictions of these questions.

RQ 1: Do bilingual and monolingual children exhibit the same patterns in their performance on measures assessing their acceptability of *ser* and *estar*?

RQ 2: Does the performance of both groups change, as the children grow older?

RQ 3: To what extent does age of exposure play a role in bilingual participant's acceptability of the copula?

The hypothesis for RQ 1 is that monolingual and bilingual participants will show distinct patterns of acceptability judgements with regard to the copulas. Bilingual speakers receive more input in English overall, given that it is the language used in their schools as well as majority society outside their home. The added influence of singular English *be* may mean that the bilingual participant did not acquire the aspectual feature specification of *estar*. Though bilingual speakers are predicted to distinguish between *ser* and *estar*; an overlap of *estar* into *ser* predicates is expected due to possible absence of the aspectual distinction of *estar* and an overall shift in language dominance to English (Silva-Corvalán, 2014; Valenzuela et al., 2015). I predict that at the time of testing, monolingual speakers will distinguish between *ser* and *estar* and associate each copula with its predicate (Holtheuer, Miller, and Schmitt, 2011; Schmitt and Miller, 2007; Requeña et al., 2015).

The hypothesis for RQ 2 is that the acceptance of both copulas in obligatory contexts will develop with the children's age among monolingual participants. I predict that older monolingual children will associate the copula with the corresponding predicate to a greater extent than their younger counterparts (Alonqueo, 2013; Alonqueo and Soto 2011; Requena et al., 2015). I predict that older bilingual participants may demonstrate increased variability in the use of the copulas with their obligatory predicates. If participants have not demonstrated a diminished use of aspectual distinction, then it is expected that these obligatory contexts will be more adult-like (monolingual Spanish) than younger bilinguals.

The hypothesis for RQ 3 addresses the bilingual speakers in this study. I hypothesize that age of exposure among bilingual participants does play a role in the acceptability of the copulas. In this study, sequential bilinguals are categorized as children who were exposed to Spanish primarily between the ages of 0-3;0 and English was introduced after 3;0. Simultaneous bilinguals were exposed to both Spanish and English between birth and approximately 3;0. I predict that sequential bilinguals will associate the copulas to their obligatory predicates to a greater extent than simultaneous bilinguals. This is due to having received more Spanish input since birth, compared to the simultaneous bilinguals, who have been exposed to lower levels of Spanish from the onset of language acquisition.

4.3 Participants

4.3.1 Demographic and Language History information

The following sections outline the demographic and language background of the participants. The participants who were tested in the Ternary Acceptability Judgment Task (Strawberry Task) were also tested in the Forced Choice Grammaticality Judgment Task (Cartoon Task). However, the younger participants that were tested in the Cartoon Task were unable to complete the Strawberry Task, given that it was too cognitively demanding for the younger populations. The participant demographic profile and language history information will be presented separately for each experimental context.

4.3.1.1 Cartoon Task Participant division

The following section gives a detailed description of the participants who were tested in the Cartoon Task. Tables 3 and 4 outline the child participant division. The overall participant numbers are represented as well as the age groups and simultaneous/ sequential division for bilingual participants. ‘Overall’ data will pertain to RQ 1, ‘Age Group’ data will pertain to RQ 2, and ‘Language Exposure’ will pertain to RQ 3. Table 5 shows the adult, Spanish-speaking control participants, who also participated in the Strawberry Task. The age-group division was derived from a median-split of the participant’s ages, from youngest to oldest.

Table 3.

Cartoon Task monolingual child participant division: Santiago, Dominican Republic

| Overall | Age range |
|---------------------------|------------------|
| N=57 (Female=29; Male=28) | 4;6-10;9 M=7;6 |
| Age Group | |
| M _{young} N=29 | 4;6-7;1 M=6;1 |
| M _{old} N=28 | 7;2-10;9 M=8;10 |

Table 4.

Cartoon Task bilingual child participants: New Jersey, USA

| Overall | Age range |
|---------------------------|------------------|
| N=34 (Female=21; Male=13) | 4;6-12;2 M=8;5 |
| Age Group | |
| B _{young} N=16 | 4;6-8;4 M=6;8 |
| B _{old} N=18 | 8;7-12;2 M=10;0 |
| Language exposure | |
| Simultaneous N=13 | 4;9-11;9 M=8;4 |
| Sequential N=21 | 4;6-12;12 M=8;5 |

Table 5.

*Cartoon Task and Strawberry Task monolingual adult control*¹²

| Total # Participants | Age range |
|-----------------------------|---|
| N=13 (Female=8; Male=5) | 24;0-66;0 M=41;0 |
| Countries reported: | Colombia: N=6; Spain: N=3; Chile: N=2; Argentina: N=1; Ecuador: N=1 |

4.3.1.2 Strawberry Task Participant division

Tables (6-7) show the participants that were tested in the Strawberry Task. A total of 25 participants were removed from the analysis of this task. It was found that participants from the Cartoon Task between 4;6 and 5;11 were unable to complete the requirements of the task reliably, due to its more complicated nature and overall cognitive demands. Because of this, the median-split that was used to divide the participants on their ages shifted. Four participants that were previously in B_{old} with the Cartoon Task, are now in B_{young} and four participants that were previously in M_{old} with the Cartoon Task are now in B_{young}. In the Strawberry Task, participants were asked to judge and assign a scalar value to a puppet's statement. The same Spanish-dominant adults were included as a control measure to demonstrate that there are no dialectal differences when dealing with *ser* and *estar* in these contexts and that there is a clear division between what is considered "grammatical" and "ungrammatical" among adult Spanish speakers (Table 5).

¹² All adult participants lived in Spanish-speaking countries at the time of testing.

Table 6.

TAJT monolingual child participant division: Santiago, Dominican Republic

| Overall | Age range |
|---------------------------|------------------|
| N=43 (Female=22; Male=21) | 5;11-10;9 M=8;0 |
| Age Group | |
| M _{young} N=21 | 5;11-7;4 M=6;9 |
| M _{old} N=22 | 7;5-10;9 M=9;2 |

Table 7.

TAJT bilingual child participants: New Jersey, USA

| Overall | Age range |
|---------------------------|------------------|
| N=25 (Female=15; Male=10) | 6;0-12;2 M=9;0 |
| Age Group | |
| B _{young} N=12 | 6;0-8;11 M=7;9 |
| B _{old} N=13 | 9;4-12;12 M=10;5 |
| Language exposure | |
| Simultaneous N=9 | 6;7-11;9 M=9;3 |
| Sequential N=16 | 6;0-12;12 M=9;2 |

4.3.1.3 Participant language history

Monolingual and bilingual participants were sent home with a consent packet for their parents or guardians to fill out. Both groups were also sent home with language background questionnaires. At the time of testing, the monolingual children were growing up in the second largest city in the Dominican Republic, a Spanish-speaking country. Some children attended a private, primary school where the majority of the curriculum was in Spanish. Other children attended another private, primary school where the curriculum was taught in both Spanish and English.

Monolingual parents were asked to report on their child's ability to speak and understand Spanish on a four-point scale (understood/ speaks like a native speaker; understood/speaks with great fluidity/ has difficulty understanding/speaking/ barely understands/ speaks). Of the monolingual participants reported here, all but three of the

participants' parents responded to this question. They indicated that their children either understood/spoke Spanish like a native speaker or did so with great fluidity. The language background questionnaire used with monolingual participants is included in Appendices A-B.

The adult control participants completed a similar version of the language background questionnaire that was given to monolingual children. All participants reported understanding Spanish as a native speaker, and all but one participant reported speaking Spanish as a native speaker (one participant reported speaking Spanish with "great fluidity." The adult control participants represented five different countries, presented in Table 3.

At the time of testing, all bilingual children were attending a public primary school in New Jersey, where most of the curriculum was taught in English. The language background questionnaire used for bilingual children was also filled out by the participant's parent or guardian. This measure was a shortened version of Unsworth's (2013) Utrecht Bilingualism Exposure Calculator (UBiLEC), adapted by DeCat, Gusnanto, and Serratrice (2017). This questionnaire was used with bilingual participants to better inform on RQ 3, dealing with the participant's initial age of exposure to English. A full report of the variables included in the language background questionnaire is in Appendices C-D. Participant data concerning exposure to child-directed speech by the mother (in Spanish and English) as well as mother-directed speech from the child (in Spanish and English) is described in Table 8¹³. Parents responded on a scale from 0 to 4

¹³The consent form and language background questionnaire made up an 11-page document in total. The majority of consent packets went home with the child from school. It could be the case that after the first 8 pages, parents tired of filling out the form, therefore only the responses that were answered consistently by the majority of participant's parents were reported.

(0 =always speak Spanish/ English; 1=normally speak Spanish/ English; 2=speak Spanish/English half the time; 3=speak Spanish/ English rarely; 4=never speak Spanish/English). Averages are presented in Table 8 with the standard deviation in parenthesis. The data corresponds to each type of bilingual group that was investigated, pertaining to the research question (Table 4 for the corresponding group outline). The closer an average is to 0 means that the language in that column is frequently produced. The closer the average is to 4 means that the language is rarely to never spoken.

Table 8.

Reported language exposure: Cartoon Task Bilingual participants (overall)

| Group | MDS (Spn) | MDS (Eng) | CDS (Spn) | CDS (Eng) |
|--------------------|------------------|------------------|------------------|------------------|
| Bilingual Overall | .44 (.75) | 2.50 (.79) | .94 (1.07) | 1.95 (1.00) |
| B _{young} | .56 (.81) | 2.33 (.71) | 1.31 (1.01) | 1.58 (1.00) |
| B _{old} | .33 (.69) | 2.67 (.87) | 0.61 (1.04) | 2.40 (.84) |
| Simultaneous | .69 (.85) | 2.38 (.52) | 1.31 (1.32) | 1.60 (1.32) |
| Sequential | .29 (.64) | 2.60 (.97) | .71 (.85) | 2.25 (.75) |

Key:

MDS = ‘mother directed speech’

CDS = ‘child directed speech’

Spn = Spanish

Eng = English

Average and (Standard Deviation)

Scale: (0 =always speak Spanish/ English; 1=normally speak Spanish/ English; 2=speak Spanish/English half the time; 3=speak Spanish/ English rarely; 4=never speak Spanish/English).

In Table 8 the overall bilingual group shows rates of speaking Spanish were greater than English in MDS. Overall children (CDS) were reported to speak more Spanish than English to their mother’s but speak English at a greater rate overall. Rates of MDS were similar in the bilingual age groups, but older bilingual children were reported to speak more Spanish than English to their mothers. Rates of MDS were also similar among simultaneous and sequential bilingual speakers, but sequential speakers were reported to speak more Spanish to mothers than simultaneous speakers (but only

differing in the “always” to “normally” rating). Table 9 demonstrates the reported language exposure among the children in the Strawberry Task.

Table 9.

Reported language exposure: Strawberry Task Bilingual participants (overall)

| Group | MDS (Spn) | MDS (Eng) | CDS (Spn) | CDS (Eng) |
|--------------------|------------------|------------------|------------------|------------------|
| Bilingual Overall | .36 (.76) | 2.60 (.84) | .64 (.91) | 2.38 (.77) |
| B _{young} | .67 (.98) | 2.00 (.71) | 1.00 (1.04) | 1.83 (.75) |
| B _{old} | .08 (.28) | 3.20 (.45) | 0.31 (.63) | 2.86 (.38) |
| Simultaneous | .44 (.88) | 2.50 (.58) | .78 (1.09) | 2.33 (.82) |
| Sequential | .31 (.70) | 2.67 (1.03) | .56 (.81) | 2.43 (.79) |

In Table 9 the overall bilingual group shows that mothers (MDS) speak more Spanish than English to children. This was similar for CDS in the overall group. Among the younger and older bilinguals, rates of MDS were similar, and older bilingual children were reported to speak more Spanish than younger participants (similarly reported in Table 8). Rates of MDS and CDS were similar among simultaneous and sequential speaker.

The data reported from Tables 8 and 9 tell us that Spanish is both present in the linguistic environment of the bilingual speakers in this study. At least one parent is using Spanish at home and the children are reported as using it themselves.

4.3.2 Language Proficiency

Before the experimental tasks were run, a proficiency measure was administered to assess participants' knowledge of basic morphosyntax and semantics in Spanish as well as to check that they were familiar with all lexical items that were going to be used in the experimental tasks. This was a forced-choice measure, where two images were

presented side by side on the computer screen using Microsoft PowerPoint (2011).

Children were asked to point to objects on the screen but were not required to produce language (Figure 1)

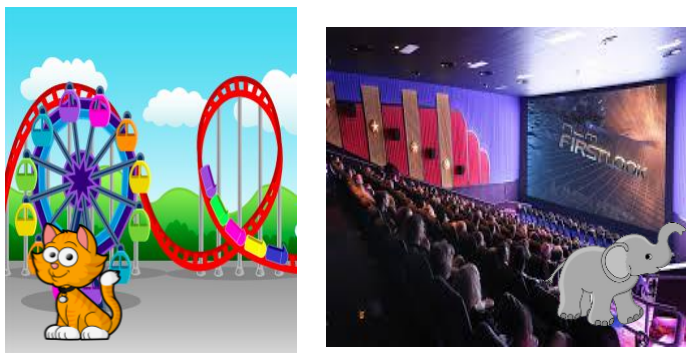


Figure 1. Language Proficiency task sample slides

Children were presented with contrasting images on one slide, as in Figure 1. The lexical items were the same in the experimental tasks, however different images were used to represent each item. Figure 1 checked for the understanding of the items used with DP complements. In this example, children were asked in Spanish, to “Point to the cat,” and “Point to the movie theater.” With adjectival predicates, they were asked in Spanish to “Point to the open window,” and “Point to the closed window.” The copulas were not used in the proficiency task in order to not prime the participants in the experimental contexts.

The morphosyntax and semantics slides were adapted from the Bilingual-English Spanish Assessment (Peña et al., 2018). The slides with the lexical items were different images of the same item, used later in the Cartoon Task and the Strawberry Task (scripts, Appendices E-G). If a child scored below 90% on the proficiency measure they did not

complete the experimental items. Thus, all participants included in the following analysis reached 90% or above on the measure¹⁴.

4.4 Materials and Procedure

There were ($k = 6$) experimental *ser* conditions and ($k = 6$) experimental *estar* conditions in each experiment, along with ($k = 6$) filler conditions. All items in the Cartoon Task and Strawberry Task were randomized (See Appendices E-G for experimental scripts). For participants that were tested in both the Cartoon Task and the Strawberry Task, the experimental tasks were counterbalanced (Table 10):

Table 10.

Experimental task order.

| Experimental Task | Participants |
|---------------------------|---------------------------------|
| Cartoon Task | Monolingual (N=25) |
| delivered 1 st | Bilingual (N=14) |
| Strawberry Task | Monolingual (N=17) |
| delivered 1 st | Bilingual (N=11) |
| Total | Monolingual ^a (N=42) |
| | Bilingual (N=25) |

^aone eliminated from this analysis because they only completed the Strawberry Task, not the Cartoon Task.

4.4.1 Forced-Choice Grammaticality Judgment Task (Cartoon Task)

This experiment was within-subjects, designed to give participants a choice between *ser* and *estar* in obligatory contexts. In each experimental sentence, there was only one grammatical answer. In this task, children were introduced to two cartoon images, *Señor Ratón* (Mr. Mouse) and *Señor Tortuga* (Mr. Turtle) (Unsworth, 2014). The cartoons were presented as friends of the experimenter, who were learning Spanish but

¹⁴ Based on criterion established by Brown (1973) and De Villiers and De Villiers (1973). Brown's criterion of 90% was based on morpheme production in obligatory contexts. Here, since children were not asked to produce language, if they correctly identified the lexical item and/ or corresponding image pertaining to the syntactic/semantic structure, then they were included in the study.

needed a lot of help. I reminded the child participant that they knew how well their Spanish was and wanted to know if they would be willing to help Sr. Ratón and Sr. Tortuga. The child was then told that they were going to see a series of images on the screen and that Sr. Ratón and Sr. Tortuga were each going to say something about the same image. It was then the child's turn to decide which cartoon said their sentence "better." Participants heard a total of 22 sentences, 4 training sentences were presented initially to make sure they understood how to do the task. There were a total of 6 experimental sentences for *ser*, 6 for *estar* and 6 filler sentences. The experimental and filler items were counterbalanced randomly. Which cartoon said the grammatical sentence was randomized as well so that the same cartoon did not always have the correct answer. A native speaker of Spanish recorded all utterances in the Cartoon Task. Their voice was manipulated in PRAAT for each character and timed to start at the same point. When each character spoke, a blue dialog cloud appeared above him or her, to signal to the child who the speaker of the sentence was. The filler sentences were based on present, 1st and 3rd person subject-verb agreement. These were designed solely to make sure that the participant was paying attention during the task. If a participant received a score of 50% or below on the filler items, their data were not included in the final analysis. If the participant did not understand subject-verb agreement for the filler items, then their responses on the experimental conditions would not be considered reliable as the copula tokens involve more complex grammatical intuitions involving lexical semantics and syntax. An example of an *estar* + adjectival passive condition is illustrated in Figure 2:



Figure 2. Cartoon Task Sample Slide

Experimenter: *Entre el Sr. Ratón y el Sr. Tortuga: ¿Quién lo dijo mejor?*

‘Between Mr. Rat and Mr. Turtle: Who said it better?’

Mr. Rat: ✓ *La ventana está abierta*

‘The window is [estar] open’

Mr. Turtle: **La ventana es abierta*

‘The window is [*ser] open’

A full set of stimuli is presented in Appendices E-G. Recall that the Cartoon Task included both *estar* + adjectival passive conditions as well as *ser* + DP (Appendices E-G). This experimental task lasted between 8-15 minutes on average.

4.4.2 Ternary Acceptability Judgment Task (Strawberry Task)

The Strawberry Task was within-subjects, participants were introduced to a fictional character, a puppet named *Señor Dragón* (Mr. Dragon), who was played by myself (the experimenter). The premise was that Sr. Dragón was a timid creature that came from a distant land and was not familiar with “our world.” First, the child and the puppet listened to a short story about an image on the screen, read by myself, and then

the puppet shared a short phrase about the image, using either *ser*, *estar*, or a filler verb. The experimental tokens with *ser* and *estar* were all designed to be grammatically incorrect (thus *ser* was used in *estar* contexts and vice versa) while the fillers were grammatically correct. There is an assumption among researchers that children are likely to obey the ‘Principle of Charity’ (Quine, 1960) in Truth Value Judgement Tasks. This means that they will try and assert the puppet’s sentences as ‘True’ if they can (Conroy et al., 2009; Syrett and Lidz, 2011). In this case, experimental tokens in this Truth Value Judgment Task were designed to make only one reading of the sentence possible (Crain and Thornton, 1999; Conroy et al., 2009). All experimental sentences in the task were delivered as ungrammatical copula + complement contractions. Children were then occasionally asked to explain what they would say instead, to make sure their attention was on the grammatical utterance (and not on the colors of the image, for example) (Crain and Thornton, 1999). Fillers were created to ensure the child was paying attention. They were present, 3rd person singular verbs:

- (37) a. Ella come la manzana
 She eat-PRES.3SG the apple
 ‘She eats the apple.’

If a participant received a score of 50% or below on the filler items, they were not included in the final analysis. An example of a *ser* condition is illustrated in Figure 3.



Figure 3. Strawberry Task Sample Slide

Experimenter: *Aquí tenemos un lugar donde hay muchas personas y pueden buscar libros, leer en silencio, muy calladitos Sr. Dragón, esta... (puedes terminar mi frase)?* Here we have a place where there are a lot of people who can look for books, read in silence, very quietly. Sr. Dragón, this... (can you finish my sentence)?

Sr. Dragón.: **Esta, está una biblioteca.* This (*) is a library.

Experimenter: *¿Qué le darías? Una fresa pequeña, mediana, o grande?* What would you give him? A small, medium, or large strawberry?

For the Strawberry Task, the child's job was to judge how well they liked what Sr. Dragón said. Recall that all participants judged both ungrammatical *ser* and ungrammatical *estar* contexts. Instead of an either/ or response as in the Cartoon Task, participants were given a 3-point scale to assess how well they liked Sr. Dragón's sentence. As mentioned in the introduction of this section, this measure was adapted from Katsos' and Bishop's (2011) and Katsos' and Smith's (2010) studies. The scale was made up of three different-sized strawberries, said to be Sr. Dragón's favorite food, shown in a horizontal line from smallest to largest, left to right (Figure 4).

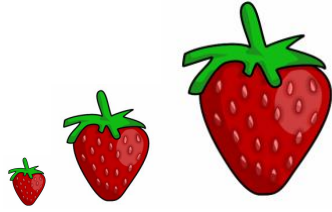


Figure 4. Strawberry Task Strawberries used for 3-point Likert Scale

Per Katsos and Bishop (2011) and Katsos and Smith (2010), each number on the scale was explicitly introduced as its corresponding strawberry: 1 was the “*pequeña*” (small), 2 was the “*mediana*” (medium), and 3 was the “*grande*” (large) strawberry, respectively. Each participant was presented with four training sentences and then the experimental task began.

4.5 Summary of Chapter

In this chapter, I presented the research questions, hypotheses and predictions guiding this study. The participants and experimental methodology were explained next. An overview of the participants’ language background and (bilingual) language exposure was included as they inform the research questions in terms of participant age and language experience. In the following chapter I present the results of the analyses from the two experimental tasks.

CHAPTER 5: RESULTS AND ANALYSIS

5.1 Introduction

This chapter examines the results of the two experimental tasks that were completed by three participant groups: monolingual Spanish-speaking children from the Dominican Republic, bilingual Spanish-English children living in the United States, and an adult, Spanish-dominant control group. To remind the reader, participants, complete a language background questionnaire, a lexical proficiency task, and two experimental tasks (Cartoon Task and Strawberry Task). The two experimental tasks were designed to assess speaker acceptability of *ser* and *estar* when paired with obligatory predicates ([*ser* + DP] and [*estar* + adjectival passive]). The results presented are first described then analyzed with non-parametric statistical measures. The results presented in this chapter shed light on the path of acquisition that both monolingual and bilingual children take in acquiring *ser* and *estar*, including speaker access of the aspectual feature specification to *estar* and its predicates. The two groups will be compared to each other to examine how variables such as age and initial age of exposure to a second language may affect participant acceptability.

Adults were administered an online-adapted version of both tests without a puppet or strawberries. Approximately half the participants were administered a version that gave the Cartoon Task ($N = 7$) before the Strawberry Task ($N = 6$), the other saw the Strawberry Task then the Cartoon Task. All participants saw both tests.

In the following chapter, the results and analyses are presented for the participant groups. Two brief discussion sections are included after the presentation of results and

analyses. Following this, Chapter 6 will discuss these results in full. The research questions are repeated here:

RQ 1: Do bilingual and monolingual children exhibit the same patterns in their performance on measures assessing their acceptability of *ser* and *estar*?

RQ 2: Does the performance of both groups change, as the children grow older?

RQ 3: To what extent does age of exposure play a role in bilingual participant's acceptability of the copula?

5.2 Forced-Choice Grammaticality Judgment Task (Cartoon Task)

The results of the Cartoon Task are presented below. Recall that participants were presented with a grammatical copula + complement and an ungrammatical copula + complement in one token. The columns for *ser*, *estar*, and the filler items are the average percentage of correct responses chosen by individuals in that in that group (i.e., when they correctly selected *ser* + DP and *estar* + adjectival passive in each token). Table 11 presents the overall descriptive results for the three groups. The results for all age groups are presented next, followed by the simultaneous and sequential bilingual results.

5.2.1 Overall group results

Table 11.

Monolingual and Bilingual Overall, Percentage Correct

| Group | Verb | | | | | |
|-----------------|------------|--------|--------------|--------|--------|--------|
| | <i>Ser</i> | (SD) | <i>Estar</i> | (SD) | Filler | (SD) |
| Monolingual all | 97% | (0.12) | 94% | (0.12) | 98% | (0.08) |
| Bilingual all | 88% | (0.19) | 79% | (0.24) | 89% | (0.16) |
| Adults | 97% | (.06) | 100% | (0) | 100% | (0) |

Adults demonstrate (near) ceiling comprehension of the copulas in obligatory contexts, where only one option is grammatical when given two. In the *ser* conditions, one participant incorrectly accepted *‘Éste está una cebra’ *This is_(estar) a zebra*, and another participant incorrectly accepted *‘Éste está un gato’ *This is_(estar) a cat* while accepting all other DP predicates with *ser*. Since the adult version was administered online, and there were fewer participants overall, these particular responses are taken as “human error” as opposed to a genuine acceptance of [*estar* + DP]. Overall the adult results here demonstrate the characteristic, strict division of [*ser* + DP] and [*estar* + adjectival passive] predicates.

The overall results indicate that both monolingual and bilingual participants have a high rate of acceptability of *ser* with obligatory DP predicates. Monolinguals also have a high acceptance rate of *estar* with obligatory adjectival predicates and bilinguals demonstrate greater variance in their responses, by allowing ungrammatical *ser* + adjectival predicates more frequently than monolinguals. A table with the average performance on each test item with both bilingual and monolingual participants can be found in Appendix N.

Each experimental condition was out of $k = 6$ trials, 3 out of 6 (50%) is considered “chance” responding. A series of one-sample Wilcoxon signed ranks were run for the children and showed that all group means were significant from chance (Appendix H). This indicates that children were not responding at chance. Individual response patterns for the Cartoon Task can be found in Appendix H as well.

An initial Mann-Whitney U was run to see if there were statistical differences between monolingual and bilingual participants. There was a statistically significant

different in the acceptability of *ser* items between bilinguals (mean rank = 38.26) and monolinguals (mean rank = 50.61) overall, $U = 1,232.00$, $z = 2.986$, $p < .003$.

Significance was also found for differences in *estar* between bilinguals (mean rank=35.43) and monolinguals (mean rank = 52.31), $U = 1,328.500$, $z = 3.471$, $p < .001$.

There was also significance for the filler items between bilinguals (mean rank = 36.99) and monolinguals (mean rank = 51.38), $U = 1,275.500$, $z = 3.480$, $p < .001$. Table 12 summarizes these results.

Table 12.

Monolingual and Bilingual, Mann-Whitney U

| Groups compared | Verb | | |
|-----------------------|--------------|--------------|--------------|
| | <i>Ser</i> | <i>Estar</i> | Filler |
| Monolingual-Bilingual | $p < .003^*$ | $p < .001^*$ | $p < .001^*$ |

The overall group results show that there are significant differences in rates of acceptance of both *ser* and *estar* among monolingual and bilingual children in this study. In the next section, the results in terms of participant age will be presented.

5.2.2 Age Group results

Table 13 shows the observed results of participant acceptability with *ser* and *estar* in obligatory contexts in the Cartoon Task. The younger monolingual and bilingual participants are “MONO” and “BIL” “1”, respectively. The older monolingual and bilingual participants are “MONO” AND “BIL” “2”. The adult participant results remain the same and are included in the table as a point of reference.

Table 13.

Age groups, Percentage Correct

| Group | Verb | | | | | |
|--------------------|------------|--------|--------------|--------|--------|--------|
| | <i>Ser</i> | (SD) | <i>Estar</i> | (SD) | Filler | (SD) |
| M _{young} | 94% | (0.97) | 92% | (0.78) | 96% | (0.64) |
| M _{old} | 99% | (0.19) | 96% | (0.69) | 99% | (0.19) |
| B _{young} | 79% | (0.23) | 75% | (0.22) | 85% | (0.18) |
| B _{old} | 96% | (0.07) | 83% | (0.26) | 92% | (0.14) |
| Adults | 97% | (.06) | 100% | (0) | 100% | (0) |

Table 13 shows that there is little change between the younger and older monolingual participants with either *ser* or *estar*. For bilingual participants, there is an increase in acceptability of *ser* with DP between younger and older, and that there is not a great increase between the two groups in their acceptability of *estar* with adjectival predicates. A table with the average performance on each test item with both bilingual and monolingual participants can be found in Appendix O.

Another series of one-sample Wilcoxon signed rank tests were run for the age groups and showed that all group means were significant from chance (50%) (Appendix I). This indicates that children were not responding at chance. Individual response patterns can be found in Appendix I as well.

A Kruskal-Wallis test was conducted to determine if there were differences in scores for *ser/ estar* and filler items among all the child participant groups¹⁵. The difference in the distribution of *ser* scores was statistically significant among the groups $H(3) = 18.609, p < .001$. Subsequently, pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons.

Adjusted p values are presented. The post-hoc analysis revealed statistically significant

¹⁵ This was used with all groups, as opposed to a series of Mann-Whitney U tests, in order to increase test sensitivity. A GLMM was attempted but was not a good fit for this data.

differences in *ser* scores between the bilinguals (B_{young} (mean rank = 28.81) and B_{old} (mean rank = 46.67), $p < .039$), B_{young} and M_{young} (mean rank = 46.86) ($p < .014$). No statistical significance was reported between the two MONOs ($p < .786$) or B_{old} and M_{old} ($p < 1.00$), as can be expected from Table 13.

For *estar*, the Kruskal-Wallis test conducted revealed further differences in the distribution of scores after visual inspection of a boxplot. This distribution was statistically significant ($H(3) = 17.040$, $p < .001$). Further pairwise comparisons were run using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Again, adjusted p values are presented. The post-hoc analysis revealed statistically significant differences in *estar* scores between young bilinguals and young monolinguals groups: B_{young} (mean rank = 28.81) and M_{young} (mean rank = 47.81) ($p < .039$). No statistical significance was reported between older bilinguals and older monolinguals: ($p < .001$), B_{old} (mean rank = 41.31,) and M_{old} (mean rank = 56.96) ($p < .126$). No statistical significance was reported between the bilingual groups ($p < .631$), or the two monolingual groups ($p < .742$).

For the filler conditions, Kruskal-Wallis revealed differences in the scores among several of the groups after a visual inspection of a boxplot. The distribution was statistically significant $H(3) = 15.207$, $p < .002$. Bonferroni pairwise comparisons revealed statistical significance between B_{young} (mean rank = 32.56) and M_{young} (mean rank = 48.36) ($p < .047$) and B_{young} and M_{old} (mean rank = 54.50) ($p < .001$). No significance was reported between B_{old} and M_{old} ($p < .111$), the bilingual groups ($p < 1.00$), or the monolingual groups ($p < 1.00$) (Table 14).

Table 14.

Monolingual and Bilingual children by age, Kruskal-Wallis

| Groups compared | Verb | | |
|---|--------------|--------------|--------------|
| | <i>Ser</i> | <i>Estar</i> | Filler |
| B _{young} – B _{old} | $p < .039^*$ | $p < .631$ | $p < 1.00$ |
| M _{young} – M _{old} | $p < .786$ | $p < .742$ | $p < 1.00$ |
| B _{young} – M _{young} | $p < .014^*$ | $p < .039^*$ | $p < .047^*$ |
| B _{old} – M _{old} | $p < 1.00$ | $p < .126$ | $p < .111$ |

The age group results show that there are statistically significant differences in rates of acceptance of *ser*, but not *estar* between the younger and older bilingual participants. There were no significant differences between monolingual age groups. When cross-compared, there were significant differences between the youngest monolingual and bilingual groups for both copulas. There were no significant differences between older monolinguals and bilinguals, although bilinguals performed lower overall in *estar*, compared to monolinguals. In the next section, the results from simultaneous and sequential bilingual will be presented.

5.2.3 Simultaneous and Sequential bilingual results

Table 15 shows the observed results of bilingual participant acceptability with *ser* and *estar* in obligatory contexts in the Cartoon Task, simultaneous and sequential bilinguals were split into groups. Children whose parents had reported that the child was first in contact with English at age three or after were considered sequential (see Chapter 4). A table with the average performance on each test item with both simultaneous and sequential speakers can be found in Appendix P.

Table 15.

Simultaneous and Sequential, Percentage Correct

| Group | Verb | | | | | |
|----------------------|------------|------|--------------|------|--------|------|
| | <i>Ser</i> | (SD) | <i>Estar</i> | (SD) | Filler | (SD) |
| Simultaneous N=13 | 92% | 0.16 | 74% | 0.26 | 88% | 0.18 |
| Sequential N=21 | 86% | 0.20 | 83% | 0.23 | 89% | 0.15 |

The observed results in Table 15 show that simultaneous bilingual participants accepted *ser* + DP at a slightly higher rate, while sequential speakers accept *estar* + AP at a slightly higher rate. A series of one-sample Wilcoxon signed rank tasks determined that both simultaneous and sequential participant responses were significant from chance (Appendix J). A series of Mann-Whitney U tests were run and no significance was found between groups: *ser* $U = 105.5$; $z = -1.264$; $p < .276$; *estar* $U = 164.5$; $z = 1.045$; $p < .326$; filler $U = 132.5$; $z = -.160$; $p < .889$ (Table 16).

Table 16.

Simultaneous and Sequential, Mann-Whitney U

| Groups compared | Verb | | |
|---------------------------|------------|--------------|------------|
| | <i>Ser</i> | <i>Estar</i> | Filler |
| Simultaneous - Sequential | $p < .276$ | $p < .326$ | $p < .889$ |

The above sections reported the observational results and statistical analyses of the Cartoon Task experimental test. A brief, general discussion will be next, followed by the reported results and statistical analyses of the Strawberry Task.

5.3 General Discussion of Cartoon Task

The Cartoon Task was an experimental measure that asked the participant to judge which cartoon utterance they believed to be “right” or “wrong” about an image. This was a within-subjects design where both *ser* and *estar* + complement were heard in

the same condition, and only one option was grammatically correct. This task was designed to increase understanding of what the child accepts as grammatical, while simultaneously confirming what they consider to be ungrammatical, given a choice between the two. The results from the Cartoon Task inform the three research questions that guide this study. The results show us that overall, both monolingual and bilingual children differentiate between *ser* and *estar*. Monolingual and bilingual children accept *ser* with grammatical complements at a similar rate but do so differently with *estar*. Acceptability of *ser* increased with age among the bilingual participants, but not so with *estar*. The Cartoon Task did not yield age-related results for monolingual participants but did so for bilingual participants concerning *ser*. Finally, although there was a slight observable difference between simultaneous and sequential speakers, it was not statistically significant. Interestingly, the simultaneous speakers' acceptance of grammatical *estar* with adjectival predicates was at chance, indicating an increase in the acceptance of ungrammatical *ser* with adjectival predicates in this group.

In the following section, the results from the Strawberry Task will be presented along with statistical analyses.

5.4 Ternary Acceptability Judgment Task (Strawberry Task)

The results of the Strawberry Task are presented below. Tables 7-9 present the overall descriptive results for the three groups. The results for all age groups are presented next, followed by the simultaneous and sequential bilingual results.

5.4.1 Overall group results.

The overall results from the monolingual children and bilingual children differ from those of the adult controls. The percentages represent the instances that the children chose that particular strawberry. The ‘Distribution of participants’ shows the number of participants that responded at least once in that category. In some cases, the distribution of participants will be the same across conditions, but the percentages will be different. This signifies that individual participants differed in the rating they gave a particular strawberry in that condition. The response ratio across all conditions can be seen in Appendix K. “Ungrammatical *estar*” refers to the tokens that paired *estar* with a DP and “Ungrammatical *ser*” refers to *ser* tokens paired with adjectival predicates. Recall that all experimental items in this task were designed to be ‘False’ while all filler items are ‘Optimal.’ The labels for the type of response are as follows: “1-‘*pequeña*’” is the use of the smallest strawberry for Sr. Dragón and signifies the participant’s rejection of the utterance. The “2-‘*mediana*’” is a medium strawberry that signifies participant tolerance toward the utterance (“tolerance” in this case means that the participant does not dislike the sentence enough to choose a 1 or that they like the sentence enough to choose a 3). The “3-‘*grande*’” is the large strawberry meaning that the participant liked Sr. Dragón’s utterance. The results for the adults are presented first in Table 17. As can be seen, all adults rejected the ungrammatical instances of *ser* and *estar* and accepted the grammatical fillers.

Table 17.

Overall Adult, Percent response by Type

| Type of Utterance | Type of Response | Ungrammatical <i>estar</i> | Distributio n of participants | Ungrammatical <i>ser</i> | Distributio n of participants |
|-------------------|------------------|----------------------------|-------------------------------------|--------------------------|-------------------------------------|
| FALSE | 3-‘grande’ | 0% | 0 | 0% | 0 |
| | 2-‘mediana’ | 1.28% | 1 | 0% | 0 |
| | 1-‘pequeña’ | 100% | 12 | 100% | 13 |
| | 0-no response | 0% | 0 | 0% | 0 |
| | | | | | |
| | | Filler | Distribution of participants | | |
| OPTIMAL | 3-‘grande’ | 100% | 13 | | |
| | 2-‘mediana’ | 0% | 0 | | |
| | 1-‘pequeña’ | 0% | 0 | | |
| | 0-no response | 0% | 0 | | |

One adult participant gave a medium, ‘*Regular*’, judgment to *estar* in one of the six *ser* conditions: “**Ésta está una biblioteca*” “This is_(estar) a library.” In this particular instance, it is likely that the participant read through the token too quickly. They chose ‘*Regular*’ and then filled in their alternative response as ‘*en la biblioteca*’. This was the first experimental token in the series and the same participant did not repeat this reading with the other instances. Therefore, this particular instance is considered “human error”. In all other cases, all participants chose ‘*Mala*’ for the ungrammatical *ser* and *estar* tokens and wrote the alternative response in using the correct copula.

Table 18 shows the monolingual results:

Table 18.

Overall Monolingual, Percent Response by Type

| Type of Utterance | Type of Response | Ungrammatical <i>estar</i> | Distribution of participants | Ungrammatical <i>ser</i> | Distribution of participants |
|-------------------|------------------|----------------------------|------------------------------|--------------------------|------------------------------|
| FALSE | 3-‘grande’ | 5% | 4 | 16% | 19 |
| | 2-‘mediana’ | 18% | 18 | 32% | 26 |
| | 1-‘pequeña’ | 77% | 38 | 52% | 33 |
| | 0-no response | 0% | 0 | 0% | 0 |
| | | | | | |
| | | Filler | Distribution of participants | | |
| OPTIMAL | 3-‘grande’ | 95% | 43 | | |
| | 2-‘mediana’ | 5% | 8 | | |
| | 1-‘pequeña’ | 0.4% | 1 | | |
| | 0-no response | 0 | 0 | | |

As can be seen from the monolingual responses in Table 18 the majority of children gave small strawberries to Sr. Dragón’s ungrammatical *estar* utterances at (77%). For *estar* tokens, they rejected ungrammatical *ser* at (52%). Participants rejected ungrammatical *ser* at lower rate than what was seen for ungrammatical *estar* and increased their medium (tolerate) and large (accept) strawberries here. This shows more of an allowance for these types of sentences than that of ungrammatical *estar* with DP predicates contexts. Wilcoxon signed ranks were run to compare participant responses to chance (since there were 6 trials for each condition, 3 would be considered ‘chance’ responding, or a 50% response rate here). All monolingual responses were significantly above or below 50%, except for the use of the small strawberry with ungrammatical *ser* (Appendix K). This means participant’s rejection of ungrammatical *ser* was near chance. Individual response ratios are also available in Appendix K. A table with the average

performance on each test item with both bilingual and monolingual participants can be found in Appendix Q.

The bilingual responses are in Table 19:

Table 19.

Overall Bilingual, Percent Response by Type

| Type of Utterance | Type of Response | Ungrammatical <i>estar</i> | Distribution of participants | Ungrammatical <i>ser</i> | Distribution of participants |
|-------------------|------------------|----------------------------|------------------------------|--------------------------|------------------------------|
| FALSE | 3-‘grande’ | 15% | 8 | 37% | 16 |
| | 2-‘mediana’ | 26% | 17 | 40% | 17 |
| | 1-‘pequeña’ | 59% | 22 | 23% | 12 |
| | 0-no response | 0% | 0 | 0.67% | 1 |
| | | | | | |
| | | Filler | Distribution of participants | | |
| OPTIMAL | 3-‘grande’ | 95% | 25 | | |
| | 2-‘mediana’ | 4% | 4 | | |
| | 1-‘pequeña’ | 0% | 0 | | |
| | 0-no response | 0.07% | 1 | | |

Bilingual participants rejected ungrammatical *estar* at (59%) and gave more medium strawberries here, followed by small strawberries. This pattern was not seen with ungrammatical *ser*: here bilingual participants were more tolerant of these utterances and gave a medium strawberry at 40%, followed by accepting these utterances and rejecting them last. Wilcoxon signed ranks were run to compare bilingual participant responses to 50%. All bilingual responses were significant above or below chance, except for the use of the small strawberry with ungrammatical *estar*, and the medium and large strawberries for ungrammatical *ser* (Appendix K), these responses were all near chance. Additionally, bilingual response patterns can be found Appendix K. Statistical analyses of monolingual and bilingual acceptance patterns in the Strawberry Task follow.

In the Strawberry Task, as with the Cartoon Task, each experimental condition is considered an independent variable. To look at differences between groups of speakers and the choices between a small, medium, or big strawberry, a series of Mann-Whitney U tests were run. The adults were not included in the statistical analysis, just as with the Cartoon Task (Table 20).

Table 20.

Monolingual (M) all, Bilingual (B) all, Mann-Whitney U

| Verb Choice | Mean Rank | | Mann-Whitney U | p-value |
|----------------------------|-----------|-------|----------------|---------|
| Ungrammatical <i>estar</i> | B all | M all | | |
| 3-‘ <i>grande</i> ’ | 39.32 | 31.70 | 417 | .021* |
| 2-‘ <i>mediana</i> ’ | 39.90 | 31.36 | 402.5 | .065 |
| 1-‘ <i>pequeña</i> ’ | 26.70 | 39.03 | 732.5 | .009* |
| 0 | 34.5 | 34.5 | 537.5 | 1.00 |
| Ungrammatical <i>ser</i> | | | | |
| 3-‘ <i>grande</i> ’ | 41.44 | 30.47 | 364 | .018* |
| 2-‘ <i>mediana</i> ’ | 37.04 | 33.02 | 474 | .405 |
| 1-‘ <i>pequeña</i> ’ | 25.44 | 39.77 | 764 | .003* |
| 0 | 35.36 | 34 | 516 | .190 |
| Filler | | | | |
| 3-‘ <i>grande</i> ’ | 35 | 34.21 | 525 | .811 |
| 2-‘ <i>mediana</i> ’ | 33.98 | 34.80 | 550.5 | .803 |
| 1-‘ <i>pequeña</i> ’ | 34 | 34.79 | 550 | .446 |
| 0 | 35.36 | 34 | 516 | .190 |

Overall, a statistically significant difference was found in the rate of acceptance “3-‘*grande*’” and rejection “1-‘*pequeña*’” with both ungrammatical *estar* and ungrammatical *ser* among monolingual and bilingual participants overall. The rate of tolerance “2-‘*mediana*’” was not significant and as can be seen above, both groups had increased use of medium strawberries with both ungrammatical *estar* and *ser*. Age groups results for monolingual and then bilingual participants are presented in the following section.

5.4.2 Age Group Results.

5.4.2.1 Monolingual age groups

The results in Tables 21 and 22 show the monolingual results, broken into the two age groups. M_{young} are the youngest monolingual participants. M_{old} are the oldest. The justifications outlined in the last paragraph summarize what occurred among participants in both age groups. A table with the average performance on each test item can be found in Appendix R.

Table 21.

M_{young} , Percent Response by Type

| Type of Utterance | Type of Response | Ungrammatical <i>l estar</i> | Distribution of participants | Ungrammatical <i>l ser</i> | Distribution of participants |
|-------------------|------------------|------------------------------|------------------------------|----------------------------|------------------------------|
| FALSE | 3-‘grande’ | 10% | 4 | 22% | 11 |
| | 2-‘mediana’ | 19% | 9 | 32% | 13 |
| | 1-‘pequeña’ | 71% | 18 | 46% | 14 |
| | 0-no response | 0% | 0 | 0% | 0 |
| | | | | | |
| | | Filler | Distribution of participants | | |
| OPTIMAL | 3-‘grande’ | 91% | | 21 | |
| | 2-‘mediana’ | 8% | | 6 | |
| | 1-‘pequeña’ | 0.8% | | 1 | |
| | 0-no response | 0% | | 0 | |

A further look into the responses by monolingual participants, now split into their two age groups, shows that the younger group ($M = 6;9$) rejected the ungrammatical *estar* conditions first, followed by tolerating the response with a medium strawberry, then accepting it. The young participants followed the same pattern for ungrammatical *ser*, but the rate of rejection has decreased in these instances and the tolerance rate has increased. Individual response patterns are in Appendix L. The Wilcoxon signed rank test found

participant rejection of ungrammatical *ser* not to be significantly lower than 50%. All other responses were either significantly greater or lower than 50% (Appendix L). The older monolingual group is presented next.

Table 22.

Mold, Percent Response by Type

| Type of Utterance | Type of Response | Ungrammatical <i>estar</i> | Distribution of participants | Ungrammatical <i>ser</i> | Distribution of participants |
|-------------------|----------------------|----------------------------|------------------------------|--------------------------|------------------------------|
| FALSE | 3-‘ <i>grande</i> ’ | 0% | 0 | 9% | 8 |
| | 2-‘ <i>mediana</i> ’ | 17% | 9 | 33% | 13 |
| | 1-‘ <i>pequeña</i> ’ | 83% | 20 | 58% | 19 |
| | 0-no response | 0% | 0 | 0% | 0 |
| | | | | | |
| | | Filler | Distribution of participants | | |
| OPTIMAL | 3-‘ <i>grande</i> ’ | 98% | 22 | | |
| | 2-‘ <i>mediana</i> ’ | 2% | 2 | | |
| | 1-‘ <i>pequeña</i> ’ | 0% | 0 | | |
| | 0-no response | 0% | 0 | | |

For the older monolingual participants (Table 22), the rate of rejection of ungrammatical *estar* was higher compared to the younger monolinguals, followed by tolerance, and a zero-rate of acceptance. The pattern was similar for ungrammatical *ser*, however there were some instances of acceptance among this group. Again, the Wilcoxon signed rank test found rejection of ungrammatical *ser* to not be significantly greater than 50% and all other responses were either significantly greater or lower than 50% (Appendix L). Individual response patterns for the Strawberry Task monolingual age groups are in Appendix L as well.

When participants responded to experimental contexts, they were occasionally asked either “Por qué” “Why” if they accepted the sentence with a large strawberry or

“¿Cómo lo dirías?” “How would you say it?” if they showed either flexibility or rejected the sentence altogether with the medium or small strawberry. Justifications were not straightforward for all participants, whether in the young M_{young} group or older M_{old} . There were overall more instances of grammatically motivated responses among the M_{old} group. It is clear that by adulthood, this knowledge is in place and easily identified and expressed (see the section above on adult justifications) but still under development in this age range of children.

Nevertheless, when the M_{young} and 2 participants gave a large strawberry and were then asked “Why?” they replied that the sentence sounded correct. More instances of large strawberries were given in M_{young} . When a medium strawberry was used for ungrammatical *ser* or *estar* and participants were asked to follow up with how they would say the sentence, but not consistently. The participants either: confirmed that the sentence was ungrammatical by restating the sentence with the correct copula, however, confirmed that this did not warrant a small strawberry. They also may have confirmed that the sentence was grammatical, and reaffirmed the use of the incorrect copula, but did not give want to give a large strawberry. Or the participant was not sure how they would say the sentence but just that it sounded “OK.”

When participants rejected a sentence with the small strawberry, they offered an alternative sentence occasionally. A participant in M_{young} offered: “*Aquí hay una biblioteca*” “Here is_{haber} a library.”¹⁶ On other occasions, a participant may have given a small strawberry and used the “ungrammatical” copula to form a grammatical sentence. For example, one participant in M_{young} gave a small strawberry but said: “*Ellos están en una biblioteca*” “They are_{estar} in a library.” Alternatively, a participant may have

¹⁶ The verb *haber* in Spanish is used to denote the existence of a noun.

expressed that they did not know how to say it, but that they knew that the sentence delivered by the dragon was wrong.

As an interesting methodological issue, in at least two instances in the M_{old} group participants were more empathetic to Sr. Dragón and justified medium strawberries because he only “made a mistake” or “is not from our world.”

The monolingual justifications of *ser* and *estar* demonstrated that the children were paying attention to the grammatical context in question and not distracted by other elements in the experimental design. In particular, the younger, M_{young} participants demonstrated a metalinguistic awareness of the grammaticality of the copulas, but that ungrammatical instances could be considered grammatical to some participants. This tendency diminished among older participants, supporting an age-based development of grammatical acceptability of the copulas.

A series of Mann-Whitney U tests were run to look at differences between the age groups of monolingual speakers and their choices between a small, medium, or big strawberry. “M_{young}” refer to the younger monolingual group, “M_{old}” is the older group. The adults were not included in the statistical analysis, just as with the Cartoon Task (Table 23).

Table 23.

M_{young} and M_{old}, Mann-Whitney U

| Verb Choice | Mean Rank | | Mann-Whitney U | p-value |
|----------------------------|--------------------|------------------|----------------|---------|
| Ungrammatical <i>estar</i> | M _{young} | M _{old} | | |
| 3-‘grande’ | 24.10 | 20 | 187 | .034* |
| 2-‘mediana’ | 22.10 | 21.91 | 229 | .957 |
| 1-‘pequeña’ | 20.74 | 23.20 | 257.5 | .477 |
| 0 | 22 | 22 | 231 | 1.00 |
| Ungrammatical <i>ser</i> | | | | |
| 3-‘grande’ | 24.19 | 19.91 | 185 | .214 |
| 2-‘mediana’ | 21.98 | 22.02 | 231.5 | .990 |
| 1-‘pequeña’ | 20.12 | 23.80 | 270.5 | .329 |
| 0 | 22 | 22 | 231 | 1.00 |
| Filler | | | | |
| 3-‘grande’ | 19.71 | 24.18 | 279 | .085 |
| 2-‘mediana’ | 24.29 | 19.82 | 183 | .085 |
| 1-‘pequeña’ | 22.52 | 21.5 | 220 | .306 |
| 0 | 22 | 22 | 231 | 1.00 |

The only statistical difference between the younger monolingual participants and the older monolingual participants was the use of the large strawberry to accept ungrammatical *estar*. As was seen in Tables 21-22, the rate of acceptance in this category went from (10%) in the younger group to (0%) in the older group. Age group results for bilingual participants is presented next.

5.4.2.2 Bilingual age groups

Tables 24 and 25 show the bilingual results, broken into the two age groups (B_{young} are the younger participants, B_{old} are the older participants). A table with the average performance on each test item can be found in Appendix R.

Table 24.

B_{young}, Percent Response by Type

| Type of Utterance | Type of Response | Ungrammatical <i>estar</i> | Distribution of participants | Ungrammatical <i>ser</i> | Distribution of participants |
|-------------------|------------------|----------------------------|------------------------------|--------------------------|------------------------------|
| FALSE | 3-‘grande’ | 25% | 6 | 46% | 9 |
| | 2-‘mediana’ | 21% | 8 | 32% | 8 |
| | 1-‘pequeña’ | 54% | 10 | 21% | 7 |
| | 0-no response | 0% | 0 | 1% | 1 |
| | | | | | |
| | | Filler | Distribution of participants | | |
| OPTIMAL | 3-‘grande’ | 94% | 12 | | |
| | 2-‘mediana’ | 4% | 2 | | |
| | 1-‘pequeña’ | 0% | 0 | | |
| | 0-no response | 1% | 0 | | |

In B_{young} ($M = 7;9$), a clear distinction is shown between *ser* and *estar* conditions. Participants rejected ungrammatical *estar* first, followed by acceptance of the utterances, then tolerance. The difference between acceptance and tolerance rates is minimal in this condition. The younger bilingual participants accepted ungrammatical *ser* first, then gave a medium response, followed by rejecting the utterances last. Wilcoxon signed rank tests were run to compare participant responses to chance responding and found rejection of ungrammatical *estar* not significant from 50%. Acceptance and tolerance of ungrammatical *ser* were also not significant from 50% (Appendix L). This highlights how close in distribution ‘accept’ and ‘tolerate’ were for ungrammatical *ser* among younger bilingual participants. All other responses were either significantly greater or lower than 50%. Individual response patterns for bilingual participants are in Appendix L. The older bilingual group is presented next.

Table 25.

B_{old}, Percent Response by Type

| Type of Utterance | Type of Response | Ungrammatical <i>estar</i> | Distribution of participants | Ungrammatical <i>ser</i> | Distribution of participants |
|-------------------|------------------|----------------------------|------------------------------|--------------------------|------------------------------|
| FALSE | 3-‘grande’ | 5% | 2 | 28% | 7 |
| | 2-‘mediana’ | 31% | 9 | 47% | 9 |
| | 1-‘pequeña’ | 64% | 12 | 24% | 5 |
| | 0-no response | 0% | 0 | 0% | 0 |
| | | | | | |
| | | Filler | Distribution of participants | | |
| OPTIMAL | 3-‘grande’ | 96% | 13 | | |
| | 2-‘mediana’ | 4% | 2 | | |
| | 1-‘pequeña’ | 0% | 0 | | |
| | 0-no response | 0% | 0 | | |

For B_{old} ($M = 10;5$), they rejected the *ser* conditions that used *estar*, giving a small strawberry to Sr. Dragón at a rate of (64%). A medium strawberry was used to a lesser extent at (31%), and a large strawberry at (5%). When *ser* was used ungrammatically in *estar* conditions, a medium strawberry was given at (47%), while a large at (24%) and a small at (28%). Wilcoxon signed rank tests showed older bilingual ‘tolerance’ and ‘reject’ responses to not be significant from chance with ungrammatical *estar*. For ungrammatical *ser*, the rate of ‘tolerance’ responses were not significant from chance. All other responses were significant for the older bilingual group (Appendix L).

As with the monolinguals, when occasionally asked to justify the strawberry that they gave on the experimental items, bilingual participants in both the B_{young} and B_{old} group gave a variety of responses. Different from the monolinguals, participants gave entirely new sentences for medium strawberry responses, compared to small strawberry responses.

They were occasionally asked, “¿Por qué?” “Why?” when they accepted an utterance from Sr. Dragón with a large strawberry. They were asked “¿Cómo lo dirías?” “How would you say it?” if they showed flexibility or rejected the sentence with the medium or small strawberry. When a bilingual participant gave a large strawberry, participants would confirm that the sentence Sr. Dragón gave was “good.” One participant in B_{old}, when asked how s/he would say the sentence, used the correct copula and then confirmed that “maybe you could use both *ser* or *estar* in the sentence.” This participant gave all large strawberries when *ser* was used in place of *estar* and all medium strawberries when *estar* was used in place of *ser*. In two other cases, participants in B_{young} would give a large strawberry and use the correct copula in a recast of the sentence. I would point out the difference between what the participant said and what Sr. Dragón said, and they would still want to give a large strawberry Overall, more large strawberries were given in the B_{young} group than in the B_{old} group.

With the medium strawberry, the bilingual participant justifications were similar to what was found among monolinguals and the small strawberries: the participant would either reject the statement given by the Dragón, then reform the sentence with correct copula but not give a small strawberry, or they would confirm the statement with the incorrect copula, but not give a large strawberry. There were other cases where the participant would give a medium strawberry and reform the sentence to be grammatical with the original “incorrect” copula (this was also seen with monolingual speakers). For example, a participant from B_{old} heard Sr. Dragón say “*Ésta *está un parque*” “This is_{estar} a park” and change it to “*Aquí está el parque*” “Here is_{estar} the park.” In other cases, the bilingual participant would avoid the copula entirely. Similar to the monolingual

participant, a B_{old} child used haber “*Aquí hay una biblioteca*” “Here is_{haber} a library” instead of using “*Éste es una biblioteca*” “This is_{ser} a library”. In other instances, the participant would not know how else to say the sentence but confirm that what Sr. Dragón said just sounded “OK.”

When using a small strawberry, participants would usually reject what Sr. Dragón said and replace the sentence with the correct copula. In particular, one participant in the B_{young} group said, “*Aquí está + DP*” “Here is + DP” constructions instead of using *ser* with the DP.

In summary, bilingual justifications also demonstrated that participants were paying attention to the grammatical context in the Strawberry Task and were not distracted by other elements in the experiment. Evidence of grammatical knowledge of the copulas is shown as some participants did reject ungrammatical cases. There is a basis for the age-motivated development of acceptability with the copulas, both from the observational data and the above justifications; however, this is not supported by the statistical analysis. Individual participant cases create a basis for the potentially dynamic nature of bilingualism and are in line with Putnam and Sánchez’s model of language acquisition, which will be discussed further in Chapter 6. The following is the statistical analysis of the younger and older bilingual groups (Table 26):

Table 26.

B_{young} and *B_{old}*, Mann-Whitney *U*

| Verb Choice | Mean Rank | | Mann-Whitney U | p-value |
|----------------------------|--------------------------|------------------------|----------------|---------|
| Ungrammatical <i>estar</i> | <i>B_{young}</i> | <i>B_{old}</i> | | |
| 3-‘grande’ | 15.46 | 10.73 | 48.5 | .110 |
| 2-‘mediana’ | 11.83 | 14.08 | 92 | .470 |
| 1-‘pequeña’ | 11.83 | 14.08 | 92 | .470 |
| 0 | 13 | 13 | 78 | 1.00 |
| Ungrammatical <i>ser</i> | | | | |
| 3-‘grande’ | 14.97 | 11.35 | 56.5 | .247 |
| 2-‘mediana’ | 11.79 | 14.12 | 92.5 | .437 |
| 1-‘pequeña’ | 13.62 | 12.42 | 70.5 | .689 |
| 0 | 13.54 | 12.5 | 71.5 | .728 |
| Filler | | | | |
| 3-‘grande’ | 12.88 | 13.12 | 79.5 | .936 |
| 2-‘mediana’ | 13.08 | 12.92 | 77 | .979 |
| 1-‘pequeña’ | 13 | 13 | 78 | 1.00 |
| 0 | 13.54 | 12.50 | 71.5 | .728 |

No statistical differences were found between the younger and older bilingual groups. In the observational data (Tables 14 and 15), it was found that older bilinguals reject ungrammatical *estar* at a greater rate than younger bilinguals and that the rate of acceptance decreases, while tolerances increase. For ungrammatical *ser*, the rate of acceptance decreases from younger bilinguals to older bilinguals, and the rate tolerance with the medium strawberry increases from younger to older. The rate of rejection stays nearly the same between younger and older bilingual participants. The observational data points to several possible trends: first, that rejection of ungrammatical *estar* with DP predicates increases as bilingual participants get older (rejection of ungrammatical *ser* increased by 3% among younger/older bilinguals). Second, the pattern of decreased acceptance and increased tolerance in younger and older bilinguals for both ungrammatical contexts suggest a trend towards recognizing the ungrammaticality of the copulas used here. However, this could also suggest prolonged tolerance and

acceptability of ungrammatical *ser* between the two bilingual groups. These are not robust patterns however, as no statistical significance was found.

In order to assess differences across the age groups, monolingual and bilingual speakers, and the choices between a small, medium, or big strawberry, a series of Mann-Whitney U tests were run (Table 27-28). The youngest bilingual and monolingual group are compared below, followed by the two older groups.

5.4.2.3 Comparing Monolingual and Bilingual age groups

Table 27.

B_{young} and M_{young}, Mann-Whitney U

| Verb Choice | Mean Rank | | Mann-Whitney U | p-value |
|----------------------------|--------------------|--------------------|----------------|---------|
| Ungrammatical <i>estar</i> | B _{young} | M _{young} | | |
| 3-‘grande’ | 20.21 | 15.17 | 87.5 | .152 |
| 2-‘mediana’ | 19.12 | 15.79 | 100.5 | .345 |
| 1-‘pequeña’ | 13.71 | 18.88 | 165.5 | .141 |
| 0 | 17 | 17 | 126 | 1.00 |
| Ungrammatical <i>ser</i> | | | | |
| 3-‘grande’ | 20.67 | 14.90 | 82 | .104 |
| 2-‘mediana’ | 17.38 | 16.79 | 121.5 | .868 |
| 1-‘pequeña’ | 13.75 | 18.86 | 165 | .152 |
| 0 | 17.88 | 16.5 | 115.5 | .699 |
| Filler | | | | |
| 3-‘grande’ | 18.21 | 16.31 | 111.5 | .593 |
| 2-‘mediana’ | 15.71 | 17.74 | 141.5 | .567 |
| 1-‘pequeña’ | 16.5 | 17.29 | 132 | .839 |
| 0 | 17.88 | 16.5 | 115.5 | .699 |

No significant differences were found for the two youngest groups, B_{young} and M_{young}, though there are differences in their use of small and large strawberries across conditions: their frequency of use of the medium strawberry with both copulas is nearly identical with *ser* (M_{young} (*ser*: 19%) B_{young} (*ser*: 21%)) and identical with *estar* (M_{young} (*estar*: 32%) B_{young} (*estar*: 32%)). Several trends are seen in the two groups from the observed results. Both younger bilinguals and monolinguals first rejected, then tolerated, then accepted ungrammatical *estar*. The statistical analyses reflect the similarity between

groups in this pattern. For ungrammatical *ser*, younger bilinguals first accepted these utterances at a rate of (46%), then showed tolerance at (32%) followed by rejection at (21%). Young monolinguals demonstrated the opposite pattern with rejection at (46%), tolerance at (32%) and acceptance at (22%). The observable differences lead me to conclude that age is a factor in judging the grammaticality of *ser* and *estar* and that young monolinguals are patterning toward the rejection of ungrammatical *ser*, while young bilingual participants are patterning toward acceptance of ungrammatical *ser*. However even at the mean age of 6;0, these patterns are not strong and are evidence of still-developing linguistic intuitions.

Table 28.

Bold and M_{old}, Mann-Whitney U

| Verb Choice | Mean Rank | | Mann-Whitney U | p-value |
|----------------------------|------------------|------------------|----------------|---------|
| | B _{old} | M _{old} | | |
| Ungrammatical <i>estar</i> | | | | |
| 3-‘grande’ | 19.69 | 17 | 121 | .468 |
| 2-‘mediana’ | 21.38 | 16 | 99 | .139 |
| 1-‘pequeña’ | 13.5 | 20.66 | 201.5 | .045* |
| 0 | 18 | 18 | 143 | 1.00 |
| Ungrammatical <i>ser</i> | | | | |
| 3-‘grande’ | 21.19 | 16.11 | 101.5 | .159 |
| 2-‘mediana’ | 20.23 | 16.68 | 114 | .335 |
| 1-‘pequeña’ | 12.54 | 21.23 | 214 | .015* |
| 0 | 18 | 18 | 143 | 1.00 |
| Filler | | | | |
| 3-‘grande’ | 17.23 | 18.45 | 153 | .749 |
| 2-‘mediana’ | 18.77 | 17.55 | 133 | .749 |
| 1-‘pequeña’ | 18 | 18 | 143 | 1.00 |
| 0 | 18 | 18 | 143 | 1.00 |

Statistically significant differences were found for the use of the small strawberry to reject ungrammatical *ser* and *estar* between B_{old} and M_{old}. The observational data showed us that M_{old} rejected ungrammatical *ser* and *estar* conditions at a higher rate than B_{old}. The comparison between the two oldest participant groups reveals that the bilingual participants may be more tolerant of these ungrammatical utterances, even in later

linguistic development. The implications of this will be discussed further in Chapter 6. The final section of this chapter analyzes data from the simultaneous and sequential bilinguals in this study.

Although justifications were not asked for nor given with the filler contexts, it is of note that among both groups (monolingual and bilingual) participants overwhelmingly “accepted” these contexts with the large strawberry. Hesitation and variance among the *ser* and *estar* experimental contexts indicates that speakers’ grammatical intuitions of *ser* and *estar* in obligatory contexts are still developing.

5.4.2.3 Simultaneous and Sequential bilinguals: overall data

The results in Tables 29 and 30 show the results of the Strawberry Task from the bilingual participants, when they are divided into ‘simultaneous’ and ‘sequential bilingual’. Recall that a ‘sequential bilingual’ is someone who was first exposed to English at or after the age of 3;0. These participant groups were not divided further into younger and older age groupings as the participant numbers were too small. A table with the average performance on each test item can be found in Appendix S.

Table 29.

All simultaneous, Percent Response by Type

| Type of Utterance | Type of Response | Ungrammatical <i>estar</i> | Distribution of participants | Ungrammatical <i>ser</i> | Distribution of participants |
|-------------------|------------------|----------------------------|------------------------------|--------------------------|------------------------------|
| FALSE | 3-'grande' | 11% | 2 | 33% | 6 |
| | 2-'mediana' | 26% | 7 | 57% | 8 |
| | 1-'pequeña' | 63% | 7 | 7% | 1 |
| | 0-no response | 0% | 0 | 0% | 0 |
| | | | | | |
| | | Filler | Distribution of participants | | |
| OPTIMAL | 3-'grande' | 93% | 9 | | |
| | 2-'mediana' | 7% | 3 | | |
| | 1-'pequeña' | 0% | 0 | | |
| | 0-no response | 0% | 0 | | |

Overall simultaneous speakers showed a pattern of ‘rejection’, some ‘tolerance’, and some ‘acceptance’ of ungrammatical *estar*. Participants were more tolerant for ungrammatical *ser*, followed by acceptance and minimal rejection of these utterances. Wilcoxon signed ranks showed that medium and small ratings for ungrammatical *estar* were not significant from chance, nor were acceptance and medium ratings for ungrammatical *ser* (Appendix M). Individual response patterns for simultaneous and sequential speakers in the Strawberry Task are in Appendix M.

Table 30.

All sequential, Percent Response by Type

| Type of Utterance | Type of Response | Ungrammatical <i>estar</i> | Distribution of participants | Ungrammatical <i>ser</i> | Distribution of participants |
|-------------------|------------------|----------------------------|------------------------------|--------------------------|------------------------------|
| FALSE | 3-'grande' | 17% | 6 | 39% | 10 |
| | 2-'mediana' | 26% | 10 | 30% | 9 |
| | 1-'pequeña' | 57% | 15 | 31% | 11 |
| | 0-no response | 0% | 0 | 0% | 0 |
| | | | | | |
| | | Filler | Distribution of participants | | |
| OPTIMAL | 3-'grande' | 97% | 16 | | |
| | 2-'mediana' | 2% | 1 | | |
| | 1-'pequeña' | 0% | 0 | | |
| | 0-no response | 1% | 1 | | |

Sequential speakers rejected ungrammatical *estar* first, then showed tolerance, followed by some acceptance. For ungrammatical *ser*, the acceptability judgments were nearly split three-ways. Acceptance was followed by rejection, which was closely followed by tolerance. The Wilcoxon signed rank showed that rejection rates for ungrammatical *estar* was not significant from chance. None of the judgments for ungrammatical *ser* were significant from chance (Appendix M). Individual response patterns of sequential speakers are in Appendix M. A series of Mann-Whitney U tests were run to analyze statistical significance between simultaneous and sequential judgment patterns (Table 31).

Table 31

Simultaneous and Sequential, Mann-Whitney U

| Verb Choice | Mean Rank | | Mann-Whitney U | p-value |
|----------------------------|--------------|------------|----------------|---------|
| Ungrammatical <i>estar</i> | Simultaneous | Sequential | | |
| 3-‘grande’ | 11.83 | 13.66 | 82.5 | .559 |
| 2-‘mediana’ | 13.06 | 12.97 | 71.5 | .978 |
| 1-‘pequeña’ | 14.22 | 12.31 | 61 | .558 |
| 0 | 13 | 13 | 72 | 1.00 |
| Ungrammatical <i>ser</i> | | | | |
| 3-‘grande’ | 12.56 | 13.25 | 76 | .846 |
| 2-‘mediana’ | 16.33 | 11.12 | 42 | .095 |
| 1-‘pequeña’ | 8.67 | 15.44 | 111 | .027* |
| 0 | 13.89 | 12.5 | 64 | .677 |
| Filler | | | | |
| 3-‘grande’ | 11 | 14.12 | 90 | .329 |
| 2-‘mediana’ | 15.06 | 11.84 | 53.5 | .301 |
| 1-‘pequeña’ | 13 | 13 | 72 | 1.00 |
| 0 | 12.5 | 13.28 | 76.5 | .803 |

Results from the Mann-Whitney U demonstrate statistical significance in the rate of rejection of ungrammatical *ser* between simultaneous and sequential speakers. The observational data shows that sequential bilingual speakers reject ungrammatical *ser* at a greater rate (31%) than simultaneous bilingual speakers (7%). The distribution of participants shows that there was only one participant who rejected ungrammatical *ser* in the simultaneous bilingual group, as opposed to the eleven participants that rejected these utterances in the sequential group. There is a higher rate of rejection among sequential bilinguals, compared to simultaneous bilinguals. However sequential bilinguals did not trend toward rejection of ungrammatical *ser* in their observational data but showed that they were divided by "reject," "tolerate," or "accept." It could be that there is more to be observed concerning these patterns if there was a larger simultaneous and sequential participant pool. For now, it can be assumed that sequential bilinguals demonstrate increased sensitivity to the grammaticality of ungrammatical *ser*, compared to simultaneous bilinguals.

5.4.3 General Discussion of Strawberry Task

To summarize, the Strawberry Task assessed learner sensitivities to ungrammatical instances of *ser* and *estar*. A three-point Likert scale was used to give the participants more flexibility with their response to ungrammatical *ser* and *estar*. The Strawberry Task was paired with the Cartoon Task to offer a more detailed description of learner intuitions toward *ser* and *estar* in obligatory contexts. Even though the grammatical phenomenon in this study has only a right or wrong answer, a three-point Likert scale helps to understand just how much a child who is undergoing language acquisition accepts or rejects *ser* and *estar*. The data and analyses from the Strawberry Task help to inform further on the three research questions guiding this dissertation. Recall that adult participants consistently rejected ungrammatical *ser* and *estar*. Both monolingual and bilingual data indicate a developmental trend in the acceptability of *ser* + DP and *estar* + adjectival passive. First, there were significant differences between the monolingual and bilingual participant groups overall regarding their patterns of rejection and acceptance of ungrammatical *estar* with DP predicates and ungrammatical *ser* with adjectival predicates. Rates of tolerance were not significant between the groups, showing that both monolingual and bilingual participants demonstrate similar sensitivity and tolerance to these ungrammatical utterances.

Concerning age differences for monolinguals and bilinguals, several patterns emerged: First, there were no significant differences in any judgments between younger and older bilinguals. This indicates that even in older bilingual participants, there is a continued variability in terms of accepting both ungrammatical *estar* and *ser*. There was a

significant difference in the patterns of acceptance between younger and older monolinguals for ungrammatical *estar*, but no statistical significance for ungrammatical *ser*. This indicates that monolingual participants increase in their sensitivity to ungrammatical cases with *estar* but remain variable (or tolerable) of ungrammatical *ser*, even later in childhood.

Second, between younger monolingual and bilinguals there were no statistical differences. Between older monolingual and bilinguals there were statistical differences in the rejection of both ungrammatical *estar* with DPs and ungrammatical *ser* with adjectival participles. Due to these results, it appears that age-related sensitivity for both monolingual and bilingual participants appears to emerge later in childhood (7;2-12;2) and monolinguals show a path of development that seems more convergent with adult speech.

Finally, simultaneous and sequential bilinguals differ in their pattern of rejection of ungrammatical *ser*. It appears that sequential bilinguals have an increased sensitivity to ungrammatical cases of *ser* with adjectival passives, but also show increased rates of both tolerance and acceptance in these two areas.

5.5 Concluding Remarks

This chapter has presented results obtained in two experimental tasks that were completed by Spanish-speaking monolingual children growing up in a Spanish-dominant society and Spanish-English bilingual children growing up in an English-dominant society. Results confirmed that the two speaker groups have distinct patterns of acceptability of *ser* and *estar* with their obligatory predicates. The overall data indicate

that both monolingual participants and bilingual participants have a high level of acceptability of *ser* with DP predicates. Monolingual participants also have a high level of acceptability of *estar* with adjectival predicates overall. Bilingual participants showed more variance in their acceptability of *estar* with adjectival passives and showed a greater tolerance to ungrammatical *ser* with these predicates as well, and some tolerance for accepting *estar* with DP predicates.

Age contributes to the acceptability of *ser*, but not *estar* among bilingual participants. Acceptance of *ser* was significant between younger and older bilingual speakers in the Cartoon Task, but not in the Strawberry Task. In the Cartoon Task, a wider age range of participants was included, including younger bilingual children who were unable to complete the Strawberry Task. This prolonged variance with the acceptability of *estar* may be indicative of a differential feature specification among bilingual speakers, specifically related to aspectual marking associated with *estar* and its adjectival predicates.

There were no age-related effects of monolinguals in the Cartoon Task. However, there was with the acceptance of ungrammatical *estar* in the Strawberry Task. Acceptance decreased from younger to older participants. Concerning age as a variable in acceptability, the copulas, results from the Cartoon Task show that young monolinguals accept both grammatical contexts with *ser* and *estar* as there were no statistical differences between young monolinguals and older monolinguals. The Strawberry Task shows some age-related sensitivity to the grammaticality of *estar* with DP predicates. Overall, monolinguals performed similarly in the two age groups.

Simultaneous and sequential speakers did not have statistically significant differences in the Cartoon Task, though there were observed differences indicated between the simultaneous speakers' acceptance of grammatical *ser* and *estar* in that task. The Strawberry Task showed that sequential speakers might have an increased sensitivity to ungrammatical cases of *ser* in with adjectival predicates. This difference could be related to age-of-exposure factors between the two groups and will be discussed further in the following chapter.

CHAPTER 6: DISCUSSION

6.1 Introduction

The goal of this dissertation is to examine monolingual and bilingual speakers' acceptance of *ser* and *estar* when they are used with canonical, non-overlapping predicates such as (38 a-b):

- (38) a. Éste es un gato.
 This be-PRES.3SG [_{DPA} cat]
 'This is a cat.'
- b. La botella está vacía.
 The bottle be-PRES.3SG [_{ADJP}empty]
 'The bottle is empty.'

Three questions were posed to examine speaker acceptability on both the group and individual level, as well as to ascertain whether or not age was a contributing factor to differences both within and between speaker groups. Additionally, the question of initial age of second language exposure was posed to the bilingual group to assess whether or not external, qualitative factors played a role in the acceptability of the copulas. To briefly summarize, it was found that monolingual and bilingual children have distinct patterns of acceptability of the copulas across the two experimental contexts overall. Age was found to make a difference in copula interpretation among monolinguals with the use of ungrammatical *estar* in the scalar judgment task, but no difference was found for age in the Cartoon Task. Age differences were found among the bilingual participants in the case of *ser* for the Cartoon Task, whereas no differences were found in the scalar task. Finally, there was

no evidence of a significant difference between simultaneous and sequential bilingual speakers and their interpretation of the copulas.

6.1.1 Comparing and Contrasting Previous Work with the Copulas

Previous research with *ser* and *estar* has focused on speaker interpretations of permanent and transient readings when either copula can be paired with the same, scalar adjective, rather than testing their degree of acceptability. Production data has focused on whether or not children have an adult-like separation of the copulas. Schmitt and Miller (2007); Holtheuer, Miller, and Schmitt (2011), and Requena et al., 2015 focus on the use of gradable, scalar adjectives (fat, skinny, tall, short) that can be used with either copula. The implicature associated with either copula will change the reading: *ser* with a gradable adjective (GA) will yield a permanent reading; *estar* with a GA will yield a temporary one. There is the additional possibility to create a temporary reading with *ser* and a GA, by using either implied or overt adverbial modifiers (*today*, *now*). The authors mentioned above tested monolingual interpretations of *ser* and *estar* in a series of between-subjects designs where the speakers were only asked to give their interpretation of either *ser* or *estar*, not both. As mentioned previously (section 3.2.3), the authors have found that monolingual children strictly associate *estar* to a temporary reading and can be more flexible in how they associate *ser* (associating either a permanent or temporary reading, which is grammatical in these conditions). On the other hand, Requena et al., 2015 had found adult monolinguals to be less restrictive with the use of *ser*. They often link *ser* to a temporary property, meaning they have associated a relevant time interval in order to

make a temporal reading of *ser* grammatical (see Schmitt and Miller, 2007, p. 1925-1926 for this explanation).

The present study is distinct from previous experimental studies on the acquisition of *ser* and *estar*: the copulas are only used in contexts where their predicates are obligatory and not interchangeable. The overall experimental context is also different from previous studies. In this study, adults showed no ambiguity in the use of *ser* with DP predicates and *estar* with adjectival passives across both tasks (outside of the minimal ‘human errors’ addressed in section 5.2). In the Cartoon Task, all participants were given a choice between *ser* or *estar*, where one option was grammatical and the other was ungrammatical. The Strawberry Task tested the acceptability of the copulas in ungrammatical contexts and also examined the participant’s “tolerance” of the utterance by using a three-point scale (Katsos and Bishop, 2011). Only children were tolerant of ungrammatical sentences with either *ser* or *estar*; the adults showed no tolerance or possible flexibility in the acceptance of these sentences. Both the monolingual and bilingual children in this study have shown that their acceptability of each copula with its predicate is not yet stable in an adult-like way. Additionally, both monolingual and bilingual children showed more tolerance in their acceptance of ungrammatical *ser* with the Strawberry Task, compared to the Cartoon Task. Bilinguals also accept more cases of *ser* + adjectival passive in the Cartoon Task. These results suggest that there is prolonged flexibility in the acquisition and distinction of the copulas in childhood for both monolinguals and bilinguals. This is especially the case for bilingual participants, given the results of the Cartoon Task and the Strawberry Task, namely. For bilinguals, a prolonged flexibility in the use of the copulas is further compounded by other, external

factors. While the results addressing the second research question show us that this flexibility extends to older participants, the third research question examines how the initial age of onset may affect the acceptability of the copulas.

In this chapter, each research question will be presented in a separate section, followed by the implications for the acquisition of *ser* and *estar*. A general discussion section will conclude the chapter that summarizes the previous discussion as well as providing insight into the theoretical implications of this research to the structure of *ser* and *estar* and bilingual language development overall.

6.2 RQ1: The acquisition of *ser* and *estar*

The first research question asked whether or not Spanish-English bilingual and Spanish monolingual children exhibit the same patterns in their performance on measures assessing their comprehension of the copulas *ser* and *estar*. I hypothesized that both groups would show distinct patterns in judging the copulas. This is due to the differing linguistic systems between the two groups of speakers, the bilinguals having the additional influence of English singular copula ‘to be,’ and a likely shift in dominance from Spanish to English due to the school environment and pressure from the majority language of the society. I predicted that by the age of testing, monolingual speakers would establish a separation between *ser* and *estar*, one that associated *ser* with DP predicates (a canonical *ser* predicate) and *estar* with an adjectival passive (a canonical *estar* predicate). Additionally, I predicted that while bilingual speakers would maintain a separation of the copulas overall, overlap in the use of *estar* to *ser* contexts could be expected, due to several linguistic and extra-

linguistic factors (including a possible loss of aspectual distinction and influence of English *to be* due to a shift in language dominance (Silva Corvalán, 2014; Valenzuela et al., 2015).

6.2.1 RQ 1: A summary of overall findings

Two experimental measures were used to assess speaker acceptability of *ser* and *estar*: the first, a forced-choice grammaticality judgment task (Cartoon Task), asked participants to choose between two utterances of the copula, delivered by two cartoon animal ‘friends.’ The subject and predicate were identical in both contexts, but one was used with *ser* and the other with *estar*. The participant decided who spoke the utterance “better”:

- (39) a. *Señor Ratón: Aquí la ventana **está** abierta.*

Here, the window is_{ESTAR} open.

- b. *Señor Tortuga: *Aquí la ventana **es** abierta.*

Here, the window is_{*SER} open.

The results show us that monolingual and bilingual speakers clearly reject *estar* with DP predicates but that bilingual speakers are more accepting of *ser* with adjectival passives. When monolingual or bilingual children were asked to choose between grammatical *ser* and ungrammatical *estar*, they chose grammatical *ser*. Both groups performed well above chance (chance = 50%); monolinguals chose the grammatical utterance with *ser* 97% of the time, and bilinguals chose it in 88% of the test items. When either group was asked to choose between grammatical *estar* and ungrammatical *ser*, both groups performed above chance, but bilinguals had a significantly lower

acceptability rate of grammatical *estar* (monolinguals: 94%; bilinguals: 79%). A significant difference was found between the two groups in their acceptance of grammatical *ser* and *estar* (*ser*: $p < .003$; *estar*: $p < .001$). All adult participants accepted grammatical instances of both copulas near ceiling (*ser*: 97%; *estar*: 100%).

The second experimental task, a ternary acceptability judgment task (Strawberry Task), asked speakers to judge a single, ungrammatical utterance that was delivered by a puppet on a 3-point Likert scale (original task by Katsos and Bishop (2011)). All experimental utterances were designed for the participant to reject, given the ‘yes-bias’ that is shown to be present in children (Crain and Thornton, 1999). Here, *estar* was paired with DP predicates and *ser* with adjectival passives. Children had the option to either give the puppet a small strawberry, meaning they rejected his utterance, a medium strawberry, meaning they thought the utterance was tolerable, or a large strawberry if the utterance was well liked, as shown in (40):

(40) Experimenter: Aquí tenemos un lugar donde hay muchas personas y pueden buscar libros, leer en silencio, muy calladitos Sr. Dragón, esta...(puedes terminar mi frase)? *Here we have a place where there are a lot of people who can look for books, read in silence, very quietly. Sr. Dragón, this...(can you finish my sentence)?*

Sr. Dragón.: *Esta, está una biblioteca. *This is a library.*

Experimenter: ¿Qué le darías? Una fresa pequeña, mediana, o grande? *What would you give him? A small, medium, or large strawberry?*

Similar to the Cartoon Task, this task asked the speaker to imagine a hypothesized world along with their own world (in the Cartoon Task two cartoons were “learning”

Spanish, in the Strawberry Task a puppet that came from “far away” was also “learning” Spanish). Unlike the Cartoon Task, the Strawberry Task was pragmatically enriched with the addition of context that referred to the image on the screen, which was provided by the experimenter. As mentioned in the results section, this task was too difficult for younger participants to complete, therefore results from fewer participants were included in the Strawberry Task.

The results from the Strawberry Task demonstrate how speakers in both the monolingual and bilingual groups judge *ser* differently from *estar*, a pattern that is carried over from the Cartoon Task. By introducing scalar judgment with a 3-point scale, the participants were able to show any tolerance they may have to the ungrammatical utterances they heard.

The data from the ungrammatical utterances with *estar* + DP show us that both monolingual and bilingual participants reject *estar* with DP predicates, but bilinguals do so at a lesser rate. Monolinguals rejected ungrammatical utterances with *estar* + DP the most (77%), followed by a few participants who gave the sentences a medium rating (18%). The fewest participants accepted ungrammatical *estar* with DP predicates (5%). Bilingual speakers usually rejected ungrammatical *estar* (59% of the time). Their second most common response was a medium rating (26%), and accepting these utterances was the least common response (15%). A statistically significant difference was found between monolingual and bilingual participants' rate of rejection ($p < .009$) and their rate of acceptance ($p = .021$) for ungrammatical *estar* utterances, but not between their medium ratings. Data from ungrammatical *ser* with adjectival passives shows a different pattern for monolingual and bilingual participants. Monolingual participants first rejected

these utterances (52%). This was followed by a medium rating (32%), then acceptance (16%). Bilingual participants did not follow this pattern: they first gave a medium rating (40%), followed closely by acceptance (37%), and then rejection (23%). Again, there was a significant difference found between rejection ($p < .018$) and acceptance ($p < .003$) patterns between monolingual and bilingual participants. Between the two groups, monolinguals rejected ungrammatical *ser* with adjectival passives first, and bilinguals did so last. Bilinguals demonstrate an even greater tolerance for *ser* in *estar* cases. Overall, both monolingual and bilingual participants contrast dramatically with adult monolingual judgments, who rejected all ungrammatical instances of either *ser* or *estar* in the Strawberry Task.

6.2.2 RQ 1: Discussion

Findings from both the Cartoon Task and the Strawberry Task demonstrate that monolingual and bilingual children have distinct patterns of accepting *ser* and *estar* in obligatory contexts. In addressing RQ 1 regarding the Cartoon Task, the statistical significance between monolingual and bilingual judgments demonstrates their distinct acceptability of the copulas. Bilinguals seem to have an increased acceptability of *ser* in *estar* cases overall.

The Strawberry Task adds further to these findings. In further response to RQ 1, these patterns of acceptance and rejection tell us that monolingual and bilingual participants do not accept *ser* and *estar* similarly, but they both maintain some tolerance with ungrammatical readings of the copulas. Overall, bilinguals are much more willing to accept *ser* where *estar* is considered obligatory.

6.3 RQ2: Age-related factors in the acquisition of *ser* and *estar*

The second research question asked whether acceptability of the copulas would change as children get older. I hypothesized that the acceptance of *ser* and *estar* develop with age in both monolingual participants and that greater variability may be demonstrated among older bilingual participants as a result of the lack of aspectual feature specification on with *estar*. I predicted that older bilingual and monolingual children would be able to better associate the copula with its appropriate predicate, which corroborates previous experimental and production research (Alonqueo, 2013; Alonqueo and Soto, 2011; Holtheuer, 2009; Requena et al., 2015). Additionally, I predicted that bilingual speakers would be more likely to choose ungrammatical forms of the copulas in both of the judgment tasks. This prediction corresponded to previous production data from Silva-Corvalán (1986, 1994, 2001, 2006) that found overlap in use of the copulas by bilingual speakers of Spanish in the US.

As discussed previously, the results concerning the first research question show a difference between monolingual and bilingual groups overall. The participants were split into older and younger groups to investigate the influence of age and the acceptability of the copulas.

6.3.1 RQ 2: A summary of age-related findings

6.3.1.1 Monolingual Cartoon Task

Results from the Cartoon Task show us that all bilingual and monolingual age groups performed above chance (50%), in line with the overall results (section 6.2.1

above). For *ser*, both the younger and older monolinguals (M_{young} and M_{old}) performed at near-ceiling (ceiling = 100%), choosing grammatical *ser* over ungrammatical *estar* in the majority of cases that were presented. No statistical significance difference was observed between the two monolingual age groups. A similar trajectory was shown for *estar* among monolinguals. To summarize, by the earliest age of testing (4;6) monolingual speakers exhibit a difference in acceptance between grammatical *ser* + DP vs. ungrammatical *estar* + DP and between grammatical *estar* + adjectival passive vs. ungrammatical *ser* vs. adjectival passive when offered a choice between the two. These results were closely in-line with the adult monolingual control participants.

6.3.1.2 Bilingual Cartoon Task

For the bilinguals in the Cartoon Task, the younger group (B_{young}) accepted *ser* + DP above chance, and the older group (B_{old}) showed a near-ceiling acceptance. A significant difference was shown between these two age groups (section 5.2.2, Table 13). For *estar* + adjectival predicates, both groups' responses are significantly above chance, however remain similar and no statistical significance was observed here. In summary, this data shows us that for *ser*, bilingual children largely accept grammatical *ser* when it combines with a DP over ungrammatical *estar*, and it is likely that this increases with the age of the bilingual, similar to the monolingual participants. There is more flexibility in the acceptance of *estar* among bilinguals (compared to their acceptability of *ser*): both younger and older give greater allowance to ungrammatical *ser* + adjectival passive here, so much so that there was no difference between the age groups. Monolingual and bilingual participants differ in their acceptance of *estar*.

In the next section, results from the Strawberry Task emphasize how speakers in both the monolingual and bilingual age groups judge *ser* differently from *estar*, a pattern that is carried over from the Cartoon Task.

6.3.1.3 Monolingual Strawberry Task

Both younger and older monolingual participants first rejected, then assigned a medium rating to ungrammatical *estar* with DP predicates in the Strawberry Task. The younger monolingual participants did accept some of these utterances, while the older monolingual participants did not accept these utterances at all. The oldest monolingual participants abandoned the acceptance of ungrammatical *estar* + DPs and were much more likely to reject these utterances. A statistically significant difference was seen in the use of the large strawberry to accept these utterances between younger and older monolinguals, but not for the use of the medium or small.

For younger and older monolingual participants, the most common responses to ungrammatical *ser* with adjectival passives was rejection, followed by a medium response, then acceptance. While younger monolingual participants had a low rate of rejection overall, this increased among older monolinguals, where a decrease in medium and acceptance ratings was also seen. The older monolingual rejection rate exceeded 50%, but it was not significant from chance. There were no statistically significant differences between the monolingual age groups for ungrammatical *ser* with adjectival predicates.

The Strawberry Task shows us that when monolingual speakers are given the ability to judge an ungrammatical copula on a scale, they reject ungrammatical *estar*

more frequently than ungrammatical *ser*. Monolingual participants showed more flexibility when judging the copulas in the Strawberry Task, and the age differences are more robust here than with the Cartoon Task. It is clear that acceptance of ungrammatical *estar* decreases with participant age, with the statistically significant difference in use of the large strawberry. The results with ungrammatical *ser* indicate that rejection increases as monolingual participants get older, however not in statistically significant terms. Monolingual participants considered *ser* + adjectival passive as grammatical to a greater extent than *estar* + DP.

6.3.1.4 Bilingual Strawberry Task

Bilingual participants demonstrated a varied distribution in their response patterns on the Strawberry Task. The younger bilinguals rejected ungrammatical *estar* + DP, at a rate of just above 50%. The next most common response was accepting these utterances, closely followed by the choice of the medium rating. The older group mostly rejected ungrammatical *estar*, but at a greater rate than younger bilinguals, then gave a medium rating, and acceptance was the least common response. There was no statistical significance between the B_{young} and B_{old} response rates with ungrammatical *estar*.

For ungrammatical *ser*, younger bilinguals accepted ungrammatical *ser* + adjectival passives at the greatest rate, hovering just below chance, followed by the medium, and rejected these utterances last. The older bilinguals gave a medium rating the most frequently, and then accepted these utterances which was closely followed by their rejection. No statistical significance was shown between the younger and older bilingual

groups concerning their response to ungrammatical *ser*, though there was a decrease in the rate of acceptance from younger to older.

Bilingual results from the Strawberry Task did not differ between age groups, although the patterns of response were different for both ungrammatical *ser* and *estar*: Younger bilinguals were most likely first to reject ungrammatical *estar* but their second most common response was to accept it, whereas older bilinguals were most likely to reject ungrammatical *ser* (like the younger bilinguals), but their second most common response was to give a medium rating to these responses. For ungrammatical *ser*: younger bilinguals most commonly accepted these utterances, while the older group predominantly gave a medium rating.

The Strawberry Task did not show robust age differences based on participant acceptability of the copulas, but it did demonstrate a more fine-grained judgment of ungrammatical uses of the copulas, especially where ungrammatical *ser* was concerned. Bilingual participants considered *ser* + adjectival passive as grammatical more so than *estar* + DP; this was also seen with monolingual participants, however there were greater rates of acceptance with bilinguals than with monolinguals.

6.3.2 RQ2: Discussion

In response to RQ 2, monolingual participants demonstrate an emerging development of adult-like acceptability judgments with *ser* and *estar* with their associated, canonical predicates. Findings from the Strawberry Task help support results from the Cartoon Task: from the earliest age of testing, monolingual participants demonstrate that grammatical and ungrammatical copula + predicates are different from

each other. However, the three-point judgment task emphasizes that monolingual participants still do not have an adult-like judgment of the copulas because they still have a high rate of tolerance of ungrammatical *ser* with adjectival passives.

The bilingual data also suggests that there is a developmental trajectory regarding *ser*: there was a statistically significant difference in the acceptance of *ser* + DP in the Cartoon Task between the younger and older bilingual groups. The increased rejection and use of the medium rating of ungrammatical *estar* + DP between younger and older bilinguals indicates an increased sensitivity to which copula is required for the DP predicate. Concerning *estar*, there was an increase in the use of the medium rating for ungrammatical *ser* + adjectival passives in the Strawberry Task. This indicates that older participants are sensitive to this structure, either allowing for flexible *ser* with adjectival complements or not quite rejecting the predicate with the copula. Like the Cartoon Task, the results for ungrammatical *ser* in the Strawberry Task indicate that bilinguals find ungrammatical *ser* + adjectival passives more tolerable than ungrammatical *estar* with DPs.

6.3.2.1 Age and the copulas

There are few studies on the acquisition of *ser* and *estar* that specifically focus on age as a contributing factor. Production data from two Spanish-English bilingual brothers (between the ages of 1;6 and 5;11) growing up in California shows that speakers have a relatively low-error rate overall (Silva-Corvalán, 2014). The author found that the types of errors her participants produced were in line with those from monolingual production data (Sera, 1992; Holtheuer, 2009). Silva-Corvalán did note a higher frequency of the use

of *estar* by the youngest brother, which she attributed to his lower level of exposure to Spanish overall. Silva-Corvalán suggests that input, speaker output, and order in a sibling pair could be contributing factors to non-target uses of Spanish, however she discounts the possible influence from English itself. Experimental work from Requena et al. (2015), Alonqueo and Soto (2011), and Alonqueo (2013) have all found that older children in their experiments produce more adult-like interpretations of either *ser* or *estar*. It is important to note however that the children from each experiment represented different age ranges. The youngest participants were in Requena et al., where they found that at 4;6, Spanish-speaking children were associating *estar* with temporary properties and *ser* with permanent properties when either was paired with a GA. Alonqueo and Soto (2011) and Alonqueo (2013) found that children around 9-11 years of age had the most adult-like interpretation of properties distinguishing *ser* from *estar*, and that children younger than 9 years of age in their study did not.

The data in this study gives equivocal support concerning the role that age may play in the acceptability of the copulas in obligatory contexts. Among monolinguals, age does not seem to affect judgments when the speaker has a choice between a grammatical copula and an ungrammatical copula (the Cartoon Task). However, when a child has to judge one ungrammatical instance of a copula on a scale (the Strawberry Task) there is more support for the role of age: here, monolinguals show allowance for ungrammatical instances of the copulas. This tendency decreases significantly for the use of ungrammatical *estar* from younger to older children, but not for ungrammatical *ser*. The data from this dissertation supports previous claims that monolingual children have an early understanding of the difference between *ser* and *estar*. However, non-adult like

acceptability judgments are shown to extend through childhood, especially with *estar*, thus age is likely to play a role.

Bilingual data shows that speakers do have an early distinction of the copulas, but that acceptability may be variable, especially with ungrammatical *ser* in *estar*-only contexts. Age was found to play a role in the judgment of grammatical *ser* in bilingual speakers: children increased in acceptance of *ser* within the age range studied here. This was not the case for grammatical *estar* in the same context: though children chose grammatical *estar* significantly above chance when tested, they also accepted *ser* to be an appropriate copula in these contexts. This did not change with age. When the speaker judged ungrammatical copulas on a scale, no age differences were seen.

Interestingly, the response pattern seen with bilingual children here has been shown with adults HS from the US in research by Valenzuela et al., 2015. In their study, adult HS of Spanish had a greater allowance for ungrammatical copulas (both *ser* and *estar* with obligatory complements) What can be understood from this is that not only do bilingual participants have a different pattern of acceptability of copulas compared to monolingual speakers in their same age range, but that this extends into adulthood.

6.4 Task type and maturation effects

To conclude the present section on age effects and the acceptability of *ser* and *estar*, I will address the possible influence of task type and overall cognitive maturation as it applies to the study. The data here suggest that the type of task used may determine the degree of acceptability a speaker allows. Crain and Thornton (1999) highlight the usefulness of truth value judgment tasks (like the Strawberry Task) in gaining insight into

a child's perspective of grammar. Truth value judgments provide a more nuanced perspective on speaker acceptability: not only do these types of tasks help determine how speakers entertain the grammar-based options presented, but also whether (or not) they assign similar (or not) judgments as their child counterparts and/ or adult controls (Crain and Thornton, 1999). In that vein, I highlight not only the significance of the results from the Strawberry Task but also the pattern of results from each participant group. The adult control participants in this study did not employ the 'medium' option in the Strawberry Task. The experimental sentences were rejected, and the fillers were accepted, which is how the task was designed. Both monolingual and bilingual participants did not assign this same pattern of judgment to the experimental sentences with *ser* and *estar* in the Strawberry Task, but similarly accepted the grammatically correct fillers. In Katsos and Bishop's (2011) study of pragmatic felicitousness with scalar implicatures, the three-point scale was used. In that study, they found that young children were aware of underinformativess but also more tolerant of infelicity overall. In the present study, the age range under investigation did provide evidence of age-related differences, and maturation effects are present when comparing the child participants to the adults. The following section addresses the external factor of early, initial exposure to Spanish and its potential effect on judgments of the copulas among bilingual speakers.

6.5 RQ 3: The contribution of age of initial exposure to bilingual language acquisition

The third research question asked to what extent initial age of exposure played a role in bilingual participant's comprehension of the copulas. I hypothesized that age of

exposure among bilingual participants would play a role in the acceptability of *ser* and *estar*. Sequential bilinguals are categorized as children who were primarily exposed to only Spanish between (0 and 3;0) years of age. Simultaneous bilinguals are those who were exposed to both Spanish and English since birth. I predicted that sequential bilinguals would be more likely to associate the copulas to their canonical predicates than simultaneous bilinguals given that their overall input and exposure to Spanish was thought to be greater at an earlier point in their lives.

6.5.1 RQ3: Summary of age of exposure findings

Results from the Cartoon Task showed differences in the acceptance of *ser* and *estar* with canonical predicates between all simultaneous and sequential bilinguals. No statistical significance was found overall, though sequential participants slightly outperformed simultaneous with grammatical *estar*. For the Strawberry Task, statistical significance was found between the rates of rejection of ungrammatical *ser*. Though sequential bilinguals have essentially split their judgments across the three ratings, simultaneous bilinguals seem more likely to accept ungrammatical *ser* in *estar* cases. Though results from the Cartoon Task were not significant, the statistical difference in the rate of rejection of ungrammatical *ser* in the Strawberry Task may indicate that sequential bilinguals have greater sensitivity to grammatical *estar* compared to simultaneous speakers.

Concerning overall language exposure (Tables 8 and 9, Chapter 4.3.1.3) simultaneous and sequential speakers in the Cartoon Task had similar rates of reported mother to child-directed speech. However sequential speakers were reported to speak

more Spanish with their mothers. In the Strawberry Task, where there were fewer participants, this difference is less pronounced, and rates of both mother-directed speech and child-directed were very similar among simultaneous and sequential speakers.

6.5.2 The acquisition of *ser* and *estar* – RQ 3

In response to RQ 3, whether initial age of exposure played a role in a bilingual participant's comprehension of the copulas, the present analysis does not show a robust significant difference between simultaneous and sequential bilinguals. However, the significant difference in rates of rejection of ungrammatical *ser* may point to an increased development of acceptability judgments of these structures among sequential bilinguals. This finding is interpreted with caution, particularly considering the three-way split of responses by sequential bilinguals in that category. Though they 'outperform' simultaneous bilinguals concerning rates of rejection of ungrammatical *ser*, they also showed that they are actively considering ungrammatical *ser* to be tolerable with the use of the medium rating. Additional consideration is given to the reported speech patterns between children and parents. In the Strawberry Task, there was not a large reported difference between simultaneous and sequential speakers

6.5.3 RQ 3: Discussion

Previous research in bilingual language acquisition has investigated age of exposure effects on bilingual language development. More recently research has focused on potential age effects in bilingual language acquisition (work from Flores et al., 2016; Matohardjono, Phillips, Madsen, and Schwartz, 2017; Montrul, 2002; Montrul and

Sanchez Walker, 2013). Montrul, 2002 found that adult heritage speakers who grew up as simultaneous and early sequential bilinguals (exposure to English at age 4) did differ significantly from monolingual speakers regarding tense/aspect morphology. Individual differences showed that simultaneous bilinguals may have a lower performance than sequential bilinguals, however this was not statistically significant in Montrul's study. Her conclusion was that early bilingualism, would have an outcome similar to monolingual, but that comparing simultaneous vs. sequential acquisition may not yield robustly different effects from each other. Montrul and Sánchez Walker (2013) investigated DOM omission among bilingual children (ranging from 6-17;0) in age. They found that initial age of acquisition did not play a significant role in DOM omission rates or accuracy with DOM. Both simultaneous and sequential bilingual children performed significantly from monolingual speakers, and there was a high rate of individual differences among the bilingual groups, similar to what is seen in this study. Most recently, Martohardjono et al., 2017 found no significant differences between early and late Spanish-English bilingual participants (tested in adulthood) regarding their recognition of grammatical anomalies in Spanish. Increased use and overall exposure to English yielded significant effects across all groups. This indicates that a later-acquired L2 may affect Spanish language acquisition overall.

Flores et al. (2016) found that amount of language exposure at home, rather than initial age of exposure, had a greater effect on bilingual acquisition of the subjunctive in Portuguese. Children in this study ranged from ages 6-16;0 and initially were all only exposed to Portuguese, and then were exposed to German beginning at around age 4;0. Those who were exposed to the most Portuguese at home were likely to perform better on

the tasks measuring interpretation of the subjunctive (this aligns with studies on the connection of input and acquisition in bilingual contexts (see Austin, 2009 and Unsworth, 2014 mentioned in section 3.4.1).

Previous research on age of acquisition effects in bilingual language development has yielded differing results. What can be distilled from some of the more recent studies, is that the property in question could determine the outcome of effect seen across bilingual speaker groups. My present research did not reveal robust findings of differences between simultaneous and sequential speakers; however, individual differences are present. A significant finding from the Strawberry Task indicated that sequential bilinguals might have a greater sensitivity to ungrammatical uses of *ser*, compared to simultaneous bilinguals. These findings need to be interpreted with caution: the sequential results from the Strawberry Task analysis indicate that participants were in a three-way split between rejection, medium, and acceptance responses. The language background questionnaire also reported similar rates of mother and child-direct speech between the simultaneous and sequential bilingual participants in this study. Though initial age of exposure to English is different between the two groups, this does not largely affect their acceptability of the copulas in Spanish. While future research may yield different findings with increased participant numbers, the current findings are inconclusive regarding a distinction between simultaneous and sequential bilinguals and their acceptability of *ser* and *estar*.

Concerning the present data, the focus should be shifted from the effect of initial age of exposure of the bilinguals to general exposure and use of English overall. The results from the language background questionnaire from the Cartoon Task showed

differences among the two groups, however their acceptability was similar. In the Strawberry Task, the two groups had a different pattern of acceptability, despite their similar rates of exposure to English and Spanish on the language background questionnaire. Overall exposure to English, as opposed to initial age of exposure, will be considered as a contributing factor to bilingual patterns of language development below. Future investigation in language exposure and use may provide more insight regarding copula use among bilinguals, as opposed to initial age of onset. Based on the results of this study, there is reason to further investigate the effect of the language environment, as well as language activation concerning speaker input and output as far as it relates to bilingual language acquisition.

6.6 General Discussion

The data presented in this dissertation shows us that monolingual and bilingual speakers have divergent judgments of *ser* and *estar*. In both groups, *ser* has shown to be acquired and accepted readily with its canonical DP predicate. *Estar* has shown to be acquired and used with its adjectival passive predicate, however among both monolingual and bilingual speakers, *ser* was frequently judged to be acceptable in canonical *estar* contexts. This has implications for both the theoretical structure of the copulas as well as development: *ser* is likely acquired first among Spanish speakers, and *estar* emerges later. In the case of bilingual speakers however, evidence in adult HS from the US indicates that the use of *estar*, and even possibly *ser* may continue to be variable beyond childhood (Valenzuela, et al., 2015). Evidence from adult speakers of Spanish in this study does not indicate the same type of variability to be expected for monolingual

children. In the following sections, I will discuss the theoretical and developmental implications of the data found in this study.

6.6.1 Implications for theoretical claims for *ser* and *estar*

To remind the reader, I offered a review of verb and predicate-based analyses of the distinction between *ser* and *estar* in Chapter 2. These analyses were divided into “partial aspectual” (Schmitt (1992, 2005), Schmitt and Miller (2007), and Camacho (2012a and 2012b), “full aspectual” (Lujan (1981), Roby (2009) and “predicate focused” distinctions respectively. In this section, I review the results from the data as they apply to the theoretical structure of the copulas.

In the Cartoon Task, children were able to distinguish between predications with *ser* and *estar* on a syntactic basis and pair either with the appropriate copula when they had a choice between a grammatical and an ungrammatical option. Here, both monolingual and bilingual children rarely accepted *estar* + DP constructions, even though they heard it in the task, (refer to the *ser* column for both B and M groups in Table 11). On the other hand, bilingual children demonstrated the more “coercible” nature of *ser*. This means that although the phrases themselves are ungrammatical in the contexts that were presented in the task, *ser* is more readily extendible to *estar* contexts than vice-versa. Ultimately, this supports a theoretical analysis of *ser* as unmarked and *estar* as marked for aspect. The data from bilingual children supported this analysis of *ser* in the Cartoon Task, as did data from bilingual and monolingual children in the Strawberry Task by accepting *ser* in *estar*-only contexts (Table 11 and Tables 18-19). In the Cartoon Task, monolingual children showed slightly more variation in their *estar* responses

compared to their *ser* responses, (they accepted *ser* in *estar* cases occasionally) but overall judged *estar* to go with adjectival passives more frequently. This pattern was more pronounced in the Strawberry Task among monolingual children than the bilinguals. Adults did not demonstrate this behavior with either copula in the Cartoon Task. Monolingual children show adult-like judgements of *ser* before *estar*, and their acceptability of *estar* may fluctuate for a time during language development. Monolingual children show that their acceptability of both copulas is stable by age (4;6) in the Cartoon Task. In the case of bilingual children, higher instances of *ser* were accepted in *estar* cases in both tasks. This result could reflect development in progress, but also fluctuations in the activation of aspectual features, which will be discussed further below.

The data from both the Cartoon Task and the Strawberry Task give insight into the structure of the copulas in Spanish. What is clear from the data, is that *ser* and *estar* are semantically distinct. Additionally, there seems to be far less tolerance for *estar* + DPs than there is for *ser* + adjectival passives by both groups of speakers. A theoretical analysis that claims that *ser* and *estar* are the output of their predicates, or that *ser* and *estar* are only compatible with either IL or SL readings is not supported by the data provided here. If it were the case that the copulas were transparent or only formed SL/ IL predications, then it is unlikely that the asymmetrical overlap that is seen with the copula + predicate structures here would occur. That is, it is more likely for *ser* to fit into *estar* cases, even when it is ungrammatical. This data has implications for the theoretical structure of *ser* and *estar*. First, to remind the reader, the structures under question in this dissertation were not in complementary distribution. In several theoretical analyses,

researchers have argued for the structure of the copulas based on a complementary distribution of their predicates (i.e. their combination with stage-level and/ or individual level predicates (Fernandez-Leborans, 1999; Luján, 1981 and/or their combination with open-scale, gradable adjectives (Gumiel-Molina and Perez-Jiménez, 2012; Gumiel-Molina et al., 2015; Schmitt and Miller, 2007). In this study, the predicates that combined with *ser* were DPs with *ser* and closed-scale, absolute adjectives combined with *estar*. By investigating a non-complementary distribution of the copulas, we can better understand what children know about their use as well as how they judge the predicates that combine with either *ser* or *estar*. To my knowledge, this has not been investigated in previous literature.

In the literature review, I summarized several theoretical analyses of the copulas to better account for the structure of *ser* and *estar*. Previous theoretical work with individual and stage-level predicates assumes that it is the predicates themselves that are specified for *ser* or *estar*. Stage-level (SL) predicates combine only with *estar* while Individual-level (IL) predicates combine with *ser*. The argument for this relationship is based in syntax. An IL/SL split of *ser* and *estar* assumes the following: that the copulas are empty verbalizers, have no meaning of their own, and only differ in their selection restrictions; or that the copulas have separate semantic values and that they output IL/ or SL predication (See Carlson, 1977; Diesing 1990, 1992; Kratzer, 1989, 1995; Marín, 2009; Schmitt and Miller, 2007; Zagana, 2002). If we consider the copulas to be empty verbalizers, then that would imply that children need to acquire the appropriate event mapping for the predicate as well as the particular syntactic structure that brings either *ser* or *estar* together with an IL or SL predicate respectively (see Camacho 2012a and the

specifications above). In the second case, where *ser* and *estar* have separate semantic values and output IL/SL predicates, then appropriate event mapping would need to be acquired associated to either copula.

Gumiel Molina and Perez Jimenez (2012) and Gumiel Molina et al. (2015) analyzed *ser* and *estar* with adjectival predicates that distinguish the copula on the basis of their predications as well. However, these authors consider both copulas to be empty verbalizers (V_{ser} and V_{estar}) that are the spell-out reflexes of their predication. Additionally, they have aspectual and tense operators that are carried on (PredP). The spell-out of *estar* occurs when PredP includes a comparison class with stages, and *ser* is spelled out in all other cases. According to the analysis of Gumiel Molina, et al. the child would need to acquire the semantic restrictions specific to the predicates to determine the spell-out of either *ser* or *estar*.

While a predicate-based split of *ser* and *estar* helps to shed light on the nature of the copulas and how they can yield either a permanent (*ser*) or temporary (*estar*) reading, several authors have presented the counter-evidence to a predicate-based claim. They argue that the difference between the copulas is essentially aspectual (Camacho, 2012a; Fernandez-Leborans, 1999; Luján, 1981; Marin, 2009; Roby, 2009; Schmitt, 1992, 2005; Schmitt and Miller, 2007). An argument against *ser* and *estar* as transparent verbalizers was summarized based on arguments made by Schmitt and Miller (2007) and Camacho (2012a). There is a lack of complexity involved in an IL/SL argument: if *ser* is considered a spell out of an IL predication and *estar* the spell out of a SL predication, then *ser* would only output IL readings and *estar* would only output SL readings, which is not the case due to several exceptions (Camacho, 2012a). Though *estar* may not

systematically produce IL/SL arguments, it does seem to encode a ‘temporary’ vs. ‘permanent’ distinction. Schmitt and Miller (2007) argue that this is because *estar* is a state and aspectually marked, and therefore holds an implicature of *temporariness*. Additionally, it is not the case that aspectual features only appear on the copula without any effect from the predicate (**estar* + DP) (Camacho, 2012a), which runs counter to claims from both Luján (1981) and Roby (2009) who place aspectual feature only on the copulas themselves. To this end, I suggest that arguments that present the case for the lexical aspect of copular predications in Spanish are best suited to describe the difference between *ser/estar* (Camacho, 2012a; Lema, 1992; Luján, 1981; Schmitt, 1992; Schmitt, 2005; Schmitt and Miller, 2007; Valenzuela et al., 2015). In particular, I will review the implications that Valenzuela et al. (2015), Schmitt and Miller (2007) (stemming from Schmitt 1992 and 2005), and Camacho (2012a) present for the data in this study, which present *ser* and *estar* at the syntax-semantics interface.

The central components of a lexical-aspectual argument are as follows (Camacho, 2012a and Valenzuela et al., 2015): 1. *Estar* is considered a copulative auxiliary that has aspectual features and *ser* is a copula devoid of aspectual value. 2. The participial complements to the copulas may also contain aspectual content and check these features with the verb. 3. That the distinction between *ser* and *estar* is a complex one that involves the interaction between syntax, lexicon, semantics, and discourse information.

Schmitt and Miller (2007) argue (based on Schmitt 2005) that predications with *estar* are STATES, (STATE = containing a subinterval property (Smith, 1997)) and that *estar* itself is encoded with subevent STATE, which contributes to the VP head, asserting “that property x holds at all times t, and the predication is always temporally anchored.”

(p. 1913). Predications with *ser* do not refer to a specific time interval; therefore, these predications are independent of time. If an aspectual reading is to be derived from *ser* + predicate, then an aspectual operator (e.g., overt/covert adverb) needs to be added to modify the reading.

Camacho (2012a) also contends that *estar* carries a situational/lexical aspect and that *ser* remains unmarked. Instead of a subevent STATE contributing to the VP, Camacho argues that *estar* selects for a “progressive aspect projection.” This type of aspect specified by is not the same as Roby (2009) has argued (i.e. [+telic]), though it implies a bounded event (aka stage-level). Camacho (2012a) and Zagana (2013) argue that the aspectual projection of *estar* has a beginning boundary and is encoded for an uninterpretable prepositional feature [*uP*] with the value [INCH] (INCH=inchoative aspect which denotes the beginning of an event). *Ser* remains unmarked for this specification. The complement to *estar* is marked for [INCH] and [*uP*] needs to be checked on *estar*. Therefore, *estar* selects for boundaries (*abierto* (open), *cerrado* (closed), *lleno* (full), *vacío* (empty)), but not necessarily for changes of state, as is seen with *ser* (41a and b).

- (41) a. *La puerta estaba cerrada (por el guardia)*
 The door of the jail cell wa_{S_{estar}} closed (*by the guard).
 b. *La puerta fue cerrada (por el guardia).*
 The door of the jail cell wa_{S_{ser}} closed (by the guard). (Valenzuela et al., 2015)

The theoretical arguments from Camacho and Zagana account for the role of both the verb as well as the predicate in determining which copula is expressed. By accounting for the predicate, we can better understand why *estar* + DP expressions are not allowed in

Spanish and why *ser* would be more likely to be overgeneralized to adjectival passives. If the [+ perfective] features were only on the copula, then the expectation is that there would be no effect from the predicate (Roby, 2009). However, *estar* cannot allow DP as its complement (Camacho, 2012a). Evidence for *estar* as a marked copula, where *ser* is not, is seen from the data provided in this dissertation: overall, when ungrammatical *estar* + DP was present, it was not favored by participants, unlike ungrammatical *ser* + adjectival passive. *Ser* + adjectival passives (although ungrammatical) show the open, unmarked nature of *ser*, thus its flexibility¹⁷.

As Valenzuela et al. (2015) have pointed out, the acquisition of *ser* and *estar* involves an interaction of syntax (the choice of construction with either copula), semantics (the aspectual distinction), and the lexicon (the choice of copula)¹⁸. The interactions of these interfaces (syntax, semantics, and lexicon) are just one potential locus of complication when it comes to acquiring *ser* vs. *estar*. Monolingual participants have demonstrated this with the differing results that came from the Cartoon Task and Strawberry Task: a choice between grammatical and ungrammatical instances of the copula is accepted differently (Cartoon Task), compared to when an ungrammatical phrase with the copula is left isolated (Strawberry Task). In the case of the Strawberry Task, monolinguals showed us that the acquisition of aspectual feature specification of *estar*, and how it interacts with *ser*, is under development. For bilinguals, aspectual feature specification of *estar* and its interaction with *ser* is also under development. The additional factor of English language exposure must be considered for both simultaneous

¹⁷ Patterns of overgeneralization have been attested in other areas of Spanish grammar for both bilingual and monolingual speakers. Notable, masculine gender in Spanish is considered a ‘default marker’ (Cuza and Perez-Tattam, 2016; Montrul and Potowski, 2007; and Licerias et al. 2008).

¹⁸ They also specify pragmatics because they are dealing with generic vs. specific subjects (Valenzuela et al., 2015).

and sequential bilinguals, based on their similar pattern of acceptability. Both monolingual and bilingual judgment of *ser* and *estar* are discussed in terms of overall language development in the next section.

6.6.2 Implications for language development

To summarize, this study shows us that monolingual and bilingual speakers judge *ser* and *estar* differently in childhood. With both groups, *ser* + DP predicates are accepted more readily, and *estar* + adjectival passives are accepted with more caution. For monolingual participants, this discrepancy was found in the scalar judgment task, not the Cartoon Task. For bilingual participants, this pattern was seen in both tasks. As I addressed in the above section, the theoretical implication for this is that *ser* is unmarked for aspect, while *estar* is marked. Grammatically speaking, the task of the child is to understand this distinction as well as how the verb (marked or unmarked) interacts with its predicate. Both monolingual and bilingual children were shown not to have any difficulty in understanding the predicates, given the near-ceiling results of the proficiency and lexical selection task presented before the Cartoon Task and Strawberry Task. Thus, the issue is centered around the aspectual feature specification of copular verbs themselves and their ultimate interaction with the predicates.

For monolinguals, the developmental expectation is that they will eventually accept *ser* and *estar* as adult-dominant speakers of Spanish do, without flexibility. This study shows us that the acquisition of the copulas in childhood may take longer than was previously thought; even in obligatory contexts, monolingual children show a prolonged flexibility with one copula over the other. For bilingual speakers, the outcome of

development may not be the same, given additional external factors as well as shifts in both input and output of Spanish that may take place. Adult HS work with *ser* and *estar* in obligatory contexts has shown us that prolonged flexibility may take place in these speakers (Valenzuela et al., 2015). Developmental applications of the data found in this study are discussed in what follows.

In this study, I examined how external crosslinguistic effects influence bilinguals' judgments of *ser* and *estar*, specifically early onset of exposure to one or both language(s). This was investigated as a potential contributing source to lexical competition and/or crosslinguistic influence; however, I did not find conclusive evidence pointing to the importance of this factor. An extended acceptance of the use of *ser* in *estar* contexts was clear from the results (even though grammatical *estar* was still accepted at above-chance levels when paired with ungrammatical *ser* (in the Cartoon Task) in both simultaneous and sequential bilinguals). The structure of the copulas along with greater exposure to English may lend itself to variability in acceptability in bilinguals. I have already discussed the structure of the copulas, and in the following section, I offer a possible explanation for why the structure may contribute to the extended variability of *ser* and *estar* and what role the frequency of language input and output may play.

As reviewed in chapter 3, competing theories of bilingualism have speculated as to why differential outcomes occur in HS grammar. One line of thought argues that parts of HS grammar can be deemed 'incomplete' due to an interrupted process of acquisition (often when the child is of school age and English becomes the majority used language or due to insufficient input in the heritage language (Montrul, 2008; Polinsky, 2011). Silva-

Corvalán (2016) reinforces that incomplete acquisition has taken place in parts of the grammar of the two Spanish-English bilingual children (6;0) growing up in the US (also referenced in her and Montanari's 2008 and her 2014 work). She found similarities in the uses of overt subject pronouns, object clitic omission, and the TMA systems between the two children and 50 adult 2nd and 3rd generation bilinguals, compared to what had been reported for Spanish monolingual speakers, concluding that incomplete acquisition had taken place. This follows Polinsky's (2011) statement where incomplete acquisition can be considered likely if both a child and adult "deviate from the baseline in the same way" (Polinsky, 2011).

Another line of thought argues that both emerging and residual optionality in bilingualism is not due to end-state incompleteness, but rather to crosslinguistic influence and/or variability and frequency of input/output. Hulk and Müller (2000), Müller and Hulk (2001) as well as Sorace (2011) have discussed how internal domains of grammar can be responsible for grammatical optionality in the bilingual mind. Work by Putnam and Sánchez (2013) extends the role of internal domains to incorporate external effects as well¹⁹. The approach by Putnam and Sánchez (2013) was covered more in depth in Chapter 3.4 and is reconsidered here concerning the present data. To review, their work argues that lexical competition and crosslinguistic influence input may have an effect at either the lemma level, which involves the specification of syntactic and semantic features (Caramazza, 1997; Jiang 2000), and/ or at the lexeme level, which involves the morphological, phonological, and orthographic variants of a word (Caramazza, 1997; Jiang, 2000). In the context of the present work, a Spanish-English bilingual speaker is

¹⁹ Amaral and Roeper's Theories of Multiple Grammars (2013) has potential to be incorporated into this line of thought as well. Optionality is central to human language, triggered not only from multiple grammar sources but also external, sociolinguistic contexts as well.

tasked with acquiring the syntactic and semantic selectional features of the copulas in Spanish and English, along with the lexical items themselves. In the case of *ser* and *estar*, the lemma level represents what the child needs to acquire concerning the syntactic features associating each copula to its predicate as well as the aspectual distinction with *estar* (*estar* selects for boundaries). The lexeme level represents the use of either copula to represent the syntactic and semantic features. This is also in competition with English *be*, which does not require the divisional selection that *ser* and *estar* need. Specific findings from this dissertation support this proposal: some bilingual children may not have acquired the aspectual feature distinction of *estar* at the lemma-level. This is evidenced by the individual response patterns in both the Cartoon Task and the Strawberry Task where several participants accepted the majority of ungrammatical *ser* with adjectival passive constructions. Given the preference for these constructions, these children have not acquired the aspectual feature marking with *estar* but consider *ser* to be applicable. Discrepancies at the lexeme level are apparent among the children who accepted both ungrammatical *ser* with adjectival predicates and grammatical *estar* in these cases as well.

Essential to the Putnam and Sánchez (2013) argument is that during the course of both bilingual language acquisition and a bilingual's lifetime, the strength and activation of lexical items and the underlying grammatical components in the (L1/LA) may change. This is due to lexical competition and crosslinguistic influence (Putnam and Sánchez, 2013, see also the work outlined in Chapter 3.4.1 on the effects of crosslinguistic influence). As a bilingual speaker receives more input and produces more output in English the competition for copula selection becomes more extreme. The use of *ser* in

estar contexts may be a result of this competition. With greater exposure to English, the copula that requires additional selection restrictions may not only be the last to be acquired, but the last to be used and accepted overall.

Additionally, Sánchez (to appear) has created a schema to address how co-activation of grammatical features may affect their representation over the course of a bilingual's lifetime. Sánchez's schema (Figure 5) allows us to include these additional influences in bilingual grammars. Across childhood and the lifetime of the bilingual, the level of linguistic input may shift, causing acceptability and subsequent representation of the copulas to shift as well (both the lexeme and lemma levels). Per Sánchez, this is precisely why age of acquisition effects are difficult to isolate as the cause behind differential acceptability in bilingual grammars. As a system is constantly undergoing change due to fluctuation in frequency of both input and output, the age of initial onset in acquisition may not play as large a role as the current intake and use of the language.

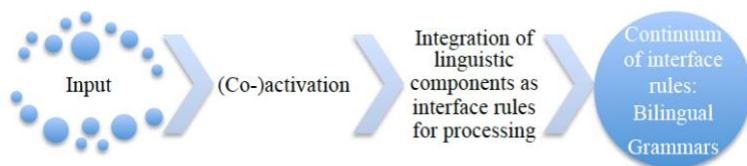


Figure 5. Sanchez (to appear) Schema of bilingual language development

6.7 General Remarks

In summary, the previous section of this chapter has discussed the implications of the data in both theoretical and acquisitional terms. The findings from this dissertation support a verb-based aspectual analysis of the copulas; *estar* and its predicates are marked for aspect and *ser* is not, which leave it open for the possibility to be

overgeneralized to *estar* contexts. This pattern of overgeneralization was seen in both monolingual and bilingual populations. Monolingual acceptability of *ser* in *estar* contexts became more adult-like with age, but this was not seen with bilinguals. These findings have interesting implications for patterns of acquisition among bilinguals. The differential acquisition of *ser* and *estar* among bilinguals may be due to variance in input/output by the speaker as well as crosslinguistic influence. Increased use of English may affect the formation of aspectual features associated with *estar* in Spanish and therefore increase the overgeneralization of *ser*, which is not marked for aspect. Over the course of the bilingual's lifetime, the underlying representation of the copulas as well as their use, may shift. The following chapter summarizes the findings presented in this dissertation and discusses directions for further research.

CHAPTER 7: CONCLUSION

7.1 Concluding Remarks

This dissertation set out to account for the acquisition of *ser* and *estar* in two obligatory contexts among both monolingual and bilingual children. The three research questions that were initially asked have been reviewed and discussed in light of the results. The results point to the following conclusions: monolingual and bilingual children have distinct patterns of acceptability of the copulas *ser* and *estar* when matched with DP and adjectival passive predicates, respectively.

Additionally, age plays a role in children's ability to judge the copulas. Among monolinguals, this was more apparent depending on the task used. When choosing between grammatical and ungrammatical *ser* and *estar* (Cartoon Task), even the youngest participants showed a ceiling-level acceptability of grammatical contexts, similar to the adult Spanish speakers. When a scalar judgment task was used, however, both younger and older monolinguals were more accepting of ungrammatical utterances of the copulas. These non-target responses decreased from younger to older participants in the study with the use of ungrammatical *estar*, but not as much for ungrammatical *ser*. Control items in both tasks showed that there was no task effect and no order effect was found. It is clear that monolingual children have an early understanding of the canonical contexts of *ser* and *estar*, but that non-adult acceptability may extend through childhood, especially in the formation of *estar*.

In the case of *ser*, age is a contributing factor to its acceptance among bilingual speakers. However, the role of age in the acquisition of *estar* is less clear at this time, as prolonged variability is predicted to occur extending into adulthood. In the Cartoon Task,

speakers chose between grammatical *ser* and ungrammatical *estar* and acceptability approached ceiling as the bilingual participants got older. This was not the case when children were asked to choose between grammatical *estar* and ungrammatical *ser*. In the scalar task, no age differences were seen, and prolonged acceptability of *ser* in *estar* contexts was evident.

I argue that overall frequent exposure and use of English may be the locus of extended variability in the use of the copulas for bilinguals. Age of initial exposure was considered as an additional factor that may play a role in speaker judgment for the bilingual participants. Previous research had not found clear evidence that age of initial exposure plays a role in bilinguals' interpretation of copulas. I did not find strong evidence to support a difference between simultaneous and sequential speakers in their acceptance of the copulas, based on the experimental data and language background questionnaire. The scalar task did indicate a significant difference in rejection rates of ungrammatical *ser*, in which sequential speakers rejected these cases more than simultaneous speakers.

7.2 Limitations and considerations for future work

In this section, the methodological and theoretical limitations that arose in this dissertation are addressed. Additional considerations for future research will be addressed as well.

Several methodological issues arose during data collection and analysis. As mentioned in chapter 4, the consent form and language background questionnaire were issued as a packet to the parents of bilingual children. The packets were given to the

children from their instructors and to be taken home to be filled out by parents or legal guardians. In the majority of cases, the consent would be signed, but the last pages of the language background questionnaire were left blank. I imagine this had to do with the length of the questionnaire itself and perhaps the nature of the questions, which ask for hourly estimates the child spent carrying out different activities in either language (homework, sports, watching T.V., for example. See Appendix C-D for the full questionnaire). Questionnaire completion was more successful when I sat down with parents individually and was able to explain the context of the questions as well as any questions the parents may have had.

Regarding methods and data analysis, the three-point scale used in the Strawberry Task (adapted from Katsos and Bishop, 2011) allowed for the assessment of monolingual and bilingual speaker sensitivity to ungrammatical utterances with the copulas. This scalar task was too cognitively demanding for the younger participants in the study, who were unable to complete it. This will be taken into future consideration when assessing copular judgments and young participants. While ‘tolerance’ was assessed with the task, the use of the ‘medium’ strawberry does not allow the researcher to understand if the participant was choosing a medium over a large strawberry or a medium over a small strawberry. For future consideration, it may be useful to incorporate a 5-point scale, in order to better assess whether or not the participant finds an utterance ‘more’ or ‘less’ grammatical.

Despite the limitations, in this study novel data were presented in terms of the acceptability of *ser* and *estar* in otherwise not-previously studied contexts. Future work will consider speaker acceptability judgments of English ‘be’, address the possibility of

crosslinguistic influence from English in bilingual language development. Additionally, future work will incorporate adult bilingual responses to similar contexts, in order to provide a representation of bilingual speaker acceptability, specific to these grammatical contexts. This will also better inform on the potential, continued variability that may occur as it concerns aspectual feature specification in bilingual speakers here in the US.

**Appendix A: Consent and Language Background for DR participants, English
version**

Dear Parent or guardian,

Your child is invited to participate in a research study on the acquisition of Spanish conducted by Anne Lingwall, a PhD student from the Bilingualism and Second Language Acquisition program at Rutgers University. The purpose of this research is to understand how young children acquire certain properties of language, and to examine what are the factors that intervene in said course of development.

The tasks used in this study are designed as a game. They are child-friendly, and children enjoy participating in them. There is no wrong answer, and children may decline to participate at any point. The overall objective is not to evaluate individual children, but rather to learn more about language acquisition and cognitive development by observing trends among children of the same age.

In the next page, you will find the **consent form** for this study, which will provide more details about the project. If you decide to allow your child to participate, please **read** over the form very carefully, **sign** it, and **return** it to your child's teacher.

If you have questions, please do not hesitate to contact me via e-mail (anne.lingwall@rutgers.edu) or directly at this number: (515) 710-5584.

Thank you so much for your time and consideration!

Sincerely,

Anne Lingwall

Your child is invited to participate in a research study on the acquisition of Spanish conducted by Anne Lingwall, a PhD student from Rutgers University. It is requested that you to read this form carefully, and ask any questions before agreeing to allow your children to participate in this study.

Objectives: The purpose of this study is to understand how young children acquire certain properties of language, and to examine what are the factors that intervene in this course of development.

Description of the project: If you agree to allow your child to take part in this study, you will be asked to:

- 1) sign the consent form and return it to your child's teacher
- 2) fill out a questionnaire regarding your child's language use and knowledge of other languages.

Provided that he/she is allowed to participate, your child will be interviewed only once for approximately 35 minutes. The individual meetings (with the presence of a teacher) will consist of a play session. He/she will take part in four tasks (approximately 10 minutes each), where he/she will be asked to interact with puppets, pictures and stories. In this study, your child's responses may be audio and video recorded. We are providing you with an additional section on which you may indicate your approval for your child to be audio and video recorded.

Risks and benefits: There are no foreseeable risks to participating in the study. Each child will receive a small toy, regardless of whether he or she withdraws from the study. While your child's linguistic skills are not likely to improve from participation in this research, his/her responses will provide us with valuable data about the process of language acquisition and development.

Confidentiality: All the records of this study will be kept private. It will be impossible to identify participants by name, as they will be assigned a random code. The consent forms will be stored in a secure place at all times. The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated, unless you have agreed otherwise.

Freedom of participation: Your decision to allow your child to participate or not to participate in the study will not affect your current or future relationship with Rutgers University nor with your child's school. If you decide to allow your child to participate, you have the right to withdraw your child from the study at any time. Additionally, if your child chooses not to participate in the study, or feels the need to leave during the interview, he/she will be given a small gift and the teacher will take him/her back to class.

If you have any questions about the research, you may contact me, Anne Lingwall at the following address: Carpender Hall, Rutgers University, 105 George Street, New

Brunswick, NJ 08901 (USA). My cell phone number is (515) 710-5584. You can also contact me by e-mail at: anne.lingwall@rutgers.edu.

For further information, you may also contact Dr. Liliana Sánchez at: Department of Spanish and Portuguese, Rutgers University, 105 George Street, New Brunswick, NJ, 08904, Tel: (+1)732-932-9412 ext. 18. E-mail: lsanchez@spanport.rutgers.edu.

Please don't hesitate to contact us with any questions you may have. If you have any questions about your rights as a research subject, please contact an IRB Administrator at the Rutgers University, Arts and Sciences IRB:

Institutional Review Board
Rutgers, The State University of New Jersey
Liberty Plaza / Suite 3200
335 George Street, 3rd Floor
New Brunswick, NJ 08901
Email: humansubjects@orsp.rutgers.edu
[\(732\)235-9806](tel:(732)235-9806)

You will be given a copy of this consent form for your records. If you allow your child to participate in this study, please sign and date below:

Child's name: _____ Parent's signature: _____

Date: _____

Principal Investigator Signature _____ Date: _____
(Anne Lingwall)

Additionally, if you consent to your child being **audio and/ or video recorded** as a part of this research study, please sign below. These recordings will be kept on password-protected equipment in a secured location. If any copies are recorded to DVD or CD, they will be kept safe in a locked file cabinet. Only Anne Lingwall and Dr. Liliana Sánchez will have access to them, and they will be securely maintained for the entirety of the publication and presentation of this research.

Parent's Signature _____ Date: _____

1. Do we have permission to record your child with audio?

Yes _____ No _____

2. Do we have permission to record your child with video?

Yes _____ No _____

3. Do we have your permission to interview your child individually?

Yes _____ No _____

4. Would you like to receive a copy of the results of the study? Yes _____ No _____

If you would like to receive a copy, please provide your e-mail address here:

**Appendix B: Consent and Language Background for DR participants, Spanish
version**

Estimado padre o tutor,

Su hijo ha sido invitado a participar en un estudio sobre la adquisición del español llevado a cabo por Anne Lingwall, estudiante de doctorado del programa de bilingüismo y adquisición de segundas lenguas de la Universidad de Rutgers (EE.UU.). El propósito de esta investigación es examinar la adquisición de ciertas propiedades semánticas y sintácticas del lenguaje en niños. Asimismo, se busca determinar cuáles son los factores que intervienen en dicho proceso de desarrollo.

Las tareas utilizadas en este estudio han sido diseñadas como si fueran juegos para niños, por lo tanto, no se considera que su hijo pueda dar una respuesta correcta o incorrecta. Asimismo, su hijo podrá abandonar la entrevista en cualquier momento y tiene pleno derecho a rehusar su participación si así lo desea. Las actividades de este estudio buscan ampliar nuestro conocimiento sobre la adquisición del lenguaje y el desarrollo cognitivo mediante la observación de tendencias comunes en niños de la misma edad.

En la siguiente página se le adjuntan tanto el consentimiento como detalles adicionales acerca del proyecto. Si accede a que su hijo participe en el estudio, le rogamos lea el formulario cuidadosamente, firme y rellene los datos de la parte inferior y lo entregue al maestro de su hijo.

Si tiene alguna pregunta, por favor no dude en ponerse en contacto conmigo a través de mi correo electrónico (anne.lingwall@rutgers.edu) o número de teléfono: (515) 710-5584 (móvil de EE.UU.).

Muchas gracias por su tiempo y consideración!

Atentamente,

Anne Lingwall

Su hijo ha sido invitado a participar en un estudio sobre la adquisición del español llevado a cabo por Anne Lingwall, estudiante de doctorado de la Universidad de Rutgers (EE.UU.). Le rogamos lea este formulario cuidadosamente y haga cualquier pregunta antes de autorizar que su hijo participe en este estudio.

Objetivos: El objetivo de este estudio es examinar la adquisición de ciertas propiedades lingüísticas en niños, y determinar cuáles son los factores que intervienen en este proceso de desarrollo.

Descripción del proyecto: Si autoriza que su hijo participe en este estudio, se le pedirá que:

- 1) firme el consentimiento y lo devuelva al maestro de su hijo.
- 2) rellene un cuestionario acerca de los hábitos lingüísticos de su hijo, incluyendo información sobre su dominio de otras lenguas y lo devuelva al maestro de su hijo.

Si accede a que su hijo sea entrevistado, se llevará a cabo una única sesión de aproximadamente 35 minutos. Estas reuniones (que contarán con la presencia de un maestro) son muy parecidas a una sesión de juegos. En primer lugar, se le invitará a participar en cuatro tareas (de aproximadamente 10 minutos cada una), donde se le pedirá que interactúe con títeres, dibujos y distintas historietas. Si usted lo considera adecuado, las respuestas de su hijo pueden ser grabadas en audio y video. Le rogamos que indique más adelante si está dispuesto a que esto se lleve a cabo.

Riesgos y beneficios: No se prevé ningún riesgo por participar en este estudio. Todo niño recibirá un pequeño obsequio, incluso si posteriormente decide no participar en el estudio. A pesar de que las destrezas lingüísticas de su hijo/a no mejoren por haber participado en este estudio, sus respuestas nos proporcionarán datos muy valiosos acerca del desarrollo cognitivo y de los procesos de adquisición de lenguas.

Confidencialidad: Todos los datos recogidos en este estudio serán confidenciales. No será posible identificar a los participantes por su nombre, ya que se les asignará un código aleatorio a todos ellos. Los formularios de consentimiento se guardarán en un lugar seguro en todo momento. Los investigadores y el comité de ética (*Institutional Review Board*) de la Universidad de Rutgers son los únicos que tendrán acceso a los datos, a menos que estos sean requeridos por ley. Si se llegara a publicar algún informe de este estudio, o sus resultados se presentaran en una conferencia, no se presentarán resultados que pueden ser vinculados a un individuo concreto.

Libertad de participación: La decisión de autorizar o no a su hijo para que participe en este estudio no afectará su relación (presente o futura) con la Universidad de Rutgers, ni tampoco con la escuela de su hijo. Si accede a que él/ella forme parte del estudio, le recordamos que puede cambiar su decisión en cualquier momento del proceso. Asimismo, si su hijo decide no participar en el estudio, o siente la necesidad de dejar la entrevista, se le otorgará un pequeño regalo y el profesor lo/la llevará de vuelta a clase.

Si tiene alguna pregunta acerca de la investigación puede ponerse en contacto conmigo, Anne Lingwall, en: Carpender Hall, Rutgers University, 105 George Street, New Brunswick, NJ 08901 (EE.UU.), por teléfono: (515) 710-5584, correo electrónico: anne.lingwall@rutgers.edu.

Para más información, también puede comunicarse con la Dra. Liliana Sánchez en: Departamento de español y portugués, Rutgers University, 105 George Street, New Brunswick, NJ, 08904, Tel: (+1) 732-932-9412 ext. 18. E-mail: lsanchez@spanport.rutgers.edu.

Por favor, no dude en ponerse en contacto con nosotros si le surge cualquier pregunta. Para cuestiones adicionales sobre los derechos de niños como sujetos de investigación, puede comunicarse con el administrador del IRB de la Universidad Rutgers en:

Institutional Review Board
Rutgers, The State University of New Jersey
Liberty Plaza / Suite 3200
335 George Street, 3rd Floor
New Brunswick, NJ 08901
Email: humansubjects@orsp.rutgers.edu
(732)235-9806

Una vez haya firmado, se le entregará una copia de este formulario de consentimiento. Si permite que su hijo participe en este estudio, le rogamos complete los datos que aparecen a continuación:

Nombre del niño: _____ **Firma padre/madre:**

Fecha: _____

Firma del Investigador Principal _____ **Fecha:**

(Anne Lingwall)

Asimismo, si usted autoriza que su hijo sea grabado en audio y/o video como parte de este estudio, le rogamos lo indique en el siguiente espacio. Estas grabaciones serán guardadas bajo llave y con protección electrónica. Si las copias se grabaran en un DVD o CD, se mantendrían guardadas en un archivador. Sólo Anne Lingwall y la Dra. Liliana Sánchez tendrán acceso a ellas durante el periodo en el que se lleve a cabo la investigación.

Firma del padre/madre: _____ **Fecha:**

1. ¿Tenemos permiso para grabar a su hijo con audio?

Si _____ No _____

2. ¿Tenemos permiso para grabar a su hijo con video?

Si _____ No _____

3. **¿Tenemos su permiso para entrevistar a su hijo individualmente?**

Sí _____ No _____

4. **¿Le gustaría recibir una copia de los resultados del estudio?** Si _____

No _____

Si desea recibir una copia, por favor escriba su e-mail aquí:

Participante # _____

Cuestionario
TODA LA INFORMACIÓN PROPORCIONADA ES CONFIDENCIAL

Instrucciones:

Por favor, conteste las siguientes preguntas sobre su hijo. En algunos casos se le pedirá que marque su respuesta, mientras que en otros casos deberá responder con una respuesta corta. Si hay alguna pregunta que no está relacionada con su hijo, le rogamos la deje en blanco.

Información sobre el niño:

1. Nombre del niño: _____
2. Fecha de nacimiento: _____
3. Lugar de nacimiento: _____
4. Su hijo siempre ha vivido allí? (Países y la duración de la estancia):

5. ¿Quién se hace cargo del niño? _____
6. ¿Qué idioma(s) hablan? _____

Información acerca de la familia:

7. Idiomas hablados por la madre / tutor: _____
8. Idiomas hablados por el padre / tutor: _____
9. Idiomas hablados entre los hermanos: _____
10. Idiomas hablados por los abuelos: _____

Información sobre el desarrollo lingüístico del niño:

11. Cuando su hijo empezó a hablar (marque la respuesta más precisa):
 - a. Sólo ha aprendido un idioma.
 - b. Ha adquirido más de un idioma (incluya cuáles):
 - c. Si su hijo habla otro idioma ¿cuál es su competencia general?

1 2 3 4 5

12. ¿Dónde usan/ escuchan los idiomas que habla su hijo? (Marque las respuestas que se correspondan mejor con su situación).

| Español | Otro idioma _____ | Otro idioma |
|---------------------------|---------------------------|--------------------|
| _____ Casa | _____ Casa | _____ Casa |
| _____ Niñera | _____ Niñera | _____ Niñera |
| _____ Escuela | _____ Escuela | _____ Escuela |
| _____ TV | _____ TV | _____ TV |
| _____ Libros | _____ Libros | _____ Libros |
| _____ Otros (especifique) | _____ otros (especifique) | _____ otros |
| (especifique) | | |

13. Si tuviera que valorar la capacidad de su hijo para hablar español, que diría?

_____ lo habla como un nativo.

_____ lo habla con gran fluidez.

_____ tiene dificultades para hablarlo.

_____ apenas puede hablarlo.

14. Si tuviera que valorar la capacidad del niño para entender español, qué diría?

_____ lo entiende como un nativo.

_____ lo entiende con gran fluidez.

_____ tiene dificultades para entenderlo.

_____ apenas puede entenderlo.

Appendix C: Consent and Language Background for US participants, English

Dear Parent or guardian,

Your child is invited to participate in a research study on the acquisition of Spanish conducted by Anne Lingwall, a PhD student from the Bilingualism and Second Language Acquisition program at Rutgers University. The purpose of this research is to understand how young children acquire certain properties of language, and to examine what are the factors that intervene in said course of development.

The tasks used in this study are designed as a game. They are child-friendly, and children enjoy participating in them. There is no wrong answer, and children may decline to participate at any point. The overall objective is not to evaluate individual children, but rather to learn more about language acquisition and cognitive development by observing trends among children of the same age.

In the next page, you will find the consent form for this study, which will provide more details about the project. If you decide to allow your child to participate, please read over the form very carefully, sign it, and return it to your child's teacher. **Only pages 4-11 need to be handed in.**

If you have questions, please do not hesitate to contact me via e-mail (anne.lingwall@rutgers.edu) or directly at this number:

Thank you so much for your time and consideration!

Sincerely,

Anne Lingwall

CONSENT: INFORMATION

Your child is invited to participate in a research study on the acquisition of Spanish conducted by Anne Lingwall, a PhD student from Rutgers University. It is requested that you to read this form carefully, and ask any questions before agreeing to allow your children to participate in this study.

Objectives: The purpose of this study is to understand how young children acquire certain properties of language, and to examine what are the factors that intervene in this course of development.

Description of the project: If you agree to allow your child to take part in this study, you will be asked to:

- 1) sign the consent form and return it to your child's teacher
- 2) fill out a questionnaire regarding your child's language use and knowledge of other languages.

Provided that he/she is allowed to participate, your child will be interviewed only once for approximately 35 minutes. The individual meetings (with the presence of a teacher) will consist of a play session. He/she will take part in four tasks (approximately 10 minutes each), where he/she will be asked to interact with puppets, pictures and stories. In this study, your child's responses may be audio and video recorded. We are providing you with an additional section on which you may indicate your approval for your child to be audio and video recorded.

Risks and benefits: There are no foreseeable risks to participating in the study. Each child will receive a small toy, regardless of whether he or she withdraws from the study. While your child's linguistic skills are not likely to improve from participation in this research, his/her responses will provide us with valuable data about the process of language acquisition and development.

Confidentiality: All the records of this study will be kept private. It will be impossible to identify participants by name, as they will be assigned a random code. The consent forms will be stored in a secure place at all times. The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated, unless you have agreed otherwise.

Freedom of participation: Your decision to allow your child to participate or not to participate in the study will not affect your current or future relationship with Rutgers University nor with your child's school. If you decide to allow your child to participate, you have the right to withdraw your child from the study at any time. Additionally, if your child chooses not to participate in the study, or feels the need to leave during the interview, he/she will be given a small gift and the teacher will take him/her back to class.

If you have any questions about the research, you may contact me, Anne Lingwall at the following address: Carpender Hall, Rutgers University, 105 George Street, New

Brunswick, NJ 08901 (USA). My cell phone number is (515) 710-5584. You can also contact me by e-mail at: anne.lingwall@rutgers.edu.

For further information, you may also contact Dr. Liliana Sánchez at: Department of Spanish and Portuguese, Rutgers University, 105 George Street, New Brunswick, NJ, 08904, Tel: (+1)732-932-9412 ext. 18. E-mail: lsanchez@spanport.rutgers.edu.

Please don't hesitate to contact us with any questions you may have. If you have any questions about your rights as a research subject, please contact an IRB Administrator at the Rutgers University, Arts and Sciences IRB:

Institutional Review Board
Rutgers, The State University of New Jersey
Liberty Plaza / Suite 3200
335 George Street, 3rd Floor
New Brunswick, NJ 08901
Email: humansubjects@orsp.rutgers.edu
[\(732\)235-9806](tel:(732)235-9806)

CONSENT FORM: TO RETURN TO TEACHER

You will be given a copy of this consent form for your records. If you allow your child to participate in this study, please complete the following:

Child's name: _____ Parent's signature: _____

Date: _____

Principal Investigator Signature _____ Date: _____
(Anne Lingwall)

Additionally, if you consent to your child being **audio and/ or video recorded** as a part of this research study, please sign below. These recordings will be kept on password-protected equipment in a secured location. If any copies are recorded to DVD or CD, they will be kept safe in a locked file cabinet. Only Anne Lingwall and Dr. Liliana Sánchez will have access to them, and they will be securely maintained for the entirety of the publication and presentation of this research.

Parent's Signature _____ Date: _____

1. Do we have permission to record your child with audio?

Yes _____ No _____

2. Do we have permission to record your child with video?

Yes _____ No _____

3. Do we have your permission to interview your child individually?

Yes _____ No _____

4. Would you like to receive a copy of the results of the study? Yes _____

No _____

If you would like to receive a copy, please provide your e-mail address here:

Participant # _____

QUESTIONNAIRE: TO RETURN TO TEACHER
ALL OF THE PROVIDED INFORMATION IS CONFIDENTIAL.

Instructions:

Please answer the following questions about your child. In some cases you may be asked to circle your response, while in other cases you may respond with a short answer. If there are questions that do not pertain to your child, please leave them blank.

About the Child

Name _____

Gender _____

Place of birth _____

Date of birth _____

Date of arrival in US (if not born here) _____

Language(s) spoken in the home of the child _____

At what age did your child start receiving regular exposure to English?

When child was:

- ☐ 0-1 year old
- ☐ 1-2 years old
- ☐ 2-3 years old
- ☐ 3-4 years old
- ☐ 4-5 years old
- ☐ 5-6 years old

Where did your child start receiving regular exposure to English for the first time?

- ☐ at home
- ☐ in a playgroup
- ☐ at preschool
- ☐ at primary school
- ☐ somewhere else: _____

About the Parents

Country of origin (Mother) _____

(Father) _____

Date of arrival in US (Mother) _____

(Father) _____

How well do you speak English?

Mother

- ☐ not at all
- ☐ not well
- ☐ pretty well
- ☐ very well

Father

- ☐ not at all
- ☐ not well
- ☐ pretty well
- ☐ very well

What language(s) do you speak with the child?

| MOTHER | | |
|---|---|---|
| Home Language | English | 3rd language (only if there is) |
| Always Usually Half the time Rarely Never | Always Usually Half the time Rarely Never | Always Usually Half the time Rarely Never |

| FATHER | | |
|---|---|---|
| Home Language | English | 3rd language (only if there is) |
| Always Usually Half the time Rarely Never | Always Usually Half the time Rarely Never | Always Usually Half the time Rarely Never |

What language(s) does the child speak to you?

| Child to MOTHER | | |
|---|---|---|
| Home Language | English | 3rd language (only if there is) |
| Always Usually Half the time Rarely Never | Always Usually Half the time Rarely Never | Always Usually Half the time Rarely Never |

| Child to FATHER | | |
|---|---|---|
| Home Language | English | 3rd language (only if there is) |
| Always Usually Half the time Rarely Never | Always Usually Half the time Rarely Never | Always Usually Half the time Rarely Never |

When mother and father are together with the child, who speaks most to the child?

- ☐ Mother
- ☐ Father
- ☐ Both an equal amount

Other Members in the House

Does your child have sisters or brothers? Yes No

If yes, Name of sibling 1 _____ Age _____

Name of sibling 2 _____ Age _____

Name of sibling 3 _____ Age _____

Name of sibling 4 _____ Age _____

Name of sibling 5 _____ Age _____

What language(s) do the siblings speak with the child? _____

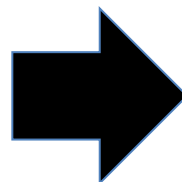
Besides the parents and siblings, does another adult look after your child (e.g. nanny, grandmother, aunt)?

Yes No

If yes, what is the relation of this adult to the child? _____

What language(s) does this adult speak to the child? _____

What language(s) does the child speak to this adult? _____



Please fill in the information relating to this other adult in the “other” column, in the tables below!

Average Day

Please describe who spends time with the child on an average day during the week?

Please check the relevant boxes. If more than one person is with the child at the same time, circle the check to show who is interacting more with the

| | Mother | Father | Siblings | School | Other adult (specify person) _____ |
|-------------------|--------|--------|----------|--------|--|
| 7 am – 8 am | | | | | |
| 8 am – 9 am | | | | | |
| 9 am – 3 pm | | | | | |
| 3 pm – 4 pm | | | | | |
| 4 pm – 5 pm | | | | | |
| 5 pm – 6 pm | | | | | |
| 6 pm – 7 pm | | | | | |
| 7 pm – bedtime | | | | | |

Please describe who spends time with the child on an average day during the weekend?

Please check the relevant boxes. If more than one person is with the child at the same time, circle the check to show who is interacting more with the

| | Mother | Father | Siblings | Other adult (Specify person) _____ |
|---------------|--------|--------|----------|---|
| 7 am – 8 am | | | | |
| 8 am – 9 am | | | | |
| 9 am – 3 pm | | | | |
| 3 pm – 4 pm | | | | |
| 4 pm – 5 pm | | | | |
| 5 pm – 6 pm | | | | |
| 6 pm – 7 pm | | | | |
| 7 pm –bedtime | | | | |

How many weeks per year is your child on vacation from school? ____

How many weeks per year does the child spend in the family's country of origin? ____

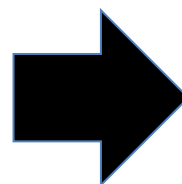
How often does your child speak English during vacation time?

- ☐ Always
- ☐ Usually
- ☐ Half the time
- ☐ Rarely
- ☐ Never

Please describe who spends time with the child on an average day **during vacation time**?

Please check the relevant boxes. If more than one person is with the child at the same time, circle the check to show who is interacting more with the

| | Mother | Father | Siblings | Other adult (Specify person) |
|----------------|---------------|---------------|-----------------|---|
| 7 am – 8 am | | | | |
| 8 am – 9 am | | | | |
| 9 am – 3 pm | | | | |
| 3 pm – 4 pm | | | | |
| 4 pm – 5 pm | | | | |
| 5 pm – 6 pm | | | | |
| 6 pm – 7 pm | | | | |
| 7 pm – bedtime | | | | |



Other Activities

How often do you do activities with your child?

For instance: going to museums / going to the zoo / going to a movie / going to the swimming pool / etc.

- ☐ Often
- ☐ Regularly
- ☐ Sometimes
- ☐ Never

What activities does the child do each week in what language?

Please give the total NUMBER OF HOURS per week, e.g. 2 hours per week

Note: 'Reading with an adult' involves the times that a child is being read to by an adult, as well as the times that a child tries to read on their own under supervision of an adult.

| | HOME LANGUAGE | |
|-----------------------------------|-----------------------|------------------------|
| Activity | Monday- Friday | Saturday-Sunday |
| Reading with an adult | | |
| Using computer | | |
| Watching TV | | |
| Sports | | |
| Playing with friends / cousins | | |

| | ENGLISH | |
|-----------------------------------|-----------------------|------------------------|
| Activity | Monday- Friday | Saturday-Sunday |
| Reading with an adult | | |
| Using computer | | |
| Watching TV | | |
| Sports | | |
| Playing with friends / cousins | | |

Thank you for completing this questionnaire!

Appendix D: Consent and Language Background for US participants, Spanish

Estimado padre o tutor,

Su hijo ha sido invitado a participar en un estudio sobre la adquisición del español llevado a cabo por Anne Lingwall, estudiante de doctorado del programa de bilingüismo y adquisición de segundas lenguas de la Universidad de Rutgers (EE.UU.). El propósito de esta investigación es examinar la adquisición de ciertas propiedades semánticas y sintácticas del lenguaje en niños. Asimismo, se busca determinar cuáles son los factores que intervienen en dicho proceso de desarrollo.

Las tareas utilizadas en este estudio han sido diseñadas como si fueran juegos para niños, por lo tanto, no se considera que su hijo pueda dar una respuesta correcta o incorrecta. Asimismo, su hijo podrá abandonar la entrevista en cualquier momento y tiene pleno derecho a rehusar su participación si así lo desea. Las actividades de este estudio buscan ampliar nuestro conocimiento sobre la adquisición del lenguaje y el desarrollo cognitivo mediante la observación de tendencias comunes en niños de la misma edad.

En la siguiente página se le adjuntan tanto el consentimiento como detalles adicionales acerca del proyecto. Si accede a que su hijo participe en el estudio, le rogamos lea el formulario cuidadosamente, firme y rellene los datos de la parte inferior y lo entregue al maestro de su hijo. **Sólo debe entregar las paginas 4-11.**

Si tiene alguna pregunta, por favor no dude en ponerse en contacto conmigo a través de mi correo electrónico (anne.lingwall@rutgers.edu) o número de teléfono: (515) 710-5584 (móvil de EE.UU.).

Muchas gracias por su tiempo y consideración!

Atentamente,

Anne Lingwall

CONSENTIMIENTO: INFORMACIÓN

Su hijo ha sido invitado a participar en un estudio sobre la adquisición del español llevado a cabo por Anne Lingwall, estudiante de doctorado de la Universidad de Rutgers (EE.UU.). Le rogamos lea este formulario cuidadosamente y haga cualquier pregunta antes de autorizar que su hijo participe en este estudio.

Objetivos: El objetivo de este estudio es examinar la adquisición de ciertas propiedades lingüísticas en niños, y determinar cuáles son los factores que intervienen en este proceso de desarrollo.

Descripción del proyecto: Si autoriza que su hijo participe en este estudio, se le pedirá que:

- 1) firme el consentimiento y lo devuelva al maestro de su hijo.
- 2) rellene un cuestionario acerca de los hábitos lingüísticos de su hijo, incluyendo información sobre su dominio de otras lenguas y lo devuelva al maestro de su hijo.

Si accede a que su hijo sea entrevistado, se llevará a cabo una única sesión de aproximadamente 35 minutos. Estas reuniones (que contarán con la presencia de un maestro) son muy parecidas a una sesión de juegos. En primer lugar, se le invitará a participar en cuatro tareas (de aproximadamente 10 minutos cada una), donde se le pedirá que interactúe con títeres, dibujos y distintas historietas. Si usted lo considera adecuado, las respuestas de su hijo pueden ser grabadas en audio y video. Le rogamos que indique más adelante si está dispuesto a que esto se lleve a cabo.

Riesgos y beneficios: No se prevé ningún riesgo por participar en este estudio. Todo niño recibirá un pequeño obsequio, incluso si posteriormente decide no participar en el estudio. A pesar de que las destrezas lingüísticas de su hijo/a no mejoren por haber participado en este estudio, sus respuestas nos proporcionarán datos muy valiosos acerca del desarrollo cognitivo y de los procesos de adquisición de lenguas.

Confidencialidad: Todos los datos recogidos en este estudio serán confidenciales. No será posible identificar a los participantes por su nombre, ya que se les asignará un código aleatorio a todos ellos. Los formularios de consentimiento se guardarán en un lugar seguro en todo momento. Los investigadores y el comité de ética (*Institutional Review Board*) de la Universidad de Rutgers son los únicos que tendrán acceso a los datos, a menos que estos sean requeridos por ley. Si se llegara a publicar algún informe de este estudio, o sus resultados se presentaran en una conferencia, no se presentarán resultados que pueden ser vinculados a un individuo concreto.

Libertad de participación: La decisión de autorizar o no a su hijo para que participe en este estudio no afectará su relación (presente o futura) con la Universidad de Rutgers, ni tampoco con la escuela de su hijo. Si accede a que él/ella forme parte del estudio, le recordamos que puede cambiar su decisión en cualquier momento del proceso. Asimismo, si su hijo decide no participar en el estudio, o siente la necesidad de dejar la entrevista, se le otorgará un pequeño regalo y el profesor lo/la llevará de vuelta a clase.

Si tiene alguna pregunta acerca de la investigación puede ponerse en contacto conmigo, Anne Lingwall, en: Carpender Hall, Rutgers University, 105 George Street,

New Brunswick, NJ 08901 (EE.UU.), por teléfono: (515) 710-5584, correo electrónico: anne.lingwall@rutgers.edu.

Para más información, también puede comunicarse con la Dra. Liliana Sánchez en: Departamento de español y portugués, Rutgers University, 105 George Street, New Brunswick, NJ, 08904, Tel: (+1) 732-932-9412 ext. 18. E-mail: lsanchez@spanport.rutgers.edu.

Por favor, no dude en ponerse en contacto con nosotros si le surge cualquier pregunta. Para cuestiones adicionales sobre los derechos de niños como sujetos de investigación, puede comunicarse con el administrador del IRB de la Universidad Rutgers en:

Institutional Review Board
Rutgers, The State University of New Jersey
Liberty Plaza / Suite 3200
335 George Street, 3rd Floor
New Brunswick, NJ 08901
Email: humansubjects@orsp.rutgers.edu
[\(732\)235-9806](tel:(732)235-9806)

CONSENTIMIENTO: PARA ENTREGAR

Una vez haya firmado, se le entregará una copia de este formulario de consentimiento. Si permite que su hijo participe en este estudio, le rogamos complete los datos que aparecen a continuación:

Nombre del niño: _____

Firma padre/madre: _____

Fecha: _____

Firma del Investigador Principal _____ **Fecha:**

(Anne Lingwall)

Asimismo, si usted autoriza que su hijo sea grabado en audio y/o video como parte de este estudio, le rogamos lo indique en el siguiente espacio. Estas grabaciones serán guardadas bajo llave y con protección electrónica. Si las copias se grabaran en un DVD o CD, se mantendrían guardadas en un archivador. Sólo Anne Lingwall y la Dra. Liliana Sánchez tendrán acceso a ellas durante el periodo en el que se lleve a cabo la investigación.

Firma del padre/madre: _____ **Fecha:**

1. ¿Tenemos permiso para grabar a su hijo con audio?

Si _____ No _____

2. ¿Tenemos permiso para grabar a su hijo con video?

Si _____ No _____

3. ¿Tenemos su permiso para entrevistar a su hijo individualmente?

Sí _____ No _____

4. ¿Le gustaría recibir una copia de los resultados del estudio? Si _____

No _____

Si desea recibir una copia, por favor escriba su e-mail aquí:

Participante # _____

CUESTIONARIO: PARA ENTREGAR
TODA LA INFORMACIÓN PROPORCIONADA ES CONFIDENCIAL

Instrucciones:

Por favor, conteste las siguientes preguntas sobre su hijo. En algunos casos se le pedirá que marque su respuesta, mientras que en otros casos deberá responder con una respuesta corta. Si hay alguna pregunta que no está relacionada con su hijo, le rogamos la deje en blanco.

Información sobre el niño

Nombre del niño _____

Sexo _____

Lugar de nacimiento _____

Fecha de nacimiento _____

Fecha de llegada a los EEUU (si no nació aquí) _____

Idioma(s) hablado(s) en la casa del niño _____

¿A que edad empezó la exposición de su hijo al inglés de manera regular?

Cuando el niño tenía:

- ☐ 0-1 años de edad.
- ☐ 1-2 años de edad.
- ☐ 2-3 años de edad.
- ☐ 3-4 años de edad.
- ☐ 4-5 años de edad.
- ☐ 5-6 años de edad.

¿Dónde empezó la exposición de su hijo al inglés por primera vez?

- ☐ en casa
- ☐ en un grupo de juego de madres y niños
- ☐ en preescolar
- ☐ en la primaria
- ☐ otro sitio _____

Sobre los padres

País de origen (Madre) _____

(Padre) _____

Fecha de llegada en los EEUU (Madre) _____

(Padre) _____

¿Cómo de bien habla inglés?

Madre

- ☐ no puedo hablarlo
- ☐ tengo dificultades para hablarlo
- ☐ lo hablo con fluidez
- ☐ lo hablo como nativo

Padre

- ☐ no puedo hablarlo
- ☐ tengo dificultades para hablarlo
- ☐ lo hablo con fluidez
- ☐ lo hablo como nativo

¿Qué idioma(s) habla usted con el niño?

| MADRE | | |
|------------------|------------------|------------------------------------|
| Español | Inglés | Otro idioma (si aplica) |
| Siempre | Siempre | Siempre |
| Normalmente | Normalmente | Normalmente |
| Mitad del tiempo | Mitad del tiempo | Mitad del tiempo |
| Apenas | Apenas | Apenas |
| Nunca | Nunca | Nunca |

| PADRE | | |
|---|---|---|
| Español | Inglés | Otro idioma (si aplica) |
| Siempre Normalmente Mitad del tiempo Apenas Nunca | Siempre Normalmente Mitad del tiempo Apenas Nunca | Siempre Normalmente Mitad del tiempo Apenas Nunca |

¿En qué idioma(s) habla el niño con usted?

| Niño a MADRE | | |
|---|---|---|
| Español | Inglés | Otro idioma (si aplica) |
| Siempre Normalmente Mitad del tiempo Apenas Nunca | Siempre Normalmente Mitad del tiempo Apenas Nunca | Siempre Normalmente Mitad del tiempo Apenas Nunca |

| Niño a PADRE | | |
|---|---|---|
| Español | Inglés | Otro idioma (si aplica) |
| Siempre Normalmente Mitad del tiempo Apenas Nunca | Siempre Normalmente Mitad del tiempo Apenas Nunca | Siempre Normalmente Mitad del tiempo Apenas Nunca |

¿Cuándo los padres están juntos con el niño, quién habla más con el niño?

- ☐ Madre
- ☐ Padre
- ☐ Ambos, igual

Otros Miembros en la Casa

¿Tiene su niño hermanos/as? Sí No

Si ha marcado 'sí', Nombre del hermano/a 1 _____ Edad _____

Nombre del hermano/a 2 _____ Edad _____

Nombre del hermano/a 3 _____ Edad _____

Nombre del hermano/a 4 _____ Edad _____

Nombre del hermano/a 5 _____ Edad _____

¿Qué idiomas hablan los hermanos con el niño? _____

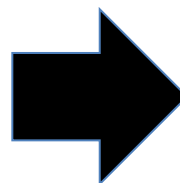
Además de los padres y los hermanos, hay algún otro adulto que cuide al niño? (ejemplo: niñera, abuela, tía)

Sí No

Si ha marcado 'sí', ¿cuál es la relación del adulto con el niño? _____

¿Qué idioma(s) habla este adulto con el niño? _____

¿En qué idioma(s) habla el niño al adulto? _____



Por favor, llene la información sobre este adulto en la columna ‘Otro’ en las siguientes tablas.

Un día normal

Por favor describa quién pasa tiempo con el niño en un día normal durante la semana.

Marque las opciones más adecuadas. Si hay más de una persona con el niño al mismo tiempo, haga un círculo sobre este símbolo que representa la persona que más interactúa con el niño.

| | Madre | Padre | Hermano(s) | Escuela | Otro adulto (especifica) |
|-----------------------|-------|-------|------------|---------|--------------------------|
| 7 am – 8 am | | | | | |
| 8 am – 9 am | | | | | |
| 9 am – 3 pm | | | | | |
| 3 pm – 4 pm | | | | | |
| 4 pm – 5 pm | | | | | |
| 5 pm – 6 pm | | | | | |
| 6 pm – 7 pm | | | | | |
| 7 pm – hora de dormir | | | | | |

Por favor describa quién pasa tiempo con el niño en un día normal durante el fin de semana.

Marque las opciones más adecuadas. Si hay más de una persona con el niño al mismo tiempo, haga un círculo sobre este símbolo que representa la persona que más interactúa con el niño.

| | Madre | Padre | Hermano(s) | Otro adulto (especifica) |
|-----------------------|-------|-------|------------|--------------------------|
| 7 am – 8 am | | | | |
| 8 am – 9 am | | | | |
| 9 am – 3 pm | | | | |
| 3 pm – 4 pm | | | | |
| 4 pm – 5 pm | | | | |
| 5 pm – 6 pm | | | | |
| 6 pm – 7 pm | | | | |
| 7 pm – hora de dormir | | | | |

¿Por cuántas semanas al año está el niño de vacaciones de la escuela? _____

¿Cuántas semanas al año pasa el niño en el país de origen de la familia? _____

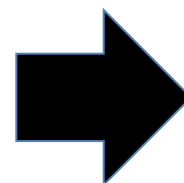
¿Con qué frecuencia habla su niño inglés durante las vacaciones?

- ☐ Siempre
- ☐ Normalmente
- ☐ Mitad del tiempo
- ☐ Apenas
- ☐ Nunca

Por favor describa quién pasa tiempo con el niño en un día normal **durante las vacaciones.**

Marque las opciones más adecuadas. Si hay más de una persona con el niño al mismo tiempo, haga un círculo sobre este símbolo que representa la persona que más interactúa con el niño.

| | Madre | Padre | Hermano(s) | Otro adulto (específica) |
|-----------------------|-------|-------|------------|-----------------------------|
| 7 am – 8 am | | | | |
| 8 am – 9 am | | | | |
| 9 am – 3 pm | | | | |
| 3 pm – 4 pm | | | | |
| 4 pm – 5 pm | | | | |
| 5 pm – 6 pm | | | | |
| 6 pm – 7 pm | | | | |
| 7 pm – hora de dormir | | | | |



Otras actividades

¿Con qué frecuencia hace usted actividades con su niño?

Ejemplo: ir al parque/ ir a la biblioteca/ ir a una película

- ☐ Frecuentemente
- ☐ A menudo
- ☐ A veces
- ☐ Nunca

¿Qué actividades hace el niño cada semana y en cuál idioma?

Por favor, completa la tabla con la cantidad de horas en la semana (ejemplo: 2 horas cada semana)

OJO: ‘Leer con un adulto’ incluye lo siguiente: cuando un adulto lee al niño y cuando el niño intenta a leer solo bajo la supervisión de un adulto

| | ESPAÑOL | |
|--------------------------------|-----------------------|-----------------------|
| Actividad | lunes- viernes | sábado-domingo |
| Leer con un adulto | | |
| Usar la computadora/teléfono | | |
| Mirar la televisión | | |
| Deportes | | |
| Pasar tiempo con amigos/primos | | |

| | INGLÉS | |
|--------------------------------|-----------------------|-----------------------|
| Actividad | lunes- viernes | sábado-domingo |
| Leer con un adulto | | |
| Usar la computadora/teléfono | | |
| Mirar la televisión | | |
| Deportes | | |
| Pasar tiempo con amigos/primos | | |

¡Gracias por completar este cuestionario!

Appendix E: Script LPT + BESA Randomized

“MUÉSTRAME CON EL DEDO...”

Aquí vamos a ver unos dibujitos y imágenes. Yo voy a preguntar dónde hay algunas cosas, y tu me vas a enseñarlas con el dedo. ¿Está bien contigo? Muéstrame el dedo... muy bien! Ok, ya vamos a empezar.

1. R: Muéstrame con el dedo...dónde la chica tiene las flores.
2. L: La cuchara sucia
3. R: La cuchara limpia
4. L: La vaca.
5. R: La playa.
6. R: Los chicos con el carro.
7. L: La gallina.
8. L: El parque.
9. L: La mesa con los panes.
10. R: La ventana abierta.
11. L: La ventana cerrada.
12. R: Dónde la familia come.
13. L: La biblioteca.
14. R: La cebra.
15. L: El vaso lleno.
16. R: El vaso vacío.
17. R: La puerta cerrada.
18. L: La puerta abierta.

- 19. R: Dónde los chicos nadan.
- 20. R: El supermercado.
- 21. L: El caballo.
- 22. R: Dónde ella camina con el perro.
- 23. L: La escuela.
- 24. R: El perro.
- 25. R: Dónde el lee el libro.
- 26. R: El plato limpio.
- 27. L: El plato sucio.
- 28. L: El gato.
- 29. R: El cine.
- 30. L: Dónde el perro tiene los zapatos.
- 31. L: La botella vacía.
- 32. R: La botella llena.

Appendix F: Script Cartoon Task, Randomized: R = Sr. Ratón/ T = Sr. Tortuga

Mis amigos, Sr. Ratón y Sr. Tortuga quieren aprender hablar español mejor, les puedes ayudar? Sé que hablas el español muy bien. Van a decir algunas frases en español y necesitas decidir quién lo dijo mejor. Tienes que escuchar muy bien a lo que dicen. Listo/a?

Training (each sesión is repeated 2x)

1. **R** *Aquí hay tres piñas*
 - a. *Aquí hay cuatro piñas*
2. **T** *Aquí hay un pan.*
 - a. *Aquí hay 2 panes.*
3. **R** *Aquí hay dos manzanas*
 - a. *Aquí hay tres manzanas*
4. *Aquí hay cuatro pájaros*
 - a. **T** *Aquí hay cinco pájaros*

Experimental Sentences

5. **R** *Aquí la ventana está abierta*
 - a. *Aquí la ventana es abierta*
6. *Éste está un gato*
 - a. **T** *Éste es un gato*
7. **Control** *El leo el libro*
 - a. **T** *El lee el libro*
8. **R** *Aquí el plato está sucio*
 - a. *Aquí el plato es sucio*
9. *Éste está un perro*
 - a. **R** *Éste es un perro*

10. Ésta está una gallina
- a. **T** Ésta es una gallina
11. **Control** Ella tengo tres flores
- a. **R** Ella tiene tres flores
12. **T** Aquí el vaso está vacío
- a. Aquí el vaso es vacío
13. Éste está un caballo
- a. **R** Éste es un caballo
14. Ésta está una vaca
- a. **T** Ésta es una vaca
15. **Control** Ella hago las galletas
- a. **T** Ella hace las galletas
16. Ésta está una cebra
- a. **R** Ésta es una cebra
17. **Control** El salgo de la casa
- a. **R** El sale de la casa
18. **T** Aquí el plato está limpio
- a. Aquí el plato es limpio
19. **Control** El traigo la comida
- a. **T** El trae la comida
20. **R** Aquí el vaso está lleno
- a. Aquí el vaso es lleno
21. **T** Aquí la ventana está cerrada

- a. Aquí la ventana es cerrada

22. **Control** Ella veo la televisión

- a. **R** Ella ve la televisión

EXTRA

23. **T** Aquí hay cinco helados

- a. Hay seis helados

24. **R** Aquí hay tres celulares

- a. Aquí hay cuatro celulares.

Appendix G: Script Strawberry Task, Randomized

Context:

El Sr. Dragón viene de una tierra muy lejana. Ahora nos visita y aprende a hablar en español. Parece muy tímido y no sabe mucho de nuestro mundo. Él necesita mucha ayuda. Yo voy a enseñarles unas imágenes y les voy a contar un cuento sobre ellas. El Sr. Dragón va a contarnos algo sobre la imagen. Tu tienes que escuchar muy bien a ver si te gusta lo que dijo el Sr. Dragón. Aquí tengo su comida favorita, fresas! Conoces las fresas? Muy bien. Bueno, cuando el Sr. Dragón nos cuente algo sobre la imagen, tu vas a decidir si el merece una fresa. Si no te gustó lo que dijo el Sr. Dragón, le vas a dar la fresa más pequeña. Sí no estás muy seguro, le vas a dar la fresa mediana. Si te gusta mucho lo que dijo él, le vas a dar la fresa más grande. Está bien? Ok, vamos a empezar.

Training:

E: Sr. Dragón, que tenemos aquí?

Dragón:

1. Aquí hay un bizcochos.

*2. Aquí hay unos chico.

*3. Aquí hay unas chica.

4. Aquí hay una pizzas.

Experimental Strawberry Task (ser)

(each sentence given 2x)

5. Aquí tenemos un lugar donde hay muchas personas y pueden buscar libros, leer en silencio, muy calladitos Sr. Dragón, esta...(puedes terminar mi frase?)

Sr. D.: *Esta, está una biblioteca

Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

6. E: Sr. Dragón aquí hay una botella y contiene mucho líquido. Aquí la botella...(puedes terminar mi frase?)

Sr. D.: *Aquí la botella...es llena?

Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

Control

7. c E: Aquí hay una chica y a ella le gustan las manzanas para la merienda. Sr. Dragón, la chica....(puedes terminar mi frase?)

Sr. D.: La chica...la chica **come** una manzana

Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

8. Aquí tenemos un lugar donde los niños van para aprender, estudiar, y escribir.

Sr. Dragón, esta...(puedes terminar mi frase?)

Sr. D.: * Esta, está una escuela

Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

9. Aquí tenemos un lugar donde todos pueden jugar, bañarse, y pasar tiempo bajo el sol. Sr. Dragón, esta...(puedes terminar mi frase?)

Sr. D.: * Esta, está una playa

Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

10. E: Sr. Dragón aquí hay una puerta y nadie puede entrar. Aquí la puerta...(puedes terminar mi frase?)

Sr. D.: *Aquí la puerta...es cerrada?

Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

Control

11. c E: Aquí hay un chico y a él le gusta hacer el ejercicio. Va muy rápido, no?

Sr. Dragón, el chico....(puedes terminar mi frase?)

Sr. D.: El chico...el chico **corre** muy rápido

Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

12. Aquí tenemos un lugar donde todos pueden ir para comer palomitas y ver una película. Sr. Dragón, este...(puedes terminar mi frase?)

Sr. D.: * Este, está un cine

Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

13. E: Sr. Dragón aquí hay una cuchara pero no hay comida. Aquí la cuchara...(puedes terminar mi frase?)

Sr. D.: *Aquí la cuchara...es limpia?

Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

14. E: Sr. Dragón aquí hay una botella y no contiene nada. Aquí la botella...(puedes terminar mi frase?)

Sr. D.: *Aquí la botella...es vacía?

Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

Control

12. c E: Aquí hay una chica y a no le gusta tomar la guagua a la escuela. Sr. Dragón, la chica....(puedes terminar mi frase?)

Sr. D.: La chica...la chica **camina** a la escuela

Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

16. E: Sr. Dragón aquí hay una puerta y cualquier persona puede entrar. Aquí la puerta...(puedes terminar mi frase?)

Sr. D.: *Aquí la puerta...es abierta?

Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

Control

17. c E: Aquí hay una chica y ella pasa mucho tiempo haciendo su tarea. Sr. Dragón, la chica....(puedes terminar mi frase?)
Escúchalo otra vez

Sr. D.: La chica...la chica **escribe** su tarea
¿Qué le darías? Una fresa pequeña, mediana, o grande?

18. Aquí tenemos un lugar donde la gente va para comprar comida, bebida, verduras y frutas. Sr. Dragón, este...(puedes terminar mi frase?)
Sr. D.: * Este, está un supermercado
Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

Control

19. c E: Aquí hay un chico y su mamá le da instrucciones. Sr. Dragón, el chico....(puedes terminar mi frase?)
Sr. D.: El chico...el chico **escucha** las instrucciones
Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

20. E: Sr. Dragón aquí hay una cuchara en el bol con comida. Aquí la cuchara...(puedes terminar mi frase?)
Sr. D.: *Aquí la chuchara...es sucia?
Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

21. Aquí tenemos un lugar donde los papas y los niños pueden ir para jugar, caminar y pasar tiempo juntos. Sr. Dragón, este...(puedes terminar mi frase?)
Sr. D.: * Este, está un parque
Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?

Control

22. c E: Aquí hay un chico y le gusta practicar los deportes. Sr. Dragón, el chico....(puedes terminar mi frase?)

Sr. D.: El chico...el chico **toma** agua
Escúchalo otra vez

¿Qué le darías? Una fresa pequeña, mediana, o grande?
EXTRA

*Aquí hay unas pelotas.

Aquí hay una doctora.

*Aquí hay unas hamburguesas.

Aquí hay un chef.

*Aquí hay unos libros.

Appendix H: Cartoon Task Overall

One-sample Wilcoxon for responses above chance ALL GROUPS (chance = 3).

| Group | Ser | Estar | Filler |
|-------|-------------------------|-------------------------|-------------------------|
| B | $z = 5.017, p < .001^*$ | $z = 4.464, p < .001^*$ | $z = 5.034, p < .001^*$ |
| M | $z = 7.151, p < .001^*$ | $z = 6.898, p < .001^*$ | $z = 7.206, p < .001^*$ |

Cartoon Task Bilingual all

| | Ratio of participant responses | | | | | | | |
|--------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| <i>ser</i> | 21 | 7 | 2 | 3 | 1 | 0 | 0 | 34 |
| <i>estar</i> | 0 | 16 | 8 | 5 | 2 | 2 | 1 | 34 |
| filler | 20 | 8 | 3 | 3 | 0 | 0 | 0 | 34 |

Cartoon Task Monolingual all

| | Ratio of participant responses | | | | | | | |
|--------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| <i>ser</i> | 50 | 6 | 0 | 0 | 0 | 1 | 0 | 57 |
| <i>estar</i> | 44 | 8 | 3 | 2 | 0 | 0 | 0 | 57 |
| filler | 51 | 5 | 0 | 1 | 0 | 0 | 0 | 57 |

Appendix I: Cartoon Task Age Groups

One-sample Wilcoxon for responses above chance (chance = 3).

| Group | Ser | Estar | Filler |
|--------------------|-------------------------|-------------------------|-------------------------|
| B _{young} | $z = 3.101, p < .002^*$ | $z = 3.011, p < .003^*$ | $z = 3.376, p < .001^*$ |
| B _{old} | $z = 3.947, p < .001^*$ | $z = 3.404, p < .001^*$ | $z = 3.782, p < .001^*$ |
| M _{young} | $z = 4.934, p < .001^*$ | $z = 4.813, p < .001^*$ | $z = 5.013, p < .001^*$ |
| M _{old} | $z = 5.209, p < .001^*$ | $z = 5.038, p < .001^*$ | $z = 5.029, p < .001^*$ |

Cartoon Task B_{young}

| | Ratio of participant responses | | | | | | | |
|--------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| <i>ser</i> | 7 | 3 | 2 | 3 | 1 | 0 | 0 | 16 |
| <i>estar</i> | 0 | 6 | 4 | 4 | 1 | 1 | 0 | 16 |
| filler | 8 | 4 | 2 | 2 | 0 | 0 | 0 | 16 |

Cartoon Task B_{old}

| | Ratio of participant responses | | | | | | | |
|--------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| <i>ser</i> | 14 | 4 | 0 | 0 | 0 | 0 | 0 | 18 |
| <i>estar</i> | 0 | 10 | 4 | 1 | 1 | 1 | 1 | 18 |
| filler | 12 | 4 | 1 | 1 | 0 | 0 | 0 | 18 |

Cartoon Task M_{young}

| | Ratio of participant responses | | | | | | | |
|--------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| <i>ser</i> | 23 | 5 | 0 | 0 | 0 | 1 | 0 | 29 |
| <i>estar</i> | 19 | 7 | 2 | 1 | 0 | 0 | 0 | 29 |
| filler | 24 | 4 | 0 | 1 | 0 | 0 | 0 | 29 |

Cartoon Task M_{old}

| | Ratio of participant responses | | | | | | | |
|--------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| <i>ser</i> | 27 | 1 | 0 | 0 | 0 | 0 | 0 | 28 |
| <i>estar</i> | 25 | 1 | 1 | 1 | 0 | 0 | 0 | 28 |
| filler | 27 | 1 | 0 | 0 | 0 | 0 | 0 | 28 |

Appendix J: Cartoon Task Simultaneous and Sequential

One-sample Wilcoxon for responses above chance ALL GROUPS (chance = 3).

| Group | Ser | Estar | Filler |
|--------------|--------------------------|--------------------------|--------------------------|
| Simultaneous | $z = 3.274 \ p < .001^*$ | $z = 2.443, p < .015^*$ | $z = 3.071 \ p < .002^*$ |
| Sequential | $z = 3.864 \ p < .001^*$ | $z = 3.744 \ p < .001^*$ | $z = 4.030 \ p < .001^*$ |

Cartoon Task Simultaneous

| | Ratio of participant responses | | | | | | | |
|--------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| <i>ser</i> | 10 | 1 | 1 | 1 | 0 | 0 | 0 | 13 |
| <i>estar</i> | 0 | 4 | 4 | 2 | 2 | 0 | 1 | 13 |
| filler | 8 | 3 | 0 | 2 | 0 | 0 | 0 | 13 |

Cartoon Task Sequential

| | Ratio of participant responses | | | | | | | |
|--------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| <i>ser</i> | 11 | 6 | 1 | 2 | 1 | 0 | 0 | 21 |
| <i>estar</i> | 0 | 12 | 4 | 3 | 0 | 2 | 0 | 21 |
| filler | 12 | 5 | 3 | 1 | 0 | 0 | 0 | 21 |

Appendix K: Strawberry Task overall

One-sample Wilcoxon for responses above/below chance (chance = 3)

| | Bilingual | Monolingual |
|----------|-------------------------|-------------------------|
| Ser 3 | $z = -4.160 p < .001^*$ | $z = -6.020 p < .001^*$ |
| 2 | $z = -2.847 p < .004^*$ | $z = -4.706 p < .001^*$ |
| 1 | $z = 1.343 p < .179$ | $z = 3.797 p < .001^*$ |
| 0 | $z = -5.000 p < .001^*$ | $z = -6.557 p < .001^*$ |
| | | |
| Estar 3 | $z = -1.769 p < .077$ | $z = -5.115 p < .001^*$ |
| 2 | $z = -1.215 p < .224$ | $z = -3.022 p < .003^*$ |
| 1 | $z = -3.210 p < .001^*$ | $z = .237 p < .812$ |
| 0 | $z = -4.914 p < .001^*$ | $z = -6.557 p < .001^*$ |
| | | |
| Filler 3 | $z = 4.668 p < .001^*$ | $z = 6.052 p < .001^*$ |
| 2 | $z = -4.714 p < .001^*$ | $z = -6.087 p < .001^*$ |
| 1 | $z = -5.000 p < .001^*$ | $z = -6.487 p < .001^*$ |
| 0 | $z = -4.914 p < .001^*$ | $z = -6.557 p < .001^*$ |

M individual responses, Strawberry Task, Ser Overall

| | Ratio of participant responses | | | | | | | |
|---------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 1 | 1 | 0 | 0 | 0 | 2 | 39 | 43 |
| 2-'mediana' | 2 | 3 | 1 | 1 | 2 | 9 | 25 | 43 |
| 1-'pequeña' | 24 | 7 | 3 | 1 | 1 | 2 | 5 | 43 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 43 |

M individual responses, Strawberry Task, Estar Overall

| | Ratio of participant responses | | | | | | | |
|---------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 1 | 2 | 1 | 1 | 3 | 11 | 24 | 43 |
| 2-'mediana' | 4 | 4 | 4 | 3 | 3 | 8 | 17 | 43 |
| 1-'pequeña' | 10 | 7 | 4 | 5 | 2 | 5 | 10 | 43 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 43 |

M individual responses, Strawberry Task, Filler Overall

| | Ratio of participant responses | | | | | | | |
|---------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 35 | 5 | 1 | 2 | 0 | 0 | 0 | 43 |
| 2-'mediana' | 0 | 0 | 0 | 1 | 2 | 5 | 35 | 43 |
| 1-'pequeña' | 0 | 0 | 0 | 0 | 0 | 1 | 42 | 43 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 43 |

B Ser overall

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 0 | 1 | 1 | 3 | 1 | 2 | 17 | 25 |
| 2-'mediana' | 2 | 1 | 0 | 2 | 4 | 8 | 8 | 25 |
| 1-'pequeña' | 5 | 5 | 3 | 5 | 3 | 1 | 3 | 25 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 25 |

B Estar Overall

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 3 | 2 | 3 | 2 | 3 | 3 | 9 | 25 |
| 2-'mediana' | 5 | 0 | 4 | 2 | 2 | 4 | 8 | 25 |
| 1-'pequeña' | 2 | 0 | 3 | 0 | 3 | 4 | 13 | 25 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 1 | 24 | 25 |

B Filler Overall

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 21 | 2 | 1 | 1 | 0 | 0 | 0 | 25 |
| 2-'mediana' | 0 | 0 | 0 | 0 | 2 | 2 | 21 | 25 |
| 1-'pequeña' | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 25 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 1 | 24 | 25 |

Appendix L: Monolingual and Bilingual Age Results Strawberry Task

One-sample Wilcoxon for responses above/below chance (chance = 3)

| | B _{young} | B _{old} | M _{young} | M _{old} |
|----------|-------------------------|-------------------------|-------------------------|-------------------------|
| Ser 3 | $z = -2.351 p < .019^*$ | $z = -3.357 p < .001^*$ | $z = -3.801 p < .001^*$ | $z = -4.690 p < .001^*$ |
| 2 | $z = -2.312 p < .021^*$ | $z = -1.761 p < .078$ | $z = -3.506 p < .001^*$ | $z = -3.182 p < .001^*$ |
| 1 | $z = .452 p < .652$ | $z = 1.387 p < .165$ | $z = 2.183 p < .029^*$ | $z = 3.182 p < .001^*$ |
| 0 | $z = -3.464 p < .001^*$ | $z = -3.606 p < .001^*$ | $z = -4.583 p < .001^*$ | $z = -4.690 p < .001^*$ |
| Estar 3 | $z = -.466 p < .641$ | $z = -1.962 p < .050^*$ | $z = -3.025 p < .002^*$ | $z = -4.167 p < .001^*$ |
| 2 | $z = -1.716 p < .086$ | $z = .162 p < .871$ | $z = -2.133 p < .033^*$ | $z = -2.138 p < .033^*$ |
| 1 | $z = -2.703 p < .007^*$ | $z = -1.990 p < .047^*$ | $z = -.623 p < .533$ | $z = 1.062 p < .288$ |
| 0 | $z = -3.357 p < .001^*$ | $z = -3.606 p < .001^*$ | $z = -4.583 p < .001^*$ | $z = -4.690 p < .001^*$ |
| Filler 3 | $z = 3.207 p < .001^*$ | $z = 3.418 p < .001^*$ | $z = 4.062 p < .001^*$ | $z = 4.523 p < .001^*$ |
| 2 | $z = -3.274 p < .001^*$ | $z = -3.418 p < .001^*$ | $z = -4.128 p < .001^*$ | $z = -4.523 p < .001^*$ |
| 1 | $z = -3.464 p < .001^*$ | $z = -3.606 p < .001^*$ | $z = -4.491 p < .001^*$ | $z = -4.690 p < .001^*$ |
| 0 | $z = -3.357 p < .001^*$ | $z = -3.606 p < .001^*$ | $z = -4.583 p < .001^*$ | $z = -4.690 p < .001^*$ |

M_{young}
Ser

| | Ratio of participant responses | | | | | | | |
|---------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 1 | 1 | 0 | 0 | 0 | 2 | 17 | 21 |
| 2-'mediana' | 0 | 3 | 1 | 0 | 0 | 5 | 12 | 21 |
| 1-'pequeña' | 11 | 3 | 1 | 0 | 1 | 2 | 3 | 21 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 21 |

M_{old}
Ser

| | Ratio of participant responses | | | | | | | |
|---------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 22 |
| 2-'mediana' | 2 | 0 | 0 | 1 | 2 | 4 | 13 | 22 |
| 1-'pequeña' | 13 | 4 | 2 | 1 | 0 | 0 | 2 | 22 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 22 |

M_{young}
Estar

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 1 | 2 | 1 | 0 | 1 | 6 | 10 | 21 |
| 2-'mediana' | 2 | 2 | 2 | 1 | 1 | 5 | 8 | 21 |
| 1-'pequeña' | 4 | 5 | 1 | 0 | 1 | 3 | 7 | 21 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 21 |

M_{old}
Estar

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 0 | 0 | 0 | 1 | 2 | 5 | 14 | 22 |
| 2-'mediana' | 2 | 2 | 2 | 2 | 2 | 3 | 9 | 22 |
| 1-'pequeña' | 6 | 2 | 3 | 5 | 1 | 2 | 3 | 22 |
| 0-no response | 0 | 0 | 0 | 1 | 2 | 5 | 14 | 22 |

M_{young}
Filler

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 15 | 3 | 1 | 2 | 0 | 0 | 0 | 21 |
| 2-'mediana' | 0 | 0 | 0 | 1 | 2 | 3 | 15 | 21 |
| 1-'pequeña' | 0 | 0 | 0 | 0 | 0 | 1 | 20 | 21 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 21 |

M_{old}
Filler

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 20 | 2 | 0 | 0 | 0 | 0 | 0 | 22 |
| 2-'mediana' | 0 | 0 | 0 | 0 | 0 | 2 | 20 | 22 |
| 1-'pequeña' | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 22 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 22 |

B_{young}
Ser

| | Ratio of participant responses | | | | | | | |
|---------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 0 | 1 | 1 | 2 | 1 | 1 | 6 | 12 |
| 2-'mediana' | 1 | 0 | 0 | 0 | 2 | 5 | 4 | 12 |
| 1-'pequeña' | 2 | 2 | 2 | 1 | 3 | 0 | 2 | 12 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 12 |

B_{old}
Ser

| | Ratio of participant responses | | | | | | | |
|---------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 0 | 0 | 0 | 1 | 0 | 1 | 11 | 13 |
| 2-'mediana' | 1 | 1 | 0 | 2 | 2 | 3 | 4 | 13 |
| 1-'pequeña' | 3 | 3 | 1 | 4 | 0 | 1 | 1 | 13 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 13 |

B_{young}
Estar

| | Ratio of participant responses | | | | | | | |
|---------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 2 | 1 | 2 | 2 | 0 | 2 | 3 | 12 |
| 2-'mediana' | 1 | 0 | 2 | 1 | 2 | 2 | 4 | 12 |
| 1-'pequeña' | 0 | 0 | 2 | 0 | 2 | 3 | 5 | 12 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 1 | 11 | 12 |

B_{old}
Estar

| | Ratio of participant responses | | | | | | | |
|---------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 1 | 1 | 1 | 0 | 3 | 1 | 6 | 13 |
| 2-'mediana' | 4 | 0 | 2 | 1 | 0 | 2 | 4 | 13 |
| 1-'pequeña' | 2 | 0 | 1 | 0 | 1 | 1 | 8 | 13 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 13 |

B_{young}
Filler

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 10 | 1 | 0 | 1 | 0 | 0 | 0 | 12 |
| 2-'mediana' | 0 | 0 | 0 | 0 | 1 | 1 | 10 | 12 |
| 1-'pequeña' | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 12 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 1 | 11 | 12 |

B_{old}
Filler

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 11 | 1 | 1 | 0 | 0 | 0 | 0 | 13 |
| 2-'mediana' | 0 | 0 | 0 | 0 | 1 | 1 | 11 | 13 |
| 1-'pequeña' | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 13 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 13 |

Appendix M: Simultaneous and Sequential Participants

One-sample Wilcoxon for responses above/below chance (chance = 3)

| | Simultaneous Bilingual | Sequential Bilingual |
|----------|-------------------------|-------------------------|
| Ser 3 | $z = -2.622 p < .009^*$ | $z = -3.244 p < .001^*$ |
| 2 | $z = -1.588 p < .112$ | $z = -2.394 p < .017^*$ |
| 1 | $z = .712 p < .476$ | $z = .994 p < .320$ |
| 0 | $z = -3.000 p < .003^*$ | $z = -4.000 p < .001^*$ |
| | | |
| Estar 3 | $z = -1.211 p < .226$ | $z = -1.248 p < .212$ |
| 2 | $z = .640 p < .522$ | $z = -1.926 p < .054$ |
| 1 | $z = -2.758 p < .006^*$ | $z = -1.889 p < .059$ |
| 0 | $z = -2.887 p < .004^*$ | $z = -4.000 p < .001^*$ |
| | | |
| Filler 3 | $z = 2.754 p < .006^*$ | $z = 3.873 p < .001^*$ |
| 2 | $z = -2.754 p < .006^*$ | $z = -3.900 p < .001^*$ |
| 1 | $z = -3.000 p < .003^*$ | $z = -4.000 p < .001^*$ |
| 0 | $z = -3.000 p < .003^*$ | $z = -3.900 p < .001^*$ |

Simultaneous individual responses, Strawberry Task, Ser Overall

| Response | Ratio of participant responses | | | | | | | |
|---------------|--------------------------------|-----|-----|-----|-----|-----|-----|-------|
| | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 0 | 1 | 0 | 0 | 0 | 1 | 7 | 9 |
| 2-'mediana' | 1 | 0 | 0 | 1 | 0 | 5 | 2 | 9 |
| 1-'pequeña' | 2 | 3 | 1 | 1 | 0 | 0 | 2 | 9 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 9 |

Simultaneous individual responses, Strawberry Task, Estar Overall

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 1 | 1 | 0 | 1 | 1 | 2 | 3 | 9 |
| 2-'mediana' | 3 | 0 | 2 | 1 | 0 | 2 | 1 | 9 |
| 1-'pequeña' | 0 | 0 | 1 | 0 | 0 | 0 | 8 | 9 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 9 |

Simultaneous individual responses, Strawberry Task, Filler Overall

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 6 | 2 | 1 | 0 | 0 | 0 | 0 | 9 |
| 2-'mediana' | 0 | 0 | 0 | 0 | 1 | 2 | 6 | 9 |
| 1-'pequeña' | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 9 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 9 |

Sequential Ser overall

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 0 | 0 | 1 | 3 | 1 | 1 | 10 | 16 |
| 2-'mediana' | 1 | 1 | 0 | 1 | 4 | 3 | 6 | 16 |
| 1-'pequeña' | 3 | 2 | 2 | 4 | 3 | 1 | 1 | 16 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 16 |

Sequential Estar Overall

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 2 | 1 | 3 | 1 | 2 | 1 | 6 | 16 |
| 2-'mediana' | 2 | 0 | 2 | 1 | 2 | 2 | 7 | 16 |
| 1-'pequeña' | 2 | 0 | 2 | 0 | 3 | 4 | 5 | 16 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 16 |

Sequential Filler Overall

| | Ratio of participant responses | | | | | | | |
|-----------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-------|
| Response | 6/6 | 5/6 | 4/6 | 3/6 | 2/6 | 1/6 | 0/6 | Total |
| 3-'grande' | 15 | 0 | 0 | 1 | 0 | 0 | 0 | 16 |
| 2-'mediana' | 0 | 0 | 0 | 0 | 1 | 0 | 15 | 16 |
| 1-'pequeña' | 0 | 0 | 0 | 0 | 0 | 1 | 15 | 16 |
| 0-no response | 0 | 0 | 0 | 0 | 0 | 1 | 15 | 16 |

Appendix N: Bilingual Item Analysis: Cartoon Task

| Estar+ adj. passive | Overall |
|----------------------------|---------|
| abierta | 0.74 |
| sucio | 0.79 |
| vacio | 0.85 |
| limpio | 0.74 |
| lleno | 0.88 |
| cerrada | 0.76 |
| Ser + DP | |
| gato | 0.82 |
| perro | 0.94 |
| gallina | 0.94 |
| caballo | 0.91 |
| vaca | 0.88 |
| zebra | 0.79 |

Monolingual Item Analysis: Cartoon Task

| Estar+ adj. passive | Overall |
|----------------------------|---------|
| abierta | 0.88 |
| sucio | 0.95 |
| vacio | 1.00 |
| limpio | 0.98 |
| lleno | 0.89 |
| cerrada | 0.95 |
| Ser + DP | |
| gato | 0.93 |
| perro | 0.96 |
| gallina | 0.98 |
| caballo | 0.96 |
| vaca | 0.98 |
| zebra | 0.98 |

Appendix O: Bilingual Age Item Analysis: Cartoon Task

| Estar+ adj. passive | Age Young | Age Old |
|----------------------------|-----------|---------|
| abierta | 0.69 | 0.78 |
| sucio | 0.81 | 0.78 |
| vacio | 0.69 | 1.00 |
| limpio | 0.81 | 0.67 |
| lleno | 0.88 | 0.89 |
| cerrada | 0.63 | 0.89 |
| Ser + DP | | |
| gato | 0.63 | 1.00 |
| perro | 0.88 | 1.00 |
| gallina | 0.88 | 1.00 |
| caballo | 0.81 | 1.00 |
| vaca | 0.75 | 1.00 |
| zebra | 0.81 | 0.78 |

Monolingual Age Item Analysis: Cartoon Task

| Estar+ adj. passive | Age Young | Age Old |
|----------------------------|-----------|---------|
| abierta | 0.83 | 0.93 |
| sucio | 0.93 | 0.96 |
| vacio | 1.00 | 1.00 |
| limpio | 0.97 | 1.00 |
| lleno | 0.86 | 0.93 |
| cerrada | 0.93 | 0.96 |
| Ser + DP | | |
| gato | 0.90 | 0.96 |
| perro | 0.93 | 1.00 |
| gallina | 0.97 | 1.00 |
| caballo | 0.93 | 1.00 |
| vaca | 0.97 | 1.00 |
| zebra | 0.97 | 1.00 |

Appendix P: Simultaneous and Sequential Item Analysis: Cartoon Task

| Estar+ adj. passive | Simultaneous | Sequential |
|----------------------------|--------------|------------|
| abierta | 0.69 | 0.76 |
| sucio | 0.77 | 0.81 |
| vacio | 0.92 | 0.81 |
| limpio | 0.62 | 0.81 |
| lleno | 0.77 | 0.95 |
| cerrada | 0.69 | 0.81 |
| Ser + DP | Simultaneous | Sequential |
| gato | 0.85 | 0.81 |
| perro | 1.00 | 0.90 |
| gallina | 1.00 | 0.90 |
| caballo | 1.00 | 0.86 |
| vaca | 0.85 | 0.90 |
| zebra | 0.85 | 0.76 |

Appendix Q: Bilingual Overall Item Analysis: Strawberry Task

| Estar + DP | Overall |
|---------------------------|---------|
| Biblioteca | 1.72 |
| Escuela | 1.36 |
| Playa | 1.40 |
| Cine | 1.44 |
| Supermercado | 1.56 |
| Parque | 1.84 |
| Ser + adj. passive | |
| Llena | 2.20 |
| Cerrada | 2.04 |
| Limpia | 2.20 |
| Vacia | 2.16 |
| Abierta | 1.92 |
| Sucia | 2.24 |

Monolingual Overall Item Analysis: Strawberry Task

| Estar + DP | Overall |
|---------------------------|---------|
| Biblioteca | 1.28 |
| Escuela | 1.30 |
| Playa | 1.26 |
| Cine | 1.30 |
| Supermercado | 1.28 |
| Parque | 1.28 |
| Ser + adj. passive | |
| Llena | 1.65 |
| Cerrada | 1.53 |
| Limpia | 1.79 |
| Vacia | 1.63 |
| Abierta | 1.53 |
| Sucia | 1.65 |

Appendix R: Bilingual Age Item Analysis: Strawberry Task

| Estar + DP | Age Young | Age Old |
|---------------------------|-----------|---------|
| Biblioteca | 2.08 | 1.38 |
| Escuela | 1.33 | 1.38 |
| Playa | 1.50 | 1.31 |
| Cine | 1.58 | 1.31 |
| Supermercado | 1.75 | 1.38 |
| Parque | 2.00 | 1.69 |
| Ser + adj. passive | | |
| Llena | 2.17 | 2.23 |
| Cerrada | 2.17 | 1.92 |
| Limpia | 2.17 | 2.23 |
| Vacia | 2.33 | 2.00 |
| Abierta | 2.00 | 1.85 |
| Sucia | 2.50 | 2.00 |

Monolingual Age Item Analysis: Strawberry Task

| Estar + DP | Age Young | Age Old |
|---------------------------|-----------|---------|
| Biblioteca | 1.38 | 1.18 |
| Escuela | 1.48 | 1.14 |
| Playa | 1.33 | 1.18 |
| Cine | 1.43 | 1.18 |
| Supermercado | 1.38 | 1.18 |
| Parque | 1.38 | 1.18 |
| Ser + adj. passive | | |
| Llena | 2.05 | 1.27 |
| Cerrada | 1.62 | 1.45 |
| Limpia | 1.76 | 1.82 |
| Vacia | 1.67 | 1.59 |
| Abierta | 1.76 | 1.32 |
| Sucia | 1.71 | 1.59 |

Appendix S: Simultaneous and Sequential Item Analysis: Strawberry Task

| Estar + DP | Simultan | Sequen |
|---------------------------|----------|--------|
| Biblioteca | 2.08 | 1.38 |
| Escuela | 1.33 | 1.38 |
| Playa | 1.50 | 1.31 |
| Cine | 1.58 | 1.31 |
| Supermercado | 1.75 | 1.38 |
| Parque | 2.00 | 1.69 |
| Ser + adj. passive | | |
| Llena | 2.17 | 2.23 |
| Cerrada | 2.17 | 1.92 |
| Limpia | 2.17 | 2.23 |
| Vacia | 2.33 | 2.00 |
| Abierta | 2.00 | 1.85 |
| Sucia | 2.50 | 2.00 |

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