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BRIEF RESEARCH REPORT

Spanish copula selection with adjectives at age three

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Abstract

Previous comprehension studies using Picture Matching Tasks (PMT) have shown that, by the age of four, Spanish-speaking children have acquired the semantics of *estar* being able to calculate the implicature that a property introduced with *estar* does not hold independent of time as well as displaying some ability to integrate discourse information about properties that change in the course of a story. This study extends that line of research to children under the age of four. Thirty-eight monolingual Spanish-speaking children were tested in two PMTs. The results show that at age three children differ from older children in their interpretation of the copulas suggesting that the distinction between *ser* and *estar* with adjectives emerges between the ages of three and four.

Keywords: ser; estar; copula; Spanish; aspect

Introduction

Much of the literature on the acquisition of copula verbs (e.g., *to be* in English) has focused on the high rate of omission found in early stages of development (e.g., Becker, 2002; Brown, 1973; de Villiers & de Villiers, 1973). In Spanish, where the meaning of 'to be' may be expressed through two different copulas, namely *ser* and *estar*, young children do not demonstrate high rates of omission of the copulas early on, perhaps as a result of their meaning difference being lexicalized (Bel, 2013). One of the main challenges for the Spanish-speaking child, however, is the acquisition of adult-like copula selection in contexts where both copulas may be used with the same adjective, resulting in subtle differences in meaning (see examples in 1a and b from Silva-Corvalán, 1986). Such contexts are very frequent in the language and copula selection in them depends on linguistic and extra-linguistic factors, including features of the adjective and the referent, as well as sentence and discourse context (Geeslin & Guijarro-Fuentes, 2008, p. 366).

(1) a. *Ella es alegre*
   'She is happy' (personality)
   b. *Ella está alegre*
   'She's in a good mood'

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The distinction between *ser* and *estar* has received considerable attention in the literature (see reviews in Fábregas, 2012; Holtheuer, 2011). A popular way of conceptualizing the difference emerged from an influential proposal by Carlson (1977) that distinguished individual-level predicates from stage-level predicates. Following those ideas, properties that appear with *ser* are interpreted as defining an individual (as in 1a), and properties that appear with *estar* are interpreted as denoting a stage of an individual (as in 1b). But the extent to which the Spanish copulas instantiate the individual-level and stage-level distinction has been put into question (see Camacho, 2012; Schmitt & Miller, 2007) and aspectual proposals have instead posed that the distinction emerges from properties in the copulas themselves (Arche, Fábregas & Marín, 2017; Fernández Leborans, 1995; Schmitt, 1992, 1996). For example, some proposals consider that both copulas differ in feature specification (e.g., Camacho, 2012) while others claim they have a different structure (e.g., Gallego & Uriagereka, 2009). What these approaches have in common, however, is that *estar* contains aspectual information that, unlike *ser*, links the interpretation to a particular external situation. *Estar* has, therefore, been considered more complex than *ser,* given that the former contains an extra aspectual component that has the power of making stative the interpretation of an evaluative adjective (Arche et al., 2017, p. 49).

Some aspectual approaches acknowledge the role of pragmatics in the distinction between *ser* and *estar* (e.g., Maienborn, 2005; Schmitt & Miller, 2007). For example, Maienborn (2005) considers both copulas to have the same meaning. Nevertheless, her proposal remains aspectual in that aspect gives rise to alternative topic situations. It is the presupposition that a claim applies only to one particular situation (and not to alternative situations) which links the adjective used with *estar* to a specific discourse situation. Alternatively, given pragmatic principles of economy, the use of *ser* – as a more general term than *estar* – does not carry the presupposition that the property holds only in a specific situation. For the purposes of this study, we will follow the aspectual proposal by Schmitt and Miller (2007) that assumes aspectual content embedded in *estar* as well as implicatures as the source of the copula +predicate interpretation.

Schmitt and Miller's (2007) argument maintains that *estar* denotes a subevent of the type STATE, but *ser* is devoid of aspectual content, and therefore less restricted as to the contexts in which it can appear. Schmitt and Miller consider that the USE of each copula with adjectival predicates triggers particular implicatures. *Ser* triggers the implicature that the property holds independent of time, i.e., atemporal (as in 1a), whereas *estar* triggers the implicature that the property does not always hold, but only at a certain time (as in 1b). Therefore, the specific reading achieved depends on the interval to which the property is believed to hold.

The proposal described above generates predictions for acquisition (Schmitt & Miller, 2007; see also Holtheuer, Miller, & Schmitt, 2011, p. 94). Children first need to learn the syntactic distribution of the copulas. At this stage, we assume that contexts that categorically require one copula are acquired (e.g., *estar* with locatives and *ser* to identify referents). Espinosa-Ochoa (2019) shows how child-directed speech "invite[s] children to IDENTIFY elements with *ser* but LOCATE elements with *estar*" (p. 169) (see also Silva-Corvalán & Montanari, 2008). Most copula+adjective combinations in early child language appear to be used in complementary distribution, indicating that they are first acquired as lexically-specific constructions (Holtheuer, 2013; Sera, 1992; Silva-Corvalán & Montanari, 2008). However, semantic and morphological properties of the adjectives used in adjectival constructions in the input seem to differentiate the types of adjectives

that are used with each copula and could start to provide subtle cues as to the interpretation of the copulas used with them (Holtheuer, 2013).

A second stage would involve bootstrapping the semantics of the copulas (aspectual component of *estar* and implicatures associated with its use with adjectives) from regularities in the linguistic and interactional contexts in which the copulas occur. Several sources for such bootstrapping have been proposed, including contexts of *ser* and *estar* USE outside of the [copula+adjective] construction. This is the case of the early-acquired use of *estar* with locatives which has been proposed as evidence that susceptibility to change is associated with *estar* (Silva-Corvalán & Montanari, 2008). The semantics of the copulas could also be bootstrapped from the earliest complementarily distributed uses within the [copula+adjective] construction. During naturalistic interaction, adults offer children instances of *estar*+adjective with one particular referent which undergoes some change in time in the particular discourse situation (Espinosa-Ochoa, 2019). Therefore, uses of *ser* and *estar* outside of the adjectival construction and early uses inside the adjectival construction could help children bootstrap the meaning implied by the use of copulas with adjectives, perhaps beginning with *estar*.

A third step would involve the use of pragmatic knowledge in order to adjudicate among the readings associated with the use of each copula in a sentence. At this stage, children would be able to start calculating the implicatures associated with each copula, beginning with *estar*, since it is assumed to have a more restrictive meaning. This step requires the ability to use world knowledge or discourse knowledge to restrict the temporal domain of evaluation, including the fact that implicatures may be canceled allowing different interpretations. For example, the use of an adjective with *ser* may imply that the property holds independent of time, but it may also be coerced into an inchoative reading if one assumes certain implicit adverbials (such as 'from now on'). These "steps" in the acquisition of copula selection with adjectives serve the purpose of illustrating the complexity of adult-like copula use.

The present work expands a line of experimental research that examines monolingual Spanish-speaking children's knowledge of the aspectual distinction in copula selection with adjectives in comprehension, more specifically through the use of picture matching tasks (PMTs). Schmitt and Miller (2007) reported that by age 5;0 children are able to distinguish the two copulas, associating *estar* to a property that temporarily changed in a story (for similar results, see Holtheuer, Miller & Schmitt, 2011). Requena, Román-Hernández, and Miller (2015) tested children 4;0–7;0 in two PMTs (one with real adjectives and a second task with novel adjectives) that are the same ones that were used in the present study. In these tasks, children were presented with popular cartoon characters (e.g., Shrek from Disney's Shrek® and Woody from Pixar's Toy Story®) and were told short stories about those characters taking magic pills, which resulted in Shrek getting thin and Woody getting a blue face (in this example). At such a point in the story, while children were looking at an image of thin Shrek and blue-faced Woody, they were asked a question (Which one is thin?) using either *ser* or *estar*.[1] The results showed that from age four children strongly associate *estar* to the temporary picture (i.e., thin Shrek). This has

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[1]This describes Task 1 in Requena et al.'s (2015) study. Task 2 used a similar design except that novel adjectives were first introduces and then tested. More detail about these tasks appears in the Methods section and in Appendices A and B of the Supplementary Materials.

been taken to indicate that by this age children have not only been able to bootstrap the semantics of *estar*, but also – given the nature of the task – to integrate discourse in order to perform the task.

The results of these studies indicate that children are less restrictive in their interpretation of *ser* than *estar*. Selection of the temporary picture with *ser* in the PMTs may indicate an inchoative reading, which could result from assuming the presence of an implicit adverbial of the type 'from now on', thus rendering the selection of *ser* with the temporary picture felicitous. Child participants in Schmitt and Miller's (2007) study, for example, selected the temporary picture when asked with *ser* 35% of the time. Since adults only showed this interpretation 5% of the time, children's responses were interpreted as indicative of difficulty with restricting the domain of evaluation to the full story. In Requena et al.'s (2015) study, performance compatible with inchoative readings was found in almost 60% of the child responses (but in none of the adult responses), which would strengthen the idea that children favor inchoative interpretations of *ser* with adjectives in these tasks more than adults. Despite allowing inchoative interpretation with *ser* in previous studies, it is important to note that children selected the permanent picture with *ser* in 40% of the responses in Requena et al. (2015) and in 65% of the responses in Schmitt and Miller (2007). Selection of the permanent picture with *ser* in these tasks is taken to indicate that children can use contextual and/or discourse knowledge of what the character generally looks like and the change that happened to the other character during the course of the story.

Previous experimental studies on copula selection with adjectives show that, by age four, Spanish-speaking children are very restrictive in their interpretation of *estar*, but less restrictive in their interpretation of *ser*. In their interpretation of *ser* with adjectives, children allow both an inchoative and a permanent reading, demonstrating that they can variably integrate discourse and/or contextual information. The finding that, by age four, children are very restrictive with *estar* but not *ser* implies that both copulas follow different paths of acquisition. This raises questions of when and how children acquire the abilities to calculate implicatures as well as integrate world knowledge and discourse information that are assumed to lead to adult-like interpretation of copula with adjectives. Here, we present the results of the two PMTs used by Requena et al. (2015) with children older than age four, which we administered to thirty-eight Argentine children aged 2;2–4;3. The goal of this study is to compare performance in these tasks by four-year-olds (a group that overlaps with ages tested in previous studies) with performance by two- to three-year-olds[2] in order to shed light on how children arrive at the restricted temporal interpretation of *estar* and the less restricted interpretation of *ser* by the age of four as seen in previous research.

Research question

Do three-year-old Spanish-speaking children differ from four-year-old children in their interpretation of copula with adjectives?

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[2]Only two participants in the younger group were two years of age (2;2 and 2;9) and the rest were 3;1–3;10 ($M = 3;5$). The performance by these n=2 two-year-old children did not differ from the performance by three-year-old children. Therefore, for simplicity, we will refer to the group of younger participants as the *younger group* or the *three-year-old group* interchangeably.

Predictions

In line with previous studies (Requena et al., 2015; Schmitt & Miller, 2007), we predicted that the older children who are around age four would interpret *estar* as more temporally bounded than *ser*. Taking into account the discourse context, they were expected to select more frequently the temporary picture upon hearing *estar* in order to describe a property that changed in the course of an experimental trial. They were expected to be less restrictive in their interpretation of *ser*, as in previous research. For the younger children, our predictions differ. Previous corpus research indicates that young children exhibit complementary distribution in copula use with adjectives. By age 3;7 children combine adjectives with one copula or the other based on the semantics and morphology of the adjectives (e.g., participles ending in -ado/-ido are produced mostly with *estar*) (Holtheuer, 2013). In addition, young children are exposed to uses of *estar*+adjective to refer to contrasts or to temporary changes in properties the input (Espinosa-Ochoa, 2019). Therefore, we predict that three-year-olds will be in the process of bootstrapping the semantics of *estar*. In addition, the uses of copula with adjectives tested in this study require calculating implicatures and the PMTs used in this study require discourse integration, abilities that have been found to impose difficulty on young children (e.g., Bohn & Frank, 2019; Krämer 2000). Therefore, we expect that children younger than age 4;0 will not show evidence that they distinguish the copulas in tasks that require calculating implicatures and integrating discourse with known adjectives as well as with novel adjectives.

Method

Participants

Thirty-eight monolingual Spanish-speaking children (2;2–4;3, *M* = 3;8) recruited from two daycare and pre-K institutions in Córdoba, Argentina, participated in both tasks. Children were divided into two groups based on age. The older group consisted of 17 children (4;0–4;3, *M* = 4;1); the younger group was made up of 21 children (2;2–3;10, *M* = 3;4) (see f.n. 2). In a between-subjects design, we assigned children to either the *ser* or the *estar* condition. Twenty adults from the same community were also tested.

Stimuli and procedure

Stimuli and procedure for the two Picture Selection Tasks (PST) used here were the same as in Requena et al. (2015). The only difference between the present study and that of Requena et al. (2015) is that in Task 1 we replaced the adjective *alto* 'tall-MASC' with *grande* 'big' in order to have pairs of opposite adjectives (fat-thin, small-big) and also to include an adjective that does not include gender morphology (*grande* 'big' is invariable for feminine and masculine).

Task 1: Real Adjectives

In each of the four experimental trials in Task 1, color Microsoft PowerPoint slides were used to introduce participants to known cartoon characters to ensure that they were familiar with the characters, after which participants listened to a story about two

characters, one of which changed in body size after taking magic pills. Participants were then asked (using either *ser* or *estar*) to answer a critical question by selecting a character. Two feminine adjectives (*gorda* 'fat-FEM,' *pequeña* 'small-FEM'), one masculine adjective (*flaco* 'thin-MASC') and one gender-neutral adjective (*grande* 'big-NEUT') were used. In a between-subjects design, participants presented with *ser* were expected to choose the character that always exhibits a particular characteristic, and participants presented with *estar* were expected to choose the character who exhibited that particular characteristic for a limited period (temporary picture). A sample trial from Task 1 can be found in 'Appendix A' (Supplementary Materials).

Task 2: Novel Adjectives

The second task began with three practice trials so that participants would become familiar with using novel words. In each of the four experimental trials of Task 2, children were introduced to 'Juan,' a made-up character who appeared alongside the well-known cartoon characters. First, participants listened to a story in which Juan changed appearance after eating magic candy. This transformation was used to introduce novel adjectives that Juan exhibited for a short time before changing back to normal. The novel adjectives were: *gudo* 'one-eyed,' *dapo* 'striped,' *fate* 'spiky-haired,' and *pogo* 'holey.' Using either *ser* or *estar,* participants were asked to select a known cartoon character exhibiting the same novel adjective exhibited by Juan. A sample trial from Task 2 can be found in 'Appendix B' (Supplementary Materials).

We tested child participants in daycare and pre-K institutions during two sessions, one week apart from each other. Task 1 was administered during Session 1 and Task 2, during Session 2. One participant was not present for the second session, therefore providing responses only to Task 1. Individual trials in which participants selected both pictures (N = 23) were excluded from the analysis. This behavior was attested in sixteen trials from Task 1 and seven trials from Task 2. Patterns of which picture was selected first in these excluded trials were not found. The exclusions belonged to only six children, four of whom exhibited this behavior in all four trials of a task.

Results

Task 1 Real adjectives

Overall, in Task 1 children associated *estar* + real adjectives to transitory properties 62% (42/68) of the time and *ser* + real adjectives to inherent properties 41% (28/68) of the time. When looking at performance by age group (See figure 1[3]), we find increased selection of the temporary picture by adults with *estar* (88%, 35/40) compared to *ser* (48%, 19/40). The older children also selected the temporary picture more with *estar* (69%, 25/36) than with *ser* (56%, 14/25). These rates approximate the ones found in previous studies (Requena et al., 2015; Schmitt & Miller, 2007). The younger group in the present study, however, displays a different pattern. Selection of the temporary picture is slightly greater with *ser* (60%, 26/43) than *estar* (53%, 17/32). Analyses by trial can be found in 'Appendix C' (Supplementary Materials).

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[3]Whiskers in bar graphs represent standard error of the mean.

Task 2 Novel Adjectives

Overall, in Task 2 children associated *estar* + novel adjectives to transitory properties 58% (38/65) of the time and *ser* + novel adjectives to inherent properties 47% (36/76) of the time. This finding resembles Task 1. When analyzing selection of the temporary picture by condition by age group (see Figure 2), we find greater selection of the temporary picture with *estar* among adults (83%, 33/40) and older children (65%, 22/34) than with *ser* (40%, 16/40 and 41%, 13/32, respectively). The younger group of children in the present study, however, displays a different pattern. Selection of the temporary picture is slightly greater with *ser* (61%, 27/44) than *estar* (52%, 16/31). Analyses by trial can be found in 'Appendix D' (Supplementary Materials).

To test whether copula use in the stimuli predicted the probability of selection of the temporary picture in the two child groups, we used a generalized linear mixed model (GLMM) with a logit-link and binomial error distribution. Because each child had more than one response measured, a GLMM model was required due to this lack of independence of observations for each child. This type of analysis also allows us to include random effects (called *random intercepts*). Random intercepts are "variables whose levels represent a random sample from a population, such as subjects, where we want to capture additional variation or correlation" (Walker, Redfern & Oleson, 2019, p. 528). The binary response variable was whether the participant selected the temporary picture or not (1 and 0, respectively). The explanatory variables in the model included Condition (*ser* vs. *estar*), Age (3 vs. 4), and Experiment (Task 1-Real adjectives vs. Task 2- Novel adjectives) and all possible two way-interactions. We included Participant and Trial as random intercepts in the initial model. The post estimation settings included the Satterthwaite approximation, which helps calculate the effective degrees of freedom of smaller sample sizes as well as robust estimation in tests of fixed effects and coefficients, which helps manage violations of model assumptions. Model comparison using the Akaike information criterion (AIC) and the Bayesian Information Criterion (BIC) suggested dropping the Experiment explanatory variable as well as the Trial random intercept from the final model as well as all interactions, except Condition x Age – the final model details can be found in 'Appendix E' (Supplementary Materials). Using the likelihood ratio test, then the best model included the predictors: Age, Condition and their interaction.

Results from this GLMM showed no observed association of Condition (p = .393) or Age (p = .897) on selection of the temporary picture, but we detected a significant interaction between Age and Condition (p = .035). Model estimates are provided in Table 1 below. A significant interaction in the absence of main effects could signal a crossover interaction, where the effect of condition on the dependent variable (selection of the temporary picture) could be opposite for each age group. Indeed, as Figure 3 shows, the effect of condition differed for the younger children when compared to the older children.

In order to run group comparisons with the adults, we performed a similar GLMM analysis including child and adult data together. Although this model was not a good fit for the data, we can use the results of the insignificant three-way interaction between Task (1, 2) x Group (adult, older, younger) x Condition (*ser*, *estar*) as a way to test for differences in the selection of the temporary picture with *estar* vs. *ser* within the three age groups by experiment (i.e., whether differences between the black and stripped bars in Figures 1 and 2 are significantly different from each other). For the

Table 1. Estimates for multi-level Logit Mixed Model of Selection of the Temporary Picture, with Condition as a between-participants factor (N = 277, AIC = 1189, BIC = 1193, Log Likelihood = 1187).

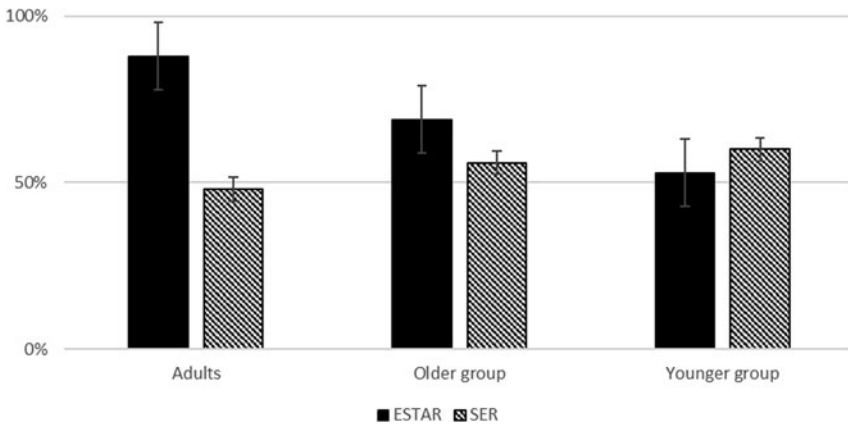| Fixed effect	Odds Ratio	SE	t	p	CI Lower	CI Upper
Intercept	1.560	.1868	2.380	.036	1.036	2.349
Condition (*estar*)	.705	.3263	−1.072	.296	.357	1.390
Age (*4;0*)	.581	.3573	−1.528	.141	.279	1.212
Condition (*estar*) × Age (*4;0*)	3.169	.5230	2.206	.035	1.089	9.227
Random effect covariance	Estimate	SE	Z	p	CI Lower	CI Upper
Participant (Intercept)	.095	.160	.592	.554	.003	2.602

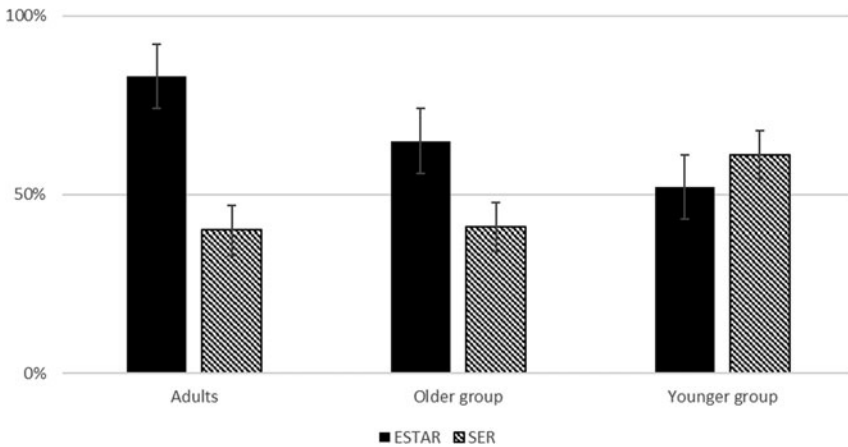**Figure 1.** Mean selection of the temporary picture in Task 1

Figure 2. Mean selection of the temporary picture in Task 2

adult group, selection of the temporary picture was significantly greater with *estar* than with *ser* across tasks (Task 1: OR = 7.74; z = 3.57; p = <.001; 95% CI = (2.5, 23.8); Task 2: OR = 7.07; z = 3.71; p = <.001; 95% CI = (2.5, 19.9)). The comparisons for the child groups did not reach significance at the .05 alpha level. Nevertheless, the difference in selection of the temporary picture with *ser* vs. *estar* approached significance in the older group in Task 2 (OR = 2.68; z = 1.94; p = .052; 95% CI = (.9, 7.3)), but was insignificant in Task 1 (OR = 1.79; z = 1.07; p = .284; 95% CI = (.6, 5.2)), as were the differences for the younger group in both tasks (Task 1: OR = .74; z = -.64; p = .525; 95% CI = (.3, 1.9); Task 2: OR = .67; z = -.84; p = .401; 95% CI = (.3, 1.7)). It is highly possible that the lack of significance for the older child group in Task 2 resulted from a lack of power due to a small sample size.
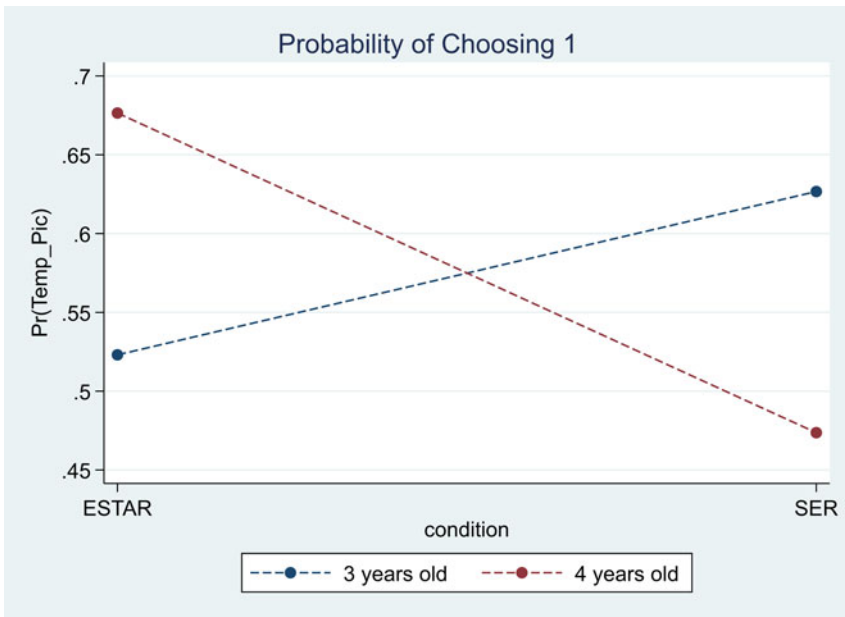
Figure 3. Significant crossover interaction between Age and Condition in selection of the temporary picture

Discussion

In order to identify the timing of the acquisition of the distinction between the Spanish copulas *ser* and *estar* before the age of four in monolingual children, we extended the study by Requena et al. (2015) to younger children. In what follows we will address our research question: Do three-year-old Spanish-speaking children differ from four-year-old children in their interpretation of copula with adjectives?

We predicted that the older children who are around age four would interpret properties used with *estar* as temporally bounded, selecting the temporary picture more with *estar* than with *ser,* similar to the children aged four and up in previous studies (Requena et al., 2015; Schmitt & Miller, 2007). Indeed, our results confirm the prediction. Selection of the temporary picture by this group resembles adult behavior in that it is greater with *estar* than with *ser*. This finding replicates previous studies with data from a different dialect. The results presented here indicate that around age four, children assign an interpretation to *estar* that is consistent with the proposal that they can calculate the implicature that a property does not hold at all times. These participants also seem to be able to integrate discourse information (from the story being told in each trial) in order to select the relevant picture.

Corpus studies indicate that at age three children's pattern of copula selection with adjectives shows complementary distribution, but that they are beginning to distinguish copulas differently based on the types of adjectives with which each copula tends to occur (Holtheuer, 2013). We, therefore, predicted that at age three children would not show evidence of the semantic distinction between the two copulas when tested with adjectives that can appear with both copulas and where the meaning difference is drawn from calculating implicatures and integrating discourse information. In

other words, we expected that three-year-olds would treat both copulas the same way, given that they have not yet acquired the distinction.

Our results indicate that three-year-old children differ from four-year-old children in their interpretation of the copulas with adjective. Unlike the older children, three-year-old children's selection of the temporary picture with estar was at chance (50%) and did not differ significantly from selection of the temporary picture with *ser* (which in Task 2 was greater than with *estar*). This indicates that the previously reported restrictive interpretation of *estar* (also found here among the older group and adults) is not evident in the three-year-olds. Our prediction is therefore confirmed, as the distinction between the copulas in the syntactic and discourse context tested here seems to develop during the third year of age in Spanish-speaking children.

Our results, however, do not mean that by age three children have no knowledge about the copulas. By age three, monolingual children have been shown to have some knowledge of the syntactic contexts in which each of the copulas may appear, and that there are different distributions of how these copulas are used with particular adjectives (Espinosa-Ochoa, 2019; Holtheuer, 2013; Sera, 1992). However, as mentioned earlier, the tasks in the present study required children to integrate discourse and calculate implicatures in order to determine the interpretation of the copulas (Maienborn, 2005; Schmitt & Miller, 2007). When observing the rates of selection of the temporary picture with each copula, we see that three-year-olds are close to 50% selection of the temporary picture with both copulas. While this is not very different from the other groups for *ser,* it can be interpreted as three-year-olds having yet to acquire the implicatures and/or discourse integration that trigger the use of *estar* with adjectives, since selection of the temporary picture is reliably found to be greater with *estar* among adults and older children in similar PMTs (Schmitt & Miller, 2007) as well as in the same tasks (Requena et al., 2015; and older children and adults in the present study).

The greater difficulty with *estar* is to be expected based on proposals that pose *estar* as more complex than *ser. Estar* is discourse-bound since it links the adjective to a particular external situation. Therefore, its interpretation in the contexts tested here requires knowledge of the implicature that the property does not hold independent of time (Schmitt & Miller, 2007). Following Maienborn (2005), the child would need to be able to entertain alternative situations (or discourse settings) and, through contrast between them, interpret a property introduced with *estar* as linked to only one of such situations. Even when before the first year of age infants engage in context-sensitive inferential communication (such as inferring the goals of social partners in particular contexts), pragmatic implicatures and discourse integration can take longer to acquire due to the limited knowledge of and experience with language as well as to difficulties with the properties and availability of the alternatives on which to base inferences (Bohn & Frank, 2019, and references therein; Krämer, 2000). Our results indicate that Spanish three-year-olds have yet to acquire certain aspects of the copula distinction with adjectives that are in place by age four.

Conclusion

Here we have presented the first study reporting responses by a group of three-year-old children performing the PMTs used in previous studies (Requena et al., 2015). We have sought to establish the timing of the acquisition of the aspectual distinction displayed by

children age 4;0 and up in the literature. Whereas previous research found children to be restrictive in their interpretation of *estar*, associating this copula to the temporary picture with more frequency than to the permanent picture, this was only true to of our older participants (age four). The younger participants in this study (age three), however, did not show evidence that they distinguish the copulas with either known or novel adjectives. The new data presented here suggest that the necessary pragmatic and discourse components of the distinction between Spanish copulas *ser* and *estar* with adjectives are not fully mastered before age four. Future research using a within-subjects design and including cognitive measures related to the ability to calculate certain implicatures and restrict the domain of reference in similar contexts as those tested here is needed to fully understand how cognitive development supports the development of the distinction between the Spanish copulas around age three.

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