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HOW CHILDREN USE THE INPUT TO ACQUIRE THE SPANISH COPULAS *SER* AND *ESTAR* WITH ADJECTIVES [*]

EL USO DEL INPUT EN LA ADQUISICIÓN DE LAS CÓPULAS *SER* Y *ESTAR* CON ADJETIVOS EN EL ESPAÑOL INFANTIL

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ABSTRACT

This paper investigates Spanish-speaking children's acquisition of *ser* and *estar* with adjectives. Studies based on production data have shown that *ser* and *estar* are acquired early. However, we know very little about how children acquire this knowledge based on the linguistic input they are exposed to. Production data of *ser* and *estar* by eleven children and their principal caretakers were collected in order to investigate whether and how children extract information from parental input. A qualitative analysis of both the children's natural production and their respective input indicated that children's choice of the copulas was related to the semantic and morphological properties of the adjectives they appear with, suggesting that children may use linguistic generalizations independent from the input in order to acquire *ser* and *estar*.

Keywords: First language acquisition, linguistic input, natural production data.

RESUMEN

En esta investigación se estudia la adquisición de las cópulas ser y estar con adjetivos. Estudios con datos de producción indican que ser y estar se adquieren en etapas tempranas. Sin embargo, se sabe muy poco sobre cómo los niños extraen este conocimiento del input lingüístico al que están expuestos. Con el objetivo de investigar qué tipo de información está presente en el input y cómo los niños acceden a ella se recogieron datos de producción

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natural de once niños y sus respectivos padres. El análisis cualitativo de la producción de los niños y la producción de los padres (input paterno) indica que la elección de las cópulas se encuentra relacionada con las propiedades semánticas y morfológicas de los adjetivos con los que aparecen. Los resultados sugieren que los niños podrían usar generalizaciones lingüísticas independientes del input para adquirir *ser* y *estar*.

Palabras clave: Adquisición de lengua materna, input lingüístico, datos de producción natural.

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1. INTRODUCTION

The Spanish copulas verbs *ser* and *estar* 'to be' have received considerable attention in the theoretical (Arche, 2007, Bello, 1951; Bosque, 1999; Vañó-Cerdá, 1982; Luján, 1981; Camacho, 2012; Clements, 1988, 2005; Leonetti, 1994; Leonetti & Escandell, 2002; Fernández-Leborans, 1995; Diesing, 1990, 1992; Kratzer 1989; Marín, 2004; Maienborn, 2005; Schmitt, 1992, 1996, 2005; Roby, 2007), sociolinguistic (Silva-Corvalán, 1994) and the second language literature (Geeslin & Guijarro-Fuentes, 2006, 2008; Guijarro-Fuentes & Geeslin, 2006)). However, we are only recently discovering how children acquire these two forms. Previous studies show that young monolingual Spanish-speaking children use *ser* and *estar* almost errorless in spontaneous speech (Sera, 1992; López Ornat, 1994) but that, in more controlled settings (e.g. in elicitation and comprehension experiments), children do not behave like adults when forced to make a choice between *ser* and *estar* (Schmitt, Holtheuer & Miller, 2004; Schmitt & Miller, 2007; Holtheuer, 2012; Schmitt, Miller & Holtheuer, 2013). As studies of second language have reported, the acquisition of *ser/estar* is a highly complex task. Correct and appropriate usage depends on distributional, semantic/aspectual, pragmatic and discursive factors. However, Spanish-speaking children unlike second language learners of Spanish, produce very few errors (see López Ornat (1994); Holtheuer & Rendle-Short (2013), and Liceras, Fernández-Fuertes, & Alba de la Fuente (2012) that report some cases of copula omission and overgeneralization in spontaneous speech).

Importantly, *ser* and *estar* are very frequent words in Spanish and Spanish-speaking children are exposed to numerous instances of positive evidence in the input that could support the acquisition of the copulas. Nevertheless, with the exception of Sera (1992) and Silva-Corvalán & Montanari (2008), there are no other studies that I know of that investigate the role of the input in the acquisition of *ser* and *estar* by monolingual populations. Sera (1992), based on natural and elicited production, reported that children and adults used only a few adjectives

with both *ser* and *estar* and hypothesized that the acquisition of *ser* and *estar* with adjectives consisted of rote memorization of the adjectives that correspond to each form (*ser* or *estar*). Similarly, the study of Silva-Corvalán & Montanari (2008) focuses on the acquisition of *ser* and *estar* by a bilingual (English-Spanish) child and shows that his early productions of the copulas mimic the distribution of the input. The authors argue "that copula acquisition is guided by the nature of the interactions that the child enters into with the adults that surround him" (p. 356). There is no doubt that the general distribution of the copulas must be learned from the input since from a very early age monolingual children, like adults, use only *ser* with nominals and only *estar* with locations (Sera, 1992). However, the input is less clear on those structures where both *ser* and *estar* may co-occur such as adjectives. That children use the same combinations of copula plus specific items as their parents do may be the result of learning specific constructions first as usage-based theories endorse but can also be due to the fact that using the same structures follows from parents and children talking about the same entities. Alternatively, children may have certain predispositions for using *ser* and *estar*.

The objective of the present paper is to provide a descriptive analysis of the relationship of patterns of *ser* and *estar* production of children with patterns in the input in order to investigate what type of information is present in the linguistic environment offered to the child and whether children make use of it in order to acquire *ser* and *estar*.

1.1. *Ser* and *estar* with adjectives

In modern Spanish *ser* and *estar* share distribution in the adjectival domain. However, there are restrictions to their use. There are numerous accounts of the distribution of *ser* and *estar* with adjectives (see Holtheuer, 2011, for a more detailed review). Traditionally, the distribution of *ser* and *estar* with adjectives has been accounted for in terms of temporal notions. *Ser* is associated with permanent and essential properties and *estar* with temporary and accidental properties:

1) a. Tania *es/está embarazada y cansada. 'T. is pregnant and tired'.
   b. Mariana es inteligente y extrovertida. 'M. is intelligent and extroverted'.
   c. Los leones son /*están carnívoros. 'Lions are carnivorous'.
   d. Maite es/está callada. 'M. is (generally) quiet/ M. is quiet right now'.

Another widely accepted account of the copulas is based on Carlson's (1977) classical distinction between Individual Level Predicates (ILPs) that refer to properties of individuals (e.g. Mary is pretty/a woman) and Stage Level Predicates (SLP) that refer to stages of individuals (e.g. Mary is sick/in the kitchen). Under

this view, *ser* is used with ILPs and *estar* with SLPs. In this paper I adopt Schmitt's (2005) proposal in which *ser* is a copula with no aspectual properties and is interpreted as a state by default. As a result *ser* is associated with permanent notions. In contrast, *estar* is a copula with aspectual features and must be interpreted anchored in time. While *ser* is atemporal and therefore correlates with permanency, *estar* is temporally specified and therefore it correlates with temporariness. Importantly, for Schmitt the correlation of *ser* with permanence and *estar* with temporariness is not grounded in the grammar as the IL/SL analysis assumes. She observes that semantic temporal notions can be easily overridden (e.g. Juana es flaca ahora. 'J is (ser) thin now'). From this analysis it follows that the acquisition of *ser* and *estar* is in theory difficult since there are situations in which the temporary/permanent character of the copulas are violated.

In order to use the two copulas correctly the child needs to know the basic syntactic and semantic/pragmatic properties of each copula but also the following general distributional facts of the schema *ser*/*estar* + Adj as the sentences in (2) illustrate:

2) a. Mariana es/está lista. 'M. is (*ser*) clever/ M. is (*estar*) ready'
   b. Mariana *es/está peinada/cansada. 'M. is combed/ tired'
   c. Maite es/?está inteligente /carnívora. 'M. is intelligent/carnivorous'
   d. Maite es/está callada. 'M. is (generally) quiet/ M. is quiet right now'

Thus, the child needs to learn that there are adjectives that go with both copulas (2d), adjectives that go with only one (2b), and that predicates with the same adjective yield a different interpretation as in (2a and d). In addition, children need to know something about conversational implicatures. For example, they need to learn that while *ser* and *estar* may overlap in meaning (e.g. *María está bonita porque es bonita* 'Mary is (*estar*) pretty because is (*ser*) pretty') there are contexts in which the *estar* expression may be used for negating the *ser* expression (e.g. *María está bonita pero no es bonita* 'Mary is (*estar*) pretty but she is (*ser*) not pretty').

Having observed the restrictions on *ser* and *estar* uses that depend on adjective type, we proceed to look at the types of errors that children could potentially produce in the examples of (3) below. The child who does not know which adjectives goes with one or the other copula would produce some unacceptable associations of copula with specific adjectives like in (3a) and (3b) below, while the child that is not sure about the specific implicatures associated with *ser* and *estar* would produce some inappropriate uses such as that in (3c):

3) a. Syntactic: Use of *ser* with an exclusively *estar* adjective (**María es embarazada.* 'M. *ser* pregnant) or use *estar* + an exclusively *ser* adjective

(**María está honesta* 'M. is (*estar)* honest').

b. Purely Semantic: Use of the incorrect copula with an adjective that changes meaning depending on which copula it appears with. For example, adjective *listo* means 'ready' if it appears with *estar* and 'clever' if it appears with *ser*. A child may utter *María es lista* 'M. is clever' with *ser* to mean that 'María is ready' although he/she should have used *estar*.

c. Semantic/Pragmatic: The use of *ser* and *estar* in contexts that give rise to different implicatures associated with each copula. For example, in a context in which a person, let's say María, turns red because of shame, a child may utter *María es roja* instead of using the more adequate description of *María está roja*.

In sum, the child could in principle make three types of errors with the copula in the adjective construction: syntactic, purely semantic and semantic/pragmatic. The question that arises then is how Spanish-speaking children learn to use the *ser*/*estar* plus adjective construction from the parental input they are exposed to. In order to answer this question a study of natural production is presented next.

2. NATURAL PRODUCTION STUDY

The main purpose of the current study is to relate patterns of *ser* and *estar* production of children with patterns in the input in order to investigate what type of information is present in the linguistic environment offered to the child.

As we saw in the introduction, in order to use the two copulas correctly in the adjectival domain, Spanish-speaking children need to know the syntax, semantics, pragmatics of the copulas but also how they are used with different types of adjectives; In order to disentangle what factors, distributional, syntactic, semantic/pragmatic and frequency information influence the acquisition of *ser* and *estar* with adjectives, we considered the following hypotheses:

1. At first children may use the underspecified forms (Roeper, 1999).
2. Children acquire first the interpretation that is true in the smallest set of circumstances (Crain & Thornton, 1998).
3. Children acquire first the forms that are very frequent in the input (Bybee & Hopper, 2001).

Hypothesis 1 predicts that *ser* is acquired first because while *estar* carries aspectual information, *ser* is underspecified for aspect (Schmitt, 1996, 2005). Hypoth-

esis 2 predicts that children would acquire a subset interpretation first. Given that *estar* may be a subset of *ser* (Luján, 1981), children would default to *estar*. Hypothesis 3 predicts that frequency of appearance aids in the acquisition. Therefore, the copula that is more frequent in the input will be acquired first.

According to Bybee (2001), type frequency is the dictionary frequency of a particular pattern while token frequency is the frequency of occurrence of a unit. In this particular study, the token frequency corresponds to the cumulative number of times that either *ser* or *estar* are used with any following adjective. In contrast, the type frequency corresponds to whether *ser* or *estar* are used with a particular adjective without specifying how many times each (*ser* or *estar*) occurred with the adjective in question. In other words, type frequency notes whether a particular combination of copula plus an adjective occurs.

In usage-based models the productivity of a schema is a function of type frequency while storage of word forms (e.g. 'entrenchment') is affected by token frequency (Bybee, 2001; Croft & Cruise, 2004). If storing equates with knowledge of the syntax-semantics of the lexical term, then token frequency will affect the knowledge of *ser* and *estar* as separate units. The prediction is that the copula that has a higher token frequency in the input will be used with fewer errors by children because it is more 'entrenched'.

2.1. Method

The children were all monolingual speakers of Spanish living in Santiago de Chile. They were eight boys and three girls whose ages ranged between 1;10 and 3;7. Two of them attended childcare in the mornings. While one boy was exclusively taken care of by his mother, and two siblings were equally taken care of by the mother and the father, all the rest had their mother and a maid as their primary sources of input while at home. The parents were invited to participate in the study and had to sign a Consent Form that was previously approved by the Human Research Ethics Committee of The Australian National University

Spontaneous speech data from five dyads (parent and child) and three triads (parent and two siblings) was collected in two sessions of approximately 1 hour each for the purpose of this study (except one child whose data was recorded only once). The interactions were both audio recorded and videotaped. The sessions took place at the family house and the caretakers were asked to act naturally.

Despite its disadvantages (e.g. lack of experimental control), spontaneous speech data is ideal for examining the uses of highly frequent structures such as the copulas. It is also an appropriate methodology for comparing adults' and children's speech. Therefore, the collection of spontaneous speech data is the methodology of choice in the context of the current study.

The data was transcribed and all utterances that contained *ser* and *estar* with words that denote properties such as adjectives and past participles (e.g. *Marta es inteligente*) in both the input and the child speech were coded.

3. RESULTS

3.1. General distribution of *ser* and *estar* with adjectives in the input and children's production

In the current study the Spanish copulas were frequently and appropriately used by both children and their caretakers. Table I shows the total number of *ser* and *estar instances* that parents and children produced in the collected data. Note that both adults and children used more instances of *ser* than *estar* in the adjective construction.

Table I. *Distribution of ser and estar with adjectives tokens in the input and children's speech.*

	Adults	Children
ser	302	85
estar	281	54

In contrast, the type frequency data shown in Table II indicate that adults used the *estar* + adj type slightly more than the *ser* + adj type (51.4% of the time *estar* was used while 48.6% of the time *ser* was used).

Table II. *Type frequencies: Number of occurrences and proportions of ser and estar with each adjective type.*

Type	Ser	%	Estar	%	Total
Input	168	48.6%	178	51.4%	346
child	37	45.1%	45	54.9%	82

However, a token frequency distribution in Table III reveals that both children and adults use more instances of *ser* with AdjPs.

Table III. *Token frequencies: Number of occurrences and proportions of ser and estar with each adjective.*

Token	Ser	%	Estar	%	Total
Input	302	51.8%	281	48.2 %	583
Child	85	61.15%	54	38.85%	139

When we look at the numbers of adjectives used with each copula we find that both adults and children use slightly more specific adjectives with *estar* than with *ser* (Table IV).

Table IV. *Number of specific adjectives used by children and adults with ser and estar.*

	Ser	*estar*	total
adults	71 (49 %)	74 (51 %)	145
children	23 (44 %)	29 (56 %)	52
total	94 (48 %)	103 (52 %)	197

To sum up, the findings indicate that (i) both children and adults use *ser* tokens more than *estar* tokens, (ii) both children and adults use more instances (types) of *estar* with specific adjectives than instances (types) of *ser* with specific adjectives; and (iii) more specific adjectives are used with *estar* than with *ser*.

At first sight, the overuse of *ser* can be taken as consistent with both the frequency effects hypothesis and Roeper's hypothesis. However, there could be other factors involved. First, not every adjective is acceptable with both copulas. For example, *sucio* 'dirty', *enojado* 'angry', and *guardado* 'stored' (all adjectives used by children in this study) can only go with *estar*. Second, even when a specific adjective is grammatically correct with both copulas, the context will generally require the use of one of the two copulas in order for the utterance to be felicitous. This means that not all adjectives have the same possibility to appear with both copulas and therefore we cannot talk about a preference of the child if the grammar does not allow a 'genuine' choice.

Hence, this seemingly overuse of *ser* with adjectives cannot be taken as showing that children prefer to use *ser* over *estar*. That children use more *ser* than *estar* tokens may be due to specific distributional characteristics of the language (e.g. *ser* is used in more syntactic environments or children use highly frequent structures such as pronominal adjectives that can only appear with *ser*). As a consequence it

cannot be safely concluded that *ser* is acquired before *estar* or that *ser* is easier to acquire than *estar*. It is important then to consider each of the contexts in which children utter the copula with a particular adjective and look for any problems of form and meaning.

3.2. An analysis of specific adjectives

All children used adjectives with both forms *ser* and *estar*, except child 3 (2;2) who did not produce any instance of *estar*. All the contexts in which each token of 'cop + adj' construction was uttered were carefully examined and no mismatch in the choice of copula and the intended meaning was found. The sentences in (4) below present some examples of how children used *ser* and *estar* with adjectives (See the Appendix for all adjectives).

4)	a.	Está triste oso. (1;10)	'*Estar* sad bear'
	b.	Este e(s) azul. (1;10)	'This *ser* blue'
	c.	Porque esa feria es muy fea. (2;11)	'Because that fair is very ugly'
	d.	Está fea el agua. (3;7)	'*Estar* ugly the water'

Table V shows the adjectives used by the children. In Spanish, from the 19 adjectives used with *ser*, 16 can occur with both copulas, 2 adjectives *mío* 'mine' and *tuyo* 'your' that are pronominal can only occur with *ser* and adjective *antiguo* 'ancient' is awkward with *estar*. From the 24 adjectives that children used with *estar*, 12 can also go with *ser* (with some adjectives showing a change in lexical meaning) and 13 are only allowed to go with *estar*.

Table V. *Adjectives used by children in current study*.

	ser adjectives	*estar* adjectives	used with both *ser* and *estar*
1	mío 'mine'	escondido 'hidden'	loco 'crazy'
2	tuyo 'yours'	agachado 'crouched down'	fea 'ugly'
3	antiguo 'ancient'	guardado 'stored'.	rojo 'red'
4	egoísta 'selfish'	enredado 'tangled'	café 'brown'
5	terrible 'terrible'	parado 'standing'	
6	gigante 'gigantic'	enojado 'mad'	
7	iguales 'same'	lleno 'full'	
8	bacán 'very good'	mojado 'wet'	
9	chico 'small'	sucio 'dirty	
10	largo 'long'	vacío 'empty	
11	fuerte 'strong'	suelta 'loosed'	

Continuation Table V.

12	pesado 'heavy'	pilucha 'naked'
13	grande 'big'	roto 'broken'
14	caro 'expensive'	resfriado 'have a cold'
15	alto 'tall'	derretido 'melted'
16	marrón 'brown'	mala 'bad'
17	azul 'blue'	buena 'good'
18	blanca 'white'	listo 'ready'
19	amarillo 'yellow'	rica 'yummy'
20		triste 'sad'
21		caliente 'hot'
22		enfermo 'sick'
23		helada 'freezing'
24		oscuro 'dark'

As the data show most of the adjectives used with *ser* by children are allowed by the grammar to appear with *estar*, but only half of the adjectives used with *estar* by children are allowed by the grammar to appear with *ser*. The children's pattern of distribution is consistent with Fernández-Leborans' (1995) observation that in Spanish, most *ser* adjectives can also appear with *estar* but most *estar* adjectives cannot appear with *ser.* Hence, the *estar* + adjective schema appears to be more restrictive in its use than the *ser* + adjective schema.

A crucial finding relates to the types of adjectives each copula appears with. It is known from the adjective literature (Kennedy & McNally, 1999, 2005) that there are different classes of adjectives and that children treat adjectives differently according to their scalar structure (Syrett, 2007). A legitimate question that arises is whether the type of adjective influences the children's choice between *ser* and *estar*. A typical classification of adjectives is that of Scalar vs. Absolute. Scalar (also known as relative or subsective) adjectives relate to a standard or norm. They are always interpreted relative to the noun with which they occur (e.g. a giraffe is tall compared to other animals like horses or dolphins but short if compared to a skyscraper). Absolute (predicative or intersective) adjectives, on the other hand, denote properties that intersect with intrinsic properties of entities they refer to (e.g. a wooden table is both *wooden* and *a table*, Syrett, 2007: 31).

According to Kennedy and McNally's (2005), a further classification of gradable adjectives refers to whether they refer to an open or closed scale. Gradable open scale adjectives are adjectives that refer to a scale that lacks minimal or maximal values (e.g. *big*, *little*) while gradable closed scale adjectives are those that refer to a scale that has minimal or maximal values (e.g. *empty*, *full*, *striped*). In this

study we adopt the idea that there are open scale (scalar) adjectives such as *big* and *tall* and there are close scale (absolute) adjectives such as *close* and *full*.

Once we consider the different types of adjectives and how children use them with *ser* and *estar* we notice an interesting pattern: while most adjectives used with *ser* are open scale adjectives e*star* appears with both open and close scale adjectives. This pattern of association suggests that children may differentiate between *ser* and *estar* by paying attention to the scalar structure of the adjectives.

Similarly, children preferred to use participial adjectives that finish in *ado/ido* exclusively with *estar.* There is only one adjective used with *ser* that finishes in *ado/ido* (*pesado* 'heavy') while there are eleven adjectives that finish in *ado/ido* used with *estar*. That children show a preference in using participial adjectives with *estar* is consistent with Raposo and Uriagereka's (2009) observation that in the absence of relevant morphology (e.g. present/past participial morphemes) both *ser* and *estar* may be used. When it is present, *estar* is usually selected. Some cases of *ser* are also acceptable with *ado*, *ido* but the important point is that *estar* only appears with adjectives that involve this morphology (P or *-ado*, *-ido*). This interpretation of the results gets support when we observe that children show this preference even though parents use several *-ado/ido* adjectives with both *ser* and *estar*. Therefore it is possible that children use morphological clues in order to choose between the two copulas.

In sum, there are two important characteristics of the adjectives that children seem to use as bootstraps for choosing *ser* and *estar*. They seem to pay attention to both the scalar and morphological structure of adjectives in order to use the copulas appropriately.

Now, how informative is the input that children receive in order to learn to use *ser* and *estar* with adjectives? Table VI shows the adjectives used by the parents.

Table VI. *Adjectives used by adults*.

	ser adjectives	English	*estar* adjectives	English	both *ser estar*	English
1	aburrido	boring	afirmado	fasten	abrigado	warm
2	alto	tall	apretado	tighten	bonito	pretty
3	amarillo	yellow	asustada	frightened	caliente	hot
4	antiguo	old	bueno	good	chico	small
5	atroz	atrocious	caído	fallen	claro	clear
6	azul	blue	callada	quiet	dura	hard
7	bajo	short	cansada	tired	fresco	fresh
8	blanca	white	cerrado	closed	grande	big
9	cansador	tiring	chueco	bent	igual	same
10	cariñosa	tender	colorada	red	malo	bad
11	carnívoro	carnivorous	cómoda	comfortable	mejor	better
12	caros	expensive	cucú	crazy	raro	rare
13	cierto	true	curiosas	curious	venenosa	poisonous

Continuation Table VI.

14	cochino	dirty	derecha	straight
15	comilona	big-eater	derretido	melted
16	corta	short	descubiertos	uncovered
17	delicado	delicate	desenchufado	unplugged
18	difícil	difficult	desesperado	desperate
19	distinto	different	disfrazado	disguised
20	dramático	dramatic	doblado	bent
21	egoísta	selfish	enfermo	sick
22	entretenido	entertaining	enojado	mad
23	escasas	scarce	enredado	tangled
24	especial	special	envenenada	poisoned
25	fácil	easy	escondida	hidden
26	floja	lazy	externa	external
27	fome	boring	extraño	strange
28	gigante	gigantic	felices	happy
29	gris	grey	fuerte	strong
30	harto	full	guardado	stored
31	herbívoro	herbivorous	hechas	made
32	idéntico	identical	helado	cold
33	largo	long	hermosa	beautiful
34	letal	lethal	inquieto	tireless
35	linda	pretty	instalada	installed
36	liviana	not heavy	junto	together
37	mañosa	bad character	lleno	full
38	mío	mine	loco	crazy
39	morada	purple	mal	bad
40	parecida	similar	metidos	introduced
41	peligroso	dangerous	mojado	wet
42	pesado	heavy	nerviosa	nervous
43	plástica	plastic	nuevo	new
44	poco	few	obnubilado	obnubilated
45	porfiada	stubborn	oscuro	dark
46	rojo	red	parado	standing
47	rosado	pink	pilucha	naked
48	simpático	nice	puesto	put
49	suyo	their	quebrado	broken
50	temprano	early	resfriadito	with a cold
51	terrible	terrible	rico	nice
52	tiesa	stiff	roto	broken
53	tímida	shy	seca	dry
54	tonto	dumb	seguro	safe
55	tricolor	tricolor	sentada	seated
56	tuyo	your	sola	alone
57	verde	green	sordo	deaf
58			sucia	dirty
59			triste	sad
60			vacío	empty
61			vestida	dressed

From the 57 adjectives that parents used with *ser*, 45 can also go with *estar*, but from the 61 adjectives that go with *estar* only 28 can also go with *ser*. Again, as in the case of children**,** most of the adjectives used with *ser* by adults are allowed by

the grammar to appear with *estar*, but only half of the adjectives used with *estar* by adults are allowed by the grammar to appear with *ser*. Also, like children, adults used very few adjectives with both copulas (only 13 adjectives were used with both *ser* and *estar*). These results are in accord with Sera's (1992) finding that only a few adjectives were used with both copulas by children and adults in her data. Sera notes that the absence of overlap of *ser* and *estar* with particular adjectives supports an empiricist account of copula acquisition. However, her conclusion relies on the assumption that every adjective can be 'freely' used with both copulas. Given that when the grammar allows a particular adjective to appear with either *ser* or *estar*, the context imposes meaning and/or pragmatic restrictions on whether one copula is the most appropriate, it is not safe to support Sera's proposal. In fact, that children in this study use *ser* and *estar* with adjectives without violating the grammar and with no evident mismatch of their semantic and pragmatic properties suggests that children have begun to distinguish *ser* and *estar* very early on.

The interesting question that arises then is how do children learn that *ser* and *estar* have different properties? Are children presented with positive evidence contrasting the two copulas? Do children, for example, encounter unambiguous uses of *ser* and *estar* (e.g. *Sus patas que eran blancas estaban entonces coloradas*. 'Their feet that were white were then red')? An analysis of the data indicates that this kind of evidence was virtually inexistent with only one case in the input. Thus, children may have to infer the meaning of *ser* and *estar* by separately analyzing how each copula matches reality when used for description purposes. This is a difficult task since it is not straightforward to determine whether a speaker used the correct copula with the intended meaning (see Woolsey, 2008, for similar claims).

To sum up, the results are consistent with the idea that the input does not contain explicit information about which adjectives go with one or the other copula. This suggests that children would have to use implicit information. It was suggested that two types of implicit information that children could in principle exploit are the semantic structure (scalar vs. non-scalar) and the morphology of the adjectives the copulas appear with. Given that the children´s production of adjectives is qualitatively different from that of adults it sounds implausible that children would use only memory for using *ser* and *estar* with adjectives in both a grammatical and felicitous manner.

4. CONCLUSION

In the current study the children used the *ser/estar* plus adjective construction correctly and felicitously. Like adults, they did not use many adjectives with both copulas. Unlike adults though, children exhibited an interesting pattern of production in their choice of matching *ser* and *estar* with adjectives: (i) while most

adjectives used with *ser* by children were scalar adjectives, children used *estar* with both scalar and non-scalar adjectives, and (ii) children used most adjectives that finish in *ado, ido* exclusively with *estar*. These findings suggest that children younger than four have begun to make distinctions between types of adjectives, regarding scalar and morphological structure. In addition, the results are consistent with the idea that children may use linguistic knowledge (e.g. adjective information) that is independent from the input in order to restrict their *ser* and *estar* distributional choices. The input offers little contrastive information of when to use *ser* vs. *estar* with a specific adjective (e.g. S*u pelo es negro pero está rojo* 'Her hair is (*ser*) black but is (*estar*) red'). Since parents did not use many adjectives with both copulas they did not provide the children with many opportunities to distinguish the adjectives that can be only used with one of the copulas from those that can be used with both. It is intriguing how children learn which adjectives occur exclusively with *ser*, which occur exclusively with *estar* and which adjectives co-occur with both copulas. In spite of this, the children seemed to have acquired a great deal of knowledge of how particular adjectives are used because they do not interchange the copulas.

Importantly, children also need to understand how *ser* and *estar* relate to different types of adjectives. Little attention has been devoted to the role of adjective learning in the acquisition of *ser* and *estar* in both the theoretical and acquisition literature. The current study underscores the need of investigating the role that adjective semantics, specifically scalar internal structure, plays in the acquisition of *ser* and *estar*.

An important limitation of the current study is that possible input sources that could be useful for choosing between *ser* and *estar* have been identified but no evidence of whether children use this information is provided. Future work should focus on comprehension data that could complement the current findings.

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APPENDIX

Adjectives used with each Copula by Children in Natural Production Data

Child (age)	*ser*	*estar*
Child 1 (1;10)	Azul 'blue' mío 'mine' chiquito 'small' rojo 'red'	triste 'sad'
Child 2 (1;11)	mío 'mine'	helada 'freezing' caliente 'hot' malo 'bad' roto 'broken'
Child 3 (2;2)	mío 'mine' marrón 'brown'	Ø sentado 'seated'
Child 4 (2;4)	tuyo 'yours' verde 'green'	sucio 'dirty'
Child 5 (2;4)	tuyo 'yours' mío 'mine' iguales 'same' blanca 'white' azul 'blue' amarillo 'yellow'	pilucha 'naked'
Child 6 (2;10)	mío 'mine' tuyo 'yours' grande 'big'	sucio 'dirty'
Child 7 (2;11)	terrible 'terrible' fea 'ugly' antigua 'ancient'	escondido 'hidden' roto 'broken' rojo 'red' agachado 'crouched down' listo 'ready' café 'brown' guardado 'stored'.

Child 8 (2;11)	largo 'long' chica 'small'	parado 'standing' oscuro 'dark' enfermos 'sick' mala 'bad' enredado 'tangled' lleno 'full' mojado 'wet' sucio 'dirty' vieja 'old'
Child 9 (2;11)	largo 'long' mio 'mine'	parado 'standing' enojado 'mad' enfermo 'sick' mala 'bad' buena 'good' lleno 'full' mojado 'wet' sucio 'dirty vacío 'empty
Child 10 (3;5)	egoísta 'selfish' gigante 'gigantic' mío 'mine'	viejo 'old' suelta 'loosed'
Child 11 (3;7)	loco 'crazy' iguales 'same' fuerte 'strong' mías 'mine' pesado 'heavy' grande 'big' bacán 'very good' caros 'expensive' alto 'tall' café 'brown'	pilucha 'naked' rica 'yummy' fea 'ugly' helada 'freezing' mojado 'wet' roto 'broken' loca 'crazy' listos 'ready' resfriados 'have a cold' derretido 'melted'