

Child First Language Acquisition of English and Spanish Prepositional and Double Object Constructions

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This study examines the acquisition of dative alternation (DA), namely, prepositional structures and double object constructions (DOCs), in English and Spanish. The analysis of Spanish and English child monolingual data and adult input available in CHILDES reveals a similar pattern of emergence of prepositional and DOCs in the two language groups. This suggests a lack of derivation between the two structures in the two languages, assuming that more complex derived structures emerge later than nonderived ones. This is argued to be the case despite the difference between English and Spanish DA, as per the Complex Predicate Parameter. The delay in the onset and the lower incidence of English and Spanish prepositional DA seems to be related to the amount of exposure in the adult input. These findings, therefore, suggest that children acquire the similar syntactic nonderivational relationship that underlies DA constructions both in English and in Spanish. Besides, adult input factors seem to play a similar role in the children's preference for the use of DOCs rather than prepositional structures in the two languages.

Keywords: prepositional; double object; emergence; adult input; dative alternation; monolingual L1 acquisition

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La adquisición infantil en la primera lengua de construcciones preposicionales y de doble objeto en inglés y en español

Este estudio examina la adquisición de construcciones con alternancia del dativo (CAD), a saber, estructuras preposicionales y de doble objeto, en inglés y en español. El análisis de datos

en inglés y español de niños monolingües y adultos, procedentes de CHILDES, revela un patrón similar de emergencia de estructuras preposicionales y de doble objeto en los dos grupos lingüísticos. Esto sugiere una ausencia de derivación entre las dos construcciones en las dos lenguas si se asume que las estructuras derivadas y, por tanto, más complejas, emergen más tarde que las no derivadas. Esto, según el Parámetro de los Predicados Complejos, es así independientemente de las diferencias entre las CADs en inglés y en español. El retraso en el patrón de emergencia y la baja incidencia de las construcciones preposicionales en inglés y en español parecen estar relacionados con el *input*. Estos hallazgos sugieren que los niños adquieren la relación sintáctica no derivada de las CADs en inglés y en español. Además, el *input* adulto parece haber desempeñado un papel similar en la preferencia de los niños por el uso de CDOs frente a estructuras preposicionales en las dos lenguas.

Palabras clave: preposicional; doble objeto; emergencia; *input* adulto; alternancia del dativo; adquisición L1 monolingüe

1. INTRODUCTION

This study explores how monolingual acquisition data can elucidate the syntactic relationship between the two types of dative alternation (DA) constructions, namely, prepositional structures—English *to/for*-datives and Spanish *a/para*-datives—that alternate as double object constructions—English DOCs and Spanish dative clitic doubled structures (DCLD)—in English (1) and in Spanish (2). In order to do so, I analyze spontaneous longitudinal production by English and Spanish monolingual children and adults that engage in conversations with them.¹

- (1) a. Give me some more [Sarah, 2;01, Brown corpus, CHILDES]
 b. Nana gave it to me [Sarah, 3;02, Brown corpus, CHILDES]
 c. You write something for me [Sarah, 2;02, Brown corpus, CHILDES]
- (2) a. Le voy a hacer un regalo a Mónica
 her.dat.cl. go.1p.sg.pres. to do.inf. a gift to Mónica
 “I am going to buy Mónica a gift” [Juan, 2;04, Linaza corpus, CHILDES]
- b. Dice hola a los árboles
 say.3p.sg.pres. hello to the trees
 “He says hello to the trees” [Juan, 2;03, Linaza corpus, CHILDES]
- c. Hacemos una nave espacial para Gus
 make.1p.pl.pres. a ship spatial for Gus
 “We are making a spaceship for Gus” [Juan, 2;04, Linaza corpus, CHILDES]

The Complex Predicate Parameter (Snyder 2001) accounts for the crosslinguistic differences that are present in the two types of DA structure in English and Spanish. While in English DA occurs via the presence or absence of the prepositions *to/for* in the alternation between *to/for*-datives and DOCs, respectively, in Spanish, DA is accounted for via the presence or absence of the dative clitics *le* (“him, her”) or *les* (“them”) in the alternation between DCLDs and *a/para*-datives. Such a point of crosslinguistic comparison arises from the parametric distinction between the availability of prepositional and DOCs in English—a [+complex predicate] language—and in Spanish—a [-complex predicate] language. More specifically, Spanish does not exhibit the direct counterpart of English-like DOCs, and thus, DCLDs do not share the

¹ The bracketed information next to each example taken from CHILDES includes the child’s name, the age at which the utterance was produced, the corpus that hosts the utterance and the reference to the CHILDES database (MacWhinney 2000).

status of the corresponding structures in [+complex predicate] languages (Demonte 1995; Cuervo 2003). In other words, while the prepositions *a* and *para* in Spanish *a/para*-datives cannot be removed in the formation of DCLDs—and this could suggest the unavailability of English-like DOCs—they show analogous syntactic properties when compared to English *to/for*-datives. This means that in English *to*-datives (1b) and in Spanish *a*-datives (2a), the verb subcategorizes for a direct object (DO) and an indirect object (IO) headed by the prepositions *to/a*. Conversely, the verb in English *for*-datives (1c) and in Spanish *para*-datives (2c) selects a DO as well as an adjunct (A) headed by the prepositions *for/para*.

A different status is given to DOCs in the two languages. While in English the verb selects two internal nominal arguments—a DO followed by either an IO, if DOCs alternate as *to*-datives, or an A, if DOCs alternate as *for*-datives—in Spanish, the verb in DCLDs subcategorizes for a DO and a nominal complement headed by the preposition *a*. The preposition in Spanish DCLDs is coindexed with the dative clitic *le* (“him/her”) or *les* (“them”) in terms of gender, number and person features along with case and theta role properties, as per the Matching Hypothesis (Suñer 1988).

Taking into account the syntactic properties of the two DA constructions, I aim to shed light on whether English and Spanish children’s longitudinal spontaneous production data can account for the syntactic derivational (Larson 1988; Demonte 1995; Haspelmath 2006) or nonderivational relationship (Marantz 1993; Snyder and Stromswold 1997; Cuervo 2003) that underlies and connects the two constructions in the two languages. Put another way, I intend to investigate whether the syntactic relational pattern of these structures differs when English children’s data are compared to Spanish children’s. Furthermore, I examine whether the adult use of English and Spanish DA constructions plays a similar role when comparing the children’s output throughout the study period, that is, from 0;06 to 8;00 (Campbell and Tomasello 2001; Yang 2016).

The findings will contribute to filling the gap in research regarding the syntactic (non)derivational relationship and the acquisition of prepositional and DOCs in English and Spanish. As regards the field of acquisition, the present study provides novel child acquisition data on English and Spanish DA. Earlier work has not examined the time of acquisition of prepositional structures that alternate as DOCs in Spanish compared to English—Vincent Torrens and Kenneth Wexler investigated the timing of emergence of one of the two types of Spanish DA constructions, namely, DCLDs (2000). Furthermore, this study also contributes novel data on prepositional and DOCs in English, given that it examines English children’s acquisition of these structures based on different data classification criteria from those reported in earlier work (Snyder and Stromswold 1997; Campbell and Tomasello 2001).

This article is organized as follows. Section 2 addresses the domain of DA in both English and Spanish from a formal perspective. Section 3 deals with earlier work on

acquisition of DA. Section 4 presents the study and is divided into two parts: the first formulates the research questions and the second describes the methodology. Section 5 deals with the conclusions drawn from the data analysis and some suggestions for further research.

2. ON THE SYNTACTIC RELATIONSHIP BETWEEN PREPOSITIONAL AND DOUBLE OBJECT CONSTRUCTIONS IN ENGLISH AND SPANISH

There is no consensus in earlier work on formal linguistics with regards to the syntactic relationship that characterizes prepositional structures that alternate as DOCs in English and Spanish. The debate focuses on whether DOCs and *to/for*-datives in English, on the one hand, or DCLDs and *a/para*-datives in Spanish, on the other, are derivationally related (Larson 1988; Aoun and Li 1989; Demonte 1995) or whether prepositional and DOCs do not derive from one another. The latter approach argues either for the two DA structures stemming from two different underlying structures (Mulder 1992; Marantz 1993; Cuervo 2003) or for a shared underived construction (Snyder and Stromswold 1997; Snyder 2001).

In English, the syntactic derivational approach has centered on whether DOCs derive from *to/for*-datives (Perlmutter 1980; Larson 1988; Haspelmath 2006) or are the source from which *to/for*-datives derive (Dryer 1986; Aoun and Li 1989). Both stances resort to a passive-like mechanism. Under the Government and Binding theory, Richard K. Larson proposes that DOCs (3b) derive from *to/for*-datives (3a) via the determiner phrase (DP)-movement of the prepositional complement to a postverbal position so as to receive accusative case from the verb:

- (3) a. John [_{VP} sends_i [_{VP} a letter [_V *t*_i to Mary]]]
 b. John [_{VP} sends_i [_{VP} Mary_j [_V [_V *t*_i] *t*_j] a letter]]] (Larson 1988, 342)

In contrast, Joseph Aoun and Yen-hui Li (1989) lend support to the notion that *to/for*-datives derive from DOCs. They argue that the empty verb (*e*) that projects a small clause (SC) in the base DOC (4a) loses its case-assigning properties and causes the DO *a book* to undergo DP-movement to the specifier of the SC in order to be allocated accusative case by the verb in the derived *to*-dative (4b):

- (4) a. I [_{VP1} [_V gave [_{SC} Mary [_{VP2} [*e* a book]]]]]
 b. I [_{VP1} [_V gave [_{SC} a book_i [_{VP2} [_{VP3} *e* *t*_i] to Mary]]]]] (Aoun and Li 1989, 164)

The Relational Grammar approach dictates that DOCs derive from *to/for*-datives via the advancement of the IO over the DO (5) (Perlmutter 1980; Haspelmath 2006) or via the advancement of the IO from a secondary object (SO) position to a primary object (PO) position (6) (Dryer 1986):

- (5) a. Pedro gave his e-mail address to Aisha
 SU-1 DO-2 IO-3
- b. Pedro gave Aisha his e-mail address
 SU-1 IO-3 DO-2
 SU-1 DO-2 *chômeur* (Haspelmath 2006, 3)
- (6) a. John gave Mary the book
 SU IO (PO) DO (SO)
- b. John gave the book to Mary
 SU DO (SO) IO (PO)
 SU DO (PO) *chômeur* (Dryer 1986, 821)

It has also been argued that DOCs and *to/for*-datives are not derivationally related to one another. One such approach lends support to two representations that differ in the status of the head projected. While Alec Marantz (1993) argues that DOCs (7a) and *to/for*-datives (7b) are, respectively, headed by a null verb and an empty causative verb, René Mulder (1992) proposes that DOCs (8a) and *to/for*-datives (8b), respectively, are projected in a Verbal Phrase (VP) structure or an SC domain:

- (7) a. [_{IP} [_{DP} Elmer] [_I [_I past]] [_{VP} [_{DP} Hortense] [_V [_V give_i + APPL] [_{VP} [_{DP} the porcupine] [_V [_V *t*_i]]]]]]]]
 b. [_{IP} [_{DP} Elmer] [_I [_I past]] [_{VP} [_{DP} the porcupine] [_V [_V give] [_{PP} to Hortense]]]]]]]]
 (Marantz 1993, 119)
- (8) a. I [_{VP} gave [_{SC} John ϕ_{HAVE} the book]]
 b. I [_{VP} gave [_{SC} the book ϕ to John]] (Mulder 1992, 69)

An alternative nonderivational approach to English DA accounts for a common underlying structure, or Property A, that could be analyzed as a complex predicate (Marantz 1993; Larson 1988) or as an SC structure (Aoun and Li 1989), following the Complex Predicate Parameter (Snyder 2001). However, *to/for*-datives require an additional property, Property B, given the special status of the prepositions.

In Spanish, there seems to be an agreement on the derivation of DCLDs from *a/para*-datives via the presence/absence of a dative clitic *le/les* (Demonte 1995) since no evidence has been presented to support the derivational status of *a/para*-datives. The formation of DCLDs (9b) departs slightly from the underlying structure of *a/para*-datives (9a) in that a dative clitic projects a dative clitic phrase (DCIP) at a higher position of a Chomskian-Larsonian VP-shell domain. The preverbal position of the dative clitic remains open for further research.

- (9) a. $\{_{VP} \{_{V'} \{_{V'} \text{entregué}_i \{_{VP} \{_{DP} \text{las llaves}\} \{_{V'} \{_{v} t_i\} \{_{PP} \text{al conserje}\}}\}}\}}\}$
 b. $\{_{VP} \{_{V'} \{_{V'} \text{entregué}_i \text{las llaves}_k \{_{DCLIP} \{_{PP} \text{al conserje}\}_j \{_{DCI'} \{_{Cl} \text{le}\} \{_{VP} t_j \{_{V'} \{_{v} t_i\} \{_{DP} t_k\}}\}}\}}\}}\}}\}$
 (Demonte 1995, 16)

Nonderivational approaches to Spanish DA (Cuervo 2003) argue that these structures differ syntactically as regards the status of the head projected, that is, a verb in *a/para*-datives (10a) and a dative clitic in DCLDs (10b):

- (10) a. Andrea envió un diccionario a Gabi
 Andrea send.3p.sg.past a dictionary to Gabi
 “Andrea sent a dictionary to Gabi”
 $\{[TP \ [\] \ [T] \ \{[Andrea] \ \{[v] \ \{[V \ \text{envió}] \ \{[Theme \ \text{un diccionario}] \ [P \ a] \ [Goal \ Gabi]\}}\}}\}}\}}\}$
 b. Andrea le envió un diccionario a Gabi
 Andrea him.cl.dat. send.3p.sg.past a dictionary to Gabi
 “Andrea sent Gabi a dictionary”
 $\{[TP \ [Andrea] \ \{[T \ le_i \ \text{envió}]_k \ \{[t_j] \ [vP \ [\text{un diccionario}] \ \{[v \ t_j + t_k] \ \{[V \ v \ t_j + t_k] \ \{[Beneficiary \ a \ Gabi] \ \{[Appl \ le_i] \ \{[Theme \ t_i]\}}\}}\}}\}}\}}\}}\}$ (Cuervo 2003, 125)

As will be discussed in section 4.1, a later pattern of emergence and a lower incidence of *to/for*-datives when compared to DOCs in English and of *a/para*-datives when compared to DCLDs in Spanish might suggest that while prepositional constructions are more grammatically complex—that is, that they are the ones being derived—DOCs are less complex and, therefore, more basic DA structures—that is, they are underived constructions. Alternatively, a similar pattern of emergence, and possibly a fairly similar incidence, in the production of the two English and Spanish DA constructions could suggest that analogous syntactic properties are required in the production of prepositional and DOCs in these two languages. This scenario would imply a syntactic nonderivational pattern in the two structures.

The present work will therefore consider the timing of the emergence of the two English and Spanish DA constructions in children as a determining factor for the relative degree of complexity of prepositional and DOCs—or lack thereof. These emergence patterns will shed light on the derivational or nonderivational explanations discussed above.

3. THE ACQUISITION OF PREPOSITIONAL AND DOUBLE OBJECT CONSTRUCTIONS

Earlier studies on the acquisition of prepositional structures that undergo alternation as DOCs in English and Spanish have investigated the age of their onset and the role played by adult input in children’s production of these constructions. With regards to English, studies (table 1) have found evidence for the earlier onset of DOCs when compared to *to/for*-datives (Bowerman 1990; Snyder and Stromswold 1997; Campbell and Tomasello 2001):

TABLE 1. Age of onset of DA by English children

Study	DOC	<i>to/for</i> -dative
Bowerman (1990)	Eva	1;10
	Christy	1;11
Campbell and Tomasello (2001)		2;04
Snyder and Stromswold (1997)		2;06

This emergence pattern reveals that English children acquire the DA constructions as a block, as part of the group of complex predicates or SC structures that share an underlying parametric property (Snyder and Stromswold 1997). Alternatively, the emergence pattern can be said to show the influence of the relative frequency of exposure to English DA in the adult input these children receive from birth (Campbell and Tomasello 2001), which it mirrors. From the thematic role-syntactic canonical mapping hypothesis approach, the ordering effect in the acquisition of DOCs and *to/for*-datives was not confirmed in Melissa Bowerman's study, which found contrasting results in terms of time of onset (1990).

William Snyder and Karim Stromswold report a significant correlation between the onset of DOCs and of *to*-datives ($r = .76$, $p = .0043$), as reflected in twelve US native English-speaking children's spontaneous data (age range: 1;04-7;10) (1997, 289-90). This suggests that DOCs and *to*-datives are related by means of a language-specific syntactic parametric property, Property A, given that they are acquired as part of the single syntactic package of complex predicates, as captured in the Complex Predicate Parameter (Snyder 2001). Despite their shared underlying structure, the delay in the onset of *to*-datives when compared to DOCs ($t(11) = 4.15$, $p = 0.002$) is argued to be related to an additional property, Property B, that is required in the production of these structures. Property B is associated with the special case and theta role-mediated assignment properties of the preposition, namely, the preposition mediates the process of assigning dative case and goal theta role by the verb onto the prepositional complement (Larson 1988).

Research on the acquisition of Spanish DA is rather scarce and chiefly concerned with emergence of DCLDs in children (Torrens and Wexler 2000). Analogous studies have not investigated the acquisition of *a/para*-datives or the relationship between the two Spanish DA constructions. Torrens and Wexler reveal that DCLDs emerge between 1;07 and 2;03, as reflected in the spontaneous production data from a Spanish child, studied between the ages of 1;07 and 3;11. This is reported to be the case, regardless of the optionality of the dative clitic with nonpronominal prepositional complements (11) or its obligatory nature with pronominal prepositional complements (12):

- (11) (Le)_i voy a dar arroz {a mi niño}_i
 him.cl.dat. go.1p.sg. pres. to give.inf. rice to my baby
 “I’m going to give rice to my child”
- (12) Te_i voy a hacer una foto {a ti}_i
 you.cl.dat. go.1p.sg. pres. to do.inf. a picture to you
 “I’m going to take a picture of you” [María, 2;04, Ornat corpus, CHILDES]
 (Torrens and Wexler 2000, 288)

Torrens and Wexler’s findings suggest that the child has the knowledge of the grammatical properties that underlie clitic doubling as regards the coreference between the dative clitic and the prepositional complement.

Adult input has been found to correlate with English child output (Legate and Yang 2002; Yang 2016). To our knowledge, there are no previous studies concerned with adult input/child output correlational patterns in Spanish children—or lack thereof. As shown in table 2, this has been found in work on acquisition in English regarding the preference in the use of DOCs over *to/for*-datives. The children studied by Aimee L. Campbell and Michael Tomasello’s (2001) and Marie-Catherine De Marneffe et al. (2012) were exposed to English from birth and followed from 1;02 to 5;00 years and 2;00 to 5;00 respectively.

TABLE 2. The production of DA by English children and by adults (# of occurrences (%))

Study	Child output			Adult input		
	DOC	<i>To/for</i> -dative	Total	DOC	<i>To/for</i> -dative	Total
De Marneffe et al. (2012)	405 (77%)	122 (23%)	527 (100%)	584 (74%)	204 (26%)	788 (100%)
Campbell and Tomasello (2001)	549 (72%)	213 (28%)	762 (100%)	1,168 (70%)	490 (30%)	1,658 (100%)

Campbell and Tomasello report that the greater relative frequency of exposure to DOCs when compared to *to/for*-datives from adult input correlates with the earlier emergence of DOCs in English children (mean age: 2;02) when compared to *to/for*-datives (mean age: 2;04) ($p < 0.01$). This is reflected in the lexically fine-grained analysis of twenty-one out of twenty-six English DA verbs that both children and adults used.² Snyder

² See Campbell and Tomasello’s table 2, in which English adults’ and children’s use of DOCs and *to/for*-datives is displayed per verb used (2001, 258-59).

and Stromswold (1997), however, observed that adults' use of DOCs (mean: 73.2%) and *to*-datives (mean: 26.8%) did not significantly correlate with the onset of DOCs English children (mean age: 2;02) and *to*-datives (mean age: 2;06) with the verb 'give' ($p > 0.10$).

4. ENGLISH AND SPANISH DATIVE ALTERNATION IN CHILD DATA

4.1. Research Questions

The research questions that guide the data analysis focus, on the one hand, on elucidating the syntactic (non)derivational relationship between prepositional and DOCs in both English and Spanish, as analyzed by age of first occurrence in children and, on the other, on examining adult input effects on child output.³ For the latter purpose, I conducted an analysis of the overall relative frequency rates with which English and Spanish DA constructions are heard by children in the adult input, as available in CHILDES (MacWhinney 2000).

RQ1. Can monolingual child acquisition data elucidate the shared syntactic derivational relationship—or lack thereof—between prepositional and DOCs in the two languages?

If English and Spanish DA structures share an analogous syntactic derivational pattern, three plausible scenarios could occur in the children's data. Firstly, the data could point to the syntactic derivation of DOCs from prepositional DA structures if the former emerge later than the latter (Demonte 1995; Larson 1988; Haspelmath 2006). Secondly, English and Spanish prepositional DA constructions could be syntactically derived from DOCs if *to/for*-datives and *a/para*-datives begin to be produced later than DOCs and DCLDs, respectively (Dryer 1986; Aoun and Li 1989). These two scenarios suggest that the most complex DA structure, be it double object or prepositional, would be expected to emerge later than its underived and less complex DA counterpart. The derived DA construction would imply a higher degree of complexity in its acquisition, given that one of its two internal constituents would trigger DP-movement in the derivation from the underived and less complex DA counterpart (see section 2). These data would lend support to Hagit Borer and Wexler's prediction that derived or DP-movement structures, such as passives or unaccusatives, are not available to the child from the early acquisition stages and, therefore, are subject to maturation, as is also the case of the passive-like status of the derived DA structure (1987).

³ We follow Snyder and Stromswold (1997) in considering the age of onset as the acquisition measure of English and Spanish DA.

Thirdly, the two English and Spanish DA constructions might not be derivationally related to one another, if prepositional and DOCs start emerging at approximately the same age (Snyder and Stromswold 1997). This suggests that the two DA constructions would require an analogous degree of complexity in their acquisition and, therefore, that they may stem from two different underlying and underived structures (Mulder 1992; Marantz 1993; Cuervo 2003), or an underlying and underived structure might be what connects the two English and Spanish DA constructions (Snyder and Stromswold 1997; Snyder 2001).

If, contrastingly, the underlying properties that characterize DA differ across the two languages, then English and Spanish children would be expected to show different emergence patterns in the production of DA. Considering the different status of DA in English (Larson 1988; Snyder 2001) and Spanish (Demonte 1995; Cuervo 2003), I predict divergent results when in the English and Spanish children's data. These findings would suggest that while English DA reflects a syntactic nonderivational relationship (Snyder and Stromswold 1997; Snyder 2001), Spanish DA would point to the derivation of DCLDs from *alpara*-datives, which is unattested to date.

RQ2. Does adult input play a role in English and in Spanish monolingual children's acquisition of prepositional and DOCs?

I expect the amount of exposure to DA in the adult input to be reflected in the acquisition patterns in the children's output (Campbell and Tomasello 2001; Yang 2016). This would be the case regardless of the preference patterns in the production of the two DA structures and regardless of the adult input/child output patterns across English and Spanish. Following RQ2, I predict that the data under analysis are in line with the usage-based or emergentist models of first language acquisition (Tomasello 2000; Ellis 2002; Zyzik 2009). That is, it is expected that the relative frequency of English and Spanish children's exposure to prepositional and DOCs in adult speech has a strong influence on shaping the use and acquisition of the syntactic properties that connect the two DA constructions in the two languages. Therefore, the predictions stated earlier do not seem to support the nativist or universal grammar (UG) approach, since this dictates that an innate linguistic endowment would be expected in the English and Spanish children's acquisition of the constructions under investigation (Chomsky 1965; Hawkins 2001).

4.2. Methodology

4.2.1. Participants

As shown in table 3, the participants in this study were selected from fifteen longitudinal corpora that are freely available in CHILDES (MacWhinney 2000). The children's ages range from 0;06 to 8;00 in English and from 0;11 to 4;08 in Spanish. None of the participants had hearing or speech disabilities.

TABLE 3. English and Spanish corpora selected

Corpora	# files examined	Child	Age range	
English	Brown	55	Adam	2;03-4;10
		20	Eve	1;06-2;03
		129	Sarah	2;03-5;01
	Cruttenden	21	Jane	1;05-3;07
		21	Lucy	1;05-3;07
	Lara	20	Lara	1;09-3;03
	MacWhinney	292	Mark	0;07-5;06
		292	Ross	0;06-8;00
	Sachs	83	Naomi	1;01-5;01
	Suppes	52	Nina	1;11-3;11
	Wells	10	Benjamin	2;03-5;00
		9	Gerald	1;06-4;09
		10	Jack	1;05-4;09
Spanish	Linaza	25	Juan 1	2;00-4;00
	LlinasOjea	60	Irene	0;11-3;02
	Marrero	6	Idaira	2;07-4;07
	Montes	13	Koki	1;07-2;11
	Nieva	32	Mendía	1;08-2;03
	OreaPine	65	Juan 2	1;10-2;07
		62	Lucía	2;02-2;07
	Ornat	125	María	1;07-4;00
Vila	35	Emilio	0;11-4;08	

Adult input has also been considered for analysis in the two language groups. The children's spontaneous interactions with adults chiefly occur with their parents—main source of input— with other caregivers—aunts, grandparents and uncles—and with researchers, as transcribed in the CHAT (Codes for the Human Analysis of Transcripts) written format designed for CHILDES.

4.2.2. Data Extraction and Classification Criteria of Dative Alternation Utterances.

The prepositional and DOCs under analysis in the child data have an adult-like grammatical form in English and Spanish. DA constructions were selected automatically, via one of the CLAN (Computerized Language ANalysis) programs available in CHILDES, KWAL (Key Word And Line), for corpora displaying a +t%mor line in their transcripts—Brown, Cruttenden, MacWhinney, Sachs, Suppes and Wells for English and Linaza, Marrero and Ornat for Spanish. Although DA utterance searches via the KWAL program were carried out on the basis of the keyword verb, further selection of the KWAL output was required. That is, in the KWAL output, utterances were not distinguished in terms of their verbal

subcategorization—that is, whether the verb was monotransitive, intransitive or underwent DA—and, therefore, DA constructions had to be manually culled out and coded. Manual data selection was carried out in the case of the English and Spanish corpora that did not include a morphology dependent tier (+τ%mor) in the transcript data—Lara for English and LlinasOjea, Montes, Nieva, OreaPine and Vila for Spanish.

Four criteria were used to search for DA utterances in the data sets, both for adults and children. In English, the structures whose verbal head subcategorizes for a DO followed by an IO headed by the preposition *to* and two nominal internal arguments (IO-DO) were codified as *to*-datives (13a) and DOCs (13b):

- (13) a. You give that one to me [Jane, 2;09, Cruttenden corpus, CHILDES]
 b. You give me that

I also considered instances where a verbal head selects a DO followed by an adjunct (A) headed by *for*, as well as two internal nominal constituents (A-DO). Although these structures are monotransitive, they undergo DA in the same way as *for*-datives (14a) and DOCs (14b):

- (14) a. You will get my lion for me [Ross, 2;09, MacWhinney corpus, CHILDES]
 b. You will get me my lion

In the case of Spanish prepositional DA, when the verb selects a DO and an IO headed by *a* (*to*), these utterances have been classified as *a*-datives (15a). In turn, as noted by Margarita Suñer (1988), when the underlying structure of *a*-datives exhibits the IO and a preverbal dative clitic *le/les* (“him/her” or “them”) with shared gender, number and person features as well as case and theta role properties, these utterances have been coded as DCLDs (15b):

- (15) a. (Blancanieves) daba besos a su mamá
 (Snow White) give.3p.sg.past kisses to her mum
 “(Snow White) gave kisses to her mum” [Irene, 2;07, LlinasOjea corpus, CHILDES]
 b. (Blancanieves) le daba besos a su mamá
 (Snow White) her.dat.cl. give.3p.sg.past kisses to her mum
 “(Snow White) gave her mum kisses”

In contrast to *a*-datives that alternate as DCLDs, Spanish DA constructions also involve monotransitive utterances in which the verb subcategorizes for a DO as well as an A headed by *para* (“for”). The verbal head of these constructions selects a DO followed by an A that is headed by *a*. This prepositional complement is coindexed with a preverbal dative clitic in terms of features, case and theta role properties. Similar to

English DA, these utterances have been classified as *para*-datives (16a) that, in turn, alternate as DCLDs (16b). These two constructions are also considered for data analysis since, although they are monotransitive, they undergo DA:

- (16) a. Voy a hacer un regalo para Mónica
 go.1p.sg.pres. to make.inf. a gift for Mónica
 “I am going to make a gift for Mónica”
- b. Le voy a hacer un regalo a Mónica
 her.dat.cl. go.1p.sg.pres. to make.inf. a gift to Mónica
 “I am going to buy Mónica a gift” [Juan, 2;04, OreaPine corpus, CHILDES]

In the present study, the two types of prepositional constructions—*to*-datives and *for*-datives in English, on the one hand, and *a*-datives and *para*-datives in Spanish, on the other hand—were merged in the data analysis under the umbrella term of prepositional DA. I also considered cases where DOs in DCLDs show a pronominal form—*lo* (“it,” masculine singular), *la* (“it,” feminine singular), *los* (“them,” masculine plural), *las* (“them,” feminine plural)—and the dative clitic adopts a pronominal *se* form (17) as a result of a dissimilation phonological process between the two constituents (Romero Morales 2008). Furthermore, given the optional realization of the IO in DCLDs that alternate as *a*-datives, and that of the A in DCLDs that alternate as *para*-datives, DCLDs with a null IO or a null A were also considered for analysis.

- (17) Se lo voy a hacer a Mónica
 se.dat.cl. it.acc.cl. go.1p.sg.pres. to make.inf. to Mónica
 “I am going to buy Mónica it (a gift)”

Longitudinally, prepositional and DOCs were analyzed at thirteen age stages ranging from 1;00-1;06 (stage 1) to 7;00-7;06 (stage 13). As shown in table 4, these developmental stages cover intervals of five to six months. Since the ages of the English children range from 0;06 to 8;00 and those of the Spanish children from 0;11 to 4;08, the ages prior to stage 1 and beyond stage 13 were not included in the data analysis.

TABLE 4. Age stages for the study of English and Spanish DA

Stage	Age range	Stage	Age range
1	1;00-1;06	8	4;07-4;11
2	1;07-1;11	9	5;00-5;06
3	2;00-2;06	10	5;07-5;11
4	2;07-2;11	11	6;00-6;06
5	3;00-3;06	12	6;07-6;11
6	3;07-3;11	13	7;00-7;06
7	4;00-4;06		

4.1.3. Data Analysis

English and Spanish children show an analogous order of emergence of DA constructions. As shown in the mean ages of onset in table 5, prepositional DA structures—English *to/for*-datives and Spanish *a/para*-datives—start being produced later than their DOC counterparts—English DOCs and Spanish DCLDs:

TABLE 5. Age of first occurrence of DA in English and Spanish children

English children			Spanish children		
name	DOCs	<i>to/for</i> -datives	name	DCLDs	<i>a/para</i> -datives
Ross	1;04	2;06	Koki	1;07	2;05
Eve	1;08	1;11	Irene	1;09	2;02
Jane	1;11	2;06	Emilio	1;09	2;08
Nina	2;01	2;11	Juan 1	1;10	2;01
Adam	2;04	2;11	María	1;11	2;08
Mark	2;06	2;09	Juan 2	2;04	4;08 ⁴
Sarah	2;09	3;02	Lucía	2;02	2;02
Naomi	2;01	2;00	Mendía	2;01	-
Lara	2;06	2;04	Idaira	2;11	-
Lucy	2;07	2;00			
Benjamin	2;03	-			
Jack	2;02	-			
Gerald	-	2;11			
Mean	2;02	2;06	Mean	2;00	2;04

Considering the English children's data, DOCs first occur between 1;04 and 2;09 and *to/for*-datives between 1;11 and 3;02. More specifically, seven of the children show an earlier onset of DOCs than *to/for*-datives, and for two of them, the emergence patterns of the two structures is reversed, while one child shows concurrent onset of the two English DA constructions. Three children produce only one of the two structures during the study period. With regards to the Spanish children's data, DCLDs emerge between 1;07 and 2;11, while age of onset of *a/para*-datives ranges from 2;01 to 4;08. Six of the children begin to produce DCLDs earlier than *a/para*-datives, one starts producing both Spanish DA constructions concurrently and two produce only DCLDs.

⁴ Juan 2's onset of *a/para*-datives deviates from the mean age of emergence of these structures in the overall Spanish children's data (SD = 0.77032, mean age = 2;08, N = 7). The normal distribution of the emergence of *a/para*-datives is achieved by excluding Juan 2's data from the analysis (SD = 0.03141, mean age = 2;04, N = 6).

Despite the later onset of prepositional DAs when compared to DOCs in both English and Spanish, the two DA constructions appear to show a rather similar emergence pattern, as seen in the English ($t(12) = -0.267, p = 0.769$) and Spanish children's data ($t(7) = -0.171, p = 0.869$), obtained through the statistical parametric two-tailed paired sample t -test. There are no significant emergence differences between DOCs and DCLDs ($U = 38.500, p = .269$) or between *to/for*-datives and *a/para*-datives ($U = 36.000, p = 0.506$), as per the statistical nonparametric Mann-Whitney test. Overall, as illustrated in table 6, the children and the adults show a higher incidence of DOCs than prepositional DA constructions in both language groups.

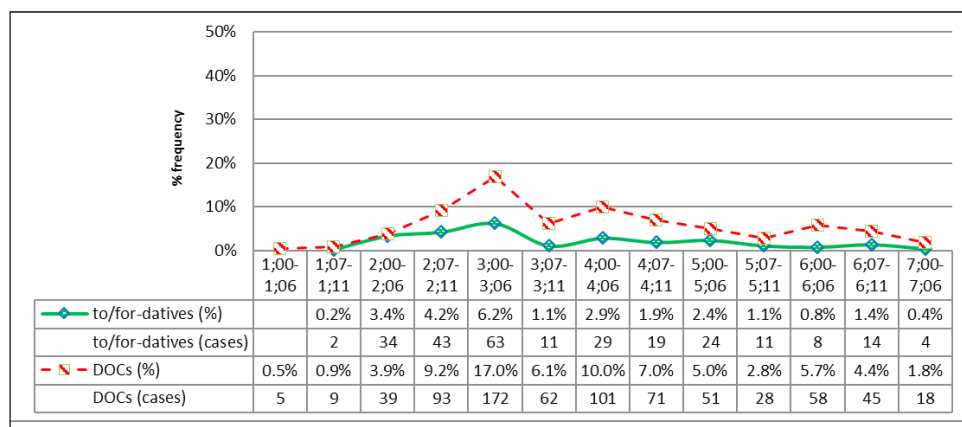
TABLE 6. English and Spanish DA in child and in adult speech (# of cases (%))

		Double object	Prepositional	Total
English	Children	752 (74.2%)	262 (25.8%)	1,014 (100%)
	Adults	1,853 (73.9%)	655 (26.1%)	2,508 (100%)
Spanish	Children	775 (93.7%)	52 (6.3%)	827 (100%)
	Adults	4,279 (92.4%)	352 (7.6%)	4,631 (100%)
Total children		1,527 (82.9%)	314 (17.1%)	1,841 (100%)
Total adults		6,132 (85.9%)	1,007 (14.1%)	7,139 (100%)

Longitudinally, higher relative frequency rates are also seen for English DOCs and Spanish DCLDs compared to English *to/for*-datives and Spanish *a/para*-datives, respectively. This is reflected in the data from English ($t(12) = -4.453, p = .001$) and Spanish ($z = -2.366, p = .018$), as per the statistical parametric two-tailed paired sample t -test and its nonparametric counterpart, the Wilcoxon signed-ranked test.⁵ As illustrated in figure 1, English children gradually increase the production of DOCs between 1;00-1;06 (5 occurrences, 0.5%) and 3;00-3;06 (172 occurrences, 17.0%), from which stage their use begins to decrease until 7;00-7;06 (18 occurrences, 1.8%). *To/for*-datives show a lower incidence when compared to DOCs throughout 1;07-1;11 (2 occurrences, 0.2%) and 7;00-7;06 (4 occurrences, 0.4%).

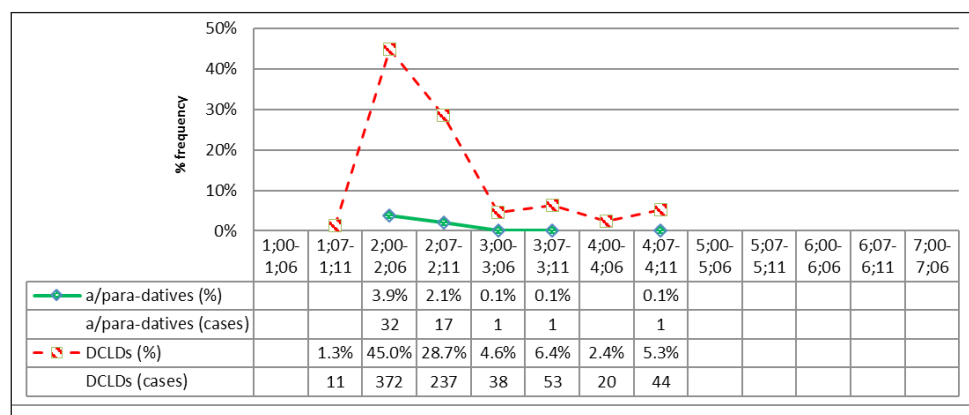
⁵ The implementation of parametric and nonparametric tests varies according to the normal distribution of the data examined. While the English data are normally distributed and, thus, the parametric two-tailed-paired sample t -test has been run, the Spanish data are skewed and the nonparametric t -test counterpart has been implemented instead.

FIGURE 1. The English children's production of DA per age stages
(100% = overall DA structures produced by English children)



As shown in figure 2, the Spanish children show a rise in the use of DCLDs from the stage of onset at 1;07-1;11 (11 occurrences, 1.3%) to 2;00-2;06 (372 occurrences, 45.0%), after which production of DCLDs drops until 3;00-3;06 (38 occurrences, 4.6%), and then remains stable until 4;07-4;11 (44 occurrences, 5.3%). A sharp decrease in *to/for*-datives appears between 2;00-2;06 (32 occurrences, 3.9%) and 4;07-4;11 (1 occurrence, 0.1%):

FIGURE 2. The Spanish children's production of DA per age stages
(100% = overall DA structures produced by Spanish children)



The analogous patterns observed in the children's production of English and Spanish DA over time seem to mirror adult input in both languages. As can be seen in figure 3, English adults prefer to use DOCs (1,853 occurrences, 73.9%) rather than *to/for*-datives (655 occurrences, 26.1%), and a similar tendency is seen in the English children's

output (i.e., 752 DOCs > 262 *to/for*-datives, 74.2% > 25.8%). In the case of Spanish, as illustrated in figure 4, the overall use of DCLDs shows higher rates if compared to that of *a/para*-datives. This pattern appears in the adults' speech (4,279 DCLDs > 352 *a/para*-datives, 92.4% > 7.6%) and in the Spanish children's production of DA (775 DCLDs > 52 *a/para*-datives, 93.7% > 6.3%).

FIGURE 3. The production of DA in the adult input and child output
(100% = overall English DA produced by adults or children)

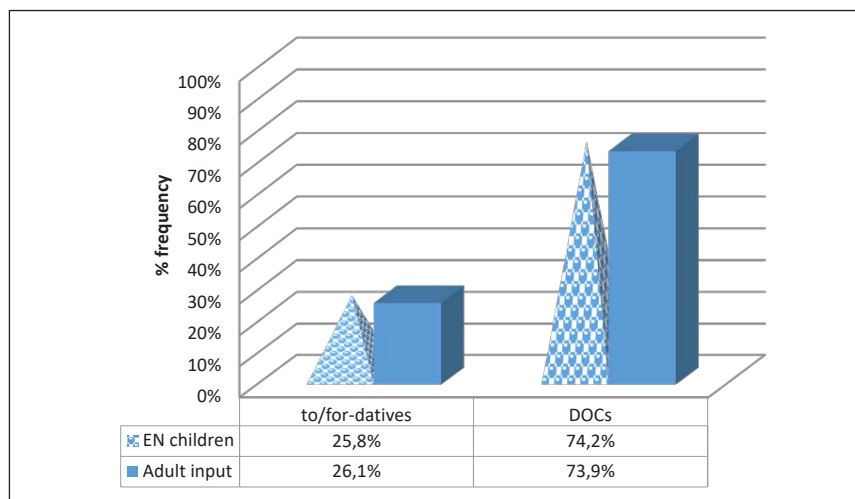
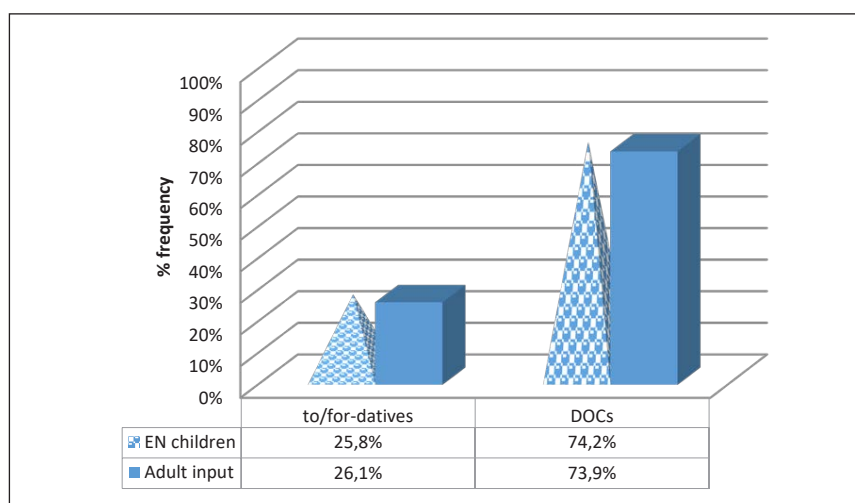


FIGURE 4. The production of DA in the adult input and child output
(100% = overall Spanish DA produced by adults or children)



4.3. Discussion of Results

Based on the findings analyzed in section 4.2.3. and in relation to RQ1, the nonsignificant differences in the onset of DA point to prepositional and DOCs constructions not being derivationally related to one another. This is the case both in English and Spanish, as revealed by in children's data in the two language groups. If one of the two DA constructions were subject to maturation, its acquisition would be expected to show significant differences in the onset when compared to the other one (Borer and Wexler 1987; Snyder and Stromswold 1997).

Two potential explanations could shed light on the syntactic nonderivational relationship between the two English and Spanish DA constructions. Following Property A of the Complex Predicate Parameter (Snyder 2001), prepositional and DOCs are built under a common underlying complex predicate structure (Larson 1988; Marantz 1993) or an SC structure (Aoun and Li 1989). This approach argues for a shared underived construction despite the fact that DOCs that alternate as prepositional DAs differ in their syntactic status in English—a [+ complex predicate] language—and in Spanish—a [- complex predicate] language. An alternative explanation points to the formation of two underived structures that differ in the status of the head that they project (Mulder 1992; Marantz 1993; Cuervo 2003). My findings therefore suggest a parallel syntactic nonderivational relation between the two English and Spanish DA constructions. Since the nonsignificant differences in the English and Spanish children's ages of onset in the present study were also reported by Snyder and Stromswold (1997), my results point to prepositional and DOCs sharing an SC structure, as per the Complex Predicate Parameter (Snyder 2001).

Snyder and Stromswold (1997) do not distinguish between the complex predicate and SC approaches, arguing instead that their English children's findings are compatible with either. Differences between their study of twelve English-speaking children and the present one revolve around the participants' age range—1;02-7;10 versus 0;06-8;00—the type of structures analyzed—DOCs and *to*-datives versus DOCs and *to/for*-datives—and the methods used for statistical data analysis. With regards to the statistical treatment of the data, Snyder and Stromswold ran a Pearson's correlation test, an option discarded in the present study because a correlation between the emergence patterns of the two English DA constructions does not tell us whether there are significant differences between the onset of DOCs and that of *to/for*-datives. The present study examines the causal relationship between the ages of onset of DOCs and *to/for*-datives and this cannot be determined via a statistical correlation test. In order to establish the difference between the ages of onset of the two constructions, parametric two-tailed paired sample *t*-tests have been implemented to elucidate whether any differences observed are random or not. Despite the differences between Snyder and Stromswold's and the present study, the DA structures analyzed in both works considered the ages of onset as a measure of the acquisition of DA in the children's spontaneous production data.

Even though the age of onset of the two different constructions in each language is not statistically significant, the English and Spanish children do share the same order in the timing of emergence of the different constructions and in their incidence (Snyder and Stromswold 1997; Torrens and Wexler 2000; Campbell and Tomasello 2001). This is not attributable to the children's acquisition of the syntactic derivation of English *to/for*-datives and Spanish *a/para*-datives from DOCs since, had this been the case, statistically significant differences in the order of emergence of these structures would have been observed. Rather, and in relation to RQ2, the role played by input appears to explain DA in the English and Spanish children's data (Campbell and Tomasello 2001; Yang 2016).

Thus, the results reported in response to RQ2 seem to be in line with the usage-based approaches of first language acquisition (Tomasello 2000; Ellis 2002; Zyzik 2009). This suggests that the information that is made available in the adult input regarding the production of prepositional and DOCs in English and Spanish has enabled the two language groups to develop the syntactic properties that underlie and relate the two DA constructions. In other words, these data seem to speak against the UG model (Chomsky 1965; Hawkins 2001) regarding the innate faculty in first language acquisition and, thus, the restricted role played by adult input in terms of child output. This is evidenced by the analogous patterns between adult input conditions and child output in the use of the two English and Spanish DA constructions.

Along with adult input, the delay in the children's onset of English *to/for*-datives might also be associated with the acquisition of the additional grammatical properties required for the production of these structures, as per Property B (Snyder and Stromswold 1997). Property B cannot be applied to the Spanish children's later emergence of *a/para*-datives, given the differences in the syntactic status of DAs in English and Spanish (Snyder 2001). Further research is required to elucidate the grammatical properties that delay the children's acquisition of Spanish *a/para*-datives.

5. CONCLUSIONS

The data analyzed in this study suggest that DA constructions do not undergo a syntactic derivational relationship in English or in Spanish. Evidence for this is seen in the non-significant differences between the emergence patterns of prepositional and DOCs in the two children's groups. The syntactic nonderivational pattern points to the formation of a shared underlying complex predicate or SC structure, as per the Complex Predicate Parameter. This appears to be the case, since the fairly similar emergence pattern of English and Spanish DA constructions is also observed in Snyder and Stromswold's study on English child acquisition data (1997).

However, some limitations of this study should be addressed. Although the children's ages of first occurrence point to the acquisition of the syntactic nonderivational relationship between the two English and Spanish DA constructions, further investigation is required to determine whether other factors also play a role in the similar emergence patterns

of these constructions, such as discourse factors—(pro)nominal type, length of internal arguments (De Marneffe et al. 2003)—or semantic conditions (Romero Morales 2008). The type of sample collected—longitudinal and spontaneous child production—may have had an effect on the analysis conducted. For instance, *to/for*-datives were not found in Benjamin's or Jack's speech. Further study under controlled conditions may provide more detailed data to help shed light on these processes.

Adult input conditions seem to have played a role in the English and Spanish children's delay in the onset and lower incidence of prepositional DAs compared to DOCs (Campbell and Tomasello 2001; Yang 2016), as per the usage-based approaches of first language acquisition (Tomasello 2000; Ellis 2002; Zyzik 2009).

From a formal grammar approach, the delay in the English children's emergence patterns of *to/for*-datives could also be related to the acquisition of the special status of prepositions, as per Property B, along with the acquisition of the syntactic properties (Property A) that underlie and connect the two English DA constructions (Snyder and Stromswold 1997). These findings, however, cannot be applied to Spanish, given that the prepositions *a/para* do not play a role in DA. Further work focused on the presence/absence of clitics in Spanish DA could shed light on the grammatical properties that underlie the later acquisition of *a/para*-datives.

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