

Article

Global Cues to Spanish Differential Object Marking in Monolingual and Bilingual Child-Directed Speech

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Abstract

Spanish Differential Object Marking (DOM) is conditioned by well-known local properties of the direct object, but also by clause- and discourse-level factors. In this study, we examine whether these factors are also available as potential learning cues in child-directed speech (CDS). We analyzed longitudinal naturalistic CDS from two monolingual and three bilingual (heritage) Spanish-learning children, manually extracting transitive clauses and coding DOM presence alongside discourse specificity, verb class, coreferential pronoun (clitic doubling), relative animacy, and DO placement, plus two local cues for comparison. Regression analyses revealed that a wider range of local and global factors conditioned DOM in monolingual than in bilingual CDS. The potential informativeness of these factors as learning cues was quantified using Competition Model measures of availability, reliability, and validity. In monolingual CDS, local cues (+human, pronominal/proper name DOs) were highly reliable, and two global cues (clitic doubling and relative animacy) showed moderate reliability. Whereas discourse specificity and verb class were highly available, they were comparatively unreliable. Validity values were uniformly low; although several global cues matched or exceeded local cues in validity, this pattern largely reflected their greater availability rather than higher reliability. In bilingual CDS, reliability and validity were reduced across nearly all cues, with little differentiation among cues. These findings suggest that Spanish-learning children encounter potentially usable utterance- and discourse-level evidence for DOM in CDS, but that the robustness of this evidence is markedly weaker in bilingual input.

Keywords: differential object marking; Spanish; child-directed speech; language acquisition; competition model; cue validity; bilingual acquisition



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1. Introduction

Argument structure is a central property of language by which a lexical item selects constituents that complete verb meaning (Comrie, 1993). Knowledge of verb argument structure and its realization develops early and is critical for children to comprehend and produce utterances unambiguously. Even at the one-word stage, English-speaking children can identify action words as well as the object being acted upon (i.e., the direct object) in comprehension tasks (Hirsh-Pasek & Golinkoff, 1999, p. 96). Because argument realization is guided by language-specific mappings between form and function, identifying the reliable cues present in the input that children receive is essential for understanding how children acquire this aspect of their native grammar.

Languages differ widely in the cues they provide to signal who does what to whom. Some rely heavily on fixed word order, others on morphological case, verbal agreement, or

a combination of these (Seržant & Witzlack-Makarevich, 2018). For instance, in a transitive construction such as *Julia loves Paul*, English-speaking children can rely on post-verbal direct object placement to identify Paul as the recipient of Julia’s love. Speakers of case-marking languages, however, may rely on subject–verb agreement or overt case morphology as more reliable indicators of argument structure. These crosslinguistic differences highlight the broader point that children must learn which cues in their input reliably map onto the functions of Agent and Patient in their language.

Within this general landscape of morphological and syntactic cueing systems, Spanish Differential Object Marking (DOM) presents a particularly interesting case. Spanish marks certain direct objects with the word *a* ‘to’ (Bossong, 1991), and this mark functions as a cue to identify the role of the direct object even when constituent order varies. Thus, *A Paul ama Julia* and *Julia ama a Paul* both mean ‘Julia loves Paul,’ with DOM helping speakers identify Paul as the object regardless of surface order or differences in information focus.

Crucially, however, not all direct objects receive DOM in Spanish, and the complexity of differential marking systems lies in their dynamic and variable nature (Fábregas, 2013; López, 2012). In Modern Spanish, inherent properties of the direct object—animacy, definiteness, and specificity—play a critical role in predicting the presence of DOM (Aissen, 2003). The marker is categorically used with [+Human, +Specific] DOs and is categorically absent with [+Inanimate, –Specific] DOs (for a recent study documenting variation within human DOs that is at least partially explained by referentiality, see Montrul et al., 2026).

Sapir (1921) wrote: “Unfortunately, or luckily, no language is tyrannically consistent. All grammars leak. . . language is variable [. . .] in choice of words, in sentence structure, in the relative frequency with which particular forms or combinations of words are used. . .” (pp. 38, 147). This is also true for many differential marking systems, which exhibit pockets of variation that cannot be fully explained by inherent properties of the DO. Nonhuman animate DOs (e.g., animals), for instance, may or may not receive DOM in Spanish depending on pragmatic or discourse factors (e.g., individuation) (Aissen, 2003; Fábregas, 2013). There are also many instances of DOM omission and extension documented in the literature (e.g., López, 2012; Alfaraz, 2011). The mere existence of variation and the fact that factors inherent to the DO cannot fully explain DOM use in many contexts reveal that other factors also condition DOM use.

Laca (2006) classifies the factors conditioning Spanish DOM as local or global (Table 1). Local factors correspond to the NP-internal properties mentioned above, whereas global factors relate to clause-level and discourse-level properties such as verb semantics, relative animacy, presence of a coreferential pronoun (clitic doubling), preverbal DO, etc. (see Tippets, 2011). Importantly, global factors may override local factors (Laca, 2006), making them theoretically significant for understanding the full distribution of DOM in adult grammar. Despite their relevance for adult usage, global factors have been almost entirely overlooked in acquisition research, which has focused predominantly on local semantic constraints given their well-established influence on DOM (Rodríguez-Mondoñedo, 2008; Montrul & Sánchez-Walker, 2013; Ticio & Avram, 2015; Callen & Miller, 2022; Guijarro-Fuentes & Marinis, 2011; Guijarro-Fuentes et al., 2017; Requena, 2023; Thane, 2025).¹

Table 1. Local and global factors impacting DOM that are addressed in the present study.

Local Factors	Global Factors
DO animacy	Relative animacy (DO animacy relative to S animacy)
DO definiteness	Clitic doubling (Presence of a coreferential pronoun)
	Word order
	Verb class

This omission is striking given the understanding in language acquisition that children are sensitive to cues beyond the local domain, including discourse-pragmatic and syntactic features, when these cues are reliably present in their input. If global factors influence adult DOM use and are systematically represented in child-directed speech (CDS), they may also serve as potential learning cues for children acquiring DOM—particularly in variable contexts where local cues do not fully determine DOM realization.

The present study seeks to fill this gap by investigating CDS to determine whether global factors at the level of the clause and discourse constitute reliable cues to DOM use. We use the term *factor* when referring to properties that condition DOM distribution and the term *cue* when evaluating the potential informativeness of those properties for learners. Because the same property may be examined from both perspectives, the terms are sometimes used together throughout the paper. The questions that guide this study are: (1) Do global factors condition DOM in monolingual and bilingual CDS? And (2) Does bilingual CDS differ from monolingual CDS in the availability, reliability, and validity of these factors as potential cues to DOM?

Our results indicate that some, but not all, global factors display high reliability as cues in monolingual CDS, whereas bilingual CDS shows reduced reliability for nearly all cues examined. These findings expand our understanding of the scope of evidence for DOM use available to children during the process of acquiring morphosyntactic encoding of argument structure in Spanish.

2. Background

2.1. Cues in the Acquisition of Argument Structure²

Children exhibit early sensitivity to argument structure and to the formal cues that languages use to encode relations between participants in an event. For instance, by age 1;9 English-learning children use word order to identify agents and patients (Gertner et al., 2006), and by around age 2;0 they exploit the number of arguments in a clause to infer verb meaning (Naigles, 1990; Naigles et al., 1992, 1993). In languages with morphological case, children similarly attend to case marking when interpreting argument roles, even under non-canonical word orders (Slobin & Bever, 1982; Göksun et al., 2008). Importantly, these findings also show that not all cues are equally informative: children may rely on some cues while disregarding others, even when multiple cues are present in the input.

The Competition Model (CM; Bates & MacWhinney, 1989) provides a functionalist framework for explaining how learners identify and weight such cues during acquisition. Within this model, a *cue* is any formal property of an utterance that probabilistically signals a particular grammatical function or structure. Each cue is assigned a *strength* that reflects how informative it is for the learner. Crucially, cue strength is operationalized in terms of cue *validity*, which is defined as the product of two components: *availability* and *reliability* (MacWhinney et al., 1984). *Availability* refers to how often a cue is present in contexts where it could in principle be used (i.e., when the relevant function is at issue), while *reliability* refers to how consistently the cue points to the target form or interpretation when it is present. Formally, cue validity is defined as:

$$\text{Cue validity} = \text{cue availability} \times \text{cue reliability}$$

Under the CM, cues that are both frequent in the input and highly predictive of a particular form or interpretation have high validity and therefore high strength. Learners are predicted to attend preferentially to these cues in comprehension and production, while cues that are rare, misleading, or weakly associated with the target structure are assigned lower weights. Importantly, cues with high availability but low reliability (or vice versa)

may still play a role in acquisition, but they are predicted to exert less influence than cues with high validity overall. As a result, cue hierarchies differ across languages depending on how reliably and frequently different formal properties map onto grammatical functions in the input.

The CM does not restrict cues to the noun phrase or to strictly local morphosyntactic features. Sentence-level and discourse-level properties may also function as cues, provided that they correlate systematically with a particular grammatical choice. This is particularly relevant for phenomena such as Spanish Differential Object Marking (DOM), where the presence of the marker *a* is conditioned not only by intrinsic properties of the direct object (e.g., animacy or definiteness), but also by factors relating to the verb, the clause, and the discourse context. If such global properties are consistently associated with DOM in child-directed speech, they may constitute cues whose validity can be quantified in the same way as more traditional, NP-internal cues. Thus, in the present study, the term *cue* refers specifically to the input-based informativeness of a property, whereas *factor* refers more broadly to its role in conditioning DOM distribution.

2.2. Spanish Differential Object Marking

Spanish Differential Object Marking (DOM) (Bossong, 1991) consists of the marking of certain direct objects (DOs) with *a*. An influential account by Aissen (2003) identifies categorical contexts where DOM is required and contexts where it is excluded, based primarily on inherent properties of the object such as animacy and specificity (see Figure 1). Under this view, DOM is categorically present with [+Human, +Specific] DOs and categorically absent with [+Inanimate, −Specific] DOs. Local factors, such as animacy and specificity or definiteness, thus interact with each other in the distribution of DOM.

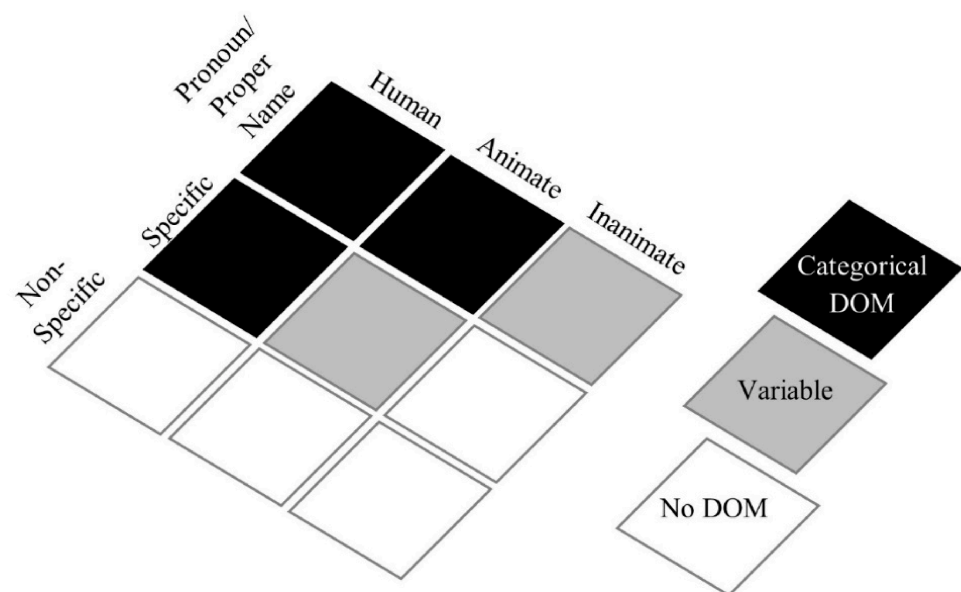


Figure 1. Categorical and variable DOM contexts in Spanish (adapted from Aissen, 2003, p. 472).

However, as has been widely documented, Spanish DOM extends beyond these categorical contexts. There are well-attested cases of DOM extension to inanimate objects in some varieties, such as River Plate Spanish (Bautista-Maldonado & Montrul, 2019; Dumitrescu, 1997; Hoff, 2018; Judy & Iverson, 2020; Zdrojewski, 2020) and Mexican Spanish (Company, 2001, 2002), as well as DOM retraction with human objects in Caribbean varieties (Alfaraz, 2011; Bullock & Toribio, 2009; Reina et al., 2021). These patterns of variation indicate that factors beyond the intrinsic properties of the DO NP condition the use of DOM. Following Laca (2006)³, these additional factors can be classified as *global*

factors: properties of the clause or discourse that interact with local NP-level features and may override or modulate them. Below, we introduce the global factors examined in the present study. For each factor, we provide a brief definition, evidence from adult grammar showing its association with DOM, and reasons why it may function as a learning cue during acquisition.

2.2.1. Discourse Specificity

Discourse specificity refers to whether the referent of the direct object is identifiable and unique in the discourse context. For the purposes of this study, an entity is treated as discourse specific if it is “unique and known to the speaker” (Tippets, 2011). This notion is closely related to epistemic specificity, whereby a specific noun refers to an entity identifiable in the speaker’s mental representation, independently of real-world existence (von Heusinger, 2002; Fábregas, 2013). Specificity has long been associated with DOM in Spanish, although its precise status remains debated. Some approaches treat specificity as grammatically encoded, while others argue that it is pragmatically inferred rather than formally marked (Leonetti, 2008; López, 2012). Laca (2006) includes discourse-level properties such as topicality and referential persistence among the global factors that condition DOM, particularly in variable contexts. Importantly, specificity has been shown to interact with animacy, allowing DOM to surface in contexts where it would otherwise be disfavored. Children show early sensitivity to discourse properties such as referential accessibility, topic continuity, and givenness (Luszcz & Bacharach, 1981; Hughes & Allen, 2014; Wittek & Tomasello, 2005). Because discourse specificity is recoverable from prior discourse and situational context rather than from the form of the NP alone, it constitutes a potential global cue that children could track distributionally. If discourse-specific objects are more frequently marked with DOM in the input, children may learn to associate discourse accessibility with the presence of the marker, particularly in contexts where local cues underdetermine DOM use.

2.2.2. Verb Class

Verb class refers to the semantic classes of verbs that differ in the degree to which they encode the affectedness of the object. Following Tsunoda (1985), verbs can be ordered along an affectedness scale (Action > Perception > Pursuit > Knowledge > Feeling), with higher-affectedness verbs more likely to license object marking. Several studies have shown that verb semantics play a role in DOM distribution (for more details on verb properties and DOM, see Torrego, 1998). Laca (2006) reports that certain verb lexemes (e.g., *llamar* ‘call’) strongly favor DOM, even extending marking to inanimate objects in otherwise unmarked contexts. Similarly, work by von Heusinger and Kaiser (2007, 2011) shows that verb–object interactions affect DOM use beyond NP-internal features. These findings suggest that DOM is sensitive not only to the properties of the object, but also to how the event encoded by the verb construes the object’s involvement. Verb-based cues have been shown to play an important role in early argument structure acquisition. Children are sensitive to verb semantics and use verb-specific patterns to infer argument roles (Naigles, 1990; Callen & Miller, 2022; Pinker, 2013). If particular verb classes or verb lexemes in Spanish consistently co-occur with DOM-marked objects in the input, children may exploit these regularities as cues, especially in variable DOM contexts involving nonhuman animate or inanimate objects.

2.2.3. Clitic Doubling

This factor refers to the presence of a clitic pronoun that is coreferential with the lexical direct object, a phenomenon commonly known as clitic doubling (e.g., *Queremos verla a la beba* ‘We want to see (her) DOM the baby’). Clitic doubling has long been associated

with DOM. Melis (1995) shows that in historical texts, DOs accompanied by clitic doubling tend to carry DOM. While some analyses treat clitic doubling as restricted to marked objects (Kayne, 1975; Jaeggli, 1982), later work shows that the association is strong but not categorical (Laca, 1987, 2006). In several dialects, including Rioplatense Spanish, clitic doubling with lexical DOs is frequent and may co-occur with DOM even in contexts that otherwise disfavor marking (Bautista-Maldonado & Montrul, 2019; Rinke et al., 2023). From a learning perspective, coreferential pronouns are salient formal elements that are closely tied to the DO NP through agreement in gender and number. Because clitics overtly signal objecthood and often co-occur with DOM, children may treat the presence of a coreferential pronoun as an extension of the DO's morphosyntactic representation. This makes it a plausible global cue that is tightly connected to local NP-level features.

2.2.4. Relative Animacy

Relative animacy refers to the animacy of the direct object in relation to the animacy of the subject rather than the intrinsic animacy of the object alone. Following Tippets (2011), animacy is evaluated along the scale Human > Animate > Inanimate (Comrie, 1989). Tippets (2011) shows that relative animacy is a strong predictor of DOM across several Spanish dialects. DOM is favored when the object is equal to or higher than the subject on the animacy scale, and disfavored when the subject outranks the object. This effect holds even when intrinsic object animacy is controlled, indicating that DOM is sensitive to the relational configuration of arguments within the clause. Children are known to attend to animacy contrasts early in development and to use animacy hierarchies in event interpretation. Relative animacy may therefore function as a cue that builds directly on local animacy features but requires integrating information across arguments. If such configurations are systematically associated with DOM in the input, children may use them to refine their understanding of when marking is expected, particularly in non-canonical or variable contexts.

2.2.5. Direct Object Placement

This factor concerns the syntactic position of the direct object, particularly whether it appears preverbally or postverbally. Preverbal DOs have been shown to correlate with increased DOM use. Melis (1995), Laca (2006), and Dumitrescu (1997) report that topicalized or fronted objects are more likely to be marked, often in conjunction with clitic doubling. Such configurations are typically associated with information-structural prominence. Word order and positional regularities are among the earliest cues exploited by children in argument interpretation. Although preverbal DOs are relatively rare in Spanish CDS, their strong association with DOM in adult grammar suggests that, when present, they may constitute a highly informative cue that children could notice and encode.

2.3. The Acquisition of Spanish DOM

2.3.1. Acquisition of DOM by Monolingual Children

Despite the first study on child language acquisition of DOM being produced in the early 2000s, the study of how monolingual children acquire Spanish DOM is still in its infancy. Rodríguez-Mondoñedo (2008) tested a prediction based on Aissen's (2003) optimality theory model of DOM that Spanish-speaking children would have to entertain several hypotheses as to where to "draw the line" between DOs that must be marked and those DOs that must not be marked along harmonic hierarchies of animacy, and definiteness/specificity. Entertaining those hypotheses would lead to a large number of detectable errors as children learn that only human, specific DOs require DOM, and inanimate, non-specific ones do not take DOM. The methodology employed by Rodríguez-Mondoñedo (2008) consisted of a corpus analysis of naturalistic production by monolingual Spanish-

speaking children between the ages of 0;9–3;0, whose data are available in the CHILDES database (MacWhinney, 2000). The results indicated virtually “errorless performance” (p. 128). Accuracy with inanimate objects (that do not receive marking) was 99% (929/937), and with animate objects (that require DOM), accuracy was 85% (45/53). Omission was thus found in only 15% of +DOM contexts. This absence of errors implied that children do not begin learning DOM by entertaining possible grammars or by attending only to one dimension at a time (e.g., animacy first and then specificity). Instead, the results point to very early target production of DOM in core contexts (for similar results, see Ticio & Avram, 2015). The analyses performed in these early studies, however, excluded variable contexts, such as Inanimate Pronouns, Animate-Definite (nonhuman), Inanimate Proper Noun, Animate Specific (nonhuman, non-definite), because “. . . optionally marked objects do not allow us to conclude anything (they are always right)” (Rodríguez-Mondoñedo, 2008, p. 129). But, as we have seen earlier, the adult Spanish DOM system is also characterized by variation or optionality, where global factors interact with local factors in conditioning the use of the mark.

Only two studies have carefully examined variable DOM contexts among very young children. Importantly, as reflective of their variationist approach, these studies also include caregiver input. In a cross-sectional study of naturalistic production by 12 monolingual children (ages 2;7–5;2) and their caregivers, Callen and Miller (2022) extracted animate DOs and classified them into Animal versus Human/anthropomorphized. Both caregivers and children were less likely to use DOM in variable contexts, i.e., with animal DOs (51% vs. 22%), than in categorical contexts, i.e., with Human/anthropomorphized DOs (86% vs. 76%, respectively). The results also found that children mirrored verb-specific patterns of DOM use in the input. This suggests that the verb lexeme may be a salient cue in the early stages of DOM acquisition. In a longitudinal study of naturalistic production by two monolingual children under age 3;0 and their caregivers, Requena (2023) distinguished categorical and variable contexts. The latter consisted mainly of nonhuman animate objects. The results indicated that caregivers and children produced less DOM in variable contexts (26% vs. 17%, respectively) compared to categorical contexts (80% vs. 50%, respectively).

Figure 2 shows the use of DOM in the two studies reviewed so far that investigated variable contexts in caregiver input. The existing evidence, therefore, shows the presence of variation in Spanish DOM, both in the input and in child language, suggesting that the study of DOM could profit from an approach that not only acknowledges the variable use of DOM in certain contexts, but that integrates these contexts into the data examined when studying acquisition. As already shown, some studies have started to do this by examining what Laca (2006) calls “local” factors that pertain to features of the NP (such as animacy, specificity, etc.). But children may also pick up cues that go beyond the lexical NP. However, we are not aware of any previous study that has documented the presence of “global” factors in the input that children receive. The present study seeks to fill this gap by providing a first approximation to the study of global cues to Spanish DOM in naturalistic conversation between caregivers and very young children.

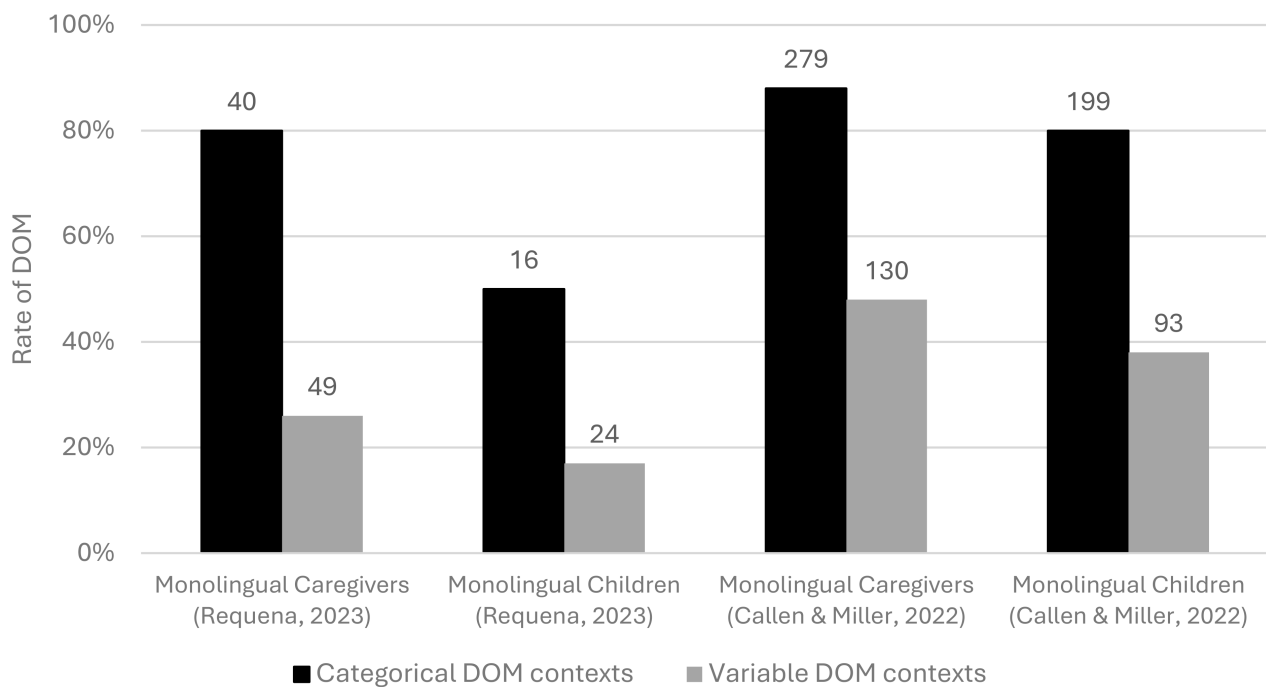


Figure 2. DOM use by caregivers and children under the age of 6 (number of tokens presented above bars) (Requena, 2023; Callen & Miller, 2022).

2.3.2. Acquisition of DOM by Bilingual Children

The study of DOM in bilingual acquisition began with research on school-age children. Montrul (2011) reports on DOM production in narratives elicited from bilingual and monolingual children ages 6–11. Accurate marking of animate DOs differed between bilingual children (simultaneous: 33%, and sequential: 63%) and the monolingual children (95%). Montrul and Sánchez-Walker (2013) conducted a study in which they elicited DOM in narratives as well as through picture descriptions. Results were in line with the previous study. Accuracy was significantly lower with animate DOs among bilingual children (~40–69%) than among monolingual children (~84–97%). In a more recent study, Requena (2023) reported lower DOM use among bilinguals with both human (77%) and nonhuman animate (44%) objects. Similar results were reported in Guijarro-Fuentes and Marinis (2011) and Guijarro-Fuentes et al. (2017) for production data, but not for acceptability judgment data. The asymmetry between child HS performance in a productive vs. a receptive task has been confirmed by Thane (2025). In summary, school-age child HSs omit DOM with animate DOs, where DOM is assumed to be required (e.g., human, definite DOs).⁴

The research on younger bilingual children tells a different story. Initially, it was believed that bilingual children omit DOM in required contexts from the earliest stages when we could study this phenomenon in production (Ticio, 2015). However, re-examination of the data indicated that it was not the case that bilingual children exhibited greater omission compared to monolingual children when variable contexts are not counted together with contexts where DOM is required (Requena, 2023). An implication of this finding is that when nonhuman animate DOs are included in a study (whether counted in extractions of corpus data or used in elicitation stimuli), they must be analyzed separately from human DOs.⁵

Very few studies of DOM have directly examined the input. Requena (2023) was the first study to isolate variable DOM contexts from categorical DOM contexts in longitudinal child corpora and to consider child-directed speech (CDS) in monolingual and bilingual children. The results revealed no group differences between monolingual and bilingual children (see Figure 3). DOM rates were significantly higher in categorical DOM

contexts compared to variable contexts. In fact, input toward monolingual children was characterized by more innovative uses, including marking of DOs in Non-DOM contexts.

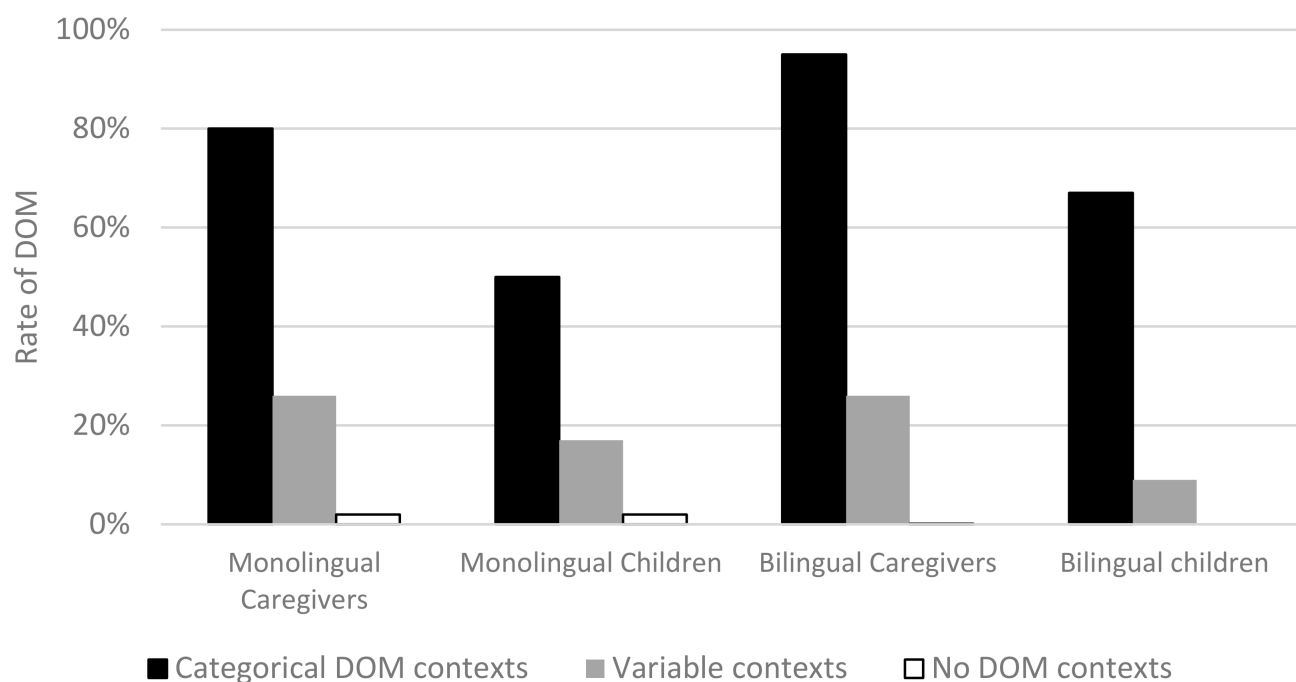


Figure 3. Rates of DOM across groups in Requena (2023).

We do not know to what extent CDS presents children with reliable cues beyond the local cues inherent to the DO (animacy and definiteness). The present study is the first to investigate the association of these sentence- and discourse-level features in Spanish CDS to monolingual and bilingual children with DOM. The questions that guide this study are:

1. Do global factors condition DOM in monolingual and bilingual CDS?

Following previous research, we expect that DO animacy and definiteness will have a significant effect on DOM use among all caregivers. Previous quantitative studies have paid less attention to global cues. Still, the available evidence (e.g., Tippets, 2011), as well as observations made across the literature, lead us to expect significant effects for discourse specificity, verb class, clitic doubling, and relative animacy.

2. Does bilingual CDS differ from monolingual CDS in the availability, reliability, and validity of these factors as potential cues to DOM?

Given that intrinsic properties of the DO, such as animacy and definiteness, have been identified as strong constraints on Spanish DOM and are acquired early, we expect local cues to show relatively high reliability, though not necessarily high availability. Human DOs and pronominal/proper-name DOs are not expected to be frequent in CDS, but when they occur, they should strongly predict DOM. By contrast, some global cues may be highly available but less reliable, which would reduce their usefulness as learning cues.

3. Present Study

3.1. Method

3.1.1. Corpora and Participant Information

Data for the present study come from three longitudinal corpora documenting naturalistic language development in two monolingual Spanish-speaking girls (Vicky and Koki) and three Spanish-English bilingual girls (Carla, Tina, and M). Table 2 shows the details on the corpora, selected to document comparable ages in available longitudinal

caregiver–child naturalistic corpora. Although socioeconomic information is unavailable, the available corpus descriptions suggest that the families were broadly middle-class (three were children of employed researchers, and two traveled abroad once a year for 4–6 weeks).

Table 2. Corpora.

Corpus Citation	Type	Child's Name	Age Range	# of Files	Total # of Words in CDS ⁶
Remedi (2014) ⁷	Monolingual	Vicky	1;10.29–2;11.00	14	10,993
Montes (1987) ⁸	Monolingual	Koki	1;07.20–2;11.14	13	32,272
Pérez-Bazán (2002) ⁹	Bilingual	Tina	2;02.17–2;11.28	4	17,976
Pérez-Bazán (2002)	Bilingual	Carla	1;11.29–3;03.21	20	21,093
Deuchar and Quay (2000) ¹⁰	Bilingual	M	1;03.04–2;06.02	9	27,895

The monolingual families resided in Rio Cuarto, Argentina (as in the case of the Remedi corpus) and in Pátzcuaro, Mexico (in the case of the Montes corpus). Despite the different recording sites, Koki (the child in the Montes corpus) had received immersive exposure to Argentinian Spanish before the child turned 1;0 and through her mother, a main source of Spanish input. This child was also exposed to Mexican Spanish through a caregiver and friends. Whereas her mother addressed Koki only in Spanish, her dad was a native speaker of English and addressed the child mostly in Spanish. Koki's parents spoke English among themselves.

The bilingual children were growing up in very different environments. Carla, Tina, and M were only children, born in Michigan (USA), Utah (USA), and Brighton (England). Their parents reportedly spoke only Spanish in the home. For each child, one parent was a native speaker of Spanish, while the other parent was a highly proficient second-language speaker of Spanish. Both parents used Spanish when communicating with each other and with the child. Prior to the age of 3;0, the heritage-speaking children were exposed to English through English-speaking babysitters. These three children are therefore classified as heritage speakers of Spanish, having been raised in Spanish-speaking households within a predominantly English-speaking community.

As Table 3 shows, the monolingual and bilingual children represent different points in a continuum of exposure to Spanish (S) and English (E) in the home, in childcare, and in the community. The continuum ranges from Vicky, who was not exposed to any language other than Spanish from a single variety, to Tina or M, whose knowledge of English was supported not only through the community but also through childcare.

Table 3. Use of Spanish (S) and English (E) across interaction types in child corpora.

Addresser → Addressee	Vicky	Koki	Carla	Tina	M
Parent → Child	S (Arg.)	S (Arg.)	S	S	S (Cuba)
Parent → Parent	S (Arg.)	E	S	S	S
Childcare → Child	n/a	S (Mx.)	S (1;11+)	E (1;11+)	E
Community	S (Arg.)	S (Mx)	E	E	E

3.1.2. Data Extraction and Coding Procedure

The analysis focuses on global, sentential and discourse-level factors in caregiver speech and evaluates their potential as reliable cues for the acquisition of Spanish DOM. The global factors selected are discourse specificity, verb lexeme, clitic doubling, and relative animacy (Laca, 2006; Tippets, 2011). All clauses containing transitive verbs were

manually extracted. Clauses where the direct object consisted of a question word (e.g., *¿Qué te dijo Mamá?* ‘What did mom say?’) were excluded. We also excluded [verb + noun] conventionalized constructions (such as *Hacer caso* ‘obey’, *dar un chirlo* ‘give a spanking’, *dar bola* ‘pay attention’), as well as exact repetitions, and transitive utterances that were part of songs or rhymes. Finally, we also excluded clauses with coordinated objects (*Traele el cuaderno y un lápiz* ‘Bring the notebook and a pencil’) and clauses with unclear intervening material between verb and object (e.g., *tengo xxx xxx juguete* ‘I have xxx xxx toy’).

Each token was then coded by corpus, file, line, speaker who produced it, and by the presence or absence of Differential Object Marking (DOM). Next, we coded for all the variables that were of interest for the analysis:

Local factors for comparison:

1. Animacy of the Object (Human, Animate, Inanimate, Unspecified)
2. Definiteness of the Object (Personal pronoun/Proper name, Definite NP, Indefinite NP)

Global factors of interest (with relevant examples):

3. **Discourse Specificity** (Specific vs. Non-specific)¹¹
 - (a) Specific

las otras		sí	las	compramos	en Morelia.
plantitas					
the other plant-DIM.F.PL		yes	them.F.PL	bought	in Morelia
We bought the other little plants in Morelia.					(Montes, 020610, line 118)
 - (b) Non-Specific

tiene	otra	flor?			
has	another	flower			
Does it have another flower?					(Montes, 020809, line 647)
4. **Verb Class** (Action, Perception, Pursuit [APP] vs. Knowledge, Feeling, Relationship, Ability [KFRA], Tsunoda, 1985)
 - (c) APP

qué	otras cosas	tiras	al	suelo,	Tina?
which	other things	throw	to/the	ground	Tina
Which other things do you throw to the ground, Tina?					(Perez/Tina, 020217, line 194)
 - (d) KFRA

tú	tienes	otra		mamá y	otra casa (...) ?
you	have	another		mom and	another house
Do you have another mom and another house?					(Pérez/Tina, 020217, line 224)
5. **Clitic Doubling** (yes vs. no)
 - (e) Yes

con	qué	dedos	la	agarrás	a	la	lapicera?
with	which	fingers	it.F.SG	grab.2.SG	DOM	the.F.SG	pen.F.SG
Which fingers do you grab the pen with?						(Remedi, 020904, line 1201)	
 - (f) No

ah,	tienen	que	arreglar	la	ventana?
ah	have	to	fix	the.F.S	window.F.S
Ah, do they have to fix the window?					(Remedi, 021100, line 1165)
6. Animacy of the Subject (Human, Animate, Inanimate, Unspecified) was coded to obtain a measure of **Relative Animacy** (DO equal or greater in animacy than S [DO = +], DO lower in animacy than S [DO-], and DO Unspecified [Sunsp])¹²

- (g) DO = +
 vamos arriba a buscar a **mamita?**
 go.1.PL upstairs to look.for DOM **mommy**
 Let's go upstairs to look for mommy? (Pérez/Carla, 020313, line 101)
- (h) DO-
 buscamos a **Barney?**
 look.for DOM **Barney**
 Should we look for Barney? (Pérez/Carla, 011129, line 272)
- (i) Sunsp
 hay que buscar otra <cinta > [>].
 One must look.for another tape
 One must look for another tape. (Deuchar, 010708, line 668)
7. **DO placement** ((S)VO vs. Other)
- (j) VO
 Quieres oír otra canción?
 Want hear another song
 Do you want to hear another song? (Pérez/Carla, 020529, line 18)
- (k) Other (OV)
 okey, qué otra canción quieres oír?
 Okay which other song want.2.SG hear
 Okay, which other song do you want to hear? (Pérez/Carla, 020529, line 17)

3.1.3. Data Analysis

We first conducted analyses to determine whether global cues condition DOM in monolingual and bilingual CDS (RQ1). This took the form of regression models on monolingual and bilingual CDS. Next, we examined whether bilingual CDS differs from monolingual CDS in DOM cue availability, reliability, and validity (RQ2), which we will exemplify here with animacy. Cue **availability** was calculated by dividing the number of tokens of each value of a variable (e.g., human) by the total number of tokens found across all levels of animacy ($A_v = \frac{N_v}{N_{total}}$). Cue **reliability** was calculated by dividing the number of cases of human DOs marked with DOM by the total number of human DOs ($R_v = \frac{D_v}{N_v}$). Finally, cue **validity** was calculated by multiplying cue availability by cue reliability ($V_v = A_v \times R_v$). Given the pockets of variation exhibited by DOM, for comparisons of cue strength, we selected the level of each cue known to predict DOM use, based on previous research. For example, for DO animacy, we report the availability, reliability, and validity of the human level (for full calculations, see Appendix A).

3.2. Results

3.2.1. Factors Conditioning DOM Use in CDS

A logistic regression model was fitted to examine the factors predicting Differential Object Marking (DOM) in monolingual CDS. The model included direct object animacy, definiteness, clitic doubling, and word order as predictors. The model provided a good fit to the data (residual deviance = 71.51 on 426 df, AIC = 89.51) (see Table 4). Direct object animacy was a significant predictor of DOM. Compared to inanimate objects (reference level), both human objects ($\beta = 3.50$, SE = 1.13, $p = .002$) and animate objects ($\beta = 1.88$, SE = 0.82, $p = .022$) showed a higher likelihood of DOM. Definiteness also played a role, though not all levels were significant. Definite noun phrases (DNP; $\beta = 4.27$, SE = 1.52, $p = .005$) and proper nouns (PN; $\beta = 6.31$, SE = 1.70, $p < .001$) significantly increased the probability of DOM relative to the reference level, while other definiteness categories were not significant.

Table 4. Logistic regression predicting DOM in monolingual CDS.

Predictor	β	Std. Error	z Value	p Value	# of Obs. N = 435	% DOM
Intercept (Inanimate, INP, no doubling, Other)	−14.053	2.745	−5.119	<.001		
DO Animacy (H)	3.499	1.133	3.089	.002	24	87%
DO Animacy (A)	1.876	0.817	2.296	.022	68	34%
DO Definiteness (DP)	2.010	1.786	1.126	.260	26	4%
DO Definiteness (DNP)	4.269	1.522	2.805	.005	211	14%
DO Definiteness (PN)	6.305	1.700	3.708	<.001	26	69%
DO Definiteness (PP)	22.411	1479.877	0.015	.988	4	100%
Clitic Doubling (yes)	6.550	1.151	5.693	<.001	64	66%
Word Order (VO)	5.366	1.606	3.342	<.001	403	13%

AIC: 89.512, R²: 0.77.

With respect to global factors, discourse specificity and verb class did not emerge as significant predictors. Clitic doubling had a strong positive effect on DOM ($\beta = 6.55$, $SE = 1.15$, $p < .001$), indicating that objects accompanied by clitic doubling are substantially more likely to be marked by DOM. Word order was also a significant predictor, with VO order increasing the likelihood of DOM ($\beta = 5.37$, $SE = 1.61$, $p < .001$) (See Appendix B).

A second logistic regression model examined the factors conditioning DOM in bilingual CDS. The model included direct object animacy, discourse specificity, and clitic doubling as predictors and showed a substantial improvement over the null model (residual deviance = 58.51 on 401 df, AIC = 68.51) (see Table 5). Direct object animacy emerged as a strong and highly significant predictor of DOM. Compared to inanimate objects (reference level), both human objects ($\beta = 5.86$, $SE = 1.28$, $p < .001$) and animate objects ($\beta = 5.04$, $SE = 1.14$, $p < .001$) were significantly more likely to receive DOM. This indicates a clear animacy hierarchy effect, whereby more animate referents strongly favor differential marking. Direct object specificity did not reach significance.

Table 5. Logistic regression predicting DOM in bilingual CDS.

Predictor	β	Std. Error	z Value	p Value	# of Obs. N = 406	% DOM
Intercept (Inanimate, Non-specific, No Cl. doubling)	−7.765	1.473	−5.273	<.001		
DO Animacy (H)	5.857	1.280	4.575	<.001	10	50%
DO Animacy (A)	5.038	1.142	4.412	<.001	35	28%
Discourse Specificity (S)	2.075	1.103	1.881	.060	297	18%
Clitic Doubling (Yes)	2.789	1.559	1.789	.074	8	37%

AIC: 68.512, R²: 0.56.

As for global factors, discourse specificity showed a marginal effect ($\beta = 2.08$, $SE = 1.10$, $p = .060$), suggesting a tendency for specific objects to be more likely to be marked, although this effect did not reach conventional levels of statistical significance. Clitic doubling also exhibited a positive but non-significant effect ($\beta = 2.79$, $SE = 1.56$, $p = .074$), indicating that objects accompanied by clitic doubling tend to favor DOM, though this tendency remains weaker and less consistent than the effect of animacy (See Appendix C).

Overall, these results suggest that DOM in monolingual child-directed speech is primarily conditioned by DO animacy, clitic doubling, and word order (albeit not in the anticipated direction), with more limited and category-specific effects of definiteness. For bilingual CDS, our results indicate that DO animacy is also the primary conditioning factor, while discourse-related factors such as specificity and clitic doubling play a more limited or gradient role.

3.2.2. Cue Availability, Reliability, and Validity

We then evaluated each factor as a potential cue by calculating its availability, reliability, and validity in monolingual and bilingual CDS (see Tables A1–A7 with data and calculations in the Appendix A). Below, we present the comparison across cues. We include two local cues (DO animacy and DO definiteness).

Cue Availability

The analysis of cue availability (Figure 4) indicates that two cues have DOM favoring values with availability scores above the rest, namely, discourse specificity and verb class. This means that DOs that were coded as identifiable based on previous discourse or the situational context are highly available in the input. Similarly, utterances with verbs of Action, Perception, and Pursuit (Tsunoda, 1985) are also highly available in the input.



Figure 4. Cue availability in monolingual and bilingual CDS.

DO animacy and definiteness did not come up as highly available, and this was expected. Human as well as pronominal/proper name DOs are not the prototypical DOs. Typically, DOs are inanimate entities as well as definite or indefinite NPs, as can be seen by the totals on Tables A1 and A2 in Appendix A.

Interestingly, both monolingual and bilingual CDS share that these cues have very available values in the input to very young children. The remaining cues had very low availability scores. Interestingly, the presence of coreferential pronouns (clitic doubling) shows a bit higher availability in monolingual CDS, probably as a result of the prevalence of clitic doubling in Argentinian Spanish.

Cue Reliability

The analysis of cue reliability (Figure 5) is a good indicator of how useful it would be for the child to attend to a cue. Here, we found not only a spectrum of very reliable cues to less reliable ones, but also differences between monolingual and bilingual CDS.

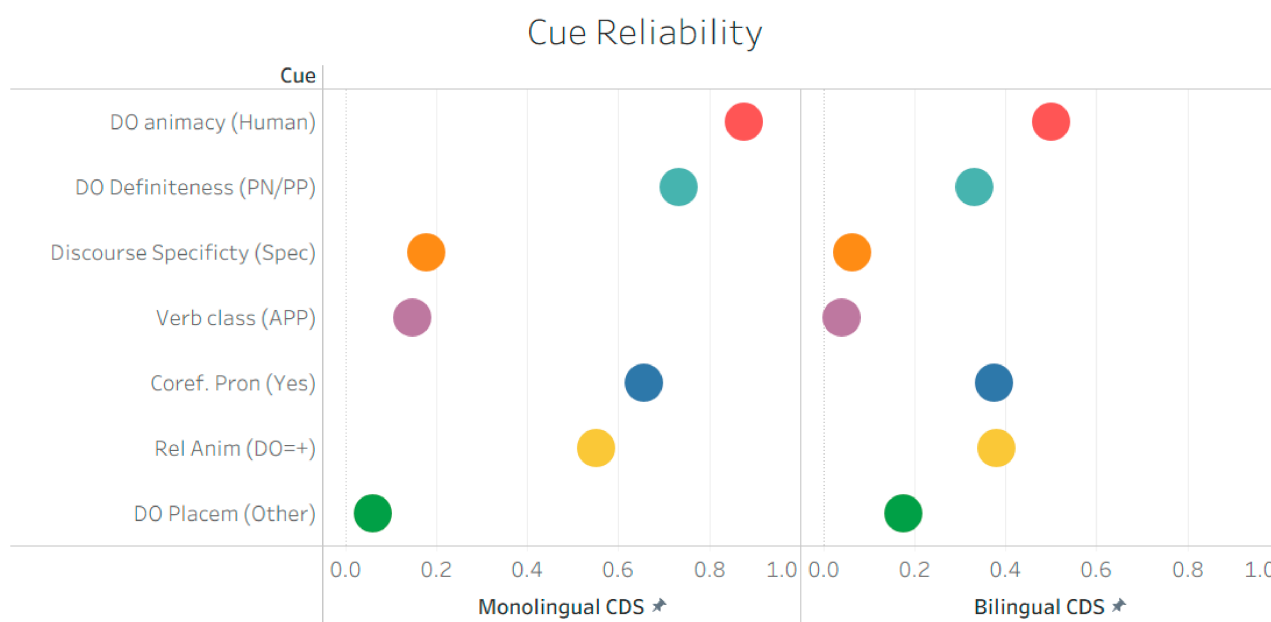


Figure 5. Cue reliability in monolingual and bilingual CDS.

Starting with the monolingual input, we observe DOM-favoring values in four cues exceeding reliability scores of 0.5. Here, both local cues to DOM (DO animacy and DO definiteness) emerge with highly reliable values (+human, +definite). The next two cues with values with moderately high reliability are the presence of clitic doubling and relative animacy. Again, the high reliability of coreferential pronouns in the monolingual input could be due to the greater use of clitic doubling in Argentinian Spanish. Discourse specificity, verb class, and DO placement did not emerge as reliable cues to DOM.

The bilingual CDS showed some similarities and some differences with respect to the monolingual CDS already presented. The relative ordering of the reliability scores is similar to the monolingual input. However, all reliability scores are low, with DO animacy having the highest score, around 0.5.

Cue Validity

Finally, out of the two scores previously presented, we can look at validity (Figure 6). Cue validity scores are all very low. Low absolute validity values are expected, given the rarity of DOM overall; what matters is the relative ranking across cues. Still, global cues such as discourse specificity, verb class, clitic doubling, and even relative animacy had validity scores that are similar to or higher than the two local cues examined. This should not be interpreted as evidence that these global cues are more reliable than local cues. Rather, their relatively high validity values often reflect their greater availability in the input. For acquisition, reliability remains especially important because it indicates how consistently a cue predicts DOM when present. The data about bilingual CDS show a different scenario. We do not see much differentiation in validity scores across cues in the input that the bilingual children receive.

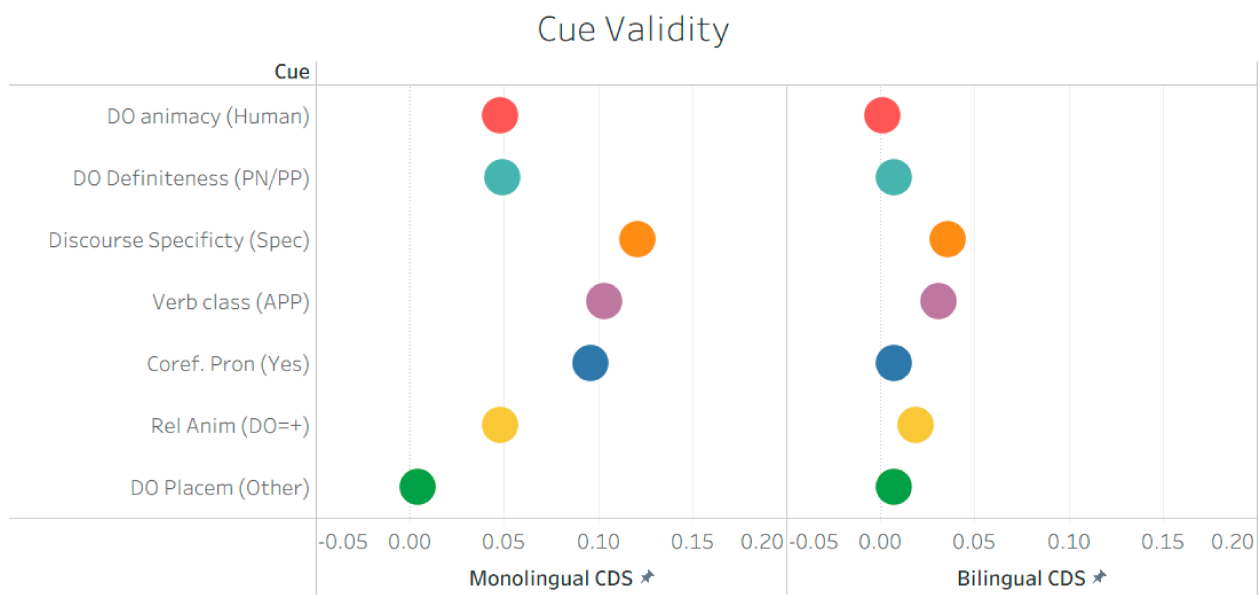


Figure 6. Cue validity in monolingual and bilingual CDS.

Group Comparisons

A logistic regression model was fitted to examine the effects of those factors that emerged as important in the separate group analyses.¹³ We looked at DO animacy, clitic doubling, discourse specificity, and word order on the likelihood of differential object marking (DOM) to assess whether these effects differ between monolingual and bilingual child-directed speech (CDS). With monolingual speech as the reference level, the results reveal robust cue effects alongside important differences across groups. In monolingual CDS, DOM is strongly conditioned by discourse specificity and clitic doubling, with discourse-specific objects showing a markedly higher likelihood of DOM and clitic doubling also exerting a strong facilitating effect. Word order similarly patterns as a strong predictor, while animacy shows an expected gradient, with inanimate objects strongly disfavoring DOM relative to more animate referents. Crucially, several interactions with Linguagem indicate differences across groups. The effects of discourse specificity, clitic doubling, and word order are significantly attenuated in bilingual CDS. In contrast, the effect of animacy is broadly comparable across groups, with only minor differences in magnitude. Taken together, these findings indicate that while the same set of cues conditions DOM in both groups, monolingual CDS exhibits stronger and more consistent cue–outcome associations, whereas bilingual CDS reflects a weakening or redistribution of cue reliability across predictors. It is worth noting that Discourse specificity emerges as significant when comparing groups in the same model.

The descriptive analysis of cue reliability displayed in Figure 7 serves to illustrate how the attenuated effect in regression analyses is also observable in calculations of cue reliability across groups. Bilingual children seem to be exposed to qualitatively similar distributions of DOM in the input compared to monolingual children. However, attenuated conditioning and cue reliability might result in some of the effects attested in bilinguals. Bilingual children might, therefore, take longer to acquire the factors that condition DOM.

In sum, the results of the present study show that while both monolingual and bilingual CDS exhibit sensitivity to some of the same cues conditioning DOM, the strength and consistency of these cues differ substantially across groups. Analyses of cue conditioning, availability, reliability, and validity converge in showing that monolingual CDS provides clearer and more robust cue–outcome associations, particularly for local factors such as DO animacy, as well as for certain global cues like clitic doubling and word order. In

contrast, bilingual CDS is characterized by markedly reduced cue reliability and weaker differentiation across cues, with DO animacy emerging as the only consistently strong predictor. Crucially, regression analyses comparing groups confirm that several global cues (discourse specificity, clitic doubling, and word order) are significantly attenuated in bilingual input. These findings indicate that, although bilingual children are exposed to qualitatively similar patterns of DOM, the probabilistic structure of the input seems less informative, potentially affecting how cue strengths are established during acquisition.

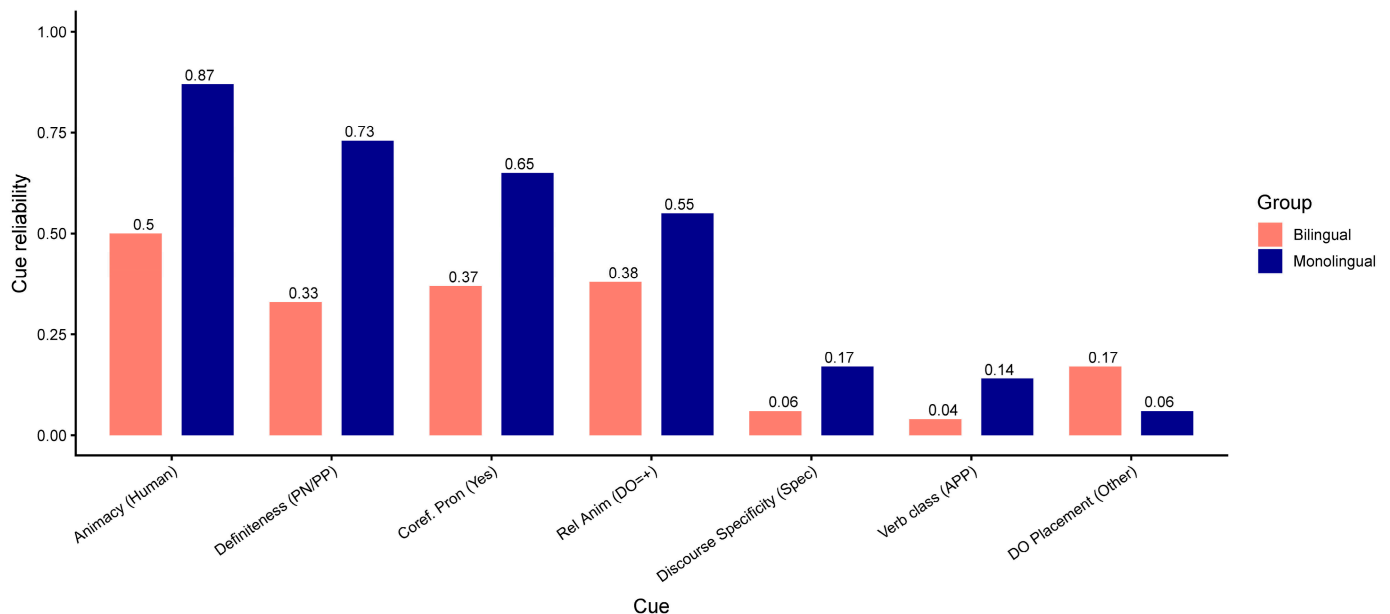


Figure 7. Comparison of cue reliability scores across cues in monolingual and bilingual CDS.

4. Discussion

It has long been recognized that the factors conditioning the use of Spanish Differential Object Marking (DOM) extend beyond the inherent features of the direct object (DO) noun phrase. While DO animacy and definiteness account for a substantial portion of DOM distribution, patterns of variation indicate that additional clause-level and discourse-level factors also play a role. Although previous work on adult language has identified such global factors (Laca, 2006), their presence and potential role in child-directed speech (CDS) have not been systematically examined. Moreover, relatively little is known about how DOM is conditioned in CDS more generally, particularly in bilingual contexts. The present study addressed this gap by investigating whether global factors are present in CDS, whether they condition DOM use, and whether they provide informative cues for learners. With respect to the first research question, our findings show that global factors do condition DOM in CDS, but their effects are selective and differ across groups. In monolingual CDS, clitic doubling and word order emerge as robust predictors of DOM, indicating that clause-level structure contributes meaningfully alongside local NP-internal features. Still, contrary to our prediction, VO word order favored DOM among monolingual CDS. This implies that at least the monolingual caregivers examined here are not using DOM to disambiguate argument structure in cases of flexible word order (i.e., OV or “Other”). Instead, they condition DOM by word order by overly marking canonical VO structures. This could be a distinctive feature of CDS that should be examined further in the context of modifications that characterized infant-directed communication. In contrast, discourse specificity and verb class do not significantly condition DOM in this group, suggesting that not all discourse-level factors are equally integrated into the marking system. In bilingual

CDS, the conditioning role of global cues is substantially weaker: none of the global factors examined reach conventional levels of significance, and only marginal tendencies are observed for discourse specificity and clitic doubling. Instead, DOM in bilingual input is overwhelmingly driven by animacy. Taken together, these results indicate that global factors are part of the conditioning system of DOM in CDS, but their contribution is uneven and markedly reduced in bilingual input, where the system relies more heavily on core local cues.

This contrast should be interpreted with caution. The corpora differ not only in whether the children were growing up in monolingual or bilingual environments, but also in dialectal background, community context, parental language background, and childcare arrangements. Thus, the group comparison is best understood as revealing differences between the input profiles represented in these corpora, rather than as a definitive characterization of all monolingual and bilingual CDS.

Previous research has consistently shown that children acquire these local DOM constraints very early. Corpus-based analyses of child production report near-ceiling accuracy in the use of DOM in categorical contexts (Rodríguez-Mondoñedo, 2008), and experimental work shows that children as young as 3;0 already follow animacy and referentiality constraints (Ticio & Avram, 2015). Although these studies did not examine child-directed speech directly, they provide strong evidence that children rapidly converge on the core local conditioning factors of DOM. More recent work incorporating CDS has shown that children closely match the input in their treatment of animate and inanimate objects, with animacy emerging as an earlier and stronger constraint than definiteness (Callen & Miller, 2022). Similarly, longitudinal analyses of monolingual and bilingual corpora indicate that children approximate the variable patterns present in the input from very early on (Requena, 2023).

Having established that global factors condition DOM to varying degrees across groups, we now turn to the second research question, which concerns not simply whether these factors are present, but how informative they are as cues for the learner. To address this question, we adopted the framework of the Competition Model (Bates & MacWhinney, 1989) and examined cue strength in terms of availability, reliability, and validity. Cue availability reflects how frequently a cue appears, while cue reliability captures how consistently it predicts DOM when present. Cue validity, defined as the product of availability and reliability, provides an overall measure of cue strength. Our results show that some cues with high availability in the input (such as discourse specificity and verb class) are nonetheless weak predictors of DOM due to low reliability. This dissociation underscores that frequency alone does not make a cue informative for the learner.

The importance of cue reliability is also consistent with previous findings in acquisition. Despite their relatively low availability in the input, cues such as DO animacy and definiteness are highly reliable predictors of DOM, which may explain why children acquire these constraints so rapidly. In this sense, reliability provides a principled explanation for the early mastery of DOM in categorical contexts reported in the literature (Rodríguez-Mondoñedo, 2008).

Cue reliability emerges as the most informative dimension for understanding the structure of the input. In monolingual CDS, four cues stand out as relatively reliable predictors of DOM: the two local cues (DO animacy and DO definiteness) and two global cues (clitic doubling and relative animacy). This pattern aligns with expectations from previous research, reinforcing the central role of inherent DO features while also identifying a subset of global cues that are meaningfully associated with DOM.

The role of clitic doubling is particularly interesting. Previous research has established a strong association between clitic doubling and DOM in adult Spanish, but this cue has

not been systematically examined in acquisition or in CDS. In the present data, its relatively high reliability suggests that children are exposed to a consistent mapping between clitic doubling and object marking. It is worth noting that the monolingual corpora analyzed here include Argentinian Spanish, where clitic doubling is especially frequent, even with lexical objects. While this may boost the availability of the cue, the bilingual data suggest that the association between clitic doubling and DOM is not restricted to this variety.

Similarly, the role of relative animacy aligns with findings from adult-directed speech. Tippetts (2011) shows that relative animacy is a strong predictor of DOM across dialects, particularly in contexts involving inanimate objects. The present results extend this observation to CDS, suggesting that children are exposed to this relational cue early in development and may use it to refine their understanding of DOM in variable contexts.

In bilingual CDS, the same general ranking of cues is observed, but reliability values are markedly attenuated across the board. Only DO animacy reaches moderate reliability, while all other properties examined, whether local or global, remain weak cues to DOM. A similar pattern is observed for cue validity, where bilingual input shows little differentiation across cues. These findings indicate that, although bilingual children are exposed to broadly similar distributions of DOM, the probabilistic structure of the input is less informative, with weaker cue–outcome associations overall.

The contrast between groups has important implications for acquisition. The Competition Model predicts that cue reliability plays a central role in determining cue strength and, ultimately, the order and ease of acquisition. In monolingual CDS, children are exposed to a system in which both local cues and certain closely related global cues provide relatively reliable information about DOM. In bilingual CDS, however, this system is flattened: cue reliability is reduced, and distinctions among cues are less pronounced. This attenuation may make it more difficult for learners to assign stable weights to cues, potentially contributing to the protracted or variable acquisition patterns observed in bilingual populations. As one reviewer suggests, the findings of this study also have implications for our understanding of heritage DOM grammar among adult heritage speakers. Although bilingual children are exposed to similar types of cues as monolingual children, the reduced reliability observed in their input may make it more difficult to establish stable cue weights, potentially contributing to the variability observed among adult heritage speakers (Montrul et al., 2026; Thane, 2025).

Unlike clitic doubling and relative animacy, discourse specificity, verb class, and DO placement showed low reliability as cues to DOM. The status of discourse specificity has long been debated in the literature, with some authors arguing that it does not directly condition DOM but rather reflects broader pragmatic or interpretive factors (Leonetti, 2008; López, 2012). The present findings are consistent with this view, as the low reliability of this cue suggests that it may be difficult for learners to extract it as a stable predictor from the input. Similarly, the lack of a clear effect of verb class may reflect the fact that verb-based influences on DOM operate at a more fine-grained, lexical level than captured by broad semantic classifications.

A key finding of the present study is that not all global factors are equally informative as cues for acquisition. While several clause- and discourse-level factors have been proposed in the adult literature, only those that are tightly connected to the morphosyntactic representation of the direct object (such as clitic doubling) emerge as sufficiently reliable in CDS to plausibly guide learning (for a recent study on the acquisition of clitics in relation to DOM, see Daniels, 2025). Crucially, these cues can be understood as extensions of the same feature space that underlies local effects (e.g., DO animacy), which may facilitate their integration into the developing grammar. In contrast, more abstract or discourse-dependent cues, such as discourse specificity and verb class, appear to be too weak or inconsistent

in the input to support early acquisition. These results indicate that the acquisition of DOM is driven not simply by the presence of multiple cues, but by the subset of cues that provide more stable and interpretable mappings between form and function in the input, an outcome that aligns closely with predictions of the Competition Model.

5. Conclusions

This study examined global factors in Spanish Differential Object Marking (DOM) in child-directed speech (CDS), integrating two complementary perspectives: the identification of factors that condition DOM and the evaluation of those factors as potential learning cues. By obtaining regression analyses and measures of cue availability, reliability, and validity, we distinguish between factors that condition DOM use and those that are most informative as potential learning cues.

The results show that global factors are present in the input and, in some cases, systematically associated with DOM, making some of them plausible learning cues. However, their contribution is uneven. In monolingual CDS, a subset of global cues reaches levels of reliability that make them plausible candidates for learning cues. This is the case for global factors that are closely tied to the morphosyntactic representation of the direct object and that therefore function as relatively reliable cues, such as clitic doubling and relative animacy. In contrast, other factors, including discourse specificity and verb class, are frequent but unreliable, limiting their usefulness for acquisition. In bilingual CDS, cue reliability is reduced across the board, resulting in a flatter cue landscape in which animacy remains the only consistently strong predictor.

These findings underscore the importance of cue reliability in shaping acquisition. While a wide range of factors may contribute to DOM variation in grammar, only those that provide stable mappings between form and function are likely to support learning. The results, therefore, suggest that learners may initially rely on cues that reinforce core feature-based distinctions, with more abstract discourse-level factors playing a more limited or delayed role.

More broadly, this study contributes to our understanding of bilingual acquisition by showing that differences in input are not only quantitative but also qualitative. Although bilingual children are exposed to similar types of cues as monolingual children, the reduced strength of cue–outcome associations may hinder the establishment of stable cue weights, potentially contributing to the variability observed in bilingual DOM systems (Montrul et al., 2026; Thane, 2025).

Several limitations should be noted. The analysis focused exclusively on caregiver input and did not include child production or comprehension, leaving open the question of how learners use the cues identified here. In addition, the set of global factors examined was necessarily selective. The small number of corpora also limits the extent to which the observed monolingual–bilingual differences can be generalized across dialects and bilingual communities. Future research should investigate whether children are sensitive to these cues in real time and explore additional discourse-level variables, as well as finer-grained lexical effects, to better understand how different sources of information interact in the acquisition of DOM. For instance, additional discourse-level variables, such as topicality, referential persistence, and secondary predication (Laca, 2006), may also contribute to DOM distribution and should be explored in future work. One way to address this would be to examine what Givón (1983) calls referential distance and topic persistence by looking at previous and subsequent mentions of the DO referent. This was found to significantly influence the use of DOM in a sociolinguistic corpus of adult-directed speech (Balasch, 2011). Finally, further research incorporating finer-grained lexical analyses of features of

the verb and of the noun (count vs. mass nouns) may help to clarify the role of local cues in shaping DOM use in input beyond animacy and definiteness.

In conclusion, the present study provides the first systematic evidence that global factors conditioning DOM are present in child-directed speech, but that only a subset of these factors function as variably reliable cues for learners. By showing that only a restricted subset of these cues achieves sufficient reliability to plausibly guide learning, the findings highlight the importance of cue strength (not merely cue availability) in shaping the acquisition of variable morphosyntactic systems.

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Appendix A. Analyses of Availability, Reliability, and Validity of Potential Cues to DOM

Table A1. Analysis of DO animacy as a local cue to DOM in CDS.

Corpus	Animacy		
	% DOM with Human	% DOM with Animate	% DOM with Inanimate
Monolingual (Vicky)	88% (15/17)	47% (14/30)	2% (4/175)
Monolingual (Koki)	86% (6/7)	24% (9/38)	3% (5/168)
TOTAL	87% (21/24)	34% (23/68)	3% (9/343)
AVAILABILITY	$=24/435 = 0.055$	$=68/435 = 0.156$	$=343/435 = 0.788$
RELIABILITY	$=21/24 = 0.875$	$=23/68 = 0.338$	$=9/343 = 0.026$
VALIDITY	$=0.055 \times 0.875 = 0.048$	$=0.156 \times 0.338 = 0.052$	$=0.788 \times 0.026 = 0.020$
Bilingual (Tina)	33% (1/3)	67% (2/3)	0% (0/20)
Bilingual (Carla)	100% (2/2)	25% (2/8)	1% (1/125)
Bilingual (M)	40% (2/5)	27% (6/24)	0% (0/216)
TOTAL	50% (5/10)	28% (10/35)	0.3% (1/361)
AVAILABILITY	$=10/406 = 0.024$	$=35/406 = 0.086$	$=361/406 = 0.889$
RELIABILITY	$=5/10 = 0.500$	$=10/35 = 0.285$	$=1/361 = 0.002$
VALIDITY	$=0.024 \times 0.5 = 0.012$	$=0.086 \times 0.285 = 0.024$	$=0.889 \times 0.002 = 0.001$

Table A2. Analysis of DO definiteness as a local cue to DOM in CDS.

Corpus	Definiteness		
	% DOM with P.Name/Pers.Pron	% DOM with Def. NP/Dem.Pron.	% DOM with Indef. NP
Monolingual (Vicky)	74% (20/27)	10% (13/127)	0% (0/68)
Monolingual (Koki)	67% (2/3)	15% (17/110)	1% (1/100)
TOTAL	73% (22/30)	13% (30/237)	0.5% (1/168)
AVAILABILITY	$=30/435 = 0.068$	$=237/435 = 0.544$	$=168/435 = 0.386$
RELIABILITY	$=22/30 = 0.733$	$=30/237 = 0.126$	$=1/168 = 0.005$
VALIDITY	$=0.068 \times 0.733 = 0.049$	$=0.544 \times 0.126 = 0.068$	$=0.386 \times 0.005 = 0.001$

Table A2. Cont.

Corpus	Definiteness		
	% DOM with P.Name/Pers.Pron	% DOM with Def. NP/Dem.Pron.	% DOM with Indef. NP
Bilingual (Tina)	0% (0/0)	19% (3/16)	0% (0/10)
Bilingual (Carla)	37% (3/8)	2% (1/56)	1% (1/71)
Bilingual (M)	0% (0/1)	5% (8/155)	0% (0/89)
TOTAL	33% (3/9)	5% (12/227)	0.6% (1/170)
AVAILABILITY	$=9/406 = \mathbf{0.022}$	$=227/406 = 0.559$	$=170/406 = 0.418$
RELIABILITY	$=3/9 = \mathbf{0.333}$	$=12/227 = 0.052$	$=1/170 = 0.005$
VALIDITY	$=0.022 \times 0.333 = \mathbf{0.007}$	$=0.559 \times 0.052 = 0.029$	$=0.418 \times 0.005 = 0.002$

Table A3. Analysis of discourse specificity as a global cue to DOM in CDS.

Corpus	Discourse Specificity	
	% DOM with Specific DOs	% DOM with Non-Specific DOs
Monolingual (Vicky)	20% (33/162)	0% (0/60)
Monolingual (Koki)	17% (20/135)	0% (0/78)
TOTAL	18% (53/297)	0% (0/138)
AVAILABILITY	$=297/435 = \mathbf{0.682}$	$=138/435 = 0.317$
RELIABILITY	$=53/297 = \mathbf{0.178}$	$=0/138 = 0$
VALIDITY	$=0.682 \times 0.178 = \mathbf{0.121}$	$=0.317 \times 0 = 0$
Bilingual (Tina)	18% (3/17)	0% (0/9)
Bilingual (Carla)	6% (4/65)	1% (1/70)
Bilingual (M)	5% (8/155)	0% (0/90)
TOTAL	6% (15/237)	0.6% (1/169)
AVAILABILITY	$=237/406 = \mathbf{0.583}$	$=169/406 = 0.416$
RELIABILITY	$=15/237 = \mathbf{0.063}$	$=1/169 = 0.005$
VALIDITY	$=0.583 \times 0.063 = \mathbf{0.036}$	$=0.416 \times 0.005 = 0.002$

Table A4. Analysis of verb class as a global cue to DOM in CDS.

Corpus	Verb Class	
	% DOM with Verbs of Action, Perception, Pursuit (APP)	% DOM with Verbs of Knowledge, Feeling, Relationship, Ability (KFRA)
Monolingual (Vicky)	17% (29/169)	7% (4/53)
Monolingual (Koki)	13% (16/136)	5% (4/77)
TOTAL	15% (45/305)	6% (8/130)
AVAILABILITY	$=305/435 = \mathbf{0.701}$	$=130/435 = 0.298$
RELIABILITY	$=45/305 = \mathbf{0.147}$	$=8/130 = 0.061$
VALIDITY	$=0.701 \times 0.147 = \mathbf{0.103}$	$=0.298 \times 0.061 = 0.018$
Bilingual (Tina)	14% (3/22)	0% (0/4)
Bilingual (Carla)	4% (4/95)	2% (1/40)
Bilingual (M)	3% (6/196)	6% (2/49)
TOTAL	4% (13/313)	3% (3/93)
AVAILABILITY	$=313/406 = \mathbf{0.770}$	$=93/406 = 0.229$
RELIABILITY	$=13/313 = \mathbf{0.041}$	$=3/93 = 0.032$
VALIDITY	$=0.770 \times 0.041 = \mathbf{0.031}$	$=0.229 \times 0.032 = 0.007$

Table A5. Analysis of the presence of clitic doubling as a global cue to DOM in CDS.

Corpus	Presence of Clitic Doubling	
	% DOM With Clitic Doubling	% DOM Without Clitic Doubling
Monolingual (Vicky)	86% (24/28)	5% (9/194)
Monolingual (Koki)	50% (18/36)	1% (2/177)
TOTAL	66% (42/64)	3% (11/371)
AVAILABILITY	$=64/435 = 0.147$	$=371/435 = 0.852$
RELIABILITY	$=42/64 = 0.656$	$=11/371 = 0.029$
VALIDITY	$=0.147 \times 0.656 = 0.096$	$=0.852 \times 0.029 = 0.024$
Bilingual (Tina)	67% (2/3)	4% (1/23)
Bilingual (Carla)	25% (1/4)	3% (4/131)
Bilingual (M)	0% (0/1)	3% (8/244)
TOTAL	37% (3/8)	3.2% (13/398)
AVAILABILITY	$8/406 = 0.019$	$398/406 = 0.980$
RELIABILITY	$3/8 = 0.375$	$13/398 = 0.032$
VALIDITY	$0.019 \times 0.375 = 0.007$	$0.980 \times 0.032 = 0.031$

Table A6. Analysis of relative animacy as a global cue to DOM in CDS.

Corpus	Relative Animacy		
	% DOM with DO = +	% DOM with DO-	% DOM with S. Unspecified
Monolingual (Vicky)	68% (15/22)	9% (18/191)	0% (0/9)
Monolingual (Koki)	37% (6/16)	7% (14/191)	0% (0/6)
TOTAL	55% (21/38)	8% (32/382)	0% (0/15)
AVAILABILITY	$=38/435 = 0.087$	$=382/435 = 0.878$	$=15/435 = 0.034$
RELIABILITY	$=21/38 = 0.552$	$=32/382 = 0.083$	$=0/15 = 0$
VALIDITY	$=0.087 \times 0.552 = 0.048$	$=0.878 \times 0.083 = 0.072$	$=0.034 \times 0 = 0$
Bilingual (Tina)	50% (3/6)	0% (0/18)	0% (0/2)
Bilingual (Carla)	25% (2/8)	2% (3/122)	0% (0/5)
Bilingual (M)	43% (3/7)	2% (5/232)	0% (0/6)
TOTAL	38% (8/21)	2% (8/372)	0% (0/13)
AVAILABILITY	$21/406 = 0.051$	$372/406 = 0.916$	$13/406 = 0.032$
RELIABILITY	$8/21 = 0.380$	$8/372 = 0.021$	$0/13 = 0$
VALIDITY	$0.051 \times 0.380 = 0.019$	$0.916 \times 0.021 = 0.019$	$0.032 \times 0 = 0$

Table A7. Analysis of DO placement as a global cue to DOM in CDS.

Corpus	DO Placement	
	% DOM with Other	% DOM with (S)VO
Monolingual (Vicky)	15% (2/13)	15% (31/209)
Monolingual (Koki)	0% (0/19)	10% (20/194)
TOTAL	6% (2/32)	13% (51/403)
AVAILABILITY	$=32/435 = 0.073$	$=403/435 = 0.926$
RELIABILITY	$=2/32 = 0.062$	$=51/403 = 0.126$
VALIDITY	$=0.073 \times 0.062 = 0.004$	$=0.926 \times 0.126 = 0.116$

Table A7. Cont.

Corpus	DO Placement	
	% DOM with Other	% DOM with (S)VO
Bilingual (Tina)	28% (2/7)	5% (1/19)
Bilingual (Carla)	0% (0/7)	4% (5/128)
Bilingual (M)	33% (1/3)	3% (7/242)
TOTAL	18% (3/17)	3% (13/389)
AVAILABILITY	$=17/406 = 0.041$	$=389/406 = 0.958$
RELIABILITY	$=3/17 = 0.176$	$=13/389 = 0.033$
VALIDITY	$=0.041 \times 0.176 = 0.007$	$=0.958 \times 0.033 = 0.031$

Appendix B

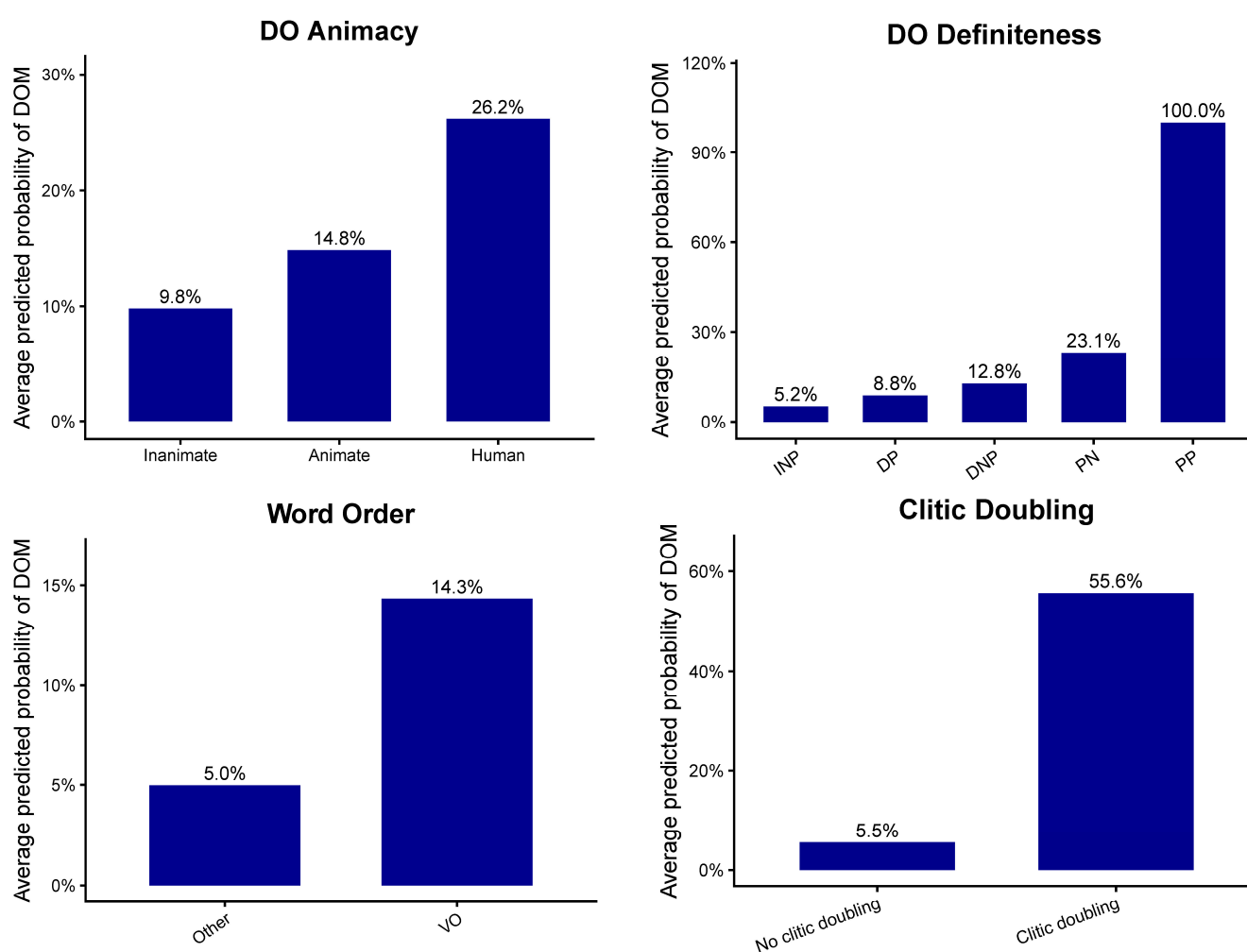


Figure A1. Figures displaying average predicted probabilities of DOM in monolingual CDS derived from the logistic regression model, illustrating the effect of each predictor while holding other variables constant.

Appendix C

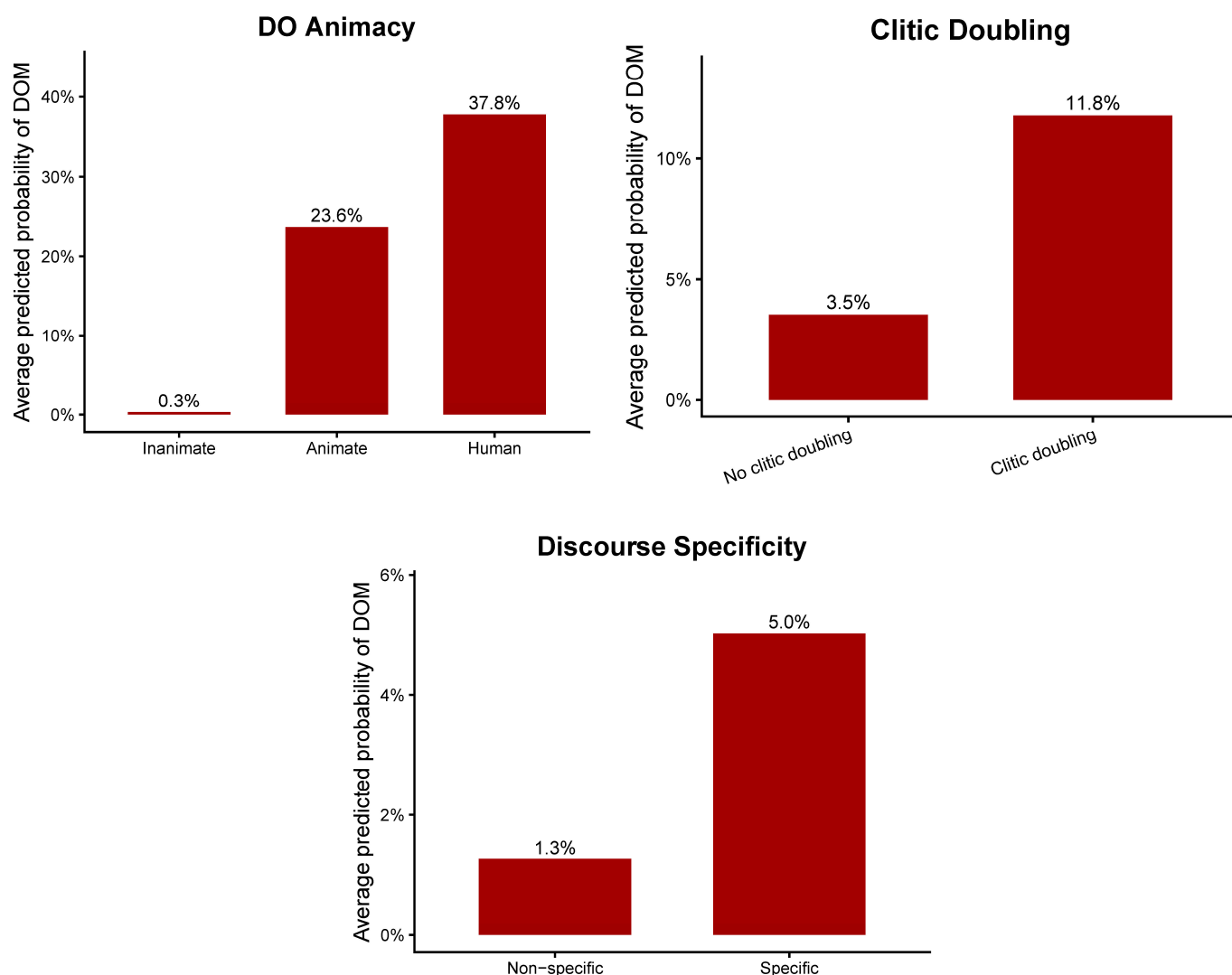


Figure A2. Figures displaying average predicted probabilities of DOM in bilingual CDS derived from the logistic regression model, illustrating the effect of each predictor while holding other variables constant.

Notes

- ¹ The only clause-level factor that has been addressed in very few of the acquisition studies is verb class (see e.g., [Guijarro-Fuentes et al., 2017](#)).
- ² We acknowledge that we use the term “cue” in ways that draw from the Competition Model, variationist sociolinguistics, and language acquisition. The CM characterizes cues as a “particular piece of information for the speaker or listener to identify the functions of linguistic forms.” We use this sense when we mention that DOM is a cue to argument structure. This could be considered a “vertical correlation” between form and function (in the sense of [Bates & MacWhinney, 1987](#), p. 165). But we also use the word “cue” to refer to the conditioning constraints to variation within sociolinguistic analysis. These constraints have traditionally been weighted and resemble cues pointing to the use of one variant over another one. Finally, language acquisition also uses the term “cues” as indicators present in the input that can help the child ‘figure out’ the features of their native grammar. Therefore, the present study will ask if the global factors found to condition DOM use in adult speech constitute cues to language acquisition and we use the calculations of cue availability, reliability and validity from the CM to examine this. In this case, the linguistic cues to DOM examined here could arguably be considered “horizontal correlations” as defined in [Bates and MacWhinney \(1987, p. 165\)](#). Finally, we are also aware that, strictly speaking, “cue validity” has been used in processing studies, whereas in studies of production, proponents of the CM may prefer the term “device validity” (as in [MacWhinney, 1978](#)).

Yet, given the integration of CM literature with sociolinguistic variation and language acquisition, we retain the use of “cue” to refer to any factors conditioning the use of DOM.

Other research discusses topicality as anaphoric and cataphoric co-reference, which would also be a global factor (see Balasch, 2011).

A reviewer accurately pointed out that few of these studies of DOM with bilingual children consider whether the input that child HSs of Spanish in the US displays standardized distribution of DOM as expected in some monolingual varieties.

In the studies with school-age children reported earlier, some items may have included non-human DOs (e.g., see *Squidward* in Montrul & Sánchez-Walker, 2013). Therefore, it is possible that this may have contributed some noise to the results. Still, the rates of omission are unlikely to be just due to these few items.

CDS token frequency was calculated with the command “freq +t*MOT +t*FAT +u *.cha @” in CLAN. For Montes (MOT: 31,127, JIM (father): 1145), Remedi (ALE (mother): 10, PAD (father): 10,983), Perez-Bazan Tina (MOT: 17,976), Perez-Bazan Carla (MOT: 18,256, FAT: 2837), and Deuchar (MOT: 20,964, FAT: 6931).

This corpus contains father-daughter dyadic interaction over 14 non-consecutive weeks.

The data being contributed consist of transcripts of thirteen 30 to 45 min audio recordings of a Spanish-speaking child interacting with her parents in the child’s home. Recordings were collected every 1 or 2 months (<https://talkbank.org/childes/access/Spanish/Montes.html>, accessed on 7 May 2026).

Recordings were taken for 90 min each two weeks with 30 min with the mother, 30 with the father, and 30 with both. (<https://talkbank.org/childes/access/Biling/Perez.html>, accessed on 11 May 2026).

Video and audio recordings were made weekly of spontaneous interactions between M. and her Spanish-speaking father on one hand, and M. and her English-speaking grandmother on the other. M.’s mother was also present at some of the recordings in both languages. (<https://talkbank.org/childes/access/Biling/Deuchar.html>, accessed on 7 May 2026).

Specificity was based on identifiability. When the DO referent was able to be pointed at because situational or discourse context made it identifiable, we considered it Specific. When the referent was generic or not referential, we coded it Non-specific. Whereas discourse specificity, as operationalized here correlates in part with Definiteness (because definite DOs will be Specific since they are linked or “anchored” to some entity already active in discourse (von Heusinger, 2002), it is not a one-to-one correspondence. Indefinite NPs can be specific or nonspecific, following our definition.

Human includes human-shaped dolls and gnomes, since they have human-like shape. We also coded as Human the child’s favorite doll. Animate includes animal characters and animal toys, Muppets, monsters, the child’s pet, etc. Inanimate includes toys, parts of the body, food, plants, etc.

Models with all factors in correlation with Linguicism were not reliable as they overfitted the data.

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