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Children's interpretation of epithets: On coreference and self-ascription

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ABSTRACT

The debate around the delayed acquisition of Condition B (the 'DPBE stage') has traditionally focused on the local coreference rule (Rule I) which regulates the competition between binding and coreference. In adult grammars, this rule sanctions Condition B obviations with a restricted class of predicates: intensional transitives like *adore, praise*, and exceptional case marking (ECM) verbs like *see*. Grodzinsky proposed that locally coreferential pronouns are licit when they signal non-self-ascriptive perspective. This hypothesis was investigated in child Italian (N = 38, age 4-6 years) by testing a class of nominals which is overtly specified for speaker-oriented perspective: epithets, such as *the rascal*. Children were tested in two Truth-Value Judgment tasks: task 1 tested epithets in local (intensional transitive) and non-local (attitude) domains; task 2 compared epithets and clitics in ECM sentences. Children's performance with clitic pronouns in the ECM task (an indicator of DPBE in Italian) predicted their interpretation of epithets: only children in the DPBE stage were at chance in blocking local coreference with epithets, but all children performed at chance with epithets inside attitude clauses. This is the first empirical study to show that epithets are subject to a DPBE in child grammar. It is suggested that children's ability to enforce competition between nominals interacts with the acquisition of self-ascriptive perspective.

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1. Introduction

An important objective of binding theories (Chomsky 1981, Burzio 1991, Reinhart & Reuland 1993, Safir 2004) is to explain the apparent complementary distribution between anaphors and other nominals within a clause, whereby both pronouns and R-expressions are typically blocked where the former are licensed.

(1) a. *Goldilocks* washed *herself*[1] (allowed by Condition A).
b. **Goldilocks* washed *her* (disallowed by Condition B).
c. **She* washed *Goldilocks* (disallowed by Condition C)

It has been robustly established that children's grammar does not sanction strict complementarity between anaphors and pronouns, that is, children in many languages (English, Dutch, Russian, Norwegian, a.o.) appear to optionally accept both (1a) and (1b) in the same truth-conditional situations, at least until 6-7 years of age, while they can correctly reject (1c). The acquisition picture

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[1]Throughout this paper I use italics to represent coreference, rather than indices, following Safir (2004).

becomes all the more puzzling as data from languages with different classes of pronouns is compared. Children acquiring Romance languages can correctly reject coreference between a clitic pronoun and a local c-commanding antecedent (the equivalent of 1b) (McKee 1992) but still violate Condition B in certain exceptional case marking (ECM) structures (Baauw 2002, Hamann 2002, Brunetto 2015). Learnability considerations would suggest that the three binding conditions should be universally innate, given that such constraints on meaning cannot be reliably learned from input alone. Acquisition studies therefore have an important role to play in the debate around the theoretical formulation of alternative binding theories, and in our understanding of the extra-syntactic procedures which can capture the competition between nominals inside the clause.

One leading intuition that has remained at the forefront of language acquisition research is that children who appear to violate Condition B in (1b) are in fact achieving covaluation of subject and object not via bound anaphora but via accidental coreference, essentially resorting to an option which is also available in adult grammars, but in much more restricted contexts (Grodzinsky & Reinhart 1993; Heim 1998). However, pinning down the source of children's difficulty with local coreference has remained both conceptually and empirically difficult (Grodzinsky & Reinhart 1993, Thornton & Wexler 1999, Elbourne 2005, Hamann 2002).

Recently, Grodzinsky (2007, 2017) has proposed a revised local coreference rule which replaces the notion of accidental coreference with the notion of (non-self-ascriptive) point of view. This proposal capitalises on the fact that the contexts in which local coreference is licensed in adult grammars exhibit intensional properties, in the sense that they create a discrepancy in point of view between speaker and grammatical subject. At a closer look, local coreference appears to require predicates whose subjects have mental states: psych verbs (*love, adore, admire*, etc.) and communication verbs (*defend, blame, praise*, etc.), which fall into the class of so-called intensional transitive verbs, as well as ECM verbs (*believe, want, see, expect*, etc.) and verbs embedding clausal complements (mental verbs and verbs of saying, such as *think, imagine, say*). In (2a)—famously discussed in Heim (1998)—a pronoun may marginally escape Condition B when the context indicates that someone's identity is under debate. Grodzinsky (2007) points out that such cases of local coreference require a discrepancy in mental perspective between subject and object. Agentive predicates—those that typically feature in children's experiments (*tickle, touch*, etc.)—resist local coreference even in these scenarios, because a discrepancy in cognitive state cannot easily be construed between actor and acted-upon (2b).

(2) a. A: Is that Zelda? B: Of course. *She* is praising *her* to the skies.
b. A: Is that Zelda? B: Of course. #*She* is tickling *her* with a feather.

This raises a compelling question: are children's coreference errors sensitive to predicate types? While previous pragmatic accounts of the Condition B delay in acquisition (henceforth: DPBE, after Chien & Wexler 1990) have often focused on children's acquisition of the extra-syntactic conditions regulating the assignment of indices to *referential* pronouns, especially via deixis (Chien & Wexler 1990, Avrutin 1994, Thornton & Wexler 1999), the notion of self-ascription has not been extensively investigated in relation to children's acquisition of Condition B.

This study explores the extent to which point of view is implicated in Italian children's coreference errors by testing children's interpretation of anaphoric relations with a wider range of perspective-sensitive predicates: intensional transitives (verbs like *praise, defend*), ECM predicates (*see* + infinitive), and verbs of saying (*say* + clausal complement). Italian is a Romance language in which a DPBE stage can only be detected with clitic pronouns in ECM predicates (Brunetto 2015). The paper reports an experiment comparing the behaviour of clitics and R-expressions against one class of nominals which have never featured in children's experiments: epithets, such as *the poor man, the sweetheart*. Epithets are definite descriptions which look like R-expressions on the surface but carry evaluative meaning (and crucially, speaker-oriented point of view). This makes them an ideal candidate to test to what extent children's coreference encodes non-self-ascriptive perspective.

2. Syntax and semantics of anaphoric epithets

Epithets are definite DPs which carry evaluative content (negative or positive, e.g., *the idiot, the bastard, the genius*) and, unlike regular definite expressions, can be linked anaphorically to a preceding DP within a sentence. This possibility is generally excluded for R-expressions (3a, 4a). While many definite expressions can be construed as epithets, a seemingly necessary characteristic of an epithet is its 'emotional' content, which is typically conveyed from the point of view of the speaker (Patel-Grosz 2014).

(3) a. *I called *John*, but *the manager* didn't answer.
b. I called *John*, but *the idiot* didn't answer.
(4) a. **John* thinks that *the manager* is admired by everyone.
b. * *John* thinks that *the idiot* is admired by everyone.
c. *John* thinks that *he* is admired by everyone.

The binding constraints governing the distribution of this class of nominals have been the subject of a long-standing debate. Lasnik (1976) argued that epithets obey Condition C, as they cannot be covalued with a c-commanding antecedent in configurations like (4). However, cases where epithets can be anaphorically linked to an antecedent under c-command were subsequently discussed in Dubinsky & Hamilton (1998), who noted that covaluation is possible when the epithet is contained inside a restrictive relative clause (as in 5a). The fact that binding—and not mere 'accidental coreference'—is at issue is suggested by cases like (5b), where an epithet can be covalued with a c-commanding quantificational antecedent. The acceptability of epithets with c-commanding antecedents has been confirmed in a variety of typologically diverse languages including Dutch, Hindi, French, and Japanese (Patel-Grosz 2012).[2]

(5) a. *John* ran over a man who was trying to give *the idiot* directions. (Dubinsky & Hamilton 1998:687)
b. At the reception, *every professor* bumped into some student that *the idiot* had failed. (Patel-Grosz 2014:96)

This data gives support to an alternative view, now dominant, which holds that epithets behave as a special class of pronouns (Dubinsky & Hamilton 1998, Patel-Grosz 2012, Yashima 2014, Nediger 2017). To explain why epithets do not pattern with pronouns inside complement clauses, these authors have capitalised on the perspectival nature of these syntactic domains.

Complement clauses are said to express attitudes *de se* ('towards oneself', that is, self-ascriptive) (Lewis 1979) if their content could be expressed by the subject in first person. Pronouns in attitude contexts are inherently ambiguous between *de se* and *non-de-se* perspective. For example, the sentence in (6) could be compatible with a *de se* belief (one that Pavarotti would ascribe to himself, and therefore paraphrase in first person), as well as a non-*de-se* belief (one that Pavarotti would express in third person, for example if he did not recognise himself as the voice on the radio) (Chierchia 1989, a.o.).

[2]The ratings in this section are based on judgments reported in the cited literature. The judgements in Patel-Grosz (2012)—the most extensive cross-linguistic investigation into the interpretation of anaphoric epithets—were corroborated by surveys involving multiple speakers per language. The present study largely confirms these judgments: our Italian adult control group rejected coreference 90% of the time in complement clauses, and 96% of the time in simple clauses.

Nevertheless, as Patel-Grosz (2012) also notes, there is considerable inter-speaker variation, as well as subtle cross-linguistic differences in epithet interpretation. Additionally, there is a well-documented amelioration effect for coreference when epithets occur in object position in complement clauses (*John thinks I like the bastard*). Given that the source of this asymmetry remains debated, only epithets in subject position are considered in the present study.

(6) *Pavarotti* thinks he is a great singer. [Context: Pavarotti is listening to his own voice on the radio.]
a. He thinks: "*I* am a great singer" (*de se*)
b. He thinks: "*He/this guy* is a great singer" (non-*de-se*)

Epithets have been argued to be anti-logophoric (Dubinsky & Hamilton 1998) or non-*de-se* pronouns (Patel-Grosz 2012) since they are incompatible with *de se* attitudes of the kind in (6a). Dubinsky & Hamilton (1998) proposed that the contrast between (4b) and (4c) can be reduced to an *antilogophoric constraint*: epithets cannot be covalued with an antecedent that is construed as the logophoric centre (the *attitude holder*) of the clause that contains them. The robustness of this generalisation is supported by Charnavel's (2019) *epithet test*, a diagnostics which in her theory of logophoricity can be used to detect attitude contexts as well as their relevant perspectival centre. Charnavel (2019) demonstrates that the epithet test correctly identifies cases when a DP *must* be interpreted as the attitude holder: if coreference is impossible with an epithet—but ok with a pronoun—then the antecedent in question must be the perspectival center of the sentence.

(7) a. *John*'s opinion is that *he* should leave (Charnavel 2019:146)
b. **John*'s opinion is that *the idiot* should leave

The fact that epithets are blocked inside complement clauses indicates that these domains by default express the perspective of their subject (*de se* perspective)—unless the context explicitly indicates otherwise.[3] As a result, the *antilogophoric constraint* applies, blocking coreference with a non-self-ascriptive form.

Crucially, if epithets are antilogophoric pronouns, their inability to corefer with local antecedents (**John loves the bastard*) is expected to follow from Condition B (Dubinsky & Hamilton 1998, Patel-Grosz 2014, Yashima 2014, Nediger 2017, Charnavel 2019).

Child grammars offer a unique opportunity to test these analyses of epithets. Given an established asymmetry between the early acquisition of Condition C and the later acquisition of Condition B, children's interpretation of epithets can reveal whether are treated more like pronouns or R-expressions in the developing grammar.

3. Previous evidence for a Condition B/Condition C asymmetry in acquisition

Research on the acquisition of the binding Conditions has established that children display relatively early sensitivity to the structural conditions governing bound anaphora. For example, children can correctly discard *Cinderella* as an antecedent for the anaphor *herself* (8a) on the basis of their grammatical knowledge of c-command from around 4;5 years of age (Wexler & Chien 1985), but allow a locally c-commanding antecedent for the pronoun *her* (8b) in the same scenarios (e.g., a picture depicting a self-oriented action). This pattern has been confirmed in many subsequent experiments and many more languages (Avrutin & Wexler 1992, Sigurjónsdóttir & Hyams 1992, Philip & Coopmans 1996, Hestvik & Philip 2000, a.o.).

(8) a. [DP [DP Cinderella]'s *sister*] points to *herself*
b. [DP [DP *Cinderella*]'s sister] points to *her*

Such apparent Condition B delay appears to interact with pronominal strength: children acquiring languages with clitic pronouns perform at ceiling in correctly rejecting local coreference, while they also make errors with strong pronouns (Baauw et al. 1997). However, a Condition B delay can be observed in certain complex predicates: ECM bare infinitives with *see* and in *faire-par* causatives

[3]The exception is represented by the special non-*de-se* cases such as the one in (6b) where the subject's awareness is denied (Pavarotti is not aware that it is *himself* he is listening to). Indeed epithets are allowed in such complement clauses (Charnavel 2019).

(Hamann et al. 1997, Baauw et al. 1997, Brunetto 2015, a.o.). It is important to note that the only study which tested children's interpretation of clitics with quantified antecedents in ECM sentences (Baauw 2002) found more Condition B violations in this condition compared to the referential condition.

(9) a. [DP *La niña*] *la* ve bailar (Spanish, ECM Referential condition: 60% correct)
'The girl sees her dance'
b. [QP *Cada niña*] *la* ve bailar (ECM Quantificational condition: 40% correct)
'Every girl sees her dance'

The ECM data challenges early assumptions that children's adultlike interpretation of clitic pronouns in Condition B configurations is due to the fact that clitics cannot undergo 'accidental coreference' due to their referential deficiency (Thornton & Wexler 1998, a.o.). Condition B violations in ECM structures appear to be universal, as they are also attested in languages with strong and weak pronouns such as Dutch and German (Baauw et al. 1997, Ruigendijk 2008).

The complexity of construction-specific and language-specific patterns in the acquisition path of Condition B contrast sharply with the early acquisition and universality of Condition C. Children as young as 3 block forward anaphora in Condition C configurations where a pronoun c-commands an R-expression (10a) (Crain & McKee 1986, Kazanina & Phillips 2001), or a quantified NP (as in (10b), from Guasti & Chierchia (2000).

(10) a. **He* was playing with the lion, while *John* was singing.
b. **He* put a gun in *every pirate*'s barrel.

Recent data from child Thai (Deen & Timyam 2018) shows that children also disallow anaphoric dependencies with R-expressions when the antecedent is another R-expression. In Thai, bare nominals (11a) can by bound by a non-local antecedent (essentially obeying Condition B rather than Condition C), whereas noun phrases which project a full DP structure (as in 11b) are visible to Condition C and cannot be covalued with a c-commanding antecedent. Deen & Timyam (2018) found that Thai children obey Condition C more strictly than adults, strongly rejecting coreference regardless of DP type. Importantly, English controls (mean age 4;5 years) also rejected both types of sentences.

(11) a. [PhiP *Dog*] said that [PhiP *dog*] won the competition (coreference OK)
b. *[DP *Dog CL cute*] said that [DP *dog CL cute*] won the competition (Condition C effect)

In sum, pronouns and R-expressions enter different acquisition paths. While child grammars appear to entertain the most restrictive option in Condition C configurations (even in languages where exceptions to Condition C are allowed, like Thai), they are more permissive than adult grammars when it comes to Condition B. We now know that this is true even in languages with clitic pronouns—although in those languages the issue is modulated by an effect of predicate type (ECM vs transitive).

4. Local coreference and point of view

The empirical evidence suggests that there are two major obstacles to any account which attempts to derive children's Condition B obviations by the same mechanism which allows obviations in the adult grammar. The first is to explain why ECM predicates (e.g., *see*) universally trigger Condition B obviations in child grammar, even in languages with referentially deficient pronouns, if one assumes that accidental coreference is not available to clitics. The second is to explain why children obey Condition C while they optionally disobey

Condition B, since the contexts allowing Condition B obviations in the adult grammar typically also allow Condition C obviations (12 a,b).

(12) a. Is this speaker Zelda? Of course she is. *She* is praising {*her/Zelda}* to the skies.
b. John and Mary have a lot in common. He loves {her/Mary} and *she* loves {*her/Mary}* too.

Grodzinsky & Reinhart (1993) argued that these cases do not involve *variable binding*, but *coreference*, and that a modular principle, called Rule I, must be posited to regulate the competition between these distinct mechanisms of establishing referential dependencies. The logic is that bound variable relations are the optimal way of expressing referential dependencies within the sentence, and therefore coreference relations are outcompeted by bound variable relations unless the resulting meaning is 'distinguishable'.

(13) *Rule I: Intrasentential coreference* (Grodzinsky & Reinhart 1993): NP A cannot corefer with B if replacing B with C, a variable A-bound by B, yields an indistinguishable interpretation.

Inspired by this version of Rule I, many accounts of children's Condition B delay have focused for many years on the *coreference* problem, tying the delayed acquisition of pronouns with the development of the conditions regulating the assignment of referential indices and especially deictic reference (Chien & Wexler 1990, Avrutin & Wexler 1992, Thornton & Wexler 1999). Within this family of pragmatic accounts, only Thornton & Wexler (1999) addresses the competition problem (i.e. the problem of 'indistinguishable interpretations') directly. They argue that children have innate knowledge of Rule I, but may allow pronouns to outcompete reflexives because they construe interpretations that are 'distinguishable' from bound variable dependencies, even when these are not supported by the pragmatic context.

This idea is based on Heim's (1998) treatment of exceptional coreference in 'identity debates' like (12a). Heim argued that in such a context a pronoun is acceptable if the speaker is construing *Zelda* (the person who is doing the praising and the person who is being talked about) under different 'guises', which are assigned different *cognitive* values.

Thornton & Wexler (1999) extend the guise account to all cases of exceptional local coreference (*contra* Heim 1998) and hypothesize that children's non-adultlike interpretations stem from a bias to overgenerate guises because of immature pragmatic knowledge. In cases where a referent is contextually salient, for example, children might overgenerate a *deictic guise* if they have not yet mastered the cues that speakers typically use to introduce new referents via deixis (e.g. pointing, stress). However, as they assume that clitics are too referentially deficient to introduce new guises, their account cannot explain the Condition B delay in Romance.

Building on ideas proposed in Grodzinsky (2007), I explore an alternative solution which maintains the core idea that children obviate Condition B because they generate 'distinguishable' interpretations for pronouns and reflexives.

It could be argued that the limitations of the 'extended guise creation' account stem from the flawed assumption that *reference* subsumes all cases of Condition B obviations. Heim (1998:222) made the point that 'reference isn't special'; at least some of the 'exceptional' scenarios don't involve coreference but rather different patterns of variable binding, as witnessed by the fact that they can also be construed with non-referential terms (so-called 'donkey anaphors').

(14) If everyone hates a man, then *that man himself* hates *him*. (Heim 1998:222)

Moreover, Grodzinsky (2007) points out that the notion of 'distinguishable interpretation' which is required to rank local coreference against variable binding is too vague, since the competing LFs do not typically have different truth conditions. For example, while (15) is truth-conditionally equivalent to (12b), the ironic flavor which is conveyed via local coreference is lost when a reflexive is used.

(15) John and Mary have one thing in common. He [VP loves her] and *she* [VP loves *herself*].

This difference is one of perspective: "not between speaker and hearer, but between the *speaker* and the *subject* of the sentence he utters [. . .]. A co-determined pronoun opens the way for a difference in cognitive state between the *narrator* and the *protagonist*: the omniscient narrator has full access to the identity relation between the subject and the object, whereas the protagonist may not be aware that she and her object pronoun are referentially identical" (Grodzinsky 2007:14).

This focus on point of view (speaker-oriented vs subject-oriented) can explain why local coreference is sensitive to predicate type: while it improves with psych-verbs (*love, admire*), ECM verbs (*see, want*) and verbs of saying (*defend, praise*), it sounds significantly more degraded with agentive predicates such as *tickle, bruise, touch, scratch*.

The predicates which are compatible with Exceptional Coreference appear to be 'intensional transitives', which according to Grodzinsky (2007) behave in some ways like propositional attitude verbs in their ability to give rise to *de se*/non-*de-se* ambiguities.

That ECM verbs like *see* have intensional properties can be demonstrated by the following two tests. First, intensional predicates embed *opaque* complements, which means that replacing a term with a co-referring one may not preserve the truth value of the whole sentence. For example, if Lois Lane is not aware that *Clark Kent* and *Superman* refer to the same individual, the equivalence in (16a) does not hold when the complement is read *de se* (from Lois Lane's perspective). This is the same for the intensional transitives (16b) but not for extensional predicates (16c):

(16) a. Lois Lane thinks that Clark Kent is funny ≠ Lois Lane thinks that Superman is funny
b. Lois Lane{sees/praises/loves} Clark Kent ≠ Lois Lane{sees/praises/loves} Superman
c. Lois Lane{tickles/kicks} Clark Kent = Lois Lane{tickles/kicks} Superman

A second test for intensional predicates is their ability to preserve truth with non-referring terms (e.g., *unicorn*). In extensional contexts, a sentence containing a non-referring term is necessarily false (17a); this is not the case for *see, praise* and *think* (17 b,c):

(17) a. Mary {tickled/kicked} a unicorn
b. Mary {saw/praised} a unicorn
c. Mary {thought/said} that a unicorn was in the garden

Replacing the notion of *bound* (vs free) anaphor with *de se* (vs non-*de-se*) anaphor can explain why Condition B obviations in the adult grammar are allowed with intensional transitives but not with agentive predicates. Rule I essentially dictates that a self-ascriptive pronoun is ungrammatical if a self-ascriptive reflexive is available. However, a pronoun can obviate Condition B if it is signaled to non-self-ascriptive (taking the speaker's point of view rather than the subject's first-personal perspective). This appears to be the case in the so-called exceptional coreference contexts:

(18) Context: That person over there must be Zelda.
a. *She* is praising *her* to the skies = she is saying: "*Zelda* is great"
b. *She* is praising *herself* to the skies = she is saying: "*I* am great".

The experiment reported here is a first attempt to investigate children's ability to apply this revised version of the local coreference rule. At first glance, this proposal fares better than previous pragmatic accounts in being able to account for the fact that Condition B obviations in the acquisition of Romance languages are sensitive to predicate type[4]. Moreover, shifting the focus from the notion of reference to the notion of point of view raises interesting questions around children's interpretation of anaphoric epithets. Since epithets differ from regular pronouns in carrying more specified evaluative content (but not richer referential content), they make a good candidate to test the hypothesis that children do not obey Condition B when they interpret the resulting relation to be not self-ascriptive.

5. Epithets in child language production

Before turning to the predictions of the current study, it is important to provide some background on the use of epithets in children's productive language. Although no other study to date has tested children's interpretation of anaphoric epithets experimentally, research on the development of taboo language indicates that name-calling and derogatory epithets appear very early in children's lexicon, often in teasing contexts (Winslow 1969, Jay 1992, Jay & Jay 2013). A CHILDES search of English corpora confirms that children use epithets as early as age 2, with an apparent awareness of their subjective and evaluative content. While most spontaneous uses are predicative (*'you are a silly sausage'*) or vocative (*'you cheeky monkey'*, *'you little bugger'*), anaphoric uses of epithets are also present (shown in (19)). The child's use of the epithet (*'the dumb dumb'*) in the dialogue in (20) is particularly revealing, as it reflects an ability to alternate labels for the same referent, progressively enriching referential content (*her, Melissa, the one with long hair*).

(19) a. He can have one of *the cheeky monkeys* (4;05 – talking about teddys)
b. I going to get *the stupid thing* out of here (Sarah, Brown corpus, 3;08)
c. Where's *that silly thing* go? (Courtney, Belfast corpus, 4;0)

(20) CHI: Do you like *that dumb dumb*? (4;09, Hall corpus)
EXP: I said I like your whole family.
EXP: The what?
CHI: *The dumb dumb*.
FAT: Who is the dumb dumb?
CHI: Don't you know *the one, who has long hair*.
FAT: Who has the long hair?
CHI: And *her* and [pauses] *Melissa*
FAT: Oh Melissa is a dumb dumb
CHI: Didn't you know Melissa was *dumb dumb*?

The epithet in the current study is *birichino* (Italian for 'rascal'), a term which is very frequent in child-directed speech and commonly used in children's literature to describe cheeky or mischievous characters[5]. It is noteworthy that the use of *birichino* and its synonyms (*scioc-chino*, silly one) became widespread among the children during the testing sessions (as also noted by the teachers). I take this as further evidence that the children in the current study

[4]It should be noted that Grodzinsky (2017) entertains a different account to explain children's Condition B obviations. He hypothesizes that children acquiring languages with strong pronouns overgenerate *intensional* objects, that is, 'individual concepts' (semantic type <s,e> rather than type <e> individuals), which fail to combine with agentive (extensional) predicates. The resulting LF fails to converge due to a semantic composition problem, and as a result children resorting to guessing. This account predicts that once intensional predicates are used, children's performance should improve—the opposite of what is argued here.

[5]Famous examples include Collodi's *Pinocchio*, where *'birichino'* is frequently used to describe the mischievous puppet. Julia Donaldson's *Tiddler* (a story aimed at 2-4-year-old children) is translated in Italian as '*Pesciolino cantastorie birichino*', and titles with similar structure (the + N + birichino) appear in many stories and songs for children.

Table 1. Summary of the structures tested and the relevant constraint applying to each nominal type.

Nominal	Clause type	Constraint	Prediction
Clitic pronoun	Simple (21a), ECM (22a)	Condition B Condition B[6]	unknown non-adult-like
Epithet	Simple (21b), ECM (22b)	Condition B (or Condition C)	non-adult-like (adult-like)
	Complex (23b)	Antilogophoric constraint (or Condition C)	unknown (adult-like)
R-expression (proper name)	Complex (23a)	Condition C	adult-like

are sensitive to the evaluative content of this epithet and its speaker-oriented, perspectival function.

6. Predictions of the study

In order to investigate the acquisition path of pronouns, epithets and R-expressions with respect to the relevant binding constraints (Condition B and Condition C), the following structures are tested in the current study (Table 1). Examples are given in (21-23).

(21) a. *Alvin lo* ha difeso
'Alvin defended him'
b. *Alvin* ha difeso *il birichino*
'Alvin defended the rascal'

(22) a. *Alvin lo* ha visto saltare sul letto
'Alvin saw him jump on the bed'
b. *Alvin* ha visto *il birichino* saltare sul letto
'Alvin saw the rascal jump on the bed'

(23) a. *Lui* ha detto che *Alvin* ha fatto cadere la torta
'He said that Alvin dropped the cake'
b. *Alvin* ha detto che *il birichino* ha fatto cadere la torta
'Alvin said that the rascal dropped the cake'

If epithets behave as R-expressions (subject to Condition C), no difference in performance is expected between all (b) structures, given that this constraint predicts R-expressions to be free in any domain. On the other hand, if epithets are indeed subject to Condition B (locally) and to the Antilogophoric constraint (non-locally), an asymmetry between epithets and R-expressions is predicted. Given the established early acquisition of Condition C and the late acquisition of Condition B, children are expected to perform more accurately with R-expressions than epithets.

While the Antilogophoric constraint has never been directly tested in child language, there is independent evidence that the ability to block referential substitution in opaque domains emerges late (between 4-7 years, with extensive variation depending on the difficulty of the task, for example, Russell 1987, de Villiers & de Villiers 1999, Kamawar & Olson 1999, Apperly & Robinson 2003, Sprung et al. 2007, a.o.). Arguably, the ability to reject an anaphoric epithet inside the complement clause requires mastery of opacity: the understanding that reference inside the *that*-clause is relativised to the matrix subject's *de se* perspective. One aim of this study is to explore whether the Antilogophoric constraint is acquired at the same time as Rule I, or whether it is mastered later. These two outcomes

[6]Under predicate-based binding theories (e.g., Reinhart & Reuland 1993) Condition B is defined over 'coarguments' (arguments of the same semantic predicate) so it does not apply to ECM structures. According to Reinhart & Reuland (1993), coreference in these sentences is blocked by the A-chain condition, which disallows a referential (case marked) pronoun occurring at the end of an A(rgument)-chain (assuming 'coreference' is not an option for clitic pronouns, Rule I cannot apply either, according to them). For the purpose of the current analysis, I remain agnostic as to whether Condition B should be stipulated as a primitive (separate from Rule I, as in predicate-based theories) or whether it can be reduced to a competition principle like Rule I (as in the spirit of competition-based theories).

have implications for our understanding of the extent to which mastery of Rule I relies on the acquisition of self-ascription, and the relation between self-ascription, competition, and locality.

Finally, the comparison between clitic pronouns and epithets aims to shed light on whether children's local coreference interpretations are *non-self-ascriptive* interpretations. The logic of this argument is that, if they are, we should see a similar rate of coreference errors for epithets (unambiguously non-self-ascriptive forms) and pronouns. The inclusion of the ECM condition serves this aim: it is a kind of baseline condition, since there is already robust evidence that children violate Condition B with clitics in these sentences.

To my knowledge, children's performance with clitics in intensional transitive sentences has not previously been investigated. If children were found to perform at ceiling with clitics (as they do with agentive predicates) this could be taken to further support the view that clitics do not require the implementation of Rule I in simple transitive structures, which makes them immune to Condition B obviations. This would not necessarily undermine the intensional version of the local coreference rule; rather, it would support the view that syntactic factors (related to clitic movement) constrain the interpretation of reflexive and pronominal clitics in simple transitive structures (Di Sciullo & Agüero-Bautista 2008, a.o.).

Summing up, the current experiment investigates the following questions:

(i) Are epithets subject to Condition B? What is their acquisition path, relative to pronouns and R-expressions?
(ii) Do Intensional Transitives trigger Condition B violations with clitics in child Italian?
(iii) Is the Antilogophoric constraint mastered later than Rule I?

7. Experiment

7.1 Participants

Thirty-eight children (17 girls, 21 boys) aged 4-6 years were tested in a primary school in Milan, Italy. This age range was chosen to capture the so-called DPBE stage (Chien & Wexler 1990). Variability is expected particularly among the older children (5;6-6 years), with some children having already exited the stage. This is useful to assess the acquisition path of Condition B relative to the Antilogophoric condition.

Children were tested in two sessions around two weeks apart, one testing simple and complex clauses only, and one testing ECM clauses only. All the children participated in both sessions. An adult control group (N = 17) was tested via Microsoft Forms on the sentences included in session 1. Participants information is summarized in Table 2.

7.2. Materials and procedure

A within-subject design was used with factors: clause type (simple, complex, ECM) and DP type (clitic, epithet, R-expression).

In session 1, children were tested on simple and complex sentences. This allowed us to compare children's interpretation of epithets in Condition B and Condition C configurations.

Table 2. Participant details.

Group	Age range	Mean age	N
4 years	4;6-4;11	4;8	9
5 years	5;0-5;11	5;5	22
6 years	6;0-6;4	6;2	7
adults	20-62	33	17

Table 3. Design of session 1 (complex and simple sentences).

Clause type	Nominal	Example
Simple	Proper name … Clitic	Simon praised *him*
	Proper name … Epithet	Alvin blamed *the rascal*
Complex	Proper name … Epithet	Simon said that *the rascal* dropped the cake
	Pronoun … R-expression	He said that *Alvin* made the best cake

The stories were presented as animated videos on a laptop computer. Children watched the videos with a pupped (a grumpy monkey) and the experimenter paused the video at critical points to check the monkey's understanding. Children were told that the monkey was learning Italian and needed their help as she sometimes lost track of the stories.

The main characters in the stories were two mischievous chipmunks called Alvin and Simon. In the warm-up phase, the chipmunks introduced themselves and it was assessed that both the child and the monkey could distinguish them and remembered their name. At this point the monkey insisted to referring to both chipmunks as '*birichini*' (henceforth: rascals). The purpose of this introduction was to ensure that there each chipmunk was equally likely to be called 'a rascal' by the monkey in the subsequent items.

The videos were centred around 6 stories, each testing one complex sentence (*say* + that) and one simple sentence for a total of 12 items (3 items per condition). The verbs used were: *incolpare* (blame), *difendere* (defend), and *lodare* (praise)[7]. The design for Session 1 is summarized in Table 3.

The animated stories were narrated by the experimenter, except for the critical statements made by the chipmunks, which were recorded with chipmunk voice-effects. This was necessary as the verbs used were all verbs of saying rather than action verbs, hence the child had to pay close attention to the dialogues in order to be able to judge the truth of the puppet's statements (see example in Figures 1 and 2). Children were allowed to re-listen to the stories multiple times if they wanted to.

(24) Sample story:
EXPERIMENTER: Smurfette just baked a beautiful cake. "Chipmunks, can you please bring the cake to the table? But careful, it's hot!" – she says. "Of course – they reply – we can help!". The chipmunks together carry the cake but look, all of a sudden the cake falls on the floor! What a mess, Smurfette put so much effort into making it.
SIMON: "I am sorry Smurfette! The cake was very heavy and I dropped it!"
ALVIN: "Sorry Smurfette! But it wasn't my fault, Simon dropped it!"

PUPPET: I know what happened in this story…
(a) Complex: Simon said that the rascal dropped the cake. Is that right? (N)
(b) Simple: And then Alvin defended him. (N)

Following the logic of the Truth Value Judgment task (Crain & Thornton 1998), all the items in this session were false (i.e., targeting 'no' answers) in their grammatical disjoint reference reading, and true under a coreference reading. The reasoning behind this is that, since speakers (and children especially) will entertain any possible meaning that makes the sentence true (so-called Principle of Charity), 'no' answers can be taken to indicate that the coreference reading is not available in their grammar (blocked by a constraint). To counterbalance the number of elicited 'yes' and 'no' answers and ensure the puppet's statement would be correct some of the time, a true filler item was included in each story, for a total of 6 fillers (e.g., *Smurfette asked them to carry the cake, is that right?*).

Session 2 tested ECM sentences with clitics and epithets embedded under the verb 'see'. Recall that the reason for including ECM sentences is to identify the children who are in the DPBE stage (i.e., those

[7]Children had no difficulties with the meaning of *incolpare* and *difendere* but some asked for clarification when the verb *lodare* was first introduced. For this reason, the first *lodare* item (which appeared in the Simple-Clitic condition) was used to make sure all children understood its meaning and was consequently removed from the analysis. This resulted in 2 clitic items instead of 3 for the Simple Clause condition. The stories, target sentences and accompanying videos are available in the Online Supplementary materials.

Figure 1. Stills from the animated story.

Figure 2. Critical dialogue scene.

who allow coreference between the subject and the pronoun in sentences like *Alvin saw him jump*), since in Italian a DPBE with clitics cannot be detected in simple sentences. The set-up for this task was a mirror game, where one character performed an action in front of the mirror while the other was watching. A third character, hiding behind the mirror, then made a guess as to what happened (Figure 3).

(25) PEPPA PIG: I could hear a guitar! I think this is what happened: Simon and Alvin went to the mirror and then…
Test sentence:
(a) Alvin saw *him* play the guitar. (N)
(b) Simon saw *the rascal* play the guitar. (Y)

A total of 12 items were tested in this condition (6 clitic sentences, 6 epithet sentences), half eliciting 'no' answers (ungrammatical coreference readings) and half control items eliciting a 'yes' answer (grammatical disjoint reference reading). The actions included were: riding a bike; riding a skateboard; singing on the stage; playing the guitar; jumping on the bed; jumping on one leg. Each activity was repeated twice (in randomized order), so each character performed the action once while the other watched. The design of session 2 is summarized in Table 4.

8. Results

8.1 Group analyses

Results for children and adults tested in session 1 (simple and complex sentences) are reported in Tables 5 and 6.

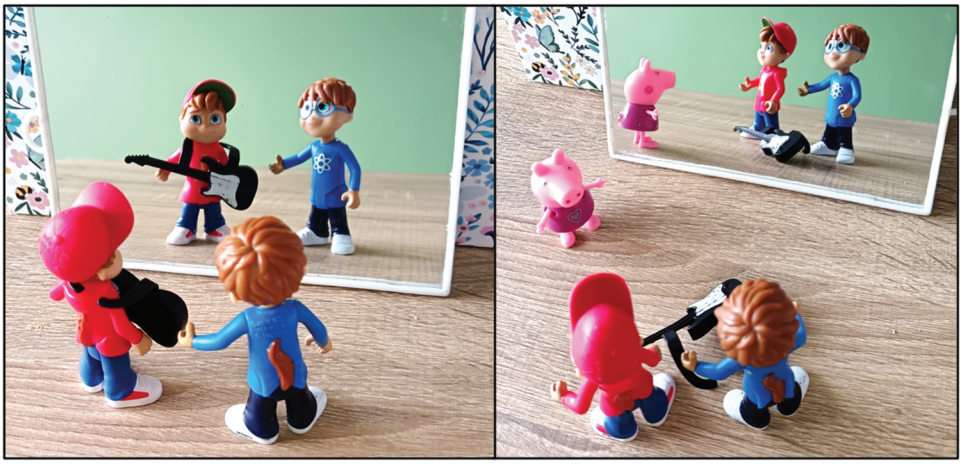

Figure 3. The mirror game in the ECM condition.

Table 4. Design of session 2 (ECM sentences).

Nominal	Sentence	Context	Correct answer
Clitic pronoun	Simon saw *him* ride the bike	Simon rode the bike	F
		Alvin rode the bike	T
Epithet	Simon saw *the rascal* play the guitar	Simon played the guitar	F
		Alvin played the guitar	T

Since the task in the ECM condition targeted both 'yes' and 'no' answers, the effect of Target on Coreference interpretations was first examined in the ECM condition. A generalized linear mixed-effects model with random intercepts for subjects and items failed to converge, therefore a simple logistic regression model was fitted. As expected, given the logic of the TVJT, the rate of errors was significantly lower when the target answer was 'yes' compared to 'no' ($\beta = -0.81$, SE = 0.24, $z = -3.40$, $p < 0.001$). Children gave coreference interpretations less frequently for TARGET = YES items (15.2%) than for TARGET = NO items (27.6%) (OR = 0.44, 95% CI = [0.28, 0.70]). Accordingly, only data for TARGET = NO items across all sentence types are included in the remainder of the analyses. Figure 4 summarizes the rate of children's coreference errors ('yes' answers) across all TARGET=NO conditions (simple, ECM and complex).

Adults' responses confirm the judgments reported in the literature: adults did not allow coreference between an epithet and a c-commanding subject antecedent, either locally or inside an attitude domain (complement clause). There were 5 'coreference' answers (out of 51 observations) in complex sentences, but no participant consistently allowed coreference readings in their answers. Due to the ceiling effect across all conditions and small sample size (N = 17), mixed-effects models failed to converge therefore simple logistic regressions were used to analyse the relation between adults' coreference interpretations and DP type. The models indicated no difference between epithets and clitic pronouns in simple sentences ($\beta = -18.36$, SE = 4093.36, $z = -0.004$, $p = 0.996$) and between epithets and R-expressions in complex sentences ($\beta = -0.24$, SE = 0.70, $z = -0.34$, $p = 0.72$) .

Children's data confirmed previous findings concerning clitic pronouns and R-expressions: first, children disallowed coreference between clitic pronouns and coargument subjects (Condition B violations) in simple sentences (90% 'no' answers); moreover, they blocked coreference between a proper name and a pronoun c-commanding it (a Condition C violation) (86% 'no' answers). Children's near-ceiling performance in the SIMPLE-CLITIC condition indicates that intensional transitive

Table 5. Results for adults and children tested in Simple sentences ('NO' indicates a disjoint reference interpretation).

DP type	Group	N	"NO" answers (%)	SD
Epithet	Adults	51	96.08	0.20
	Children	114	65.79	0.48
Pronoun	Adults	51	100.00	0
	Children	76	89.47	0.31

Table 6. Results for adults and children tested in Complex sentences ('NO' indicates a disjoint reference interpretation).

DP type	Group	N	"NO" answers (%)	SD
Epithet	Adults	51	90.20	0.30
	Children	114	48.25	0.50
R-expression	Adults	51	92.16	0.27
	Children	114	85.96	0.35

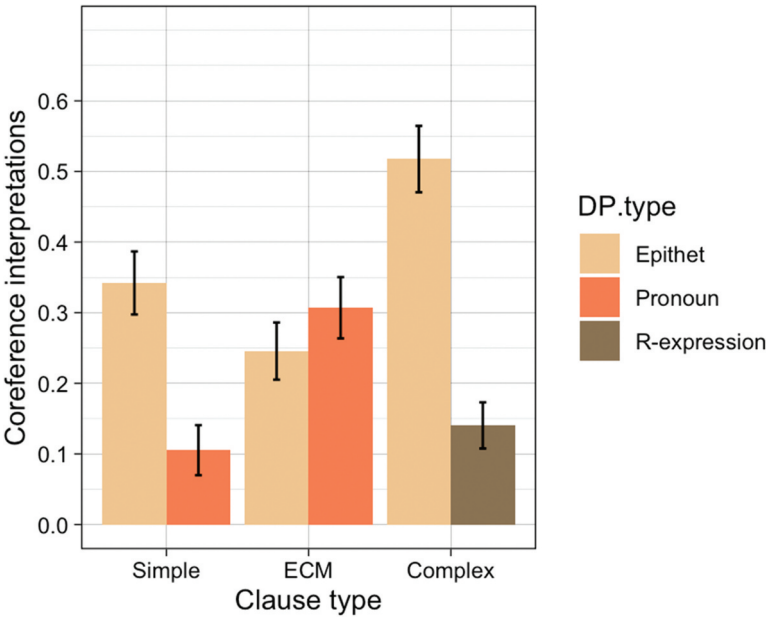

Figure 4. Children's coreference interpretations ('yes' answers) in TARGET = NO conditions.

verbs (*praise, defend, blame*) do not behave differently from agentive verbs insofar as Condition B is concerned with Italian object clitics.

To compare children and adults on epithet sentences, a generalized linear mixed effects model (GLMM) was fitted to analyze the interaction between CLAUSE (Simple vs Complex) and AGE GROUP (children vs adults) on the rate of coreference interpretations. The model included random slopes by Subject and Item.[8] Children allowed significantly more coreference readings for epithets in COMPLEX clauses than in SIMPLE clauses ($\beta = 0.76$, $z = 2.14$, $p = .03$). However, they were still significantly more likely

[8]The model was fitted with SIMPLE as the reference level for Clause and CHILD as the reference for Age Group, such that the intercept represents the baseline log-odds of coreference acceptance for children in Simple clause conditions. It did not include slope adjustment due to convergence issues. Formula: Coreference ~ Clause * Age_group + (1 | Subject) + (1 | Item). $N_{subject} = 55$; $N_{item} = 6$.

Table 7. Summary of the GLLM for the COMPLEX sentence condition.

		Coreference		
Predictors	*Odds Ratios*	*CI*	*z value*	*p*
(Intercept)	1.08	0.65 - 1.74	0.304	0.761
DP type [R-expression]	0.13	0.06 - 0.30	-4.184	<0.001
Age group [adult]	0.09	0.03 - 0.26	-4.443	<0.001
DP type [R-expression] ×Age group [adult]	5.87	1.23 - 27.97	1.914	0.056

Note. The fixed effects, their odds ratios, confidence intervals (CI), statistic (z), and p value are given. Formula for the model: Coreference~DP.type*Age_group + (1 + DP.type | Subject) + (1|Item). $N_{subject} = 55$; $N_{item} = 6$. The reference levels are CHILD and EPITHET, such that the intercept represents the baseline log-odds of coreference acceptance for children in complex sentences with epithets.

than adults to accept coreference readings in SIMPLE clauses ($\beta = -2.62$; $z = -3.44$, $p < .001$). There was no interaction between Clause and Age Group ($\beta = 0.22$, $z = 0.24$, $p = .80$), indicating that children's interpretation of epithets was non-adultlike in both SIMPLE and COMPLEX sentences.

For the purpose of teasing apart Condition C and the Antilogophoric constraint, a GLMM was also fitted on the data from the COMPLEX sentence condition. The model examined the effect of DP TYPE (epithet vs R-expression) and AGE GROUP (children vs. adults) on coreference interpretations, and their interaction. It included a by-subject random slope for DP type to account for individual variation in the interpretation of epithets. As summarized in Table 7, the results confirmed a highly significant effect of DP TYPE for children, with a greater likelihood of coreference readings for epithets as opposed to R-expressions. The interaction between DP TYPE and AGE GROUP was marginally significant in the slope-adjusted model, suggesting that this asymmetry was not observed in the adult group. Notably, the interaction effect was more clearly significant ($p = .02$) in a simpler model with random intercepts only, indicating a consistent pattern across model specifications.

Children's frequent requests for clarification suggest that they indeed found the reference of these expressions ambiguous (as would be expected if they were treated as regular pronouns). Interestingly, children also sometimes accepted the coreference reading despite overtly disagreeing with the puppet on the use of the epithet itself. This suggests that children recognized the evaluative content of the epithet.

(26) a. PUPPET: *Simon* said that *the rascal* dropped the cake… is that right?'
CHILD: Chi? Lui? (pointing to Simon) (child, 4;10)
'Who? Him?'
b. PUPPET: *Simon* saw *the rascal* jump on the bed…is that right?
CHILD: Sì, ma non si chiama birichino! (child, 5;5)
'Yes, but he's not called a rascal!'

Focusing on children's performance with epithets and clitic pronouns in Condition B configurations (SIMPLE and ECM), another key finding is that both types of clauses yielded Condition B violations with epithets, while only ECM clauses triggered Condition B violations with clitics (69% correct). The outcome of a GLMM fitted on this data with CLAUSE (simple, ECM) and DP TYPE (epithet, pronoun) as predictors, as well as their interaction, confirmed that children were significantly less likely to allow local coreference with clitics compared to epithets in simple sentences ($\beta = -1.68$, $z = -3.80$, $p < .001$). In contrast, the likelihood of coreference readings for epithets did not differ by clause type ($\beta = -0.54$, $z = -1.74$, $p = .08$) [9]. A significant interaction was found ($\beta = 2.04$, $z = 3.73$, $p < .001$), indicating that the reduction in Condition B violations in simple clauses was specific to clitics.

[9]Formula for the model: Coreference ~ DP.type * Clause + (1 | Subject). The model did not converge when including Item as random effect, or adjusting by-subject slope by DP type. $N_{subject} = 55$; $N_{item} = 6$. The reference levels are SIMPLE and EPITHET.

8.2. Subset analyses: The role of DPBE

Group statistics reveal non-adult-like interpretations for epithets in all sentence types, but somewhat worse performance in non-local domains (complex sentences with attitude clauses). Recall that intra-sentential coreference in these domains is not blocked by Condition B, but by an Antilogophoric constraint only.

To investigate the extent to which children's performance on the Antilogophoric constraint was linked to their acquisition of Condition B, the ECM clitic condition was used to determine which children were in the so-called DPBE stage at the time of testing. Children who made at least one error (out of three items) in the ECM-CLITIC (target response: NO; N = 22) condition were categorized as being in the DPBE stage. Children who made no errors in this condition were considered to have exited the DPBE stage (N = 16)[10].

Figure 5 reveals that these two groups of children performed very differently in the epithet sentences. While both groups performed close to chance-level in complex sentences, their performance split in the Condition B sentences (SIMPLE and ECM).

These observations were statistically supported by the outcome of a GLMM fitted on the epithets data (Table 8). The model included CLAUSE, DPBE GROUP, and their interaction as fixed effects, while controlling for AGE, and incorporated by-subject and by-item random slopes. The analysis confirmed a significant interaction between DPBE and CLAUSE type. Post-hoc pairwise comparisons confirmed a significant difference between the two groups in the ECM condition (β = -2.511, z = -3.233, p = 0.02), but the comparisons in the complex and simple sentences did not reach significance (all *p*s > 0.1). However, when testing performance against chance within each clause type, the DPBE group did not differ significantly from chance in any of the three conditions (*p*s > .05). In contrast, the NO-DPBE group performed significantly above chance in both

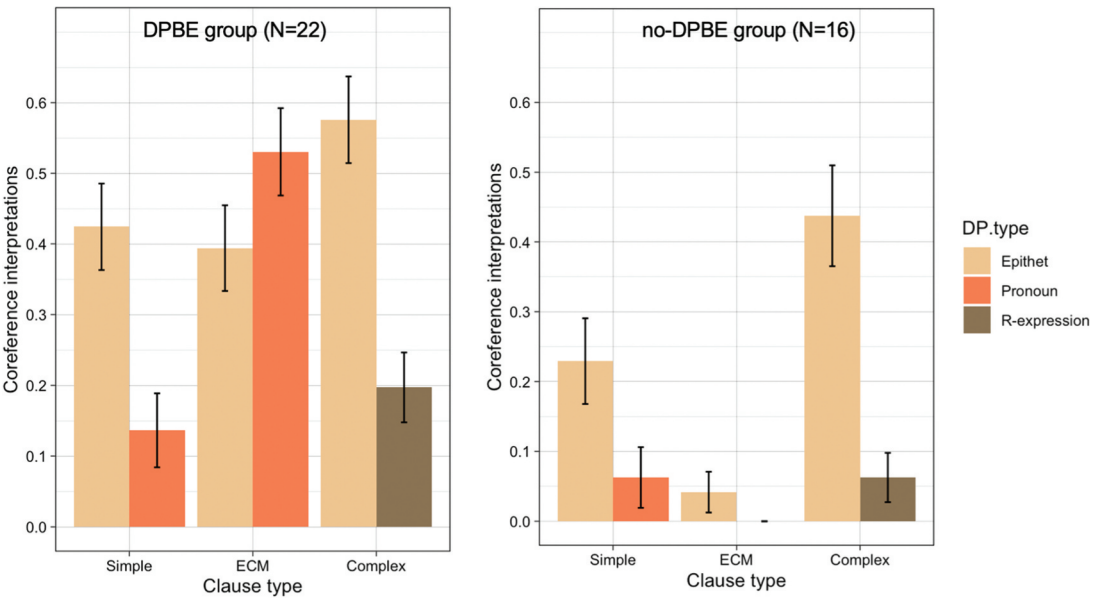

Figure 5. Rate of coreference errors for the DPBE and the no-DPBE group. Abbreviation: DPBE = Condition B delay in acquisition.

[10]Statistical analyses supported this categorical distinction: a model using children's number of ECM-clitic errors as a continuous predictor had less statistical power than a model using the categorical DPBE grouping, as shown by a comparison of Akaike Information Criterion (AIC) values (categorical model: AIC = 411.7; continuous model: AIC = 419.1). This suggests that the binary distinction between children who made *any* errors versus *none* was more predictive of their coreference errors with epithets than the total number of errors alone.

Table 8. Summary of the GLLMM for the epithets data.

	Coreference				
Predictors	*Estimate*	*Odds Ratios*	*CI*	*z value*	*p*
(Intercept)	-0.3861	0.68	0.05 – 9.14	-0.291	0.771
Clause [Simple]	1.9699	7.17	1.37 – 37.55	2.332	0.020
Clause [Complex]	2.9820	19.73	3.89 – 99.93	3.602	<0.001
DPBE	2.5110	12.32	2.69 – 56.43	3.233	0.001
Age	-0.5449	0.58	0.38 – 0.89	-2.498	0.013
Clause [Simple] × DPBE	-1.8387	0.16	0.03 – 0.90	-2.080	0.038
Clause [Complex] × DPBE	-2.2090	0.11	0.02 – 0.60	-2.551	0.011

Note. The fixed effects, their odds ratios, confidence intervals (CI), statistic (z), and p value are given. Formula for the model: Coreference~Clause*DPBE + Age + (1|Subject) + (1|Item). $N_{subject} = 38$; $N_{item} = 9$. The reference level for *Clause* is *ECM* and for DPBE is 0 (no-DPBE).

SIMPLE ($\beta = -1.112$, $z = -2.788$, $p = .005$) and ECM ($\beta = -3.082$, $z = -4.101$, $p < .0001$) clauses, but remained at chance in COMPLEX clauses ($\beta = -0.100$, $z = -0.281$, $p = .77$).

Summing up, the data confirms a Romance DPBE for clitics in ECM structures but not in simple sentences, even for non-agentive, intensional predicates. Relatively good (but not entirely adult-like) group performance with clitics in ECM sentences (69% correct) appears to be driven by the fact that a group of children (N = 16) made no errors in this condition. For the remaining children (N = 22), performance was at chance (48% correct). These children (DPBE group) equally performed around chance level in the epithet sentences. This reveals that epithets give rise to a DPBE in Italian in both simple and ECM sentences. Finally, in non-local domains all children treated epithets and R-expressions differently, with chance-level performance in the epithet sentences contrasting with their adult-like interpretation of R-expressions in Condition C configurations.

9. Discussion

This study provides the first empirical investigation on children's interpretation of epithets across different locality configurations. From a theoretical point of view, our results support the view (Dubinsky & Hamilton 1998, a.o.) that epithets obey Condition B rather than Condition C, behaving as a special class of pronouns rather than as R-expressions.

We tested this hypothesis using child language data. Children's knowledge of Condition C was evident in the very low rate of coreference errors with R-expressions. If epithets were treated as R-expressions, we would expect children to consistently reject coreference in this configuration. If, instead, the behavior of epithets is constrained by a separate principle (the Antilogophoric constraint) the observed asymmetry between epithets and R-expressions becomes theoretically motivated. Moreover, since Condition C is not sensitive to locality, it should have uniformly blocked coreference with epithets across all sentence types. However, a clear effect of locality was observed: children showed different pattern of coreference depending on clause type (SIMPLE and ECM, vs. COMPLEX). This effect was further captured by a meaningful split between children who only allowed coreference in non-local domains, and children who allowed coreference across all epithet conditions.

Children's performance in sentences with clitic pronouns provided insights on the relation between their knowledge of Condition B and their knowledge of the constraints on reference assignment for epithets. The age range in the study (4;6-6;6) allowed us to capture meaningful individual variation during this critical developmental window. We found that children's performance with clitics in the ECM condition (an established diagnostics for the DPBE stage in Romance) could predict their performance with epithets, and that this factor interacted with sentence type. In particular, only the DPBE group was at chance with epithets inside local domains, confirming that knowledge of Condition B—and not Condition C—was key to children's ability to correctly reject coreference between an epithet and a local antecedent.

The discovery of a DPBE with epithets contributes to our understanding of Rule I and its acquisition. The data suggests that children's Condition B obviations in simple transitive sentences go beyond the availability of *deictic* guises. Differently from previous experiments which employed action verbs (using pictures or acted out stories with visually salient 'actors' and characters who were 'acted-upon'), children in this task had to pay attention to what the chipmunks *said*—not what they *did*. Children's coreference interpretations could therefore not be generated by an over-reliance on deixis.

Under the account defended here, children who allowed coreference took the identity relation (e.g. *Alvin defended the rascal*) to be non-self-ascriptive, that is, entertained an interpretation, which according to Rule I should only be allowed if the speaker's intended meaning is 'distinguishable' from a self-ascriptive relation (e.g., *Alvin defended himself*). The similar rate of errors with epithets and pronouns in the ECM condition can be taken to support the hypothesis that children treated both nominals as non-self-ascriptive forms, thereby obviating Condition B.

In complex sentences, where coreference was blocked by the Antilogophoric Constraint, children's performance with epithets was consistently at chance—even among the children in the NO-DPBE group—indicating that difficulties with this constraint persist even after Condition B has been acquired.

Importantly, children's answers indicated that they were aware of the evaluative, speaker-oriented nature of epithets: in some cases, they even objected to the puppet's use of the epithet to refer to the chipmunks (as illustrated in 26b). It could be argued that they failed to apply the Antilogophoric Constraint precisely because they did not recognize that the embedded clause should be read *de se*, that is, from the perspective of the matrix subject (the *attitude holder*). This finding aligns with existing evidence that children up to at least 6 years have difficulties integrating referring expressions into opaque domains (Apperly & Robinson 2003, a.o.). In the current study, children appeared to understand that the character (e.g. *Simon*) had an alternate description ("*rascal*", according to the puppet) but failed to block referential substitution within the character's indirect speech report.

To do this successfully, children need to grasp that coreference under a self-ascriptive (*de se*) reading of the complement clause is blocked for speaker-oriented expressions such as epithets, and would require instead the use of a self-ascriptive pronoun (corresponding to the "*I*" of a direct speech report).

(27) Direct speech report: Simon said: "*I* dropped the cake"
Indirect speech report: *Simon* said that $he_{de\ se}$ dropped the cake

Failing to recognize the first-personal perspective of the complement clause, children would be faced with an ambiguity, as nothing would prevent the epithet from referring back to the matrix subject under a non-self-ascriptive reading (as previously noted in (6b) and ft.3). This appeared to be the case in our experiment, since children sometimes explicitly sought clarification from the experimenter as to what the intended referent was (see example 26a).

An outstanding question is why the Antilogophoric Constraint is acquired later than (and not concurrently with) Rule I. If the successful implementation of Rule I depends on the ability to distinguish self-ascriptive and non-self-ascriptive relations, one might expect children who have exited the DPBE stage to show adult-like performance on the Antilogophoric Constraint, which, as our results show, they do not.

One way to account for this apparent locality effect is to appeal to alternative competition theories which state complementarity in terms of availability of forms (Safir 2004, a.o.). According to Safir's *Form-to-interpretation Principle*, for example, if a language has a 'more dependent' form (an anaphor), then 'less dependent' forms (pronouns, epithets, R-expressions) should not be allowed to express the same interpretation, unless pragmatic obviation applies. A competition approach could predict locality effects as follows. Inside a local domain, where reflexives are the most *self-ascriptive* form, pronouns are outcompeted by reflexives, while

epithets are outcompeted by both reflexives and pronouns. In non-local attitude contexts, pronouns are able to map to both *de se* and non-*de se* readings[11] while epithets can only map to non-*de-se* readings. To correctly apply the Antilogophoric Constraint and rule out an epithet against the 'less dependent' form (pronoun), the child would need to recognize the availability of *de se* perspective for pronouns inside attitude domains. Until this knowledge is in place, both forms would be ranked as equivalent on a dependency scale, causing a referential ambiguity. Arguably, when such ambiguity could not be resolved by relying on the context, children ended up 'guessing' what the most plausible referent could be.[12] Importantly, this hypothesis raises new questions for cross-linguistic research, predicting differences in the developmental trajectories for epithets and for different pronominal types across languages depending on the availability of self-ascriptive forms in local and non-local domains.

Extending this competition logic, we can ask what drives the shift from the grammar of the DPBE group to the grammar of the NO-DPBE group. One possibility is that the DPBE grammar coincides with a stage in which children's mastery of logophoric perspective for reflexives is still developing. While logophoricity in adult grammars is typically associated with mental perspective (*attitude* and *empathy*, Charnavel 2018), children's earliest logophoric anaphors often appear to be licensed by deictic/spatial perspective, as illustrated in the following examples taken from the CHILDES database:

(28) a. Butch bite *myself* (Peter, 2;4, Bloom corpus)
b. And other people out lock *ourselfs* in (Abe, 2;5, Kuczaj corpus)
c. You dress *myself* (Sarah, 2;9, Brown corpus)
d. You hurted *myself* (Abe, 2;11, Kuczaj corpus)

For a grammar which licenses logophoric perspective for reflexives in a broader range of contexts, Condition B obviations could be generated by invoking Rule I in contexts where adults would not. A result reported in one of Thornton & Wexler's (1999) experiments is at least compatible with this idea. In sentences like (29), which involve VP ellipsis, these authors found that children in the DPBE stage where much more likely to allow so-called 'strict' interpretation of reflexives; in contrasts, children who made no Condition B errors preferred a 'sloppy' interpretation of the reflexive:

(29) Hawkman fanned himself and the baby boy did too. (Thornton & Wexler 1999:194)
[Context: baby boy fanned Hawkman]
CHILD (4;11): Fanned who? They both fanned him.
PUPPET: What I think happened was this. Hawkman fanned himself and the baby boy did too.
CHILD: Right.

This correlation, which remained somewhat mysterious in their account (since there is no obvious way of linking strict reflexives to immature pragmatic/extra-linguistic knowledge), becomes more

[11]It should be noted that overt subject pronouns in complement clauses in Italian (and other null subject languages) are also in competition with null pronouns (*pro*). While this study did not directly compare epithets and pronouns in complement clauses, a prediction of this hypothesis could be that children might accept coreference readings at similar rates with epithets and overt pronouns, if these were ranked on the same level on the dependency scale.

[12]To address a point raised by an anonymous reviewer, this does not necessarily mean that children guess 'randomly'. Given that experiments are typically designed in such a way to prevent children from being able to rely on pragmatic context to pick the correct referent, children's guesses tend to be poor (resulting in chance-level performance). It is possible that in some cases children committed to one interpretation (intra-sentential coreference or disjoint reference) as soon as they heard the sentence, as it fitted with their expectations about a story, and that in other cases they asked for clarification where they couldn't commit to one of the two referents. It is indeed well-known that rates of Condition B violations may vary widely across studies and methodologies (Elbourne 2005) and that manipulating the context to improve the accessibility of disjoint reference readings can significantly boost children's performance (Conroy et al. 2009).

meaningful if one assumes that strict reflexives involve logophoricity. To develop such account will require extensive crosslinguistic investigation and a direct exploration of children's understanding of logophoricity and exempt anaphora alongside the development of Condition B. Our data suggests that this dimension—so far largely unexplored—is worth pursuing and might offer us new insights into the acquisition of the binding principles.

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Data availability statement

Materials, data, and R-script can be found on OSF: https://osf.io/gc4mu/

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