ON THE ACQUISITION OF 3RD PERSON DATIVE CLITIC PRONOUNS IN ITALIAN

Anna Cardinaletti, Sara Cerutti, Francesca Volpato
Università Ca' Foscari Venezia
cardin@unive.it, sara.cerutti@unive.it, fravol@unive.it

ABSTRACT

This paper investigates the production of 3rd person singular dative clitic pronouns (3DAT) in Italian typically developing school-age children.

While most literature has focused on 3rd person accusative clitics (3ACC), which in the first stages of language acquisition may be omitted or substituted with DPs, little is known about the acquisition of 3DAT clitics. 3ACC and 3DAT clitics build a minimal pair: They share the syntactic derivation and the property of referring to antecedents present in the linguistic context, but they differ with regard to the phi-features they encode. Most notably, all Romance 3DAT clitics, including colloquial Italian *gli*, lack the gender feature.

Results show that Italian school-age children produce significantly more 3DAT than 3ACC clitic pronouns. Our results are consistent with Tuller et al.'s (2011) hypothesis that difficulties with 3ACC clitics are not only due to their complex syntactic derivation, but also to their interpretation and morphological make-up, and Delage et al.'s (2016) conclusion that gender marking is most taxing in the acquisition of the pronominal system and may remain so at school age.

Keywords: dative clitics; language acquisition; gender agreement; Italian

1. INTRODUCTION[1]

Clitic pronouns have been widely investigated in studies on the acquisition of Romance languages. They are first produced at around 20 months of age (see e.g, Antelmi 1997 for Italian; Hamann & Belletti 2006 for French; Coene & Avram, 2012, Avram et al. 2015 for Romanian). Clitic omission is reported for the earliest stages of language acquisition and is usually found until the age of 4 or 5;

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children never use tonic pronouns instead of clitics, but clitics may occasionally be replaced by full DPs (Cipriani et al., 1993; Guasti, 1993/94; Schaeffer 2000; Caprin & Guasti 2009). An elicited production study of 3ACC clitics in 16 languages (Varlokosta et al. 2016) confirmed that children aged 5-5;11 are able to choose the most appropriate pronominal form most of the time and to place it correctly in the sentence structure.[2] By the age of 5, children master the complex morphological and syntactic properties of 3ACC clitic pronouns and have the pragmatic skills needed to recognize the contexts in which the use of a clitic pronoun is the most appropriate choice. A full adult-like competence is however attained later during school years. Some omissions and substitutions with DPs are found until school age (Delage 2008 and Delage et al. 2016 for French; Pozzan 2007 and Arosio et al. 2014 for Italian).

What makes clitic pronouns particularly complex is their peculiar properties in all grammar domains. Clitic pronouns are unstressed monosyllabic words subject to specific syntactic rules. They never occur in isolation or in coordination with other elements; they cannot undergo adverbial modification and be contrastively focused; they cannot stay in their first merge position and end up occupying positions that are not allowed to noun phrases and strong pronouns (Kayne 1975). In Italian, clitic pronouns are proclitic onto finite verbs (1) and enclitic with non-finite and imperative forms (2). A clause-internal relation is established between the surface position of the clitic pronoun and its first merge position, where case and theta-roles are assigned. The first merge position of the clitic pronoun is indicated by hook brackets:

(1) Lo mangio <lo>.
[I] it$_{3SG.MS}$ eat

(2) a. Penso di non mangiarlo più <lo>.
[I] think not to eat.it$_{3\ SG.MS}$ anymore
b. Non mangiatelo più <lo>!
not eat.it$_{ACC.3\ SG.MS}$ anymore

1.1. ASYMMETRIES AMONG CLITIC PRONOUNS

In spite of the fact that all clitic pronouns share the phonological and syntactic properties mentioned above, asymmetries among clitic pronouns have been reported in the literature on language

[2] Varlokosta et al. (2016) report some errors of gender, number, and case. All studies on the acquisition of clitics in Romance languages report that clitic pronouns are never misplaced in monolingual acquisition. Varlokosta et al. (2016) only point out a very high percentage of error placement in Portuguese (72%) and Cypriot Greek (49%).

acquisition. 3ACC clitic pronouns are omitted in higher percentages and for longer than reflexive (RE) and 1st and 2nd person (1/2) clitics.[3]

Asymmetries between 3ACC and RE clitics have been reported for French (Jakubowicz et al. 1998; Zesiger et al. 2010; Tuller et al. 2011), Italian (Pozzan 2007, Arosio et al. 2010, 2014), and Romanian (Coene & Avram, 2012). They have been attributed to the different grammatical status of 3ACC and RE clitics, the former being arguments of the verb, the latter being markers of valency reduction.

Asymmetries between 3ACC and 1/2 clitics have been reported for European Portuguese (Costa & Lobo 2007a, 2007b; Silva 2008, 2010), French (Tuller et al., 2011; Delage et al., 2016), Romanian (Avram & Coene 2008, Coene & Avram, 2011, 2012, Avram et al., 2015), and Catalan (Gavarró & Fortón, 2014). 3ACC and 1/2 clitics differ with regard to their interpretation and morphological make-up.

As for interpretation, 3rd person clitic pronouns always refer to arguments present in the superordinate clause or in previous discourse (anaphoric use), while 1/2 clitics are discourse-dependent in that their reference is determined by the discourse roles of speaker and addressee (deictic use). In other words, 1/2 clitic pronouns, on a par with reflexive clitics, only enter clause-internal relations. The antecedents of the former are the speaker and the hearer, respectively, whose temporal and spatial coordinates are taken to be encoded sentence-internally in the left-periphery of the clause (a.o., Sigurðsson 2005); the antecedents of the latter are the subjects of the clauses in which they occur (Principle A of Binding theory).

As for morphology, 1/2 and RE clitics do not encode gender and only realize person features (Kayne, 2000). In Italian, these pronouns consist of a consonantal morpheme (*m*-, *t*-, [ʧ]-, *v*-, *s*-), followed by the epenthetic vowel /i/ (Cardinaletti 2008, 2010). 3ACC clitics instead encode number and gender and do not encode any person features (Kayne, 2000). In Italian, they consist of the morpheme *l*- followed by the productive nominal inflectional morphemes *-o*, *-a*, *-i*, *-e*, which realize combinations of number and gender features. 3ACC clitics agree in number and gender with their antecedents.

As argued for by Tuller et al. (2011), it is the cumulative effects of their syntactic, semantic, and morphological properties which make 3ACC clitics more problematic than other clitic pronouns. The difficulties encountered with 3ACC clitic pronouns are not only due to the complexity of their syntactic derivation, which involves movement (Kayne 1975), but also to the fact that they establish

[3] The further asymmetry between nominative weak pronouns and accusative clitic pronouns observed in studies on French (e.g. Hamann & Belletti 2006; Zesiger et al. 2010; Tuller et al. 2011) is not discussed here because it is not relevant to Italian, a null-subject language.

extraclausal coreference with their antecedents and share morphological features with them (and, in French, they may be omitted in some specific contexts). According to Delage et al. (2016), who aimed at disentangling the factors behind the asymmetry between 3ACC clitics and the other clitics, all factors individuated by Tuller et al. (2011) matter for clitic production, but it is in particular gender marking which makes 3ACC clitics the most demanding pronominal forms. Delage et al. (2016) also show that the gap between 1/2ACC and 3ACC clitics persists until when children are 8 years old (the oldest children they studied).

Gender is a lexical property of nouns which, differently from number, is not represented in the nominal syntactic structure and is parasitic on either the head noun or the number head (Ritter 1995, Di Domenico 1997).[4] This makes gender the least prominent feature in the retrieval of the pronoun antecedents (De Vincenzi & Di Domenico 1999, Carminati 2005). Gender is problematic on 3ACC clitic pronouns because of the need to keep in working memory the gender of the referents in order to produce the correct forms; difficulties are found in typically developing children as well as in atypical language development (Tuller et al. 2011, Delage et al. 2016).[5] Gender is unproblematic when it occurs on articles (Pizzuto & Caselli 1992; Jakubowicz & Nash, 2003; Kupisch et al. 2002, Caprin & Guasti 2009) because the article belongs to the extended projection of the noun and can be understood as a reprojection of the head noun itself (Giusti 2015). Gender is also unproblematic on adjectives (Caselli et al. 1993; Kupisch et al. 2002, Velnić 2020) because adjectives enter a local concord relation with the functional heads reprojected by the head noun (Giusti 2015, 2021). Also see Moscati & Rizzi (2013), (2014) for discussion of the acquisition of different agreement configurations.

As we have seen, 3ACC clitics differ from 1/2 and RE clitics in more than one respect. In order to further verify Tuller et al.'s (2011) and Delage et al.'s (2016) hypotheses, it is important to compare 3ACC clitics with 3DAT clitics because they differ minimally and can be said to build a minimal pair. While they share (i) the argument status, (ii) the syntactic derivation (they both undergo syntactic movement), (iii) the property of referring to antecedents present in the linguistic context, and (iv) the property of encoding case features,[6] they differ with regard to the encoded phi-features, most notably the gender feature (cf. Tuller et al. 2011: 438). In Romance languages, this feature is missing on 3DAT clitics (on a par with 1/2 and RE clitics). Consider Italian 3DAT clitic *gli*. In

[4] When it is a criterial feature, i.e., when it triggers movement, gender also matters in the processing of syntactic dependencies. This happens in Hebrew but not in Italian (Belletti et al. 2012).

[5] Volpato (2008), (2010) discussed further evidence in this direction using elicited production data from deaf adults.

[6] 1/2 and RE clitics are instead underspecified for case being possible as both direct and indirect objects.

colloquial Italian, *gli* is an invariant form, not marked for either number or gender, which is used for both singular and plural and masculine and feminine antecedents.[7] As discussed in Cardinaletti (2004), the underspecification of *gli* in current colloquial Italian is the result of a lexical change: the masculine form *gli* has lost the specification of the gender (and number) feature and has become gender-neutral and, consequently, more similar to the other forms of the Italian pronominal paradigm. This similarity also concerns morphology. Like 1/2 clitics (*mi*, *ti*, *ci*, *vi*) and the 3rd person reflexive clitic (*si*), *gli* consists of a consonant (the palatal lateral phoneme /ʎ/) followed by the epenthetic vowel /i/ (Cardinaletti 2008, 2010).[8]

While most studies focused on 3ACC vs. 1/2 and RE clitics, few studies compared the acquisition of 3ACC and 3DAT clitics, and findings are mixed. We present the relevant studies in section 1.2. As we will see, Italian is the less studied Romance language in this respect. This study aims at filling this gap.

1.2. ACCUSATIVE VERSUS DATIVE CLITICS IN TYPICAL DEVELOPMENT

Studies on the acquisition of 3DAT clitic pronouns in Romance languages analysed both spontaneous and elicited production. Most studies focused on preschoolers.

Lyzckowski (1999) carried out a study of spontaneous productions by three Spanish children aged 1;7-4;11. Results show that omissions of both 3ACC and 3DAT clitics were very low even at the earliest stages of language acquisition. Caprin & Guasti's (2009) study of the spontaneous production of Italian children shows that 3DAT clitics are produced later than 3ACC clitics (also see Cardinaletti, 2012), but they are omitted less frequently than 3ACC clitics. As in Italian, Romanian 3DAT clitics emerge later than 3ACC clitics (around the age of 2;2-2;3), but no statistical difference was found between the production of the two types of clitic pronouns (Coene & Avram 2012).

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[7] The 3DAT feminine singular clitic pronoun *le* is now restricted to formal contexts or written production (Serianni, 2006). The 3rd person plural dative *loro* 'to.them', also belonging to formal Italian, is a different kind a pronoun, i.e., a weak pronoun (Cardinaletti 1991). Not belonging to one and the same paradigm as *gli*, *loro* does not contrast with *gli* in number.

In the other Romance languages, 3DAT clitics are not marked for gender like Italian *gli*, but differently from Italian *gli*, they are marked for number, cf. Catalan *li*, French *lui*, Spanish *le* 'to.him/her' vs. *els*, *leur*, *les* 'to.them', respectively.

[8] The 3DAT feminine singular form *le* (see fn. 7) is bi-morphemic like 3ACC forms, but it does not express gender morphologically. It consists of the *l-* morpheme plus the class marker *-e*, which is also found on partitive clitic *ne* 'of-him/her/it/them'. This class marker is typical of the non-productive nominal declension which does not display gender distinctions, e.g. *il fiore* 'the.MS.SG flower.SG', *la felce* 'the.FEM.SG fern.SG'; *felice* 'happy.SG'. See Cardinaletti (2008) for discussion of these properties.

Turning to studies on elicited production, Spanish children aged 1;9-2;10 produced 3ACC and 3DAT clitics in similar percentages (Blasco 2000). Results from Costa et al. (2008) also show for European Portuguese that the rate of omissions of accusative and dative clitics in children aged between 3 and 4 years is comparable. Similar results are reported for children aged between 3 and 6;6 (Silva 2008, 2010). Babyonyshev & Marin (2006) observed that Romanian children with MLU higher than 2 (ages 2-3) produced dative clitics 87% of the time, slightly less than accusative clitics (94%). This difference might be due to the higher complexity of dative clitics in Romanian, which require clitic doubling. By replicating the study on Catalan, Gavarró & Mosella (2009) found that in 2-year-olds, the omission rate of 3DAT clitics is instead much lower than the omission rate of 3ACC clitics (35% vs. 74%, cf. Wexler, Gavarró & Torrens, 2004), it drops to 8% (vs. 25%) in 3-year-olds, and disappears around the age of 5, while direct objects are still omitted 4.2% of the time. Gavarró & Mosella (2009) argue that this difference is predicted by the Unique checking constraint (UCC) (Wexler 1998; Wexler, Gavarró & Torrens, 2004; Gavarró, Torrens & Wexler 2010). Since Catalan 3ACC clitics agree with the past participle, two checking operations are needed, with the past participle and the head hosting the clitic pronoun, respectively. Double checking is problematic for children aged 2 and 3 years, which predicts high rates of 3ACC clitic omissions at these ages. Since 3DAT clitics do not agree with the past participle, their derivation is not constrained by the UCC, and omissions are not found or very rare.[9]

[9] In spite of being an attractive and influential hypothesis, the UCC does not seem to make correct cross-linguistic predictions. Clitic omission is also found in Romanian, a language without past participle agreement, in a way which resembles Italian clitic omission (Coene & Avram 2012). Controversial evidence also comes from two other languages without past participle agreement, namely Spanish and Greek (Arosio et al. 2014). Furthermore, omissions are still found in children older than 3/3;6 years (e.g. in French, Delage et al. 2016, and Italian, Pozzan 2007 and Arosio et al. 2014), the age at which the UCC constraint is claimed not to be operative any longer in TD children. Finally, in French, omissions should also be found with 1/2 clitics, which trigger past participle agreement, but there is a clear difference between 3ACC and 1/2 clitics (Delage et al. 2016).

For further criticism see Guasti (2017), who suggested to capture the difference between 3ACC and 3DAT in terms of the clitic vs. affix distinction: While a 3ACC clitic realizes the D head of a DP argument, a 3DAT clitic realizes a functional head in the clausal spine, as in Sportiche's (1996) account of Romance clitics. Some general criticisms to this approach to clitic pronouns were formulated by Cardinaletti & Starke (1999: 227-8, note 82) and Cardinaletti (2015: 625). Note also that Guasti's proposal does not capture the fact that 3ACC and 3DAT clitics behave alike as far as most syntactic, phonological, and semantic properties are concerned, as we have seen above. If 3ACC and 3DAT clitics were so different entities as D° heads and clausal affixes, respectively, their common properties would be accidental. Furthermore, Guasti also analyzes Italian 1/2 clitics as clausal affixes, admitting however that their optional agreement with past participles is problematic for the analysis. For all these reasons, we do not adopt and will not further discuss this hypothesis.

As for Italian, some data are available from an elicited production task reported in Cardinaletti (2004). Children aged 3-8 showed about 30% of omissions of 3DAT clitics. Unfortunately, no comparison was reported with 3ACC clitics.

1.3. GOALS AND PREDICTIONS OF THE CURRENT STUDY

As we have seen in section 1.2, little is known about the acquisition of 3DAT clitics in Italian, and the existing evidence on the other Romance languages is controversial. The aim of this paper is to investigate whether there is a difference between the production of 3ACC and 3DAT clitics in Italian children. Since 3ACC and 3DAT clitics are both arguments of the verb, their grammatical status is the same, and since they are both subject to principle B of binding theory or to discourse coreference, their interpretation also takes place in the same way. If being an argument rather than a valency-reduction marker explained the difference between 3ACC and RE clitics, we expect no difference between 3ACC and 3DAT clitics. If having a lexical antecedent rather than being discourse-dependent explained the difference between 3ACC and 1/2 clitics, we expect no difference between 3ACC and 3DAT clitics. In the previous section, we have however seen that there is a morphosyntactic difference between 3ACC and 3DAT clitics: they differ in the phi-features they encode. We hypothesize that the crucial difference between 3ACC and 3DAT clitics is the fact that the former encode gender (and number) features, while the latter do not. Correct morphological realization of 3ACC pronouns requires agreement with the antecedent, while this is not required in the case of the 3DAT clitic *gli*. The lack of gender features is what makes Italian *gli* similar to 1/2 and RE clitics. We predict that *gli* behaves similarly to 1/2 and RE clitics in being less demanding than 3ACC clitics.

We tested school-age children for the following reasons. First, it is observed that full adult-like production of 3ACC clitics is not reached at school-entrance age yet. At this age, when a clitic pronoun is not produced, a DP is usually produced instead, but some omissions are also still found. For French, Varlokosta et al. (2016) report a range of 3ACC clitic production from 33% to 100%; Delage (2008) and Delage et al. (2016) report that ceiling performance in 3ACC clitic production is not attained before age 8. For Italian, Varlokosta et al. (2016) report a range of 3ACC clitic production from 66% to 100%; Pozzan (2007) reports that children with a mean age of 9;5 years (SD=0;6) produced 87.5% of 3ACC clitics; Arosio et al. (2014) report that a group of children with a mean age of 7.3 years (SD = 0.9) produced 88.29% of 3ACC clitics (SD = 21.88). A systematic study of school-age children can allow us to verify when full adult-like production of Italian clitic pronouns is attained and whether an asymmetry between 3ACC and 3DAT clitics is found, as predicted by our hypothesis.

Second, testing school-age children allows us to verify the role of the UCC. Since this maturational constraint should be no longer operative at school age, no difference between 3ACC and 3DAT clitics is predicted at this age. If we do find such an asymmetry, it should be attributed to another reason, not to the UCC. This other reason, we hypothesize, is the difference in morphosyntactic features.[10]

2. METHOD

2.1 PARTICIPANTS

177 Italian typically developing (TD) monolingual children took part in the study. They come from the provinces of Macerata and Milan. The participants were divided into five age groups, as shown in the following table:

Groups	#	Age	Mean age	SD
TD1	30	5;9 – 6;11	6;5	0.26
TD2	41	7 – 7;11	7;5	0.29
TD3	42	8 – 8;11	8;4	0.28
TD4	41	9 – 9;11	9;3	0.22
TD5	23	10 – 10;11	10;5	0.22

Table 1: number and age of participants

A group of 12 Italian monolingual adult controls (age 21-31, mean age 25; SD 2.98) was also included in the study.

Written informed consent was collected from children's parents and adults before testing. Parents were also asked to answer a brief questionnaire about the languages spoken at home (Italian, dialects, or other languages), which allowed us to exclude bilinguals and L2 Italian speakers from the study.

2.2 MATERIALS AND PROCEDURE

We tested the production of 3rd person singular clitic pronouns with two elicited production tasks, one for accusative and one for dative clitics.

[10] Testing school-age (typically developing) children also allowed us to compare them with children with learning difficulties, which can only be diagnosed at school age. Children with learning difficulties were shown to have difficulties with 3ACC clitics (Arosio et al., 2016; Vender et al., 2018), but their performance with 3DAT clitics was not investigated. We have addressed this issue in Cardinaletti et al. (2019).

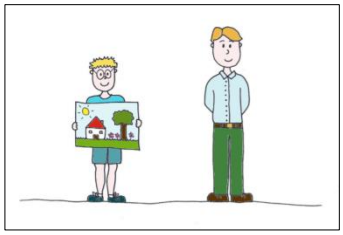
Accusative task – The first task is a version of the test used by Arosio et al. (2010; 2014). During the test, children were presented two drawings with two characters: while they saw the first drawing, children heard a recorded voice describing the scene; when the second drawing appeared, they were required to answer a question about what was happening in the picture. Five familiarization trials preceded the experimental session. A trial example is presented in (3).

(3) PICTURE 1: In questa storia c'è un bambino che vuole distruggere un castello di sabbia.
In this story, there is a boy who wants to destroy a sand castle.
PICTURE 2: Guarda, cosa sta facendo al castello?
Look, what is he doing to the castle?
Target answer: Lo sta distruggendo.
[he] it$_{3SG.MS}$ is destroying.
He is destroying it.

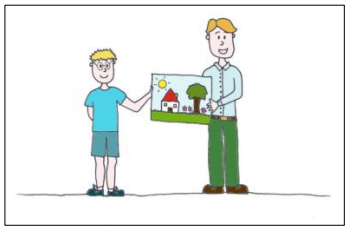
All stimuli include two participants, an animate agent and an animate or inanimate patient, characterized by gender and number feature match. The task consists of 12 items, 6 to elicit feminine singular 3ACC clitics and 6 to elicit masculine singular 3ACC clitics, presented in a random order. Questions are formulated in order to create a restrictive context in which the production of a sentence containing a full object DP would be pragmatically infelicitous, though not ungrammatical. All questions contain null subjects and the periphrastic progressive verbal form *stare* + gerund. Target answers should contain null subjects, the progressive periphrasis *stare* + gerund, and 3ACC clitic pronouns. These features differentiate the version of the test we used from the versions described in Arosio et al. (2010), (2014), in which questions contain either null or overt subjects and different verbal forms (i.e., either simple present or *passato prossimo*, present perfect).

Dative task – A similar test was created for the present study in order to elicit dative clitic pronouns. The experimental task includes 12 items (preceded by two trials): each drawing shows two characters performing an action described by a sentence containing a ditransitive verb. Each sentence contains an animate subject, an inanimate direct object, and an animate indirect object. The three arguments are characterized by gender and number feature match. After hearing a recorded voice describing the first drawing, children were required to answer a question about what one character was doing to the other in the second drawing. A trial example is presented in (4).

(4) PICTURE 1: In questa storia c'è un bambino che vuole regalare un disegno al papà.
In this story, there is a boy who wants to give a drawing to his dad.



PICTURE 2: Guarda, cosa sta facendo al papà?
Look, what is he doing to his dad?



Target answer: Gli sta regalando un disegno / il disegno.
<he> to.him$_{3SG.MS}$ is giving a / the drawing.
He is giving him a / the drawing.

This second task consists of 6 trials eliciting feminine 3DAT clitics and 6 trials eliciting masculine 3DAT clitics, presented in a random order. Target answers should contain null subjects, the progressive periphrasis *stare* + gerund, the direct object, and 3DAT clitic pronouns.

Procedure – Children were tested individually in a quiet room at their school. Adults were also tested individually. Participants' responses were audio recorded and transcribed. Transcriptions were checked by two different persons, the second author and a MA student at the Ca' Foscari University of Venice.

2.3 RESPONSE CODING

For both tests, answers were classified into four categories: target, production of full noun phrases (DP) or prepositional phrases (PP), clitic omission, other.

Target – We considered as target every answer containing a clitic pronoun. While in most of the answers, children produced the same verbal form they had heard in the question (5a), they sometimes produced sentences containing a simple present (5b) or a present perfect (*passato prossimo*) (5c):

(5) a. La sta pettinando.
[*she*] *her$_{3SG.FM}$ is combing.*
She is combing her.
b. La pettina.
[she] her$_{3SG.FM}$ combs.
She is combing her.

c. L'ha pettinata.
[she] her$_{3SG.FM}$ has combed$_{3SG.FM}$.
She has combed her.

The periphrastic form *stare* + gerund and the present tense convey the same meaning and are interchangeable. The past form conveys a different meaning. It is a perfective form, suitable to describe actions that have already been concluded. Some pictures indeed favoured this interpretation.

In the dative test, the answers containing the pronoun *gli* were scored as target also when the antecedent was a feminine noun. The use of *gli* is not due to the children's inability to process gender agreement between a dative pronoun and its antecedent. As said in fn. 7, the singular feminine 3DAT clitic pronoun, namely *le* 'to.her', has disappeared from colloquial speech.

Among target answers of the dative test, clitic clusters (*glielo* or *gliela* 'to.him him/her/it') are also included.[11] In this case, not only the target 3DAT clitic to refer to the indirect object was produced; the direct object was also realized as a 3ACC clitic pronoun, as in (6). The answer is not fully appropriate in the given context because the question is on the indirect object, but it is grammatical and acceptable:

(6) In questa storia c'è un bambino che vuole regalare un disegno al papà. Guarda, cosa sta facendo al papà?
In this story, there is a boy who wants to give a drawing to his dad. Look, what is he doing to his dad?
Answer: Glielo dà**.**
[he] to.him$_{3SG.MS}$ + it$_{3SG.MS}$ gives.
He gives it to him.

We also considered as target clitic doubling constructions, which consist in the production of both the target clitic pronoun and the prepositional phrase, as in the following example. These sentences, which were only produced in the dative test, belong to spontaneous, low-monitored oral production:

(7) Gli dà un disegno al papà.
<he> to.him$_{3SG.MS}$ gives a drawing to his dad.
He gives a drawing to his dad.

Quite unexpectedly, some children produced isolated gerundive forms with enclitic pronouns, omitting auxiliary *stare*, as in (8a). Some children also produced the target pronoun in enclitic position in the presence of *stare*, as in (8b):

[11] In clitic clusters, the dative component is always *gli*. Feminine dative *le* is ungrammatical: **le lo/la* 'to.her him/her/it'. See Cardinaletti (2008), (2010) for an analysis of this restriction.

(8) Cosa sta facendo al palloncino?
What is [he] doing to the balloon?
a. Answer: Bucandolo.
popping it$_{3SG.MS}$
Popping it.
b. Answer: Sta bucandolo.
<he> is popping it$_{3SG.MS}$
He is popping it.

Though not fully ungrammatical (Calabrese, 1988: 551), this structure is very marginal. An enclitic to a gerundive form occurs in implicit subordinate clauses, as in (9**Errore. L'origine riferimento non è stata trovata.**), but it is not usually produced in independent sentences like (8b) (as confirmed by our adult participants, who did not produce any sentence like (8b), see table 6):

(9) Leggendolo una seconda volta, ho trovato un errore.
reading.it$_{3SG.MS}$ *a second time, I found a typo.*
Reading it a second time, I found a typo.

Following the suggestion of an anonymous reviewer, we counted enclitic pronouns on gerundives among target answers, in spite of their marginality.

Full DP/PP – The most frequent non-target strategy was the production of full DPs (in the accusative test) (10a); some PPs (in the dative test) were also found (10b). These types of answers, although grammatical, sound redundant and pragmatically infelicitous being not appropriate to the elicitation context, which requires clitic pronouns:

(10) a. Sta dipingendo la maschera.
[she] is painting the mask.
b. Sta regalando un disegno al papà.
[he] is giving a drawing to his dad.

Clitic omission – In some cases, children omitted the direct (in the accusative test) or indirect (in the dative test) object. In the accusative test, clitic omission (Ø) always gave rise to ungrammatical sentences, like the one in (11a). In the dative test, ungrammatical sentences were obtained in the case of the verbs *dare* 'give', *regalare* 'give', *portare* 'bring', which require a goal argument (11b). With verbs like *leggere* 'read' and *lanciare* 'throw', grammatical sentences were produced which are however not appropriate in the elicitation context (11c) (something we signal with #):

(11) a. Cosa sta facendo <la bambina> alla farfalla?
What is <the girl> doing to the butterfly?
Answer: *Ø prende.
**[she] takes.*
**She takes.*

b. Cosa sta facendo <la bambina> alla maestra?
What is <the girl> doing to the teacher?
Answer: *Ø sta regalando una margherita.
**[she] is giving a daisy.*
***She is giving a daisy.*
c. Cosa sta facendo <il bambino> al nonno?
What is <the boy> doing to his grandad?
Answer: #Ø sta leggendo il giornale.
#[he] is reading the newspaper.

Other – Among other responses, our participants sometimes changed the verb so that dative instead of accusative clitic pronouns were produced, as in (12a), or the target clitic pronoun was avoided, as in (12b):

(12) a. Gli sta mettendo a posto i capelli (*target*: La sta pettinando)
<she> is her putting in place the hair (*target: She is combing her*)
She is putting her hair in place.
b. Sta levando la buccia (*target*: La sta sbucciando)
<she> is removing the peel (target: She is peeling it)
She is peeling it.

3. RESULTS

Overall, children produced a good amount of target answers. No gender or number agreement error was found. The most frequent non-target answer was the production of DPs in the accusative task, followed by the production of PPs in the dative task and by clitic omission (Ø). Raw numbers, percentages, and standard deviations (SD) are reported in table 2:

	Target		**DP/PP**		**Ø**		**Other**	
	ACC	**DAT**	**ACC**	**DAT**	**ACC**	**DAT**	**ACC**	**DAT**
TD1	10.4 86.7% 2.68	10.5 87.6% 3.55	0.8 6.7% 1.68	0.3 2.5% 1.64	0.5 4.1% 1.25	0.7 5.8% 2.23	0.3 2.5% 0.59	0.5 4.1% 2.06
TD2	10.9 90.9% 2.07	11.3 94.1% 1.63	0.75 6.2% 1.51	0.02 0.1% 1.15	0.3 2.5% 1.04	0.5 4.1% 1.56	0.05 0.4% 0.71	0.2 1.7% 1.57
TD3	10.3 85.8% 2.90	11.1 92.6% 2.59	1.4 11.7% 2.48	0.5 4.1% 1.91	0.1 0.8% 0.29	0.3 2.5% 0.81	0.2 1.7% 0.35	0.1 0.8% 0.91
TD4	10.8 90% 2.29	11.62 96.8% 1.16	0.8 6.7% 2.12	0.05 0.4% 0.21	0.1 0.8% 0.22	0.25 2.1% 0.86	0.3 2.5% 0.78	0.08 0.7% 0.37
TD5	10.39 86.6% 1.90	11.39 94.9% 1.23	0.78 6.5% 1.67	0.26 2.2% 0.91	0.04 0.3% 0.2	0.13 1.1% 0.34	0.79 6.6% 0.86	0.22 1.8% 0.49

Mean	10.6 88.33%	11.18 93.2%	0.9 7.5%	0.22 1.8%	0.2 1.7%	0.37 3.1%	0.3 2.5%	0.22 1.8%
Adults	11.4 95% 1.16	11 91.7% 1.70	0.6 5% 1	0.1 0.8% 0.28	---	---	---	0.9 7.5% 1.62

Table 2 – Mean scores/12, percentages, and SDs of answer strategies by children and adults

The dative *gli* for feminine antecedents was used 97.36% of the time by children of all groups and 45% by adults. Some adults used *gli* and *le* interchangeably to refer to feminine antecedents. The preference for one of the two forms does not seem to depend on their age or education level. This confirms that the form *gli* belongs nowadays to the colloquial language shared by children and adults and should not be considered a gender agreement error in the case of feminine antecedents.[12]

Generalized linear mixed-effect (GLME) models were used to carry out between-group and within-group analyses in the production of clitic pronouns. Statistical analyses were carried out using the statistical software R (R Development Core Team, 2018, R Version 3.6.1). The analysis considered CASE (ACC vs. DAT) and GROUP as independent fixed factor, response accuracy was the dependent variable, and SUBJECT and ITEM were random factors.

Likelihood ratio tests for nested models proved that the optimal fixed effects structure includes Case, Group and their interaction (see table 3).

Model	**Npar**	**AIC**	**BIC**	**Chisq**	***P***
Intercept	3	2559.3	2578.6	---	---
Case	4	2525.3	2551.0	36.063	< .001
Case + Group	9	2502.1	2559.8	33.207	< .001
Case * Group	14	2491.4	2581.3	20.617	< .001

Table 3 – Comparisons of linear mixed models. Legenda: npar: number of model parameters; AIC: Akaike Information Criterion; BIC: Bayesian Information Criterion; Chisq: the difference in deviance obtained by adding the predictor in boldface; p-values are derived from likelihood ratio test comparisons.

As for the analysis within each group, the difference between 3DAT and 3ACC was not significant in TD1 and TD2; it was significant in the other three groups: TD3 (Est = 0.8464, SE =

[12] Only one child of the TD3 group (from the province of Macerata) answered all the stimuli containing a feminine indirect object by producing the feminine 3DAT clitic pronoun *le*. There might still be some regional variation in the use of *gli* vs. *le*. In the study reported in Cardinaletti (2004), 3-to-8-year-old children coming from the province of Treviso produced *gli* instead of *le* only 3 times out of the 21 clitics produced in the feminine elicitation task (14%).

0.226, z.ratio = 3.746, p < .01); TD4 (Est = 1.3026, SE = 0.305, z.ratio = 4.268, p < .01); TD5 (Est = 1.1157, SE = 0.326, z.ratio = 3.418, p < 0.05). Although the adults' accuracy rate in the two tasks was different (95% in accusative clitic production and 91.7% in dative clitic production), the difference was not statistically significant.

As for the analysis between groups, we found significant differences only between TD1 and TD4 (Est = 1.7575, SE = 0.316, z. ratio = 5.569, p < .001), between TD4 and adults (Est = 2.0796, SE = 0.630, z.ratio = 3.301, p < .05), and a marginally significant difference between TD3 and TD4 (Est = 1.0378, SE = 0.321, z.ratio = 3.236, p = 0.0551).

We further analysed whether XP responses (either DP or PP) and omissions were significantly more frequent when accusative or dative pronouns were elicited. In the first analysis, we considered XP responses as dependent variable. We found that children of groups TD2, TD3, and TD4 produced significantly more XP responses, namely DPs, when an accusative pronoun was elicited: TD2, Est = 3.7791, SE = 1.052, z.ratio = 3.591, p < .05; TD3, Est = 1.3783, SE = 0.339, z.ratio = 4.070. p = .003; TD4, Est = 3.1807. SE = 0.767, z.ratio = 4.146, p = .002). In the second analysis, we considered omissions as dependent variable. We found that the youngest groups omitted the pronoun significantly more frequently than group TD4. In the accusative task, we found a significant difference between groups TD1 and TD4 (Est = 2.677, SE = 0.788, z.ratio = 3.396, p < .05); in the dative task, we found a significant difference between groups TD2 and TD4 (Est = 1.377, SE = 0.421, z.ratio = 3.272, p < .05).

3.1. CLITIC CLUSTERS AND CLITIC DOUBLING

Table 4 provides the production rate of clitic clusters in the dative test. This option was most often chosen by the youngest children and by adults:

Group	Mean score/12	Mean percentage	SD
TD1	2.93	24.4%	5.44
TD2	0.075	0.62%	3.95
TD3	0.064	0.53%	3.27
TD4	0.057	0.47%	3.41
TD5	0.045	0.37%	2.52
Mean	0.63	5.27%	---
Adults	1.91	15.97%	3.87

Table 4 – Mean scores, percentages, and SDs of target answers containing clitic clusters produced in the dative test

Looking at individual results, 13 children and 1 adult used clitic clusters 100% of the time. Seven of these children were from the youngest group.

In the dative clitic task, clitic doubling structures were also produced. They were used in very small percentages by children, while adults chose this strategy 7.6% of the time, as table 5 shows:

Group	Mean score/12	Mean percentage	SD
TD1	0.03	0.25%	0.18
TD2	0.29	2.41%	1.56
TD3	0.11	0.91%	0.77
TD4	0.02	0.16%	0.15
TD5	---	---	---
Mean	0.09	0.75%	
Adults	0.9	7.6%	1.62

Table 5 – Mean scores, percentages, and SDs of target answers containing clitic doubling produced in the dative test

In one case, a child of the TD2 group produced a sentence containing clitic doubling combined with a clitic cluster (13), a context which is sometimes claimed to favour clitic doubling in Italian (an observation due to Paola Benincà). Adults however always produced clitic doubling without clitic clusters:

(13) Glielo sta regalando al papà.
[he] to.him$_{3SG.MS}$ + it$_{3SG.MS}$ is giving to his dad
He is giving it to his dad.

3.2. ENCLITICS

Table 6 provides mean scores, percentages, and SDs of enclitic pronouns produced in both tasks. As the table shows, percentages are very low:

	ACC			DAT		
Group	**Mean score/12**	**Mean percentage**	**SD**	**Mean score/12**	**Mean percentage**	**SD**
TD1	--	--	--	--	--	--
TD2	0.2	1.7%	0.55	--	--	--
TD3	0.2	1.7%	1.08	0.3	2.5%	1.74
TD4	--	--	--	0.02	0.1%	0.15
TD5	--	--	--	--	--	--
Mean	0.1	0.83%		0.064	0.5%	
Adults	--	--	--	--	--	--

Table 6 – Mean scores, percentages, and SDs of target answers containing enclitic pronouns

3.3. TENSE AND ASPECT

In most cases, answers contained the elicited verbal structure *stare* + gerund. Children also produced sentences containing a simple present (5b) or a present perfect (5c); the latter mostly appeared with pictures depicting what could be interpreted as concluded actions. This interpretation was possible with 7/12 images in the accusative task, and with 5/12 images in the dative task. In the adult control group, five participants used all three verbal structures, choosing tense and aspect according to the action illustrated in the stimulus picture. Instead of *stare* + gerund, some children from the province of Macerata also produced some instances of *stare* + *a* + infinitive, which is a form used in the regional variety and the local dialects. Finally, some single gerundive forms without the auxiliary *stare* (cf. (8a)) were produced by 3 children: 0.83% in the accusative task and 0.5% in the dative task. If a clitic pronoun was produced in these cases, the pronoun was enclitic on the gerundive (see table 6). Mean scores and percentages of occurrence of the different verbal forms are reported in table 7. Since the different verbal forms do not seem to depend on age and since the choice of tense/aspect is not the focus of our study, we only report the mean percentage for the whole group of children and for adults.

Group	***stare* + gerund**		**Simple present**		**Present perfect**		***stare* a + inf**		**Gerund**	
	ACC	DAT	ACC	DAT	ACC	DAT	ACC	DAT	ACC	DAT
Mean children	8.3 69%	8.6 72%	1.2 10%	0.9 9%	2.3 19%	2.1 18%	0.1 1%	0.03 0.3%	0.1 1%	0.05 0.5%
Adults	8.7 72%	10.2 85%	1.6 13%	1 8%	1.7 14%	1 8%	---	---	---	---

Table 7 – Mean scores/12 and percentages of verbal forms produced by children and adults

4. DISCUSSION

In this paper, we tested the production of 3ACC and 3DAT clitic pronouns by Italian school-age children using two elicited production tasks. In both tasks, children produced high percentages of clitic pronouns. At the oldest age we tested (10-10;11), children produced 3ACC pronouns 86.6% of the time and 3DAT clitics 94.9% of the time. Our results are in line with Delage (2008) and Tuller et al. (2011), who observed for French that the amount of produced 3ACC clitics is increasing during school years.

In spite of the high percentages of clitic production in both tasks, a difference was found between 3ACC and 3DAT clitics. Children produced more 3DAT than 3ACC pronouns, and the difference is statistically significant for all children but the groups TD1 and TD2. The difference is not significant for adults. We suggest that the difference between ACC and DAT clitics does not

reach significance in the youngest groups TD1 and TD2 because these children still omit clitics. In the older groups of children, whose omissions are lower, the difference between 3ACC and 3DAT clitics has clearly emerged. This result is unexpected under the UCC hypothesis, which does not predict any difference between 3ACC and 3DAT clitics at school age. We attribute the asymmetry between 3ACC and 3DAT to the difference in morphosyntactic complexity. The 3DAT clitic *gli* is morphologically simple and does not encode any gender feature; it is used to refer to both masculine and feminine antecedents. For this reason, the 3DAT pronoun is easier to retrieve than the 3ACC forms, which encode gender (and number) and agree with their antecedents. The lexical retrieval of agreeing forms is more challenging than that of invariable forms since it implies keeping in mind the gender (and number) of the antecedent. Our data are compatible with Tuller et al.'s (2011) hypothesis that the difficulties encountered with 3ACC clitic pronouns are not only due to the complexity of their syntactic derivation, which involves movement (Kayne 1975), but also to the fact that they establish extraclausal coreference with their antecedents (occurring in either the superordinate clause or the discourse, as in the tasks used in our study) and enter morphological agreement with them. Syntax alone would not explain the observed difference between 3ACC and 3DAT clitics, as it is not sufficient to explain the differences between 3ACC and RE clitics on the one hand and between 3ACC and 1/2 clitics on the other hand which were reported in Section 1.1. Our results are also consistent with Delage et al.'s (2016) conclusion that gender marking is most taxing. Our results show that it may continue to be so until the last year of primary school, differentiating the two types of clitics in spite of very high rates of production. Gender is what makes 3ACC and 3DAT clitics different in Italian (as in the other Romance languages).

Although a morphologically marked lexical form is more challenging to retrieve than an invariable form, all produced 3ACC clitics have correct gender (and number) features. This result is in line with the data collected in previous studies on Italian school-age children. Gender errors were not found in Italian in either elicited production (Pozzan, 2007) or spontaneous production (Frog Story, Ibatici, 2017).

Among the non-target answers, the production of full objects instead of clitics was significantly higher in the accusative than in the dative task. Children produced a mean of 7.5% of object DPs in the accusative task, while PPs were much less used in the dative task (mean: 1.8%). Note that the percentages do not decrease with age. Since the type of task is the same in the two cases, the difference cannot be attributed to the experimental techniques, as an anonymous reviewer suggested. Rather, the higher difficulty of accusative clitics led children to produce DPs as an avoidance strategy, while this is a residual option with indirect objects. Note that adults also produced more DPs in the accusative task (5%) than PPs in the dative task (0.8%).

3ACC clitic omissions were very few and decreased with age, replicating previous results on Italian school-age children (Pozzan, 2007; Arosio et al. 2010, 2014; Cardinaletti & Casani, 2019). The clitic omission rate in the dative task was higher, reaching 5.8% in TD1 and 4.1% in TD2, the youngest groups of children. It lowered to 1.1% in the oldest group, i.e., TD5. We do not think that the omission rate of 3DAT clitics signals lack of competence. Note that half of the sentences without the dative pronoun were grammatical, i.e., cases in which the dative was not an obligatory argument, as in (11c) above, repeated as (14):

(14) #Sta leggendo il giornale. (*target*: Gli sta leggendo il giornale)
*<he> is reading the newspaper. (*target*: <he> is reading the newspaper to him)*

This answer is not fully appropriate in the elicitation context, because the question was on the indirect object. Differently from accusative arguments, however, the omission of dative arguments allowed children to produce grammatical sequences. The fact that dative omission was found most often in the TD1 and TD2 groups suggests that it is age related and that memory might be involved in not producing all arguments of the verb. Since we did not test memory skills, however, a direct correlation cannot be established.

In conclusion, our data add further evidence that the only pronouns which may still be demanding in primary school are 3ACC clitics.

Interestingly, among target answers, our dative test also elicited a certain number of clitic clusters and clitic doubling sentences.

In clitic clusters, the dative clitic pronoun is accompanied by the accusative clitic. All clusters produced were correct. This shows that children have full competence of clitic clusters by school age. This is a new result. We do not know of any study on the production of clitic clusters by Italian children. Note that the amount of clusters produced was very high in the youngest group of children (TD1), where it almost reached 25% of the time. The use of clitic clusters implies the production of 3ACC clitics instead of the expected direct object DPs. This might be due to the fact that clitic clusters are merged as lexical units, which consist of the consonantal dative clitic [ʎ], the linking vowel [e], and the accusative clitic (Cardinaletti 2008), and that producing a lexical unit is more economic than producing a dative clitic pronoun plus a full DP.

Children only used the clitic doubling option in the dative task. Accusative clitic doubling, which is indeed ungrammatical in Italian, was not found in the accusative task. This means that children used clitic doubling target-like. The low production rate of this option by children (mean 0.75%) shows that they were aware of the rarity of this possibility, which is confined to sloppy

registers of Italian, and used it accordingly. Note also that clitic doubling is more complex than sentences containing either a dative clitic or an indirect object because it contains both (first merged in a 'big DP', Torrego, 1995; Uriagereka, 1995, 2005). There is thus no reason to use this more complex alternative structure in contexts eliciting the dative clitic pronoun.

Some enclitics on simple gerundives were unexpectedly found in the responses by 3 children. As we have seen, percentages are very low. We take them to be simplification strategies. None of the adults produced simple gerundives. The use of enclitics in the presence of the auxiliary *stare* was even more infrequent (1 child in the TD3 group produced 3 enclitics, 1 child in the TD4 group produced 1 enclitic). We take this to mean that children overwhelmingly preferred clitic climbing and proclisis, a piece of data confirmed by a study on clitic placement with restructuring verbs (Cardinaletti et al. 2019). All adults produced clitic climbing with *stare* + gerund, confirming the strong marginality of the option in (8b).

Finally consider the verb forms produced. Children used different kinds of verbs in their answers, including simple present and present perfect. The last strategy was mostly used in trials depicting actions which are clearly concluded. In our study, children showed a very good mastery of the tense/aspect system.

5. CONCLUSIONS

This study investigated Italian school-age children's production of 3rd person singular clitic pronouns through two elicited production tests, one for accusative and one for dative clitics.

More 3DAT than 3ACC pronouns were produced by children, and the difference is significant for the older groups TD3, TD4, and TD5. We argue that this is due to the fact that children almost always used the 3DAT clitic *gli* to refer to both masculine and feminine antecedents as is typical of the colloquial register of Italian. Deprived of the gender feature, the dative clitic is easier to process than accusative clitics, which have to share the gender feature of their antecedents. This result is consistent with Tuller et al.'s (2011) hypothesis that the difficulties faced with 3ACC clitic pronouns are not only due to their complex syntactic derivation but also to the necessity of agreeing with their antecedents, and Delage et al.'s (2016) conclusion that gender agreement is most taxing, in particular when it is morphologically realized.

Most studies on the acquisition of Romance languages, including our study on Italian, focussed on singular clitic pronouns. If number agreement with the antecedent is demanding on a par with gender agreement, we predict that Italian *gli*, which does not encode number, is less demanding than the 3DAT clitics in the other Romance languages, which do encode number (see fn. 7). If number

behaves differently from gender, as observed in previous studies (cf. e.g. De Vincenzi & Di Domenico 1999, Carminati 2005), no difference among Romance languages should instead be found. This issue is left for future inquiry.

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	TARGET		
Predictors	*Odds Ratios*	*CI*	*p*
(Intercept)	9.36	5.31 – 16.50	**<0.001**
CASE [DAT]	1.12	0.71 – 1.77	0.630
GROUP [ADULTS]	1.49	0.44 – 5.05	0.525
GROUP [TD2]	1.15	0.72 – 1.86	0.553
GROUP [TD3]	0.99	0.64 – 1.51	0.947
GROUP [TD4]	1.76	1.11 – 2.80	**0.016**
GROUP [TD5]	0.80	0.49 – 1.30	0.366
CASE [DAT] * GROUP [ADULTS]	0.49	0.19 – 1.28	0.146
CASE [DAT] * GROUP [TD2]	1.91	0.97 – 3.78	0.062
CASE [DAT] * GROUP [TD3]	2.08	1.10 – 3.93	**0.024**
CASE [DAT] * GROUP [TD4]	3.29	1.55 – 6.98	**0.002**
CASE [DAT] * GROUP [TD5]	2.73	1.24 – 5.98	**0.012**
Random Effects			
σ^2	3.29		
$\tau_{00\ PARTICIPANT}$	2.12		
$\tau_{00\ ITEM}$	0.09		
ICC	0.40		
$N_{PARTICIPANT}$	59		
N_{ITEM}	12		
Observations	4536		
Marginal R^2 / Conditional R^2	0.062 / 0.439		

	DP_PP		
Predictors	*Odds Ratios*	*CI*	*p*
(Intercept)	0.03	0.02 – 0.06	<**0.001**
CASE [DAT]	0.29	0.12 – 0.72	**0.008**
GROUP [ADULTS]	0.44	0.10 – 1.97	0.280
GROUP [TD2]	1.27	0.67 – 2.42	0.459
GROUP [TD3]	2.32	1.32 – 4.06	**0.003**
GROUP [TD4]	1.04	0.57 – 1.90	0.904
GROUP [TD5]	1.54	0.77 – 3.10	0.225
CASE [DAT] * GROUP [ADULTS]	1.27	0.19 – 8.43	0.804
CASE [DAT] * GROUP [TD2]	0.08	0.01 – 0.70	**0.023**
CASE [DAT] * GROUP [TD3]	0.86	0.31 – 2.34	0.761
CASE [DAT] * GROUP [TD4]	0.14	0.03 – 0.75	**0.022**
CASE [DAT] * GROUP [TD5]	1.03	0.29 – 3.68	0.960
Random Effects			
σ^2	3.29		
$\tau_{00\ PARTICIPANT}$	2.01		
$\tau_{00\ ITEM}$	0.18		
ICC	0.40		
$N_{\ PARTICIPANT}$	59		
$N_{\ ITEM}$	12		
Observations	4536		
Marginal R^2 / Conditional R^2	0.274 / 0.564		

	OMISSION		
Predictors	*Odds Ratios*	*CI*	*p*
(Intercept)	0.02	0.01 – 0.04	**<0.001**
CASE [DAT]	1.53	0.72 – 3.25	0.266
GROUP [ADULTS]	0.00	0.00 – Inf	0.990
GROUP [TD2]	0.59	0.22 – 1.57	0.293
GROUP [TD3]	0.20	0.06 – 0.66	**0.008**
GROUP [TD4]	0.07	0.01 – 0.34	**0.001**
GROUP [TD5]	0.13	0.02 – 1.03	0.053
CASE [DAT] * GROUP [ADULTS]	12158683.36	0.00 – Inf	0.990
CASE [DAT] * GROUP [TD2]	1.89	0.62 – 5.74	0.264
CASE [DAT] * GROUP [TD3]	2.32	0.57 – 9.46	0.242
CASE [DAT] * GROUP [TD4]	4.05	0.70 – 23.33	0.117
CASE [DAT] * GROUP [TD5]	1.94	0.17 – 22.23	0.593
Random Effects			
σ^2	3.29		
$\tau_{00\ PARTICIPANT}$	2.29		
$\tau_{00\ ITEM}$	0.12		
ICC	0.42		
$N_{\ PARTICIPANT}$	59		
$N_{\ ITEM}$	12		
Observations	4536		
Marginal R^2 / Conditional R^2	0.600 / 0.769		