

Article

Clitic Production in Bilingual Children: When Exposure Matters

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Abstract: The aim of this work is to investigate how bilingual children perform with respect to monolingual children in a task eliciting direct object clitic pronouns in Italian. Clitic production is considered a good clinical marker for Italian monolingual children suffering from specific language impairment (SLI) (Bortolini et al. 2006). Moreover, this task is reported to be particularly challenging for early second language children (EL2), who are less accurate than their peers in this task (Vender et al. 2016). Even though the typology of errors committed by the two populations (non-impaired bilinguals and SLI children) is generally different, it can be difficult to keep them apart from each other and, as a consequence, to identify a language impairment in bilingual children. However, it has been suggested that the difficulties exhibited by EL2 children in clitic production are related to their competence in their L2 and that they should disappear as soon as their mastery of the L2 increases. To test this prediction, we assessed clitic production in a group of 31 bilingual children having Italian as their L2 (mean age 10;2), comparing their performance to that of a group of 33 Italian monolingual children (mean age 10;2). The bilingual children used their L1 on a daily basis, as assessed by means of a bilingual exposure questionnaire, and had on average eight years of exposure to Italian; moreover, they performed similarly to monolinguals in a receptive vocabulary task, indicating that their competence in Italian was good. Consistently with our predictions, we found that bilingual children performed very accurately in the clitic elicitation task, similarly to monolinguals, confirming that the deficits previously found in EL2 children were not related to bilingualism itself, but more likely to their still incomplete competence in Italian.

Keywords: clitic production; early second language learners; bilingualism; specific language impairment

1. Introduction

It is well-known that bilingual children, especially in the first stages of the acquisition of their second language, can perform more poorly than monolinguals in specific linguistic domains. Beyond vocabulary and lexical access, one of the areas that is most vulnerable is the comprehension and especially the production of structures that are complex from the morphosyntactic point of view (Bialystok 2009; Sorace et al. 2009; Vender et al. 2016). For this reason, the production of clitic pronouns, which requires a quite sophisticated linguistic competence, has been found to be problematic in early second language learners acquiring different Romance languages, including Italian, as will be reviewed in the following section.

We begin this discussion by focusing on the properties of Italian clitic pronouns, which present some levels of complexity that make their acquisition particularly challenging also for monolingual children.¹

1.1. The Production of Clitic Pronouns: Typical Development

Firstly, clitics are not salient from the phonological point of view, being monosyllabic, unstressed, and thus phonologically weak. In addition, they are not phonologically independent, since they cannot occur in isolation, but must always be coupled with an adjacent verb, as exemplified in (1).

1. Il nonno **la** segue
 The grandfather CL_{3S.FEM} follows²
 ‘The grandfather follows her.’

At the morpho-syntactic level, they carry information about gender and number, yielding four different forms, as follows: *lo* (masculine singular), *la* (feminine singular), *li* (masculine plural), and *le* (feminine plural). Moreover, they can occupy different positions in the sentence, depending on the finiteness of the verb; they can be proclitic, when they precede a finite verb, as in (1), or enclitic, when they follow a non-finite verb, as in (2).

2. Il nonno vuole seguirla
 The grandfather wants to follow.CL_{3SG.FEM}
 ‘The grandfather wants to follow her.’

Proclitics occupy a special position in the clause, preceding the verb, as they move from the canonical post-verbal position proper to internal arguments in Italian, giving rise to a non-canonical subject–object–verb word order, which is marked in Italian. Concerning their internal syntactic structure, object clitics are analyzed as the head of an impoverished DP (determiner phrase) and originate as internal complements of the VP (verb phrase). As this head carries a strong accusative feature, it requires syntactic checking, thus triggering a complex movement operation (see, for instance, [Belletti 1999](#) for a detailed syntactic analysis).³

Finally, clitics have a special status from a pragmatic perspective, as they can be used felicitously only to refer to a salient antecedent, which has already been introduced in the discourse ([Ariel 1994](#)). It is worth noticing that only a sentence containing a clitic, as in (1), is an appropriate answer to a question like the one in (3). A response containing the full DP in place of the clitic, as in (4), is pragmatically infelicitous, although it is grammatical.

3. Cosa fa il nonno alla bambina?
 ‘What does the grandfather do to the girl?’
4. Segue la bambina
pro follows the girl
 ‘He follows the girl.’

With compound tenses, like the Italian “*passato prossimo*”, the past participle must agree with the clitic for both the number and gender, as in (5). Contracted forms like the one reported in (6) are very common in Italian with the singular clitics, both masculine and feminine, whereas they are not allowed with plural clitics, as shown by the ungrammaticality of (7).

¹ The pronominal system of Italian comprises three classes of pronouns, including strong pronouns, weak pronouns and clitics ([Cardinaletti and Starke 1999](#)). Italian clitics can be classified as accusative, dative, genitive, partitive, locative or nominative. This paper focuses only on accusative or Direct Object (DO) clitics (clitics henceforth) which constitute the topic of our study.

² For the glosses, we adopted the following abbreviations: CL: clitic; IndCL: indirect clitic; PP: past participle; FEM: feminine; M: masculine; SG: singular; PL: plural; *pro*: null pronominal subject.

³ In contrast with the movement analysis of clitics, the base generation account proposes that clitics are directly generated in the preverbal position (see [Borer 1986](#) for a survey and references).

5.	Il nonno	la	ha	seguita
	The grandfather	CL _{3SG.FEM}	has	follow _{PP.3SG.FEM}
	'The grandfather has followed her.'			
6.	Il nonno	l'	ha	seguita
	The grandfather	CL _{3SG.FEM}	has	follow _{PP.3SG.FEM}
	'The grandfather has followed her.'			
7.	*Il nonno	l'	ha	seguite
	The grandfather	CL _{3PL.FEM}	has	follow _{PP.3PL.FEM}
	'The grandfather has followed them.'			

The presence of these different levels of complexity explains why the proper mastery of clitics is particularly demanding, especially from an acquisitional perspective. Indeed, clitics are normally acquired later than the other pronouns; typically developing monolingual children generally start to produce clitics around the age of two, but they can variably be omitted, especially in spontaneous speech. This optional stage of clitic omission, which is reported also in other languages (see [Costa and Lobo 2007](#) for European Portuguese, [Wexler et al. 2004](#) for Catalan, and [Pérez-Leroux et al. 2018](#) for French) is normally over at the age of 3–4 years old, with constant improvements as children grow up ([Leonini 2006](#); [Tedeschi 2009](#)). Moreover, when children produce (pro)clitics, they correctly place them before the verb, in an adultlike fashion. Substitution errors, where the clitic is wrongly inflected for number or gender, are instead occasionally observed until the age of 3–4 years old ([Guasti 1993/1994](#); [Caprin and Guasti 2009](#); [Moscati and Tedeschi 2009](#)).

Finally, agreement errors between the clitic and the past participle are generally not observed, even from the youngest age, suggesting that the syntactic complexity of the movement operations implied in clitic derivation are not significantly affected by agreement ([Belletti and Guasti 2015](#); but see [Pirvulescu and Belzil 2008](#) for a study on clitics and past participle agreement in French, where it is shown that three-year-old children do not mark past participle agreement at all).

1.2. The Production of Clitic Pronouns: Children with Specific Language Impairment

For the purposes of this paper, it can be useful to mention how children with Specific Language Impairment (SLI) typically perform in clitic production. Specific language impairment is a neurodevelopmental genetic disorder that affects approximately 7% of preschool children and is characterized by language abilities that are below age expectations, despite normal cognitive abilities and the absence of physical and neurological deficits ([Leonard 2014](#)). Children with SLI display indeed a considerable delay in their linguistic competence, affecting, in particular, the phonological, lexical, and morphosyntactic domain.

The production of clitic pronouns in languages endowed with a clitic pronominal system is one of the areas that are crosslinguistically reported as vulnerable in SLI ([Tsimpli et al. 2017](#)). In Italian, for instance, the period of optional use of the clitic is more prolonged than in typically developing children and can persist even at age 6 ([Bortolini et al. 2006](#); [Bortolini et al. 2002](#); [Leonard and Dispaldro 2013](#)). Although this stage is generally over at 7 years of age, difficulties are found in school-aged children, who still tend to avoid the clitic and replace it with a full DP, an option which is grammatical but not appropriate from the pragmatic point of view ([Arosio et al. 2014](#)).

Clitic production is therefore considered a good clinical marker for SLI in Italian, with high degrees of sensitivity and specificity ([Bortolini et al. 2006](#); [Arosio et al. 2014](#)).

Beyond Italian, difficulties with clitics in SLI have been found in other languages, including Greek ([Chondrogianni et al. 2015](#)), Romanian ([Avram et al. 2013](#)), Spanish ([Bedore and Leonard 2001](#)), and French ([Hamann et al. 1996](#)), among others.

1.3. The Acquisition of Clitics in Early L2 and Bilingual Children

Given its complexity, the acquisition of clitics is expected to be one of the areas in which early second language learners (EL2) should display difficulties, especially if their competence in the L2 is still not mature. Indeed, it has been reported that object clitic constructions are particularly hard to master for EL2 individuals across different languages (Tsimpli and Mastropavlou 2008). Deficits are reported both in simultaneous bilinguals (Karpava 2017) and in sequential bilinguals (Chondrogianni et al. 2015).

In Italian, difficulties with clitics have been reported by Guasti et al. (2013), who found that preschool children with Arabic as an L1 and who were acquiring Italian as an L2 were more impaired in clitic production than their monolingual peers, uttering more often a full DP in place of the pronoun.

More recently, (Vender et al. 2016) administered a clitic elicitation task to 120 preschool EL2 children that were exposed to Italian as their L2 (3.5 years in average) and were speaking Albanian, Arabic, or Romanian as their first language, and compared their performance to that of 40 monolingual Italian children. The authors aimed not only to compare monolingual and EL2 children in clitic production, but also to evaluate the role of exposure to Italian, as well as competence in the L2, as predictors of the performance in the task. Precise information about the subjects' exposure to Italian was collected by means of a questionnaire gathering data concerning the participants' age of first exposure to Italian, quantity of exposure, and traditional and cumulative length of exposure (TLE, CLE).⁴ In addition, children's competence in Italian was assessed by means of a receptive vocabulary task (PPVT-R) and a comprehension task (Comprendo; Cecchetto et al. 2012).

The results indicated that EL2 children, similarly to monolingual children with SLI and consistently with what has been reported by the previous studies discussed above, had difficulties in clitic production, uttering a wrong clitic instead of the correct one more often than monolinguals, with a prevalence of gender over number errors. Interestingly, no effect of a transfer from the L1 to the L2 was reported (see Grüter and Crago 2012 for a detailed discussion concerning transfer from the L1 in clitic production). Conversely, the role of exposure and competence in Italian (including both vocabulary and comprehension) was crucial in predicting performance. The production of target clitics was indeed significantly correlated with the amount of exposure to Italian, as well as with competence in Italian, thus suggesting that children having a higher (i.e., in quantity) and longer (i.e., in time) exposure and a better competence in Italian performed more accurately than the children being less exposed and less competent in their L2.

These results have two important implications, concerning on the one side the issue related to the identification of SLI in EL2 children, and on the other side, the development of linguistic competence in the L2, especially in relation to exposure factors.

The first aspect regards the identification of language disorders in EL2 children, which is one of the most important challenges raised by bilingualism, especially in a multilingual society where EL2 learners have been growing in number due to a consistent increase in migration fluxes over the last decades. As anticipated above, bilingual children typically perform more poorly than monolinguals in specific domains, displaying difficulties both at the syntactic and at the morphosyntactic level, which, crucially, are significantly compromised in SLI too. As a consequence, it can be very difficult to correctly interpret the linguistic difficulties of EL2 and bilingual children and to ascertain if they are due to the presence of a real impairment or more simply to a still immature linguistic competence. The absence of diagnostic tools that are standardized for the identification of SLI in bilinguals further complicates the situation, often leading to over-diagnoses or under-diagnoses of the impairment (Vender et al. 2014).

⁴ Traditional length of exposure is calculated as the child's chronological age minus their age at first exposure to the L2, whereas CLE is a composite measure that considers other variables to determine the actual exposure to the L2 over time (amount of language spoken to and by the child with parents and siblings, at school, during holidays, etc., see Unsworth et al. 2012).

For this reason, research has focused on the study of clinical markers of SLI, in order to verify if they can be reliably used also with EL2 and bilingual children. In this sense, the results put forward by [Vender et al. \(2016\)](#) suggest that monolingual and EL2 children's profiles in clitic production differ in quantitative and qualitative terms. Although EL2 children underperformed the monolinguals, producing a lower number of clitics, they did not omit the pronoun (which constitutes the typical behavior of SLI children), but produced an incorrect (wrongly inflected) clitic instead.

On the other side, if [Vender et al.'s \(2016\)](#) study emphasizes the relationship between performance and competence/exposure to Italian, it also elicits the reasonable prediction that difficulties with clitic production should diminish and possibly disappear once a sufficient degree of exposure and competence in Italian is reached by the children. If this prediction were borne out, the result would be particularly welcome in the light of identifying SLI in older children, since, as discussed above, difficulties with clitics are also found in school-aged children with SLI.

With the aim of verifying this prediction, we developed a study aiming to test the clitic production in two groups of typically developing children, namely: a group of monolingual Italian children and a group of bilingual children with long exposure and good competence in L2 Italian.

2. Materials and Methods

2.1. Participants

The experimental protocol was administered to 64 children divided into two groups, 33 monolingual Italian children (mean age 10;0 years old, standard deviation, $SD = 1.0$) and 31 bilingual children with Italian as their L2 (mean age 10;2 years old, $SD = 1.3$). An independent-sample t-test revealed that there were no significant differences in the age of the subjects ($t(62) = 0.563$, $p = 0.576$).

Both monolingual and bilingual children were recruited in the same public schools in the area of Trento and Verona (Northern Italy), and they had neither diagnosed nor referred cognitive deficits, nor language problems, hearing disorders, nor reading difficulties. Moreover, all children had normal or corrected-to-normal vision. The study was approved by the local ethics committee and conducted in accordance with the standards specified in the 2013 Declaration of Helsinki.

Concerning bilingual children, all participants had Italian as their L2 and spoke another language at home; their first languages were Romanian (10 children), Arabic (8 children), Albanian (4), Indian (2), Spanish (1), Ghanaian (1), Nigerian (1), Moldovan (1), Serbian (1), Polish (1), and Macedonian (1). In order to gain a precise knowledge about the bilingual children's exposure to their L1 and to Italian, we administered a questionnaire, the bilingual language exposure questionnaire, which was developed on the basis of the Italian adaptation of the Utrecht Bilingual Language Exposure Calculator ([Unsworth et al. 2012](#); see [Vender et al. 2016](#) for a study deploying the Italian version of the questionnaire). The questionnaire was filled in by parents to collect data concerning the bilinguals' age of first exposure (AFE) to Italian; their current quantity of exposure (QE) to the L2 and their length of exposure, including both TLE and CLE

In our sample, we included only bilingual children who used their home language on a daily basis and were exposed to Italian as a second language before the age of 5 (17 of the children were actually first exposed to their L2 before the age of 3). Moreover, as a cutoff, we included only bilinguals with at least 5 years of exposure to Italian and 3 years of scholastic attendance in Italy; the traditional length of exposure is on average 7.96. In terms of percentage, children were currently more exposed to Italian than to their L1 (the average percentage of exposure to the L2 is 64%), which is related to the fact that all of the children attended the school in Italy, with Italian as a vehicular language, for 8 hours a day, 5 days a week.

The relevant data are reported in [Table 1](#).

Table 1. Mean and standard deviation (SD) of the exposure factors to Italian of the bilingual children.

	Mean	Standard Deviation
Age of first exposure (in years)	2.24	1.82
Quantity of exposure (in percentage)	0.64	0.10
Traditional length of exposure (in years)	7.96	1.98
Cumulative length of exposure (in years)	2.33	0.70

As for the socioeconomic status (SES) of the participants, we considered parental education, as follows: parents were asked to provide information concerning their educational level and we assigned one point for primary education (i.e., primary school and middle school), two points for secondary education (i.e., high school), and three points for higher education (i.e., university). The individual SES of the children was calculated using the average of the two parents' levels of education. An independent sample t-test was carried out on these data revealing that there were no significant differences in the SES of the subjects ($t(62) = 1.429, p = 0.158$).

2.2. Materials

All of the children were administered a set of preliminary tasks in order to ensure cognitive comparability and to have a more precise picture of their reading abilities and linguistic competence. Subsequently, children were administered the clitic production task. Each child was individually tested in a quiet room by the first author, and each testing session lasted approximately 45 min. A description of the materials that were used follows below. As for the coding procedure, all tests were coded twice by the first and the last author, and the few disagreements in the coding were resolved after a discussion between the coders. Measures of interrater reliability have been provided for each of the tasks administered.

2.2.1. Preliminary Tasks

Nonverbal intelligence

To assure that all subjects had a normal cognitive level, we administered the Raven's Colored Progressive Matrices test (Raven et al. 1998). This task is designed to assess the subject's nonverbal visuo-spatial reasoning. The child is asked to complete a set of 36 matrices of geometric figures, each presented with one entry missing, by selecting the correct entry from a set of six answer choices. Results were calculated as standard scores based on the Italian standardization (Belacchi et al. 2008).

Reading abilities

In order to exclude the presence of reading disorders or learning disabilities, all children had to score within the normal range for their age/class of education in accuracy and fluency in reading. We tested both word and nonword reading, administering the Prova di lettura di parole e di nonparole included in the *Batteria per la Valutazione della Dislessia e della Disortografia Evolutiva* (DDE-2, Sartori et al. 2007, tasks 2 and 3) and text reading, using the *Prove di Lettura MT per la Scuola Elementare-2* (Cornoldi and Colpo 1998), which are standardized for children attending the primary school, and the *Nuove prove di lettura MT per la Scuola Media Inferiore* (Cornoldi and Colpo 1995), which are standardized for children attending the junior secondary school.

Receptive Vocabulary

To have a standardized measure for the subjects' lexical abilities, we administered the Peabody Picture Vocabulary Test by Dunn and Dunn (2000), adopting the Italian standardization by Stella et al. (2000). PPVT-R is a picture-selection task in which the child is asked to point to a picture out of an array of four corresponding to a word uttered by the experimenter.

Phonological Awareness

To have a measure of the subjects' phonological awareness we administered a task assessing nonword repetition, since the ability to repeat invented words is considered one of the most sensitive measures of phonological awareness allowing to assess the subject's phonological ability independently of lexical factors, as it happens with real word repetition tasks. Our nonword repetition task consisted of 40 items of increasing complexity ranging from two to five syllables in length: 10 disyllable, 10 trisyllable, 10 four-syllable and 10 five-syllable nonwords (whereby nonword lengths are representative of Italian lexicon). The stimuli of each block were made up to have the same syllable structures and the same number of phonemes, in order to guarantee homogeneity. The list of nonwords was carefully designed in compliance with the phonotactic rules of Italian, assembling both high and low frequency type syllables taken from a database on Italian syllable frequency (Stella and Job 2001). As recommended by Dollaghan and Campbell (1998), no consonants or vowels occurred more than once within each nonword, to assure that each of the phonemes constituting the nonword is recalled independently. Each nonword started with a consonant and ended with a vowel, following the typical pattern of Italian words. Primary stress was always assigned to the penultimate syllable, which is the most common stress pattern in Italian. Finally, none of the stimuli corresponded to an existing Italian lexical word, to avoid any influence of the participant's vocabulary.

The forty nonwords were preceded by two training items to let the children familiarize with the task. Subjects could hear the nonword only once; their responses were audio-recorded and separately analyzed by the two coders. Each phoneme was scored "correct" or "incorrect" in relation to its target phoneme; 1 point is assigned for each correctly repeated phoneme, and 0 points are assigned for mistakes. Phoneme substitution, omission or addition were considered errors. The interrater reliability was 96.5%.

Morphological Competence

To provide a measure of the subjects' morphological competence we administered a nonword pluralization task developed on the basis of Berko (1958) Wug Test and adapted to the more complex context of Italian. In our task, children were asked to provide the plural of invented words, modeled after the phonotactic structures of Italian, divided in five conditions which corresponded to distinct declension classes of noun pluralization in Italian and entailing different levels of complexity (see Vender et al. 2017 for a more detailed description of the task and Vender et al. 2018 and Melloni et al. (2017) for two studies on bilinguals). In a typical example, the child was presented with the picture of an invented character and was told: *Questa è la muva* ('This is the *muva*': the experimenter points to the picture of the invented character). *Adesso ce ne sono due* ('Now we have two of them': the experimenter points to the picture of two identical characters). *Queste sono . . .* ('These are . . .': pause for the child to complete the sentence). The child's task was to complete the sentence with the relevant plural form (target: *le muve*). The task comprised 15 items; 1 point was attributed to each correct inflection, whereas no points were attributed to incorrect pluralizations. The interrater reliability between the first and the last author was 99%.

Working Memory

We administered two tasks to assess the subjects' working memory (WM) abilities: a Forward Digit Span Task (FDS) and a Backward Digit Span Task (BDS), both taken from the *Working Memory Test Battery for Children* (Pickering and Gathercole 2001) and adapted to Italian (Vender 2017). The FDS involved the spoken presentation of sequences of digits: the experimenter uttered a sequence of digits of increasing length (starting from only one digit) and the child was asked to repeat the digits exactly in the same order as they were presented. All digits were uttered in even monotone at the rate of 1 per second. Each block was composed by 6 items; when the first four trials of one block were correctly recalled, the fifth and the sixth trials were omitted and the child was presented with

trials of the subsequent block. Testing stopped when the child committed three errors within the same block. As for the scoring system, we assigned 1 point for each item correctly recalled, including the omitted trials, and no points were given for wrong repetitions. Since it involves the recall of verbal material, this task taps the Phonological Loop in Baddeley's Working Memory Model (Baddeley 1986; Baddeley 2000). In the BDS, the experimenter uttered a sequence of digits of increasing length (from a minimum of 2 to a maximum of 7) and the child had to recall the digits in the reverse order, starting from the last digit heard and ending with the first. This test involves the simultaneous execution of two tasks: the subject has to store and recall the sequence of digits in forward order, as the experimenter presented it, and then he has to manipulate it in order to reproduce the sequence in backward order. As a consequence, this task taps not only the Phonological Loop but also the Central Executive of Baddeley's WM model. The administration of the task and the scoring system were the same as for the FDS task. The inter-rater reliability between the first and the last author was 100%.

2.2.2. Clitic Elicitation Task

Production of accusative clitic pronouns has been examined by means of an elicitation task, whose design was very similar to the one in Vender et al. (2016), as will be discussed below. In both tasks, the child was shown some pictures displayed on a computer screen and told a short story that always involved one character doing something to one or two other characters. When the first picture appeared, the characters of the story were introduced to the subject. When the second picture appeared, the child was told that one character wanted to perform an action addressed to the other/s. After being shown the third picture, in which the character performed the action, the child was asked to answer a question about what the character did, which was intended to elicit the clitic pronoun.

Descriptions were digitally recorded by a feminine Italian native speaker and played through loudspeakers connected to the PC. Pragmatic felicity was achieved by inserting all elicited utterances in a supportive context. A sample trial is reported below, as follows:

Experimenter: *In questa storia ci sono un nonno e una bambina. La bambina esce di casa e il nonno non sa dove va. Il nonno vuole seguire la bambina. Cosa fa il nonno alla bambina?* ('In this story there are a grandfather and a girl. The girl is leaving home and the grandfather doesn't know where she is going. The grandfather wants to follow the girl. What does the grandfather do to the girl?')

Target answer: *La segue.* ('He follows her.')

We elicited 32 sentences, each containing one of the four Italian DO third-person clitics, *la* (feminine singular), *lo* (masculine singular), *le* (feminine plural), and *li* (masculine plural). Two sentence types were used; half of the sentences are in the simple present (Italian "presente") and half in the present perfect (Italian "passato prossimo"), where the past participle has to agree in number and gender with the clitic. All verbs used in the task were obligatorily transitive, regular, and highly frequent, in order to avoid possible lexical retrieval difficulties for the bilingual children: *lavare* 'to wash', *salutare* 'to greet', *abbracciare* 'to hug', *accarezzare* 'to caress', *asciugare* 'to dry', *aiutare* 'to help', *spiare* 'to peek at', *vestire* 'dress up', *seguire* 'to follow', *bagnare* 'to drench', *tirare* 'to pull', *pettinare* 'to comb', *sgridare* 'to scold', *catturare* 'to catch', *spaventare* 'to frighten' and *chiamare* 'to call'. As emphasized above, all these verbs have a regular past participle form in Italian. In total, there were four items for each of the four clitics in the simple present; the same in the present perfect.

In order to make the protocol as simple as possible, the characters involved in the stories were well known and highly stereotyped figures recurring throughout the task: four agents performing the different actions (a mother, a father, a grandmother, and a grandfather) and eight patients undergoing the actions (a little boy, a little girl, a boy, a girl, two little boys, two little girls, two boys, and two girls). Moreover, female agents were always paired with male patients and vice versa.

The 32 experimental trials were randomly ordered. The task was preceded by a familiarization section consisting of six training items; in the first and in the second training item, the child was told

that a puppet would answer the questions and that she had to pay attention and do the same with the remaining items. In the following four training items, the child was invited to answer the question; if she didn't produce a clitic pronoun, she was invited to do so by the experimenter. Conversely, no feedback was given in the experimental items.

The experimental trials were intertwined with eight trials eliciting the production of the third person singular reflexive clitic pronoun *si* 'itself'; half sentences elicited an utterance in the simple present and half in the present perfect, and they involved the same characters and actions as the experimental trials eliciting the DO clitic. The verbs used were taken from the list of the 16 verbs used throughout the experiment, which allow a reflexive construction in Italian *asciugarsi* 'to dry oneself', *lavarsi* 'to wash oneself', *vestirsi* 'to dress oneself', and *pettinarsi* 'to comb oneself'. An example is provided below, as follows:

Experimenter: *Qui ci sono un bambino e una mamma. Il bambino si è sporcato e la mamma è arrabbiata. Il bambino vuole lavarsi. Cosa fa il bambino?* ('In this story there are a little boy and a mother. The little boy is dirty and the mother is upset. The little boy wants to wash himself. What does the little boy do?')

Target answer: *Si lava.* ('He washes himself.')

The design was the same used in Vender et al. (2016), in which all four clitics were tested, but only with 12 items and limited to the simple present condition. Moreover, the verbs used were in part different, including *baciare* 'to kiss' and *rincorrere* 'to chase', in addition to *lavare* 'to wash', *seguire* 'to follow', *tirare* 'to pull', and *pettinare* 'to comb', which were used also in the present study.

As for the coding procedure, the children's responses were classified in different categories on the basis of the tense used in the sentence. In the simple present, following Vender et al. (2016), the subjects' responses were coded in six categories. We classified Target as the sentences containing the correctly inflected clitic (e.g., *La segue* 'pro CL_{3SG.FEM} follows'), whereas we classified under Gender/Number Error the sentences containing a clitic wrongly inflected either for gender or number or for both gender and number (e.g., *Lo segue* 'pro CL_{3SG.M} follows', where the clitic is wrongly inflected for gender; *Le segue* 'pro CL_{3PL.FEM} follows', where the clitic is wrongly inflected for number; *Li segue* 'pro CL_{3PL.M} follows', where the clitic is wrongly inflected for both gender and number). Ungrammatical sentences in which the clitic was not produced were considered Omissions (e.g., **Segue* 'pro follows__'), whereas sentences with a full DP replacing the clitic, which are grammatical but pragmatically infelicitous, were classified as Full DP (e.g., *Segue la bambina* 'pro follows the girl'). We further classified as Indirect Clitic grammatical sentences containing a dative clitic instead of the accusative (*Le va dietro* 'pro IndCL_{3SG.FEM} goes after'). Finally, other utterances not fitting in any of the previous categories were coded as Other (e.g., *È preoccupato* 'pro is worried').

In the present perfect, instead, responses were coded in nine categories. As in the simple present, there were Target (e.g., *La ha seguita/L'ha seguita* 'pro CL_{3SG.FEM} has followed')⁵, Gender/Number Error (e.g., *Lo ha seguito/L'ha seguito* 'pro CL_{3SG.M} has followed'), Omission (e.g., **Ha seguito* 'pro has followed__'), Full DP (e.g., *Ha seguito la bambina* 'pro has followed the girl'), Indirect Clitic (e.g., *Le è andato dietro* 'pro IndCL_{3SG.FEM} went after'), and Other (e.g., *Era preoccupato* 'pro was worried'). Furthermore, we included three additional categories. Firstly, we labeled as Non-Target PP the responses where the subject uttered a contracted form of the clitic with a Non-Target PP (e.g., *L'ha seguito* 'pro CL_{3SG.M/FEM} has followed_{SG.M}'); in this case, it is not possible to determine whether the clitic was wrong and agreed with the PP, or whether the clitic was correct and the PP was wrongly inflected. We further classified Wrong Contraction as the sentences containing a contraction of the plural clitic, which is ungrammatical in Italian (e.g., **L'ha seguite* 'pro CL_{3PL.FEM} has followed_{PL.FEM}')

⁵ As discussed above, contracted forms like *L'ha seguita* are widely used in Italian with singular clitics, both masculine and feminine, and therefore we accepted them as target productions.

and Agreement Error as sentences with the correct clitic but a wrongly inflected PP (e.g., **La ha seguito pro* CL_{3SG.FEM} has followed_{SG.M}'). The interrater reliability was 100%.

2.3. Research Questions and Predictions

The main aim of our research, comparing the performance of monolingual and bilingual children in a clitic production task, was to verify the prediction put forward by Vender et al. (2016) about the effects of exposure and competence in the L2 on performance. As our children had a longer exposure to Italian than those in Vender et al. (2016), including at least three years of school attendance in Italy, we expected them to perform similarly to the monolingual children, reporting significantly reduced or no difficulties with clitic production, contrary to what is commonly found with children with a lower exposure. This could be particularly important for the identification of language disorders in bilingual children, given that, as discussed above, clitic production is a reliable clinical marker for SLI in Italian.

Furthermore, we aimed at assessing the impact of the other factors, including exposure and competence in Italian vocabulary, phonological awareness, morphological competence, and working memory, on the children’s performance in the clitic elicitation task.

3. Results

3.1. Preliminary Measures

The results of the preliminary measures (means and standard deviations), including the Raven, the reading tests, the phonological and morphological tests, and the working memory tests, are reported in Table 2.

Table 2. Number, mean (SD) age in years, means (SDs) of z scores on the Raven, on the speed and accuracy of reading words, pseudo-word and text, mean (SDs) of raw scores of the PPVT-R, of the nonword repetition task, on the morphological competence task (nonword pluralization), and on the working memory (WM) tasks (forward and backward digit span tasks).

	Monolingual Children	Bilingual Children
No.	33	31
Age	10.0 (1.0)	10.2 (1.3)
Raven	0.47 (0.79)	0.19 (0.82)
PPVT-R	102.70 (20.59)	95.94 (13.30)
Word speed	0.30 (0.64)	0.25 (0.80)
Word accuracy	0.31 (0.85)	0.03 (0.94)
Pseudo-words speed	0.31 (0.62)	0.63 (0.68)
Pseudo-words accuracy	0.17 (0.82)	0.32 (0.78)
Text speed	0.25 (0.38)	0.14 (0.46)
Text accuracy	0.48 (0.70)	0.26 (0.45)
Nonword repetition	0.94 (0.03)	0.92 (0.95)
Morphological competence	0.71 (0.16)	0.74 (0.20)
Forward digit span	29.12 (4.76)	28.33 (4.22)
Backward digit span	13.09 (4.11)	13.87 (4.69)

A series of independent-sample t-tests were carried out showing that the two groups did not differ for their nonverbal cognitive level measured by the Raven task ($t(62) = 1.367, p = 0.177$) nor for their language proficiency assessed by the PPVT-R ($t(62) = 1.549, p = 0.126$), indicating that the subject groups had comparable cognitive level and language proficiency, as far as the receptive vocabulary concerns, thus confirming that bilingual children’s competence in Italian was good. No differences amongst the two groups were found concerning reading abilities, including speed in word reading ($t(62) = 0.263, p = 0.793$), accuracy in word reading ($t(62) = 1.272, p = 0.208$), speed in nonword reading ($t(62) = 1.943, p = 0.057$), accuracy in nonword reading ($t(62) = 0.737, p = 0.464$), speed in text reading ($t(62) = 0.986, p = 0.328$), and accuracy in text reading ($t(62) = 1.423, p = 0.160$)

Monolinguals and bilinguals performed similarly in the nonword repetition task ($t(62) = 1.413$, $p = 0.164$) and in nonword pluralization ($t(62) = 0.671$, $p = 0.505$), indicating that they had comparable phonological and morphological competence in Italian. Finally, no significant differences were found in the two working memory tasks, the forward digit span ($t(62) = 0.692$, $p = 0.492$) and the backward digit span ($t(62) = 0.699$, $p = 0.487$), suggesting that bilinguals' verbal working memory was similar to that of monolinguals.

3.2. Clitic Elicitation Task

As discussed above, we coded responses in the clitic elicitation task in six categories for the simple present and nine for the present perfect. Means and standard deviations in each of these categories are reported in Table 3.

Table 3. Mean (and SDs) of responses in the clitic production task for each group.

	Monolingual Children	Bilingual Children
Simple present		
Target	0.95 (0.14)	0.94 (0.13)
Gender/number error	0.00 (0.01)	0.01 (0.03)
Omission	0.01 (0.02)	0.01 (0.03)
Full DP	0.04 (0.12)	0.02 (0.05)
Indirect clitic	0.00 (0.01)	0.00 (0.00)
Other	0.00 (0.01)	0.02 (0.09)
Present Perfect		
Target	0.94 (0.13)	0.92 (0.13)
Gender/number error	0.00 (0.00)	0.00 (0.01)
Omission	0.00 (0.01)	0.02 (0.09)
Full DP	0.04 (0.09)	0.02 (0.03)
Indirect clitic	0.00 (0.01)	0.00 (0.01)
Other	0.01 (0.03)	0.01 (0.03)
Non-target PP	0.00 (0.01)	0.01 (0.03)
Wrong contraction	0.00 (0.01)	0.00 (0.01)
Agreement error	0.01 (0.02)	0.02 (0.04)

DP: Determiner Phrase; PP: past participle.

Data show that the two groups displayed a ceiling and similarly accurate performance in the production of clitic pronouns, both in the simple present and in the present perfect. A series of independent-sample t-tests confirmed that the two groups performed similarly in the present; no differences were found concerning the percentage of target structures (e.g., *La segue*) between the two groups ($t(62) = 0.671$, $p = 0.505$). Errors were very infrequent both for monolinguals and bilinguals, without differences in Gender/Number Errors ($t(62) = 1.505$, $p = 0.141$), Omissions ($t(62) = 0.950$, $p = 0.346$), Full DPs ($t(62) = 0.587$, $p = 0.559$), Indirect Clitics ($t(62) = 0.969$, $p = 0.336$), and Other ($t(62) = 1.135$, $p = 0.261$).

No differences were found in the present perfect, in which the two groups produced a similar rate of Target structures ($t(62) = 0.796$, $p = 0.492$). Again, errors were very rare and comparable amongst groups: no differences were found in Gender/Number Errors ($t(62) = 1.485$, $p = 0.161$), Wrong Contractions ($t(62) = 1.091$, $p = 0.288$), Non-Target PPs ($t(62) = 0.794$, $p = 0.430$), Agreement Errors ($t(62) = 1.369$, $p = 0.178$), Omissions ($t(62) = 0.904$, $p = 0.369$), Full DPs ($t(62) = 0.898$, $p = 0.363$), Indirect Clitics ($t(62) = 0.044$, $p = 0.965$), and Other ($t(62) = 0.586$, $p = 0.765$).

After having established that the two groups performed similarly in clitic production, we ran a Pearson correlations test on all the data (considering both monolinguals and bilinguals) to analyze how performance in the task, considering both target structures and errors, was related to the preliminary measures, including phonological awareness (nonword repetition), working memory (forward and

backward digit span), morphological competence (nonword pluralization), nonverbal intelligence (Raven task), and receptive vocabulary (PPVT-R).

Firstly, we found that phonological awareness was positively correlated to the production of target clitics in both the present ($r = 0.346, p < 0.01$) and in the present perfect ($r = 0.398, p < 0.001$); it was negatively correlated with Gender/Number Errors, both in the present ($r = -0.359, p < 0.01$) and in the present perfect ($r = -0.317, p < 0.01$), with Omissions both in the present ($r = -0.264, p < 0.05$) and in the present perfect ($r = -0.318, p < 0.05$), and with Other both in the present ($r = -0.270, p < 0.05$) and in the present perfect ($r = -0.263, p < 0.05$). Moreover, it was negatively correlated with Agreement Errors ($r = -0.300, p < 0.05$).

As for WM, we found that both the FDS and the BDS tasks were positively correlated with Target structures in the present perfect ($r = 0.286, p < 0.05$) and ($r = 0.293, p < 0.05$), respectively, whereas FDS was negatively correlated with Gender/Number Errors in the present perfect ($r = -0.274, p < 0.01$).

Performance in the morphological task was negatively correlated with Wrong Contractions ($r = -0.345, p < 0.01$). Considering nonverbal intelligence, instead, we found only a negative correlation with the production of Full DPs, both in the present ($r = -0.261, p < 0.01$) and in the present perfect ($r = -0.249, p < 0.05$). Finally, no correlations were found with the receptive vocabulary.

Summarizing, the production of target clitics is related to phonological awareness and working memory skills (as for the present perfect), confirming the importance of both variables in clitic production. More particularly, if phonological awareness has a central importance in both conditions, the role of WM emerges only in the most difficult one, in which more resources are required for the production of the target structure.

Finally, as for the bilingual children, we carried out further analyses aimed to identify the potential correlations between clitic production and the L2 exposure measures collected through the questionnaire (i.e., age of first exposure, quantity of exposure, and cumulative and traditional length of exposure) and we found only a significant correlation between age of first exposure and other structures in the present ($r = 0.381, p < 0.05$).

4. Discussion

The main goal of this study was to compare the performance of bilingual and monolingual typically developing children in a clitic elicitation task. As discussed throughout this paper, the production of clitic pronouns is a demanding task, especially for (monolingual) language impaired children, and it is thus identified as a good clinical marker for SLI in Italian. Nevertheless, EL2 children still acquiring their second language are also reported to display deficits in this test, which makes the identification of language disorders in EL2 children an especially delicate matter.

In order to verify if an increased amount of exposure to the L2 positively affects the performance in clitic production, we examined the skills of a group of 10 year old bilinguals, with almost eight years of average exposure to Italian and at least three years of school attendance in Italy. The competence in Italian of the bilingual children who took part in this study was similar to that of their monolingual peers in each of the language levels tested, including receptive vocabulary (PPVT-R), phonological awareness (nonword repetition) and morphological awareness (nonword pluralization). Further, bilinguals scored as monolinguals in verbal working memory tasks (forward and backward digit span tasks). Interestingly, bilinguals performed similarly to monolinguals also in the clitic production task, both in the simple present, which is the easiest condition, and in the present perfect, in which gender/number agreement between the clitic and the past participle must be realized, increasing the processing costs of the whole task. Both groups of children showed indeed a ceiling performance, indicating that they had fully mastered the clitic production. Furthermore, errors were sporadic and qualitatively similar across the two groups.

This result confirms our prediction indicating that children with long exposure and good competence in L2 Italian are perfectly able to produce clitic pronouns, and thus suggesting that the difficulties reported in previous studies were not due to bilingualism per se, but, arguably, to exposure

factors. In other words, difficulties with clitics are expected to arise in children who have been exposed to their L2 only recently, and whose L2 competence is still developing. On the contrary, bilingual children with longer exposure and better competence in L2 Italian should master clitic production and behave as monolinguals in this respect.

This result has also important implications for what concerns the identification of language disorders in bilingual children. As discussed above, deficits in clitic production persist also in school-aged children with SLI, who tend to produce a much lower number of target structures than their peers, replacing the target pronoun with a Full DP. The fact that a bilingual child with a long exposure to Italian exhibits problems in producing the correct clitic can be interpreted as signaling the presence of a language impairment.

Of course, it is difficult to determine the exact amount of exposure required by a bilingual child to master clitic production, and further research would be needed to provide more precise indications. However, research suggests that three years of exposure might not be sufficient, given that in [Vender et al. \(2016\)](#)'s study, EL2 children with an average exposure of 3.5 years to Italian underperformed monolinguals, whereas our results indicate that children exposed on average by 8 years (range 4.69–11.97) display a monolingual-like performance. What is important to notice is that both studies underline the importance of evaluating exposure factors for a correct interpretation of the linguistic behavior of bilingual children; it would not be appropriate to administer a clitic elicitation task without considering at least the age of first exposure to the L2 and length of exposure. For instance, a nine-year-old child exposed to Italian for just two years cannot be expected to show a perfect mastery of clitic production and to perform similarly to an age-matched child with four years of exposure. Exposure factors appear to be even more significant for children with a lower exposure, as indicated by [Vender et al. \(2016\)](#), whereas they cease to play a predictive role as children reach a native-like performance in clitic production, as demonstrated by the absence of significant correlations between performance and exposure in the present study. Indeed, we only found a significant correlation between the age of first exposure and production of irrelevant sentences, indicating that children exposed later to Italian tend to exhibit more difficulties in coping with the task.

What seems to play a more preeminent role in determining performance are instead other aspects of (monolingual and bilingual) children's linguistic profile, as evidenced by the correlational analysis we ran, which revealed that phonological awareness, assessed by a nonword repetition task, and working memory skills, measured with a forward and a backward digit span task, correlate with performance in clitic production. Specifically, the production of target clitics is related to phonological awareness and working memory skills as for the present perfect, confirming the influence of both variables on clitic production. More particularly, if phonological awareness is fundamental in both conditions, the role of WM emerges only in the present perfect condition, whereby more processing resources are required for the production of the target structure ([Moscati and Rizzi 2014](#); [Pirvulescu and Belzil 2008](#)).⁶

Moreover, the results of the correlational analysis provided us with some clues in order to interpret the typology of errors committed by the children: subjects with a low phonological awareness are more prone to inflect the clitic in the wrong way, to omit it or to produce irrelevant structures, which are commonly seen as 'avoidance strategies' ([Vender et al. 2016](#)). Children with a low phonological memory (measured by the FDS) have more problems in producing the correct clitic in the present perfect, which is the most difficult condition. Children with a low morphological competence tend to commit more often wrong contractions, which are ungrammatical in Italian and depend on an illicit morpho-phonological operation. Finally, children with low nonverbal intelligence seem to be less

⁶ Focusing on the acquisition of different agreement configurations by Italian monolingual children, [Moscati and Rizzi \(2014, p. 79\)](#) analyse the derivational complexity of clitic/past participle agreement whereby agreement is checked through a movement chain spanning over two distinct phases, "thus plausibly engaging extra computational resources in terms of operative memory requirements".

sensitive to the pragmatic constraints that determine the infelicity of sentences containing the Full DP, instead of the clitic.

These results, highlighting the role played by phonological and, to some extent, by morphological competence, confirm that the difficulties in clitic production are related to their complexity at the phonological and morphological level. Moreover, the correlations with the FDS and the BDS scores seem to suggest that clitic production requires good WM skills, being an expensive task in terms of processing resources. This is in line with what was hypothesized by [Prévost \(2006\)](#), who proposed that the production of object clitics imposes a heavy load on the subject's processing abilities, related both to the projection of fully-fledged representations and to the non-canonical position occupied by clitics as a result of syntactic movement (see [Grüter and Crago 2012](#); [Mantione 2016](#)) for studies conducted with EL2 and dyslexic children, respectively, providing further support to Prevo's hypothesis and to the importance of WM factors in clitic production).

Finally, adopting a processing account for clitic production can also explain why EL2 children, as reported by the studies discussed above (Section 3.1), exhibit marked difficulties in this task, since processing is reported to be more costly in an L2, especially in the first stages of its acquisition ([Grüter and Crago 2012](#)).

5. Conclusions

The present study confirms the predictions in [Vender et al. \(2016\)](#) that the exposure factors to L2 Italian play a key role to achieve full mastery of clitic production, and that bilingual children with adequate exposure to L2 Italian overcome the difficulties attested at previous stages of L2 acquisition. This result is relevant not only for a better comprehension of the maturational stages leading to the full mastery of complex syntactic structures in L2 Italian, but also for the possible identification of language deficits in these bilingual children. As explained in the Introduction, the production of DO clitics is a clinical marker of SLI in Italian, and the difficulties found in children with SLI persist until school age, with impaired children avoiding clitic production mainly through full DP substitution. Our research reveals that school aged bilingual children with long exposure to the environment language show, on the contrary, a monolingual profile, matching their peers even in the most difficult condition (i.e., present perfect constructions requiring agreement between the clitic pronoun and the past participle form of the verb). This result, we believe, is especially relevant in the light of the growing need to correctly diagnose language impairments in multilingual societies, where children learning the environment language in schools or kindergartens run the risk of language impairment misdiagnosis. Specifically, as noted by [Paradis \(2005\)](#) and [Vender et al. \(2014\)](#), the lack of standardized tools for bilinguals opens the unwelcome scenario where SLI deficits are misdiagnosed in bilinguals still in the process of acquiring their second language, resulting in overdiagnosis or "mistaken identity". On the other hand, a second, more probable scenario is the one where language impairments are neglected by educators and attributed to incomplete mastery of the L2, resulting in underdiagnosis or "missed identity". In this light, identifying the linguistic profile of typically developing bilingual children with long exposure to the L2 is of crucial importance, and our results could lay the groundwork for the development of fine-grained diagnostic tools for SLI in school aged L2 Italian children.

Of course, this study represents only a preliminary step in this direction and suffers from some limitations. Firstly, the homogeneity of the bilingual group here considered is mined by the subjects' various L1s, which could affect their performance in the task, possibly due to L1 influence or transfer effects (it is worth noting, however, that the role of the L1 has been found to be irrelevant in previous studies). A future study could replicate the present one with bilingual subjects having the same L1 and, purposely, compare the profile of two groups of bilingual children, i.e., one group with a L1 having a pronominal clitic system close to Italian (e.g., Spanish) and another group with a L1 lacking a pronominal clitic system altogether (e.g., English), in order to more carefully evaluate the role of transfer effects in clitic production. Another limitation along these lines comes from the different ages of exposure of the subjects, a factor that, in principle, might be relevant for evaluating the acquisition of

clitics, since monolingual children master them very early and the difficulties in (sequential) bilinguals might be due to a late age of first exposure. Although the results of the correlation analysis in the present study point in a different direction, manifesting no correlation between the age of exposure and clitic production, it could be interesting to study clitic production in adults and compare their profile with that of children exposed to Italian L2 for an equal amount of time.

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