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The acquisition of object clitic pronouns in Heritage Romanian

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This paper examines the acquisition of object clitic pronouns in Heritage Romanian (HR) by school-age children in Toronto who are second-generation speakers of Romanian—i.e., children of first-generation immigrant parents. These children have been exposed to Romanian as their first language (L1) since birth within the home, while English has served as the societal language, primarily encountered outside the home. Additionally, they were enrolled in French immersion programs between the ages of 3 and 6. This study looks at both production and comprehension of preverbal object clitic pronouns. The findings demonstrate that HR exhibits similar patterns in the domain of object clitics as those observed in Romanian-dominant trilingual children, particularly regarding clitic omissions at specific developmental stages. Moreover, HR shares characteristics commonly identified in bilingual (heritage) language acquisition, such as gender errors. Overall, this study provides further evidence that both language use and literacy play a crucial role in shaping heritage language proficiency.

KEYWORDS

Heritage Romanian, clitic pronouns, trilingualism, language use, literacy

1 Introduction

Heritage language development shares both similarities and differences with the development of the same language as a dominant language. Typically, the first language that children are exposed to within the family context—known as the heritage language—is acquired through native (bilingual) language acquisition processes, particularly during the preschool years (for a comprehensive overview, see Montrul and Polinsky, 2019). At the same time, previous studies have shown that simultaneous heritage language speakers are more likely to exhibit divergent language development compared to dominant speakers of the same language or older bilingual children who had a longer period of monolingual exposure to their heritage language. This divergence becomes especially apparent once heritage language speakers enter the school system (Flores, 2010; Montrul, 2008; Montrul and Bateman, 2020). We define "dominant speakers of the same language" as those who learn the language as "the dominant language of the larger (national) society" (cf. Rothman, 2009, p. 156).

Individual differences, which can be classified as child-internal factors (e.g., exposure to multiple languages at different times) or child-external factors (e.g., language use and literacy), play a crucial role in the acquisition and maintenance of a heritage language (Paradis, 2023). For instance, the amount of heritage language use at home has been found to affect children's performance in various grammatical domains, including morphology and syntax (Flores et al., 2017; Paradis et al., 2021). Similarly, research indicates an interaction between literacy and heritage language development during the school years. For example, literacy has been shown to positively influence the robustness of morphosyntactic representations (Montrul and Armstrong, 2024) and the acquisition of

complex syntactic structures (Rinke and Flores, 2014; Torregrossa et al., 2022).

Certain grammatical domains, such as pronominal object clitics, are particularly sensitive to language experience and use. This has been demonstrated across different acquisition contexts, including monolingual, bilingual, and heritage language acquisition (see Pérez-Leroux et al., 2018, for monolingual and bilingual children; Rinke and Flores, 2014, for heritage speakers). Furthermore, the consolidation of native speaker linguistic competence in these domains occurs "substantially later than the age at which individual grammatical features are generally expected to become target-like (typically between ages 2 and 6)" (Steinkrauss and Schmid, 2016, p. 378). For example, in heritage German, bilingual speakers who returned to their parents' homeland, Portugal, after the age of 11 did not show significant deficits in verb placement but exhibited target-deviant omissions of pronominal objects (Flores, 2012, 2019). While the vulnerability of this domain has been well-documented in relation to fluctuations in input quantity, the impact of more specific aspects of language experience—such as children's choice of language use—as well as broader factors such as schooling and literacy, remains largely unexplored. Heritage language acquisition provides an ideal context for such an investigation, as heritage speakers vary in their exposure to formal schooling in the heritage language (i.e., exposure to the HL outside the home) as well as in their literacy skills in the heritage language.

This study examines the acquisition of object clitic pronouns by school-age children who are second-generation Romanian speakers (i.e., children of first-generation immigrant parents) growing up in Toronto. These children have been exposed to Romanian since birth in the home (as a first language, L1), making their variety of Romanian a heritage language (HR). In addition to Romanian, they have also been exposed to English as the societal language from birth and were enrolled in French immersion programs between the ages of 3 and 6.

The present investigation focuses on the production and comprehension of preverbal object clitic pronouns, as illustrated in the following example:

(1) *L-am citit*.
it.CL-have.1 read
"I/we read it."

Given that the parametric setting for clitic pronouns (as opposed to the absence of clitics) is established early in dominant Romanian (DR; Romanian acquired as the primary language of the broader society) (see, for example, Babyonyshev and Marin, 2005), one of the aims of this study is to determine whether the same parametric setting is established in HR.

Overall, this study investigates the similarities between the heritage and dominant variety of Romanian in the domain of pronominal object clitics while also investigating whether, in heritage language acquisition, target mastery of morphosyntax is facilitated by heritage language maintenance at home (language experience and use), engagement in heritage-language community (community schooling), and literacy.

2 Previous studies

2.1 Heritage language acquisition and maintenance during school years

Heritage speakers have fewer opportunities than language-dominant speakers for exposure to rich and varied societal contexts, including academic environments. As children reach school age and spend more time in educational settings, typically conducted in the societal language, their exposure to and use of the heritage language tends to decline, even in cases where both parents consistently maintain and speak it at home. Given the time required to consolidate native linguistic competence and the substantial reduction in heritage language input and use at a relatively early age, the transition to formal schooling appears to be a particularly critical period in heritage language acquisition (Armon-Lotem et al., 2020; Hoff et al., 2014). This raises an important question: what factors contribute to the successful acquisition and maintenance of a heritage language in school-aged children?

One of the most significant factors is the consistency and continuity of heritage language experience (Caloi and Torregrossa, 2021). Consistency, as defined by Caloi and Torregrossa, refers to "the same strategy of home language use over the years (from birth to current age)". Indeed, the extent to which the heritage language is used at home has been shown to impact children's performance in various grammatical domains, including morphology and syntax (Flores et al., 2017; Paradis et al., 2021; Paradis, 2023). While much research has focused on the positive effects of parents' language strategies, less is known about the influence of children's language preferences, particularly their choice of language when responding to parents (i.e., language output). Studies indicate that children exhibit more advanced proficiency in the language they actively produce. For instance, Bohman et al. (2010), examining Spanish-English bilingual kindergarteners in the U.S., found that language output played a crucial role in maintaining morphosyntactic skills in both languages. Similarly, Hammer et al. (2012) reported that bilingual children's language usage (Spanish and English) was the strongest predictor of expressive vocabulary and narrative recall. Ribot and Burridge (2018), drawing on the "language output hypothesis," further demonstrated a positive relationship between children's language output and expressive language skills. Over time, adolescents and young adults with greater use of the heritage language tend to exhibit higher proficiency levels (Albirini, 2014; Jia et al., 2014; see also Paradis, 2023, for discussion). While these studies have examined language output's role in broad linguistic domains—such as morphosyntax, vocabulary, and narrative abilities—further research is needed to determine its specific contribution to individual grammatical structures.

Continuity in language use between home and school represents another critical factor. This concept encompasses both expanding heritage language experiences beyond the home and recognizing the role of literacy (i.e., exposure to written language at school and at home) in language maintenance. Formal schooling in the heritage language enhances exposure to the language within the broader community, providing

opportunities for interaction with additional native speakers. Prior research has demonstrated that a rich and varied linguistic environment enhances heritage language skills. For example, studies on heritage Spanish have found that increased input variability leads to stronger language abilities (Place and Hoff, 2016; Gollan et al., 2015). In parallel, a growing body of evidence highlights the role of literacy in the development and maintenance of heritage language skills across different linguistic domains. Literacy has been shown to support both receptive and productive vocabulary acquisition, facilitate the learning of syntactic structures that are more common in written than in spoken language, and improve auditory sentence processing abilities (Armstrong and Montrul, 2022). More specifically, literacy enhances morphosyntactic representations (Armstrong, 2024) and fosters the acquisition of complex syntactic structures (Torregrossa et al., 2022; Dabrowska et al., 2022). It also contributes to vocabulary richness (Dabrowska, 2020). More broadly, according to the Literacy Enhancement Hypothesis (Montrul and Armstrong, 2024), exposure to written language reinforces both linguistic representations and processing mechanisms. Likewise, the Training Wheels Hypothesis (Dabrowska, 2020) suggests that literacy facilitates the acquisition and production of complex grammatical structures by enhancing processing efficiency and attentional control. As Dabrowska (2020, p. 83) states, "writing provides a processing crutch that enables speakers to produce more complex structures than they would otherwise be able to produce."

2.2 The acquisition of clitics

Heritage speakers are *early bilinguals* (Montrul, 2009, p. 161). As such, it is essential to understand the early acquisition of the studied domain across various contexts relevant to heritage language acquisition, including monolingual acquisition, simultaneous bilingualism, and early successive bilingualism. This section provides an overview of the similarities and differences in the acquisition and development of pronominal object clitics across these populations.

The realization of object clitics has been extensively studied in the L1 acquisition of Romance (Pérez-Leroux et al., 2018) and Slavic languages (Mykhaylyk and Sopata, 2016; Varlokosta et al., 2016). Across languages, a phase of omission has been identified, in which children produce only the transitive verb in referential contexts where an adult would typically use a pronominal (the production of DPs instead of pronominals in these contexts has also been observed). At the same time, there are substantial cross-linguistic differences in the resolution of omission—specifically, in the age at which children no longer omit clitics. For example, languages like French exhibit prolonged omission (cf. Pérez-Leroux et al., 2018), while languages such as Romanian see a much earlier subsidence of omission (cf. Babyonyshev and Marin, 2005).

Recent research on child monolingual Romanian (Avram et al., 2015) shows that accusative 3rd person clitics appear early in spontaneous production, even when the mean length of utterance (MLU) is below 2.0, and reach a production rate of 90% by age 3.0. In elicited production of 3rd person feminine accusative clitics (the only clitics tested, chosen for their position relative to the verb), young children (mean age = 44.9 months) supplied the clitic in 82.9% of cases, with an omission rate of 12.8% and very few DP responses. Agreement errors were minimal, and when they did occur, the accusative clitics displayed the phi-features of the clause subject. The authors also identified a lexical effect, noting that verbs like *read* and *drink* elicited a higher rate of clitic omissions. They attribute this pattern to the combined influence of the aspectual value of the predicate (atelic) and the verb's argument structure (the availability of a null prototypical object) on clitic use (see also Pérez-Leroux et al., 2018 for a detailed discussion of these factors).

Several studies on the acquisition of Romance clitics by simultaneous bilingual children show that these speakers experience a delay in clitic acquisition compared to their monolingual peers, manifested by a prolonged omission phase. A study of French-English bilinguals, for example, shows that these children exhibit a longer period of omissions, with a higher rate of omissions than monolinguals, both for object clitics in French and for object pronouns in English (cf. Pirvulescu et al., 2014). Interestingly, balanced bilinguals display this delay in both languages compared to monolinguals, suggesting that bilingualism itself may account for the developmental differences in this domain. Language dominance also appears to influence performance, with dominant children outperforming balanced bilinguals in their dominant language. Thus, object clitics are particularly vulnerable to reduced input and use in bilingual contexts. Successive bilingual children (with English as their first language and French as their second) exhibit similar patterns, with high rates of omission when exposed to French between the ages of 3 and 5 years (Strick et al., 2015). Along with omissions, infrequent errors in gender, person, and placement have also been reported (Belletti and Hamann, 2004; Paradis, 2004; Prévost, 2006).

Only incidental reports, with no experimental results, are available on the acquisition of the clitic system in heritage Romanian (HR), particularly within studies of differential object marking. Montrul and Bateman (2020) note that for adult heritage speakers of Romanian in the U.S., clitic omissions were more frequent among speakers with an early onset of bilingualism. For child heritage speakers of Romanian, clitic omissions appear to be more frequent than in monolingual children, particularly in elicited narratives (see Babei-Popa, 2024). For other Romance languages, results from adult heritage speakers are mixed. For instance, in Spanish, clitics do not appear to pose a major issue, even for speakers with low proficiency (Montrul, 2010). In contrast, adult heritage speakers of European Portuguese perform at a lower level than monolinguals in terms of clitic morphological form and placement, with these differences partially attributed to reduced formal education in the heritage language (Rinke and Flores, 2014).

In conclusion, omission is the most frequent error in the realization of pronominal object clitics among monolinguals, bilinguals, and L2 learners (aged 3–5). The age at which omissions are resolved varies across languages and acquisition types (monolingual vs. bilingual). Errors in the placement or form of the object clitic are relatively rare among children, although they represent a learning stage for adult heritage speakers and L2 learners (cf. Granfeldt and Schlyter, 2004;

Grüter, 2006; Paradis, 2004; White, 1996; Rinke and Flores, 2014; Flores, 2019). In Romanian, object clitic acquisition occurs early, but omissions and a few agreement errors remain (Avram et al., 2015). Heritage Romanian children appear to show more omissions than their monolingual counterparts. Object clitics, therefore, seem vulnerable to reduced input and use to varying degrees across different acquisition contexts, including heritage language acquisition.

2.3 Comprehension and production

Language development often exhibits an asymmetry between comprehension and production, with comprehension typically preceding production in the early stages. For heritage speakers, it is commonly observed that comprehension skills tend to be stronger than production skills (Polinsky and Kagan, 2007). When paired with production data, comprehension data can help determine whether divergences in the heritage language arise from processing limitations or from changes in grammatical representation. Divergences in both comprehension and production—especially those that differ from patterns found in baseline monolingual language acquisition—are often interpreted as indicative of changes in underlying linguistic representations (Polinsky, 2018; Putnam et al., 2019; among others).

Previous studies on object clitics in various languages have revealed that, around the age of 4, children experience similar difficulties with object clitics in both production and comprehension. For example, in Spanish, children exhibit these challenges in both domains (Grüter et al., 2012). In French, however, while comprehension and production results aligned for number and agreement markers (Legendre et al., 2010), studies involving 4- to 6-year-old children revealed that production difficulties with object clitics were more pronounced than comprehension difficulties (Van der Velde, 2003; Grüter, 2006). Further research on the comprehension of pronominal object features in young French children showed that they generally struggled with understanding gender and number features of pronominals but not with full nouns (Pirvulescu and Strik, 2014). Additionally, clitic pronouns were found to be significantly more difficult than strong pronouns, with recency effects observed for clitic pronouns. Specifically, children tended to choose the form of the clitic corresponding to the last noun phrase listed in the description. The authors suggested that these results may reflect limitations in working memory, potentially stemming from the increased complexity of constructions involving the 3rd person clitic, which could affect both production (cf. Tuller et al., 2011) and retrieval abilities.

Studies directly comparing the production and comprehension of object clitics in child heritage speakers are relatively rare. To our knowledge, only two studies have examined this relationship in the context of gender in object clitics in child heritage Spanish. Shin et al. (2019) found that, regarding gender errors on object clitics, children performed better in production than in comprehension. Similarly, Martinez-Nieto and Restrepo (2024) observed the same asymmetry when investigating the development of gender accuracy in both production and comprehension in Spanish heritage speakers as well as monolingual Spanish speakers.

2.4 Formal perspective

The assessment of the data in this paper is based on the syntactic characterization of clitic pronouns proposed in generative grammar. In this respect, some terminological and technical clarifications are in order. The description of the clitic pronoun paradigm in Romanian is provided in the Appendix.

The *clitic parameter* refers to the presence vs. absence of clitic pronouns in a language. For example, L1 learners of English have a null setting for this parameter, whereas L1 learners of Romanian have a positive setting. The relevance to this study is that HR speakers are exposed to both Romanian and English, so their parametric setting may be the same in both languages (e.g., set it for absence of clitics in Romanian). French, to which the children are exposed at a later time, also has clitic pronouns, although the clitic paradigm is richer than in Romanian (i.e., with clitic pronouns for subjects and adjuncts, not only for objects).

There are several formal approaches characterizing the syntactic properties of clitics in the literature, debating whether clitic pronouns are base generated on a par with strong pronouns (i.e., in a thematic position of the verb; e.g., Belletti, 1999; Kayne, 1975 et seq.; Nash and Rouveret, 2002), or whether they are base generated directly in the functional domain (Sportiche, 1995; Uriagereka, 1995). Crucially for this study, irrespective of where the clitics are based generated, they end up high in the clause structure (i.e., in the TP field for Romanian), and that is the evidence available to the learner. In this respect, the assessment of HR acquisition concerns the correct placement of the clitic (i.e., preverbal vs. postverbal; *in situ* strong pronouns are postverbal).

The association of clitic pronouns with the TP field is motivated by their status as agreement markers for objects (both direct and indirect), especially in Balkan languages, including Romanian (Alexiadou and Anagnostopoulou, 2000). In Romanian, the phi-features are at T (T inherits them from C; Chomsky, 2008 et seq.), where they get checked and valued by compatible nominal categories, such as the clitic pronouns in the case of object phi-features. For the learner, this requires the acquisition of object agreement, which guides the choice of the correct inflectional form of the clitic. Some HR speakers select an alternate (erroneous) inflectional form, and such cases must be evaluated to determine whether the deviation is due to grammatical representation or performance.

The phi-features of T are uninterpretable, so they require checking for full interpretation. Following Pesetsky and Torrego (2007), (un)interpretable features may or may not also undergo valuation. Along these lines, a phi-feature such as gender must be checked but not necessarily valued (e.g., as masculine or feminine). This is relevant to the foregoing discussion as children may use clitics variably for object agreement when it comes to gender.

A last point of clarification concerns the type of clitic pronouns surveyed for this study, namely resumptive clitics. *Resumptive*

clitics resume the phi-properties of an object DP that is moved to the CP field (i.e., through Clitic Left Dislocation—CLLD). This is different from a *doubling clitic,* which agrees in phi-features with an object DP that remains post-verbal (i.e., Clitic Doubling—CD occurring in constructions with differential object marking). The two operations observe different restrictions and yield different results, as shown in (2).

(2) a. Nu (***le**$_j$)-a acordat atentie
not CL.3PL.DAT-has paid attention
ştirilor$_j$. CD
news.the.DAT
'S/he did not pay attention to the news.'

b. **Stirilor**$_j$ nu *(**le**$_j$)-a
news.the.DAT not CL.3PL.DAT-has
acordat atentie. CLLD
paid attention
'To the news s/he paid no attention.'

In (2), CLLD is obligatory where CD is excluded, and it is orthogonal to animacy, which is crucial for CD (Cornilescu, 2020). Hence, the acquisition of the clitics is expected to differ in the two contexts.

In sum, formal grammar guides the interpretations of the results in this study as follows: (i) (in)stability regarding the parametric setting (+/− clitics); (ii) correct location of clitics (in T); (iii) valuation of phi-features (correct inflection for gender and number). These criteria are correlated with the type of clitic (i.e., only resumptives in our study) to decide whether errors arise at the level of syntactic derivation or whether performance difficulties (e.g., referential retrieval or overgeneralization) should be considered.

2.5 The present study

In this study, we examine the accuracy of object clitic production and comprehension in Heritage Romanian (HR) speakers compared to Dominant Romanian (DR) speakers. Additionally, we investigate the impact of key variables—language use with parents (children's output when speaking with their parents), attendance at heritage language schools, and literacy—on production and comprehension accuracy, while controlling for language input (as parents uniformly address their children in the heritage language).

Our analysis compares children's performance across both production and comprehension tasks, addressing the following research questions:

(i) What are the similarities and differences between HR and DR in the acquisition of object clitic pronouns?
(ii) Do HR speakers exhibit errors in object clitic acquisition? If so, what types of errors occur (morphological and/or syntactic), and how are they distributed across production and comprehension?
(iii) How are HR speakers' use and interpretation of object clitics related to individual differences in language use with parents, schooling in HR, literacy, age of English acquisition, and exposure to French?

TABLE 1 Participant profiles.

Participants		Heritage Romanian children	Dominant Romanian children
N		*N* = 31 Males = 18 Females = 13	*N* = 5
Age (SD)		Mean age = 11; 3 (2.27) Age range 7; 04–17	Mean age = 10; 04 (0.5) Age range 10–11;01
Language	Romanian	Birth	Birth
	English	Early exposure Mean AoA = 1; 64 (1.35) AoA range 0–4 [a]	2nd or 3rd language
	3rd Language	French in school Mean AoA = 4.48 (1.167) AoA range 3–6 Mean years of exposure = 6.52 (2.52) Range (years) 3–12 Mean current exposure = 56.87 (29.79) Range (percentage) 0–100% [b]	French or German

[a]For 4 participants the age of acquisition of English is indicated as 4 years old and for three participants it is 3 years old; subsequent discussions with the parents seem to indicate that the age of acquisition of English was based on various factors, such as the start of a daycare program, watching TV in English, etc.

[b]Three participants dropped out of the French immersion school the year before our experimental testing, being in their first year of a mainstream English school with no French classes. However, these participants had been in French immersion school since age 6. At the time of testing, they were 12, 14, and 15 years old, respectively. Therefore, they had at least 6 years of exposure to French. One other participant had, at the time of exposure, only 20% French in school (corresponding to core French). This participant was 10 years old at the time of testing and had started in French immersion at age 4, having also had 6 years of French exposure.

3 Methods

3.1 Participants

We tested 31 heritage Romanian (HR) children, aged 7–17, who grew up in the Greater Toronto Area. All participants were exposed to Romanian at home during their preschool years and had continuous exposure to English from birth in both social settings and formal education (English is included in the curriculum even in French immersion schools). Additionally, they were enrolled in French immersion programs between the ages of 3 and 6. All children had two Romanian-speaking parents who consistently spoke Romanian at home. However, while parental use of Romanian was uniform across participants, the children's responses varied, with some opting to reply in English. As a result, children's language choice when interacting with their parents serves as a variable in our study. At the time of testing, all participants regularly used all three languages but in distinct contexts: Romanian primarily at home and within their immediate community (to varying degrees), English at school and in broader social interactions, and French in academic settings. In addition to the HR group, we tested five Romanian-dominant trilingual

children residing in Romania, who also speak three languages fluently. A summary of participant profiles is presented in Table 1.

3.2 Procedures

Given that heritage speakers' language proficiency and accuracy vary depending on task modality (e.g., Pérez-Cortés et al., 2019), this study assessed both comprehension and production. Performance was compared across two tasks: a clitic elicitation task and a comprehension task (picture selection). While the comprehension task examined both gender and number features, the production task focused exclusively on gender.

The tasks were designed to evaluate syntactic accuracy (i.e., whether clitics were produced and, if so, whether they were correctly placed) as well as morphological accuracy (i.e., the correct use of phi-features). Additionally, a parental questionnaire was administered to gather information about children's language experience across their three languages. All tasks were audio-recorded, and responses were subsequently transcribed for analysis.

FIGURE 1
Example of a picture used in the elicitation task.

3.2.1 The elicitation task

The elicitation task followed a known protocol (e.g., Pirvulescu et al., 2014) with the presentation of a picture (Figure 1) and a prompt, followed by a question as in (3). We used eight test items with transitive verbs (*a împinge* "to push," *a mânca* "to eat," *a tăia* "to cut," *a gâdila* "to tickle," *a citi* "to read," *a linge* "to lick," *a bea* "to drink," *a bate* "to beat," conjugated only in the singular and in the present tense) with direct objects that were equally distributed between animate/inanimate and masculine/feminine. There were also 4 distracter items.

(3) Prompt: Aici o doamnă este
Here a lady is
la bibliotecă.
at library
"There is a lady in the library."
E așezată la o masă și are o carte în mână.
is seated at a table and has a book in hand
"She is sitting at a table and has a book in her hand."
Question: Ce face doamna cu
What does lady.the with
cartea?
book.the
"What does the lady do with that book?"
Answer: Doamna **o** citește.
Lady.the it.CL.ACC.F= reads
"The lady is reading **it**."

After seeing the picture and listening to the prompt, the child had to answer the question orally.

3.2.2 The comprehension task

The comprehension task was a picture choice task adapted to Romanian from Pirvulescu and Strik (2014). The task included 24 test items, as well as six distracters. Half of the test items contained a direct object clitic pronoun, while the other half contained a strong pronoun (adjuncts prepositional phrases). For both clitic and strong pronouns there were two conditions: (1) gender, contrasting masculine and feminine (singular) pronouns; and (2) number, contrasting singular and plural pronouns. In this task, children had to use either the gender or the number features of each pronoun to select the correct picture as per Figure 2 (for the clitic pronouns) and Figure 3 (for strong pronouns). The distracters

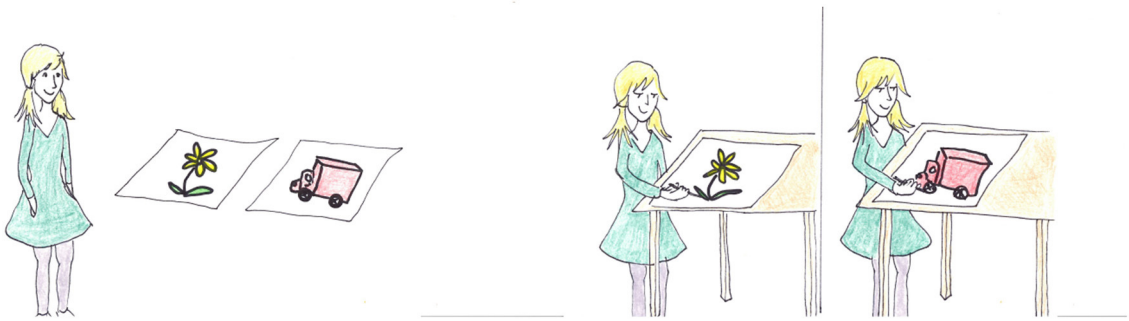

FIGURE 2
Example of pictures used in the comprehension task for the clitic pronouns.

FIGURE 3
Example of pictures used in the comprehension task for the strong pronouns.

were items containing either object or subject DPs (four and two items respectively). The testing procedure was as follows: first, two training/distracter items were presented, one with object DPs and one with subject DPs. Then, the test items were presented in a random order according to type of pronoun, gender, and number, as well as the position of the corresponding image on either the left or the right. The order of the pictures, as well as the order of pronominal antecedents, was counterbalanced across the task. The referents (direct objects in the case of clitic pronouns, and adjuncts or indirect objects in the case of strong pronouns) were introduced to the child while the investigator pointed to each of them. For each test item, the child was first presented with pictures on one page. The child was then shown two pictures on another page and asked to identify the correct picture containing the possible referent(s); see (4).

(4) a. Comprehension of object clitic pronouns
Two pictures of a girl drawing: (a) a flower;
(b) a truck; verb: *desena* 'draw'
Description : Aici vedem un copil, **floarea**
Here see.1PL a.M child flower.the.F
și camionul.
and truck.the.M
"Here we see a child, the flower and the truck. "
Prompt : Spune-mi
Tell.IMP.2SG=me.1SG.DAT
în ce imagine **o**
in what picture it.CL.ACC.F=
desenează copilul.
draws child.the
"Tell me where the child is drawing **it**. "

b. Comprehension of strong pronouns
Two pictures with a boy and (a) Santa Claus, and
(b) Snow White: verb: *gândi* 'think'
Description: Aici vedem un băiat, Moș Crăciun,
Here see.1PL a.M boy Santa Clause
"Here we see a boy, Santa Clause,
Albă ca zăpada.
Snow White
Snow White."
Prompt: Spune-mi în ce imagine
Tell.IMP.2SG=me.1SG.DAT in what picture
băiatul se
boy.the REFL
gândește la el.
thinks3SG at him
"Tell me where the boy thinks of him."

3.2.3 The variables from the parental questionnaire

A language questionnaire was used to measure the independent variables (1) language use with parents; (2) schooling in HR and (3) literacy (reading and writing) as follows:

(i) language use with parents, assessed from the answers to the question "What language does the child use to answer when the parents speak Romanian to him/her?" The answers were grouped and coded on a 5-point scale according to how much Romanian was used compared to English (The score for Romanian: no Romanian = 0; sometimes Romanian = 0.2; Romanian and English = 0.5; Mostly Romanian = 0.75; Romanian = 1)
(ii) attendance at Romanian language schools (i.e. schooling in HR); the answers were grouped and coded on a 3-point scale as following: not at all = 0; not consistently = 0.25; consistently = 1.
(iii) the variable literacy was assessed from the parents' ratings of reading and writing, on a 5-point scale with scores as following: none = 0; beginner = 0.2; intermediate = 0.35; advanced = 0.75; native-like = 1.

4 Results

We present the results structured according to the research questions, grouped in three subsections as follows: similarities and differences between HR and DR; the identification of errors and error distribution; the use and interpretation of clitics in relation to the variables language use with parents, schooling and literacy.

TABLE 2 Type of responses in elicited production—heritage Romanian vs. dominant Romanian children.

	Total responses (*N*)	Clitics	Omissions	DPs	Pronouns
Heritage Romanian children	248	0.71 (178)	0.13 (33)	0.11 (29)	0.02 (5)
Dominant Romanian children	40	0.95 (38)	0.02 (1)	0.02 (1)	N/A

Proportion and count () of types of responses. Three responses were not included in the table; they represented those the transcribers were uncertain about.

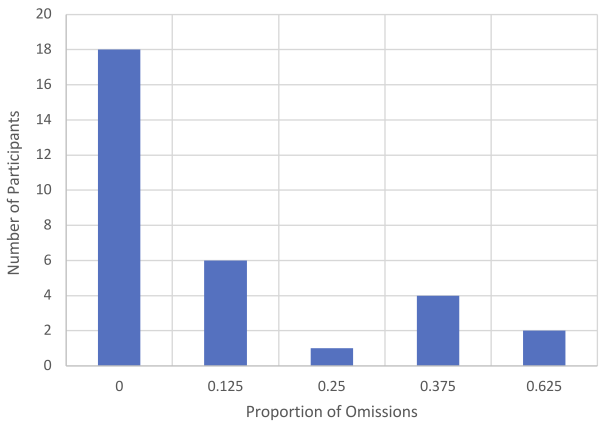

FIGURE 4
Individual analysis of omissions in heritage Romanian children. The figure presents clitic omission, grouping the participants according to the proportion of omissions out of the total number of responses.

TABLE 3 Comprehension task response types: heritage Romanian vs. dominant Romanian children.

		Total (*N*)	Total target (*N*)	Target proportion
Heritage Romanian children	Clitics	372	317	0.85
	Strong pronouns	372	371	0.99
Dominant Romanian children	Clitics	60	60	1
	Strong pronouns	60	60	1

TABLE 4 Proportions correct across the two tasks for the heritage Romanian children.

	Correct clitic production	Correct clitic comprehension	Correct pronoun comprehension
Mean	0.77	0.84	0.99
Median	0.84	0.83	1.0
SD	0.26	0.12	0.01
Variance	0.070	0.016	0.000

4.1 Results of the production and comprehension studies comparing the HR to the DR

We compared the production of clitics by the heritage children with the production of clitics by the Romanian dominant children, and the results are presented in Table 2.

The results of the clitic production task indicate that while both HR and DR speakers predominantly use pronominal clitics in the expected contexts, HR speakers occasionally omit the clitic or substitute it with a noun phrase.

It is important to recall that clitic omission is a well-documented feature in the acquisition of object clitics among both monolingual and bilingual children. The age at which these omissions are resolved serves as an indicator of cross-linguistic variation as well as differences across acquisition types. As shown in Table 2, while HR speakers continue to exhibit clitic omissions, these omissions are nearly absent in DR speakers, with only a single instance recorded.

In the HR group, omissions appear to be evenly distributed across the eight tested verbs, with the exception of the verb *loveşte* ("hit"), for which no clitic omissions were observed. The individual analysis presented in Figure 4 further reveals that clitic omissions are not uniform across all participants, with less than half of the HR speakers omitting clitics in their responses.

Table 3 presents the comparative (HR vs. DR) results of the comprehension task showing that, as in the production task, HR children perform less well than DR children, especially in the clitic condition.

4.2 Clitic errors and error distribution

Table 4 presents the accuracy of heritage speakers across the two tasks (note that DR children did not make any errors). In this table, "Correct clitic production" indicates the proportion of clitics that were produced with the correct gender form, relative to the total clitic production. "Correct clitic/pronoun comprehension" represents the proportion of responses in which the clitic or pronoun was correctly interpreted with respect to gender and number features.

Table 4 illustrates that children perform significantly better with strong pronouns than with pronominal clitics in the clitic comprehension task (Wilcoxon Signed Ranks, $Z = -3.722$, $p < 0.001$). Additionally, children make errors in both production and comprehension tasks. In production, gender errors are attested, with the masculine form being used instead of the feminine (27/34 instances). There are far fewer instances of errors involving the

TABLE 5 Results for the binary logistic regression for production accuracy.

	Estimate	SE	*z*-value	Pr (>|z|)
(Intercept)	−6.779	3.022	−2.243	0.024
Language use with parents	1.870	1.776	1.052	0.292
Schooling in HL	0.554	1.113	0.497	0.618
Literacy	15.938	7.671	2.077	0.037

TABLE 6 Results for the binary logistic regression for comprehension accuracy.

	Estimate	SE	*z* value	Pr (>|z|)
(Intercept)	−3.862	1.825	−2.116	0.034
Language use with parents	2.788	1.818	1.533	0.125
Schooling in HL	1.591	1.080	1.473	0.140
Literacy	0.303	2.657	1.114	0.909

feminine form being used instead of the masculine (4/34). One child also uses the reflexive clitic (3/34), which is not appropriate in the context. In comprehension, the majority of errors are also gender-related: children select the masculine form more often than the feminine (30/55 instances vs. 23/55 instances, respectively). Errors related to number, such as choosing the singular form instead of plural, are negligible (2/55).

To test for significant differences in correct scores (as a percentage) between the production and comprehension tasks, a Wilcoxon Signed Ranks Test was conducted, revealing no significant difference between the two tasks in terms of the percentage of correct responses (Wilcoxon Signed Ranks, $Z = -1.553$, $p = 0.121$). Furthermore, a positive significant correlation was found between the results of the two tasks (Spearman correlation, $r_s = 0.413$, $p = 0.026$), indicating that children who produce correct clitics are also more likely to select correct clitics in comprehension.

Almost half of the children (14/31) exhibit difficulties in both comprehension and production. For these children, a higher degree of accuracy in both production and comprehension of clitics is associated with a lower likelihood of clitic omissions. Both correct production and comprehension of clitics are negatively correlated with omissions ($r_s = -0.603$, $p < 0.001$, and $r_s = -0.524$, $p = 0.027$, respectively). One-third of the children (7/31) performed target-like in both comprehension and production tasks and displayed minimal omissions (2/30 across all children).

4.3 The production and interpretation of clitics in relation to language internal and external variables

Let us recall that the variables investigated in this paper are as follows: (1) language use with parents; (2) schooling in HL, and (3) literacy (reading and writing).

We performed a binary logistic regression model, with production accuracy as the dependent variable and language use with parents, schooling in HL and literacy as predictors. The results are presented in Table 5.

The results indicate that the variable Literacy is a significant and strong predictor of production acuracy of clitics, with a substantial impact on the likelihood of a correct response. The other two variables showed positive effects on the odds of a correct response but were not statistically significant in this analysis. These findings suggest that the ability to read and write plays a critical role in predicting performance, whereas other factors like language use and school type have a less pronounced impact. This suggests that production accuracy increases as literacy increases, indicating that the more people are literate in Romanian, the better they produce clitics.

We also examined the effect of language use with parents, schooling in HL and literacy on comprehension accuracy using a binary logistic regression model. The results are presented in Table 6.

The results indicate that while the variable Language use with parents exhibited the largest odds ratio, its effect was not statistically significant. Neither Schooling in HL nor Literacy showed significant contributions to predicting a correct response. The intercept was significant, reflecting the baseline odds of a correct response when all predictors were at their reference values. The overall model approached statistical significance, suggesting that the predictors collectively offer some explanatory power. These findings suggest that Language use with parents may have a meaningful, albeit not definitive, influence on the outcome. Further investigation with a larger sample size or refined measurement of predictors might provide more clarity.

4.3.1 Influence of age of acquisition and exposure to the background languages on the accuracy of responses in production and comprehension

Next, we examine whether extended exposure to English (simultaneous bilingualism) might influence performance in the heritage language. To this end, for the subgroup of children exhibiting difficulties in both comprehension and production, we explored the potential correlation between their stage of acquisition of HR clitics and the age at which they acquired English. The mean age of English acquisition for this subgroup ($M = 2.0$, SD $= 1.4$) is slightly higher than the overall group average ($M = 1.64$, SD $= 1.35$); however, this variable did not correlate with accuracy in either production or comprehension ($r_s = 0.438$, $p = 0.117$ and $r_s = -0.324$, $p = 0.258$, respectively). We then considered a larger subgroup, comprising all children who experienced some difficulties–whether in production, comprehension, or both—excluding those who performed target-like. This subgroup had the same mean age of English acquisition as the entire group ($M = 1.79$, SD $= 1.35$). Again, this variable did not significantly affect accuracy in either production or comprehension ($r_s = 0.207$, $p = 0.356$ and $r_s = -0.282$, $p = 0.182$, respectively).

Regarding French, we examined whether any characteristics of the group—such as the age of French acquisition (AoA), current and cumulative French exposure—were associated with the accuracy of responses in Romanian. Only comprehension accuracy showed a significant association with both French AoA (r_s = -0.499, p = 0.004) and cumulative exposure to French (r_s = 0.460, p = 0.009). These results suggest that more accurate comprehension responses are linked to a younger age of acquisition of French and greater exposure to French. However, accuracy in production did not correlate with any measure of French exposure.[1]

4.4 Summary of the results

Our HR participants performed well overall in both the production and comprehension tasks. In production, object clitics were correctly placed in the preverbal field; however, unlike the DR control group, there was some omission of the clitic. In comprehension, HR children correctly interpreted the referent of strong pronouns but made errors with clitics. The divergent responses in production primarily involved gender errors, with an overgeneralization of the masculine form. In comprehension, difficulties arose regarding the grammatical gender features of the clitic's referent. Specifically, errors occurred in the selection of masculine forms instead of feminine ones and vice versa. Errors in number were minimal. Notably, gender errors did not appear in the DR control group in either task. Children who were more accurate in both production and comprehension of clitics tended to omit fewer clitics overall, suggesting that omissions might indicate difficulties with clitic form.

There was variability across the children, with some demonstrating target-like performance while others exhibited varying levels of proficiency. A significant predictor of accurate clitic production was literacy. For comprehension accuracy, no HR factors emerged as significant. However, ealier and longer learning of French—a language with a clitic system similar to Romanian (i.e., preverbal object clitics in declaratives)—seemed to provide an advantage in comprehension accuracy. In contrast, early acquisition of English did not correlate with accuracy in either production or comprehension.

5 Discussion

This section addresses the research questions outlined in the Introduction. Question (i) concerns the similarities and differences between HR (heritage Romanian) and DR (dominant Romanian). Our findings suggest that in HR, clitics (when produced) are correctly placed in the preverbal field without exception. However, clitics are sometimes omitted. While the children in the HR group differ from those in the DR group of comparable age, their results are consistent with previous experimental studies on the L1 acquisition of Romanian object clitics, where omissions and gender errors were also noted (cf. Avram et al., 2015). However, in DR spontaneous production, 3rd person clitic omissions disappear early, with clitics reaching a production rate of 90% by age 3. While the omission rates in our study are similar to previous experimental studies, the underlying causes do not appear to be the same, as omissions are not associated with specific lexical verbs, and gender errors differ in nature. Furthermore, previous literature on bilingual children at the age where omissions are typically observed did not document errors in phi-features, while our study revealed a negative correlation between correct clitic use and interpretation and the number of omissions. Thus, it is challenging to argue that the omissions in our data reflect "arrested development" or, as suggested in analyses of young bilinguals, a retention of an initial null object (Pirvulescu et al., 2014). Given that clitics are generally low in perceptual salience and more taxing on working memory than more prominent elements, omissions may stem from performance issues related to limited cognitive resources (processing limitations), as proposed for young children, bilinguals, and L2 learners (e.g., Tuller et al., 2011). Future studies examining processing mechanisms will be needed to confirm whether this is also true for child heritage speakers.

Question (ii) concerns the types of non-target forms or interpretations. In production, results showed ungrammatical gender marking, with the masculine clitic form being overgeneralized. However, the clitic placement was correct, suggesting that the syntax of clitic pronouns has been acquired. In comprehension, both masculine-for-feminine and feminine-for-masculine errors were observed. The (correct) production and comprehension of direct object clitics in HR were characterized by a degree of variability, confirming findings from other studies on heritage speakers' performance (e.g., Rinke and Flores, 2014). While some children omitted and/or produced divergent forms in at least one of the tasks, all children produced and comprehended at least 50% of clitics in obligatory contexts.

Divergent forms primarily concerned the gender feature in both production and comprehension. One possible explanation is that the children face challenges with nominal gender semantics. However, the comprehension task results—specifically, the fact that children performed significantly better with strong pronouns (which are also inflected for gender) than with clitics—do not support this hypothesis. Moreover, when comparing comprehension results for both strong and clitic object pronouns with results from full DPs used as distractors (six pairs), the children performed almost at ceiling with the object nouns (97% correct performance). We suggest that the HR children do not struggle with nominal gender semantics but rather have a non-systematic issue specific to the gender of pronominal clitics in both production and comprehension. Errors appear primarily related to gender inflection, which pertains to the phi-feature cluster associated with T. Therefore, when it comes to gender, the presence of the clitic indicates that the bundle of object phi-features on T—including gender—is checked, but it is not necessarily valued as feminine by children who use clitics variably for object agreement. This valuation error may arise due to the distance between the lexical DP (in the question) and the resumptive clitic in the answer.

1 Non-significant results are as follows: current exposure to French × Comprehension accuracy (r_s = 0.201, p = 0.279); French AoA × production accuracy (r_s = 0.207, p = 0.281); French current exposure x production accuracy (r_s = 0.176, p = 0.361); French cumulative exposure × production accuracy (r_s = 0.193, p = 0.316).

The resolution of morphological overgeneralization improves with increased language experience (for comprehension) and language literacy (for production).

Previous research on heritage language acquisition has shown that the morphosyntax of gender is particularly vulnerable to reduced input (Alarcon, 2011; Antonova-Ünlü and Wei, 2016; Montrul et al., 2008) and that gender, as a phi-feature, is more vulnerable in heritage languages compared to number and person features (for discussion, see Polinsky, 2018). Heritage language learners and speakers often struggle with silent elements (Polinsky, 2018), so it is not surprising that some children have difficulty retrieving the feature values of the null DP. More generally, our study corroborates previous findings indicating that heritage language acquisition might not achieve target-like mastery of morphosyntax (e.g., Montrul and Polinsky, 2019). Further research on clitic doubling (i.e., constructions with differential object marking) is needed to explore whether having the clitic and the lexical doubled DP in the same clause might improve gender agreement.

Regarding the relationship between comprehension and production, we found a correlation between linguistic accuracy in both modalities, supporting previous findings (e.g., Litcofsky et al., 2016). Moreover, 14 of the 31 children exhibited divergent responses in both production and comprehension. Research on the relationship between production and comprehension in heritage language acquisition suggests that difficulties in both modalities are associated with divergent language representations from the dominant baseline (Putnam et al., 2019). A study comparing language processing and accuracy in object clitics is necessary to assess the likelihood of divergent representations.

Question (iii) concerns the impact of individual difference variables on the acquisition of clitics. We found that greater literacy skills predicts greater accuracy in clitic production. This novel finding highlights the importance of exposure to written texts for the development of language and oral skills (see Meyer et al., 2016 and references therein) and specifically for the robustness of morphosyntactic representations (Montrul and Armstrong, 2024). The effect of literacy on production supports the proposal that learning the written form enables learners to produce more complex structures (Dabrowska, 2020).

The impact of background languages on the acquisition of clitics in HR is an area for further exploration. We found that learning French, a language with a clitic system similar to Romanian, may provide an advantage for comprehension accuracy. Future studies could clarify this advantage by comparing our data with that of HR speakers who are not exposed to French.

6 Conclusion

Overall, the heritage language (HR) children demonstrated strong performance in acquiring clitics. Object clitics in HR speakers exhibit similar characteristics to those found in typically developing Romanian (DR) children, such as omissions at certain stages of development, and also reflect patterns identified in bilingual (heritage) language acquisition, such as gender errors. These divergent forms appear to be linked specifically to pronominal clitics (rather than pronominals in general), and the issue seems to be morphological rather than syntactic. The nature of these divergent forms suggests difficulties with the access and retrieval of relevant feature values due to reduced language exposure, rather than issues with the grammatical computation of clitic agreement features or nominal gender semantics. These findings align with previous research highlighting the impact of limited language experience on heritage language acquisition and maintenance (e.g., Rinke and Flores, 2014; Unsworth, 2013). More broadly, our results underscore the critical importance of language maintenance efforts both at home and within academic environments.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by University of Toronto Ethics Committee. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

Author contributions

MP: Conceptualization, Data curation, Funding acquisition, Investigation, Methodology, Resources, Supervision, Writing – original draft, Writing – review & editing. VH: Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/flang.2025.1413119/full#supplementary-material

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