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RESEARCH

Vulnerability and stability of Differential Object Marking in Romanian heritage speakers

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Differential Object Marking (DOM) marks some objects overtly with specific morphology and is regulated by several semantic and pragmatic factors. DOM exhibits synchronic and diachronic variability within and across languages, especially in bilingual contexts, and the study of heritage languages offers a unique perspective on the forces that shape it. This study investigates knowledge of DOM in Romanian and its interaction with accusative clitic doubling (CD) in native speakers of Romanian in Romania and first- and second-generation Romanian immigrants to the United States. The results of an oral production task, a written production task, and a written and auditory comprehension task show convergence between the adult immigrant group and the Romanians in the homeland. When divergent uses of DOM and accusative clitic omission occurred, these were mostly produced by the heritage speakers with early onset of bilingualism, consistent with findings of age effects in heritage language acquisition and a Differential Access Model of heritage language grammars. We discuss these results in the contexts of DOM vulnerability in other heritage languages, such as Spanish, and consider why DOM in Romanian might be comparatively better preserved by the adult immigrants and heritage speakers.

Keywords: differential object marking; clitic doubling; Romanian; heritage speakers; comprehension; production; differential access

1 Introduction

Differential Object Marking (DOM) is a grammatical phenomenon that marks prominent objects in many languages of the world (Bossong 1985; Aissen 2003). Object prominence is determined by several semantic and pragmatic factors related to animacy, specificity, referentiality, and focus, among others, and it is often marked overtly with specific morphology, case marking, or agreement, depending on the language. The nature of DOM has been receiving increasing attention (Bárány 2018; Börstell 2019; Ledgeway, Schifano & Silvestri 2019) because DOM exhibits synchronic and diachronic variability within and across languages. For example, among the Romance languages, Spanish, Romanian, and Sardinian have DOM, whereas Portuguese, French, and other dialects of Italian do not. In both Spanish and Romanian DOM developed diachronically. Today, some monolingual varieties of Spanish exhibit incipient expansion or extension of DOM to less prominent objects (von Heusinger & Kaiser 2005; Montrul 2013; Arechabaleta 2019; Bautista Maldonado & Montrul 2019), while in bilingual contexts, as we will see, the tendency is toward retraction, or omission, of DOM in required contexts. The variability often observed in bilingual contexts raises questions about the nature and stability of the linguistic representations of DOM in bilinguals with different levels of proficiency in the weaker language and their access to such representations during comprehension and production (Pérez-Cortés, Putnam & Sánchez 2019). In the present study we investigate knowledge of DOM in heritage speakers of Romanian in the United States.

Heritage speakers are early bilinguals whose first language is a minority language, learned before or in conjunction with the majority language of the broader society (Montrul 2016; Polinsky 2018). Because heritage speakers develop their language under conditions of reduced input during the critical period for language acquisition (Montrul, in press), the study of heritage languages offers a unique perspective on the development and use of language and the universal forces that shape it (Polinsky 2018). Heritage speakers grow up in situations where their native heritage language may not be supported by society beyond the home, and they have few opportunities for rich exposure to the language in academic and varied social contexts as they grow up. The result is that when heritage speakers reach adolescence and young adulthood they are often dominant in the majority language. As the weaker language, the heritage language retains many signatures of early native language acquisition (Montrul 2016) while also exhibiting smaller or reduced vocabularies and several grammatical divergences compared to the language of their own immigrant parents (who are full speakers of the language), or compared to the language of native speakers in the homeland (Montrul 2016; Polinsky 2018; Aalberse, Bauckus & Muysken 2019).

DOM requires integration of syntax, semantics, morphology, discourse and related interfaces (Montrul 2011; Sorace 2011; Avram & Tomescu 2020), and is susceptible to dominant language transfer in bilingualism in general. There is increasing evidence from heritage languages that this is the case: Montrul, Bhatt & Bhatia (2012), Montrul, Bhatt & Girju (2015), Bhatia & Montrul (2020), and Montrul & Bateman (2020) confirmed that obligatory DOM is often omitted by heritage speakers of Spanish, Hindi, and of Romanian in the United States. By contrast, Yager et al. (2015) and Rodríguez-Ordóñez (2017) show that DOM emerged as an innovation in heritage speakers of German in the United States, and in Basque-Spanish bilinguals in Spain. These collective findings point to the evolution and variability of DOM in situations of language contact.

In this study we further investigate the linguistic representation and use of DOM in Romanian native speakers in the homeland, first-generation immigrants, and early bilinguals (heritage speakers) of Romanian in the United States, and provide further evidence for the variability of DOM in heritage speakers of Romanian depending on type and length of the bilingual experience, as measured by production and comprehension tasks. We use multiple measures in different modalities (auditory/written) because heritage speakers typically show dissociations by language skill and modality (comprehension, production, spoken language, written language) related to their proficiency, language learning experience, and level of acquired literacy in the heritage language (Montrul 2016; Polinsky 2018; Pérez-Cortés, Putnam & Sánchez 2019). Multiple measures of linguistic ability (comprehension, production) are critical to obtain an accurate and comprehensive understanding of heritage language knowledge (Kim, O'Grady & Schwartz 2018) and access to such knowledge (Putnam & Sánchez 2013; Putnam, Pérez-Cortés & Sánchez 2019), since it is often the case that heritage speakers display different levels of accuracy depending on task modality and the degree of metalinguistic awareness required in the task (Bowles 2011; Torres 2013; Pérez-Cortés et al. 2019). Our results show that compared to studies of Spanish, DOM in the Romanian speakers tested in the present study is comparatively better preserved. When DOM and clitic omission errors occurred, these came primarily from the heritage speakers with early onset of bilingualism, consistent with findings of age effects in heritage language acquisition (Montrul 2008; 2016; Flores 2010; Ahn et al. 2017; Karayayla & Schmid 2019). Assuming a microparametric difference between Spanish and Romanian DOM (Hill & Mardale 2019; 2020), we see the few errors made by the heritage speakers as arising from slower lexical access and computation of features during production rather than from representational differences at the level of phrase and feature structure, consistent with the Differential Access Model of heritage language grammars (Pérez Cortés et al. 2019).

The next section describes DOM in Romanian and its interaction with accusative clitic doubling (CD). Section 3 covers background on the acquisition of Romanian and section 4 presents the methods and results of our study.

2 DOM in Romanian

In Romanian, animate and specific direct objects are generally doubled by an accusative clitic and marked by the preposition *pe*, the DOM marker. The two main parameters that regulate DOM in Romanian are animacy and referential stability (Farkas & von Heusinger 2003; Mardale 2008; 2010; Ciovârnache & Avram 2013). In Romanian, animacy is less deterministic as a trigger of DOM than it is in Spanish because specific inanimate objects can be marked, as we illustrate below. Referential stability is related to how the specificity value of a given DP can change depending on discourse properties (Farkas & von Heusinger 2003). Farkas & von Heusinger (2003) proposed a referential stability scale, as in (1).

(1) Referentiality stability scale (Farkas & von Heusinger 2003):
Proper noouns, definite pronouns > definite DPs > partitives > indefinite DPs

Following the referentiality scale in (1), *pe*-marking is obligatory with personal pronouns and proper names, as in (2a,b), including those referring to personified animals (Farkas & von Heusinger 2003; Gramatica Limbii Române 2005; von Heusinger & Gáspár 2008; von Heusinger & Chiriacescu 2009). Names of cities (i.e. Chicago), are not *pe*-marked. *Pe*-marking is optional with referentially stable objects, as in modified definite animate DPs in (3) and indefinite animate DPs in (4).

(2) a. Raluca a văzut-o **pe** Beatrice/ea.
Raluca has seen-CL.3SG.F DOM Beatrice/her
'Raluca saw Beatrice/her.'

b. *Raluca a văzut Beatrice/ea.
Raluca has seen Beatrice/her
'Raluca saw Beatrice/her.'

(3) (L)- am văzut (**pe**) băiatul înalt.
CL.3SG.M-have seen DOM boy.DEF.SG.M tall
'I/we saw the tall boy.'

(4) Roxana a vizitat (**pe**) un prieten.
Roxana has visited DOM M.INDF friend.SG.M
'Roxana visited a friend.'

Pe-marking is generally ungrammatical with definite specific and indefinite inanimate DPs, as in (5) and (6).

(5) a. Angelica a văzut casa.
Angelica has seen house.DEF.SG.F
Angelica saw the house.'

b. *Angelica a văzut **pe** casa.
Angelica has seen DOM house.DEF.SG.F
'Angelica saw the house.'

(6) a. Luminița a văzut o casă.
Luminița has seen F.INDF house.SG.F
'Luminița saw a house.'

b. *Luminița a văzut **pe** o casă.
Luminița has seen DOM F.INDF house.SG.F
'Luminița saw a house.'

DOM (*pe*-marking) is also sensitive to definiteness, specificity, and dislocation (Cornilescu 2000; Mardale 2009; Țigău 2010; 2011). Strong pronominal direct objects are obligatorily marked with *pe* irrespective of animacy, as in (7a,b). Inanimate objects are usually not acceptable with DOM (Irimia 2018); however, specific inanimate objects can also be differentially marked with *pe*, as in (8). Similarly, other specific inanimate objects may trigger DOM only when dislocated as in (9a), while some speakers find that the use of DOM with inanimate objects post-verbally creates a semantic upgrading effect (9b) (Ticio & Avram 2015: 387).

(7) a. L- am cumpărat **pe** acesta/ **pe** celălat.
CL.3SG.M- have.1SG bought DOM this.SG.M DOM other.SG.M
'I have bought this one/the other.'

b. Ai luat- o **pe** aceea.
have.2SG taken- CL.3.SG.F DOM that.SG.F
'You have taken that one.'

(8) L- ai uitat **pe** A din text.
CL.3SG.M- have.2SG forgot DOM A from text
'You forgot the (letter) A in the text.'

(9) a. **Pe** trandafir l- a lăsat albina la urmă.
DOM rose.SG.M CL.3.SG.M- have.3SG left bee.DEF.SG.F at end
'The rose, the bee left it for the end/for last.'

b. Albina l- a lăsat **pe** trandafir la urmă.
bee.DEF.SG.F CL.3SG.M have.3SG left DOM rose.SG.M at end
'The bee left the rose for last/the end.'

Summarizing, animate specific direct objects are marked with *pe* in Romanian, especially if they are expressed with names or pronouns. Definite animate objects (definite DPs) are optionally *pe*-marked because, semantically, they are less referentially stable. In addition, there are other syntactic constraints that determine the optionality of *pe*-marking with definite DPs. These DPs behave differently depending on the presence or absence of the definite enclitic article, and this is the result of a syntactic constraint independent of DOM, as it applies to all prepositions in Romanian (except for *cu* 'with'), such that constructions with a preposition + noun-definite article suffix are ungrammatical, as the sentence in (10) shows. Thus, if the noun is suffixed with a definite article (*băiat-ul* 'boy-the'), it cannot be *pe*-marked unless it is further modified with an adnominal expression, as in *băiatul înalt* (boy-the tall) in (3) (Dobrovie-Sorin 1994; Mardale 2009; von Heusinger & Chiriacescu 2009). Some use *pe* and drop the definite article leaving a bare noun, as in (11a), while others drop *pe* and use the definite article, as in (12) (von Heusinger & Onea Gáspar 2008; von Heusinger & Chiriacescu 2009).

(10)

*L-	am	văzut	**pe**	băiatul.
CL.3SG.M	have.1SG	seen	DOM	boy.DEF.SG.M

‘I have seen the boy.’

(11) a.

L-	am	văzut	**pe**	băiat.
CL.3SG.M	have.1SG	seen	DOM	boy.SG.M

‘I have seen the boy.’

b.

*Am	văzut	băiat.
have.1.SG	seen	boy.SG.M

‘I have seen the boy.’

(12)

Am	văzut	băiatul.
have.1.SG	seen	boy.DEF.SG.M

‘I have seen the boy.’

When DOM is present with definite DPs, the nominal expression is referentially stable because DOM provides referential persistence in the discourse (Chiriacescu & von Heusinger 2009); when DOM is omitted, the expression has a role reading (e.g., *the director, the king, the presiden*t, etc.), where the referent is not stable (Hill 2013). Some familiar functional expressions such as *the mother, the teacher, the priest, the boss*, etc. are exceptions to the syntactic constraint on prepositions and may appear with *pe* (at least in spoken Romanian) (von Heusinger & Gáspár 2008). Example (13) is acceptable under the reading that the boss is granted contextual uniqueness to its referent (role reading), though such expressions are rare.

(13)

L-	am	văzut	**pe**	şeful.
CL.3.SG.M	have.1.SG	seen	DOM	boss.DEF.SG.M

‘I have seen the boss.’

Another syntactic characteristic of Romanian is the presence of accusative clitic doubling (CD), by which the object DP is doubled by an accusative clitic. Whenever a direct object is doubled by an accusative clitic, DOM (*pe*-marking) is required, as in (14) and (15). Clitic doubled objects without *pe*-marking are typically ungrammatical (Farkas & von Heusinger 2003), but there is also some variation as we discuss below.

(14) a.

Angelica	a	văzut-	o	**pe**	Madonna/ea.
Angelica	has	seen-	CL.3.SG.F	DOM	Madonna/her

‘Angelica saw Madona/her.’

b.

*Angelica	a	văzut-	o	Madonna/ea.
Angelica	has	seen-	CL.3.SG.F	Madonna/her

‘Angelica saw Madona/her.’

(15) a.

Elisabeta	a	văzut-	(o)	**pe**	o	femeie.
Elisabeta	has	seen-	CL.3.SG.F	DOM	F.INDF	woman.SG.F

‘Elisabeta saw a woman.’ (specific reading)

b.

*Elisabeta	a	văzut-	o	o	femeie.
Elisabeta	has	seen-	CL.3.SG.F	F.INDF	woman.SG.F

‘Elisabeta saw a woman.’ (specific reading)

The distribution of CD with postverbal objects also follows the definiteness and referentiality scales: while pronouns and proper names always occur with CD, there is a strong preference for CD with *pe*-marked definite direct objects as in (16), and some preference for CD with *pe*-marked animate indefinite direct objects, as in (15) (von Heusinger & Gáspár 2008). Inanimate objects are ungrammatical with CD because CD requires DOM, and nonspecific inanimate objects cannot be *pe*-marked, as in (17).

(16) (L)- am văzut **pe** bărbatul înalt.
CL.3.SG.M- have.1.SG seen DOM man.DEF.SG.M tall
'I saw the tall man.'

(17) *Ioana a văzut- o **pe** o casă.
Ioana has seen- CL.3.SG.F DOM F.INDF house.SG.F
'Ioana saw a house.'

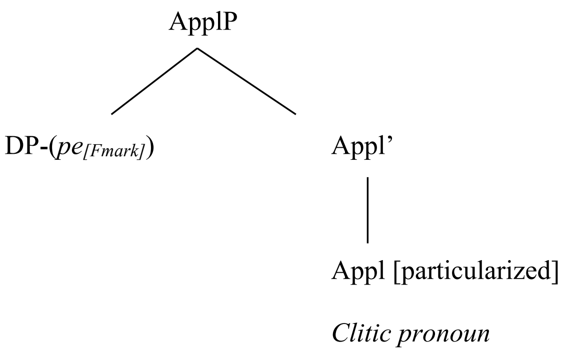
There is some disagreement in the literature with respect to the use of CD in some contexts, particularly for definite modified objects, and this is likely due to register (higher registers prefer CD). In general, von Heusinger & Gáspár (2008), von Heusinger & Chiriacescu (2009), and Gramatica Limbii Române (2005), all indicate that CD is obligatory with proper names and personal pronouns, regardless of whether the pronouns refer to animate or inanimate objects, and thus sentences as in (18) (example from Farkas and von Heusinger 2003: 1) are ungrammatical.

(18) Maria *(l)- a desenat *(**pe**) Matei/el.
Maria *(CL.3.SG.M)- has drawn *(DOM) Matei/him
'Maria drew Matei/him.'

With modified animate DPs, CD and DOM are optional (Farkas & von Heusinger 2003). Gramatica Limbii Române (2005) notes that CD is obligatory with modified animate DPs with strong quantifiers, while definite modified DPs are reported to be marginal for some speakers (von Heusinger & Chiriacescu 2009). For the purposes of the present study we will assume that CD and DOM are both required for proper names and personal pronouns, and optional with definite DPs, despite some variation that exists in the language. DOM and CD are ungrammatical with inanimate objects, especially if these are not specific.

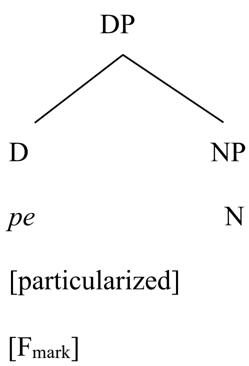
Hill & Mardale (2017; 2019; 2020) propose that Romanian DOM obligatorily involves an activated bundle of discourse features in K. DOM-marked direct objects stay in situ in the VP, in a split DP structure (Bernstein et al. 2018) with two D positions (D_1 and D_2 and a D_{DOM} position in between). The object marker *pe* spells out the discourse feature bundles of K, although it is not a functional preposition in Modern Romanian. The bundle includes the formal feature [particularized], which maps the semantic noun features animacy, reference, and specificity, and the feature [F_{mark}], which maps the speaker's intention on the noun for pragmatic effects (e.g., contrastive vs. familiar effects). Diachronically, these DOM features remained in the nominal domain at all times, but changes occurred in their bundling, distribution, and spell out (Hill & Mardale 2020). So, Modern Romanian has two ways to express DOM; one with CD (the default marking option), which favors [+human] nouns, and one without CD. In Old Romanian, the DOM marker *pe* could check both [particularized] and [F_{mark}], but in Modern Romanian these features are split. The proposed structure for CD with DOM is an ApplP, as in (19). The feature [F_{mark}] is in the D of the DP and is checked by *pe*, whereas the feature [particularized] is checked by the accusative clitic in Appl.

(19)



Personal pronouns and names of animate entities systematically undergo DOM through ApplP, whereas animate DPs (nouns) are only *preferably* derived through ApplP. Categories at the end of the referentiality scale in (1) still show traces of Old Romanian. Unmodified nouns and specific indefinites project to DP with *pe* merged in D, as in (20): the presence of *pe* forces the specific reading on the noun. Both [particularized] and [F_{mark}] bundled under D and mapped to *pe* in D.

(20)



The difference between DOM *pe* with unmodified versus modified nouns is that, for the former, *pe* merges in a collapsed D, whereas in the latter *pe* merges in a split D field (Bernstein et al. 2018).

To summarize, Modern Romanian has two mechanisms to mark DOM: with clitic doubling and *pe*-marking in an ApplP, as in (19), or in a lower D position in a split DP for unmodified DPs, as in (20). In the former, the features [particularized] and [F_{mark}] are spelled out in separate projections by the accusative clitic and the marker *pe* respectively, whereas in the latter, both features are bundled and overtly expressed by the marker *pe*. We assume that native speakers of Romanian have and activate these two representations for DOM for comprehension and production.

3 The acquisition of DOM in monolinguals and bilinguals

Recent studies on the acquisition of DOM in different languages have found that DOM is acquired by age 3 in monolingual acquisition but it is vulnerable, with high rates of omission in required contexts, in bilingual and second language acquisition contexts (Avram 2015; Mardale & Montrul 2020). These overall trends extend to Romanian.

Following up on Rodríguez-Mondoñedo's (2008) findings from Spanish L1 acquisition, Ticio & Avram (2015) conducted a longitudinal comparative investigation to determine whether the semantic scales of animacy and definiteness are manifested in the spontaneous production of very young children acquiring Spanish and Romanian in a monolingual context.[1] The DOM systems of these two languages are very similar, both being regulated by animacy and by the referential stability scales, which separate proper names and definite pronouns from definite DPs (Farkas & von Heusinger 2003). Overall, error rates were relatively low in both languages when DOM emerged (between the ages 1;7–1;11 in Spanish and 1;9–2;2 for Romanian): 25.5% for Spanish and 13.6% for Romanian. DOM omission errors, which occurred before age 3;00, were more frequent than commission errors. In Romanian there were 13 overextensions of *pe* to inanimate objects, which was also noted in the child directed speech, while there was only one such extension of *a* to inanimate objects in Spanish (Ticio & Avram 2015: 393). The emergence and use of DOM in Spanish and Romanian followed the referentiality scale shown in (1) in the six children: the rate of DOM marking was higher for pronouns and names than for definite DPs and for indefinite DPs. Romanian CD appeared after the children produced *pe* and accusative clitics independently, and when CD with *pe*- marking appeared, it did so with names, definite pronouns, and definite DPs at the same time rather than gradually. Overall, Ticio & Avram's (2015) findings are consistent with the relatively early mastery of DOM reported by Rodríguez-Mondoñedo (2008) for L1 Spanish.

Avram & Tomescu (2020) investigated the acquisition of DOM in Romanian-Hungarian simultaneous bilingual children living in Romania. Ticio (2015) found that DOM is very vulnerable (more than 70% omission) in Spanish-English bilingual three year-olds. Based on this finding, since Hungarian, like English, does not have an overt differential object marker (although it has different agreement on definite and indefinite objects), Hungarian-Romanian bilinguals might also show high omission rates of *pe*. Avram & Tomescu (2020) conducted a study with two very young bilingual children (spontaneous production) and another with older children who narrated a frog story. The findings revealed that the Hungarian-Romanian simultaneous bilinguals followed the same acquisition route with pronouns and names as Romanian monolinguals.[2] However, there was more omission and instability of *pe*-marking with definite DPs, where DOM use involves discourse-pragmatics considerations and shows delayed acquisition.

The omission of required DOM with animate specific direct objects has been well established in the literature on Spanish as a heritage language in contact with English (Montrul & Bowles 2009; Montrul & Sánchez-Walker 2013; Montrul 2014; Arechabaleta 2019; 2020 among many others), with French (Grosjean & Py 1991), and with Dutch (Irizarri van Suchtelen 2016) and German (Pomino, Schmitz & Neuburger 2018). It has also been found in Hindi as a heritage language (Montrul, Bhatt & Bhatia 2012; Montrul, Bhatia, Bhatt & Puri 2019; Bhatia & Montrul 2020). Montrul, Bhatt & Girju (2015) examined the extent to which Romanian DOM is omitted in required contexts in adult heritage speakers of Romanian living in the United States. They found that Romanian heritage speakers accepted ungrammatical sentences with DOM omission in an acceptability judgment task, especially when these did not occur with CD. The present study seeks to verify the strength of this finding by investigating the potential of DOM omission in production and comprehension in the same adult speakers.

Many patterns of DOM omission by heritage speakers have been conceived as emerging from partial or incomplete acquisition arising from reduced or different input conditions (Montrul & Sánchez-Walker 2013), but most recent discussions on the etiology of

[1] The Animacy Hierarchy (Silverstein 1976)
human > animate > inanimate

The Definiteness Scale (Croft 1988; Aissen 2003: 437)
Personal pronoun > Proper name > Definite NP > indefinite specific NP > Non-specific NP.

[2] If differential agreement for animate and inanimate objects is a kind of DOM, then the children could have transferred DOM from Hungarian.

variability in heritage language grammars seek to shift the burden of explanations away from incomplete acquisition and more toward a bilingual conception of grammars interacting at the cognitive level (Putnam & Sánchez 2013). There is growing recognition that many of the variable patterns observed in heritage speakers result from structural reanalysis and rearrangement with possible changes in representation (Polinsky 2018; Scontras, Polinsky & Fuchs 2018). Another possibility is that the syntactic structure could be intact, but the changes occur in the morphophonological exponents, as proposed by the Missing Surface Inflection Hypothesis (MSIH) (Prévost & White 2000; Lardiere 2009; Putnam, Pérez-Cortés & Sánchez 2019). Neurocognitive and psycholinguistic research on bilingualism confirms that elements of both source grammars can be simultaneously active, thus leading to the possibility that continued competition for limited processing resources may lead to a restructuring of 'weaker', or 'less actively used' grammars. In the present study, we assume and support Pérez-Cortés et al.'s (2019) position that variability in heritage language grammars arises from asymmetries in access to the lexicon, which include the functional features of syntactic projections, and to syntactic representations formed in early childhood. Infrequent use of the heritage language during childhood leads to lower proficiency in adulthood, which in turn affects the fast and efficient activation and inhibition of the features, functional projections, and morphosyntactic representations in the heritage language. Pérez-Cortés et al.'s (2019) model seeks to capture asymmetries in the comprehension and production of morphosyntactic properties of the heritage language, and to explain why morphological variability is more evident in production than in comprehension in adult heritage speakers. Variable outcomes in heritage language acquisition at high and intermediate levels of proficiency stem from reduced or inhibited access to linguistic representations during language production, which does not always arise in language comprehension because comprehension requires less activation and impulses to the neural substrate than production (Paradis 2004).

4 The Study

4.1 Research Questions and Hypotheses

Four research questions guide our study:

1) Do heritage speakers of Romanian know the relationship between *pe*-DOM and CD?;
2) Do adult heritage speakers of Romanian omit *pe*-marking or CD in required contexts (animate, specific direct objects that are names or pronouns) in production?;
3) Do heritage speakers of Romanian correctly interpret *pe* as a direct object marker in comprehension?; and
4) If heritage speakers of Romanian make errors, are these related to errors made by first-generation immigrants, suggesting continuity and transmission of a contact variety, or are they unrelated errors mostly arising in a few individuals with lower proficiency, suggesting that divergence arises from difficulties with representational access, and mapping of formal features to morphophonological material under cognitive load pressure?

Our study includes a cross-generational component and there are several reasons for this design. Most of the early experimental work on heritage speakers has used a group of monolingually-raised native speakers as a baseline for comparison (Montrul 2004; Montrul, Foote & Perpiñán 2008). Some have argued that heritage speakers are primarily exposed to input that may be different from the input under which monolingually raised native speakers developed their language (Sorace 2004; 2020; Rothman 2007; Pires & Rothman 2009; Pascual y Cabo 2013). Valid arguments have been made for also using a more ecologically suitable baseline group, such as, for example, the equivalent of the parental generation of the heritage speakers: namely, immigrants who grew up in the homeland and who are also now residing in the same bilingual environment as the heritage speakers (Otheguy & Zentella 2012; Kupisch & Rothman 2018; Montrul 2016; Bayram et al. 2019; Polinsky 2018). Adding a group of immigrants who speak the same contact variety as the heritage speakers allows us to address the relationship between the linguistic knowledge of the first-generation speakers and the second-generation, heritage speakers, and to trace whether structural changes in the heritage language of young adults can be related to similar patterns in the immigrant generation, under the assumption that the first-generation speakers are, generally speaking, the input providers for the heritage speakers. Furthermore, to see if the first-generation Romanian speakers speak a variety of their native language that is already influenced by contact with the majority language of the new environment, then native speakers in the homeland, who are not living in a language contact situation, must be the baseline for this group. Finally, our study also included a group of native speakers in the homeland of the same age and SES as the heritage speakers to assess convergence or potential changes in the language spoken in the homeland and in the first-generation immigrants (see also Flores, Rinke & Azevedo 2017 and Rinke, Flores & Barbosa 2018 for a similar cross-generational approach).

If the language of the adult immigrants converges with the language of the older speakers in Romania, then we can conclude that the Romanian immigrants do not manifest L1 attrition of DOM and CD. If the heritage speakers' patterns diverge from the adult immigrants, that is, they show omission of DOM and CD and poor comprehension of DOM, unlike the first-generation immigrants and the younger and older native speakers in Romania, then such divergent uses of DOM and CD cannot be attributed to the quality of the input the heritage speakers of Romanian were exposed to in the United States. If the heritage speakers make errors, especially in production, these may be more likely due to computational difficulties and differential access to linguistic representations due to cognitive load. Computational difficulties in mapping the features [particularized] and [F_{mark}] to appropriate functional structure in CD + DOM (19) and DOM (20) structures may arise from early onset of bilingualism, less exposure to and use of Romanian in later childhood and adolescence, and lower proficiency in the heritage language in general.

The evidence for age effects in language attrition is substantial: younger bilingual children whose L1 is a minority language and receive less exposure and use it less than the majority language are more likely to exhibit language loss or attrition than older bilingual children and adults who had a longer period of monolingualism in their L1 (Yeni-Komshian et al. 2000; Montrul 2008; Bylund 2009; Flores 2010; Ahn et al. 2017; Karayayla & Schmid 2019). We therefore predict that the heritage speakers exposed to English and Romanian since birth (simultaneous bilinguals) and before age 5 (pre-school) will show more variability with DOM and CD than heritage speakers exposed to Romanian and then to English (sequential bilinguals) in later childhood, at around school entry, and than Romanian immigrants with age of exposure to English in adulthood.

4.2 Participants

A total of 126 Romanian speakers participated in the study. Thirty-two were Romanian immigrants and 42 were heritage speakers residing and tested in the Central Illinois and Chicago area. Fifty-two Romanian native speakers were tested in Brașov, Romania (31 were in their 20s and 21 in their 40s). The participants were divided into five groups: three from the United States—simultaneous bilingual Romanian heritage speakers (n = 23),

Table 1: Information about the Romanian participants in this study.

	United States groups			Romania groups	
	simultaneous bilingual HS	sequential bilingual HSs	adult immigrants	younger native speakers	older native speakers
N	20	19	30	31	21
age at testing	20.2	21.3	40.5	22.7	49.4
AoA Romanian	birth	birth	birth	birth	birth
AoA English	3.3[3]	8.7	19.2	8.4	9.3
LOR US (years)	18.1	12.1	9.2	—	—
LOR Romania	—	10.6	24.3	22.7	49.4
Romanian feels like an L1	41.5%	66%	100%	—	—
Romanian feels like an L2	58.5%	34%	—	—	—
Self-ratings in English (scale 1-5)	4.9	4.7	4.3	3.5	2.4
Self-ratings in Romanian (scale 1-5)	3.7	4.5	4.6	4.9	4.9
English listening	4.9	4.6	4.6	3.6	2.9
English speaking	4.8	4.6	4.2	3.1	2.4
English reading	4.8	4.6	4.5	3.5	2.7
English writing	4.7	4.6	4.0	2.9	2.4
Romanian listening	4.1	4.8	4.8	4.9	5
Romanian speaking	3.5	4.6	4.4	4.7	5
Romanian reading	3.7	4.5	4.3	4.8	5
Romanian writing	2.9	4.0	4.2	4.7	4.8
mean Written Prof. Test (max = 27)	22.15	24.7	26.7	26.2	26.0
SD	2.98	1.62	.59	.97	1.14
range	16–27	22–27	25–27	22–27	23–27

sequential bilingual Romanian heritage speakers (n = 19), and adult Romanian immigrants (n = 32)—and two native groups from Romania: younger native speakers (n = 31) age-matched to the heritage speakers and older native speakers (n = 21) age-matched to the first-generation Romanian immigrants.

All participants completed an extensive language background questionnaire with sixty-five questions about their bilingual language history, patterns of language use across their lifespan and during schooling, self-ratings about their Romanian and English skills, attitudes toward improving Romanian, etc. We used a short Romanian proficiency test (Montrul, Bhatt & Girju 2015) as a general measure of written proficiency. Basic descriptive information about the five Romanian-speaking groups is presented in Table 1. All participants were asked to self-assess their linguistic ability in English and in Romanian, since most participants, including the native speakers tested in Romania, had been exposed to some English.

[3] There were 4 participants who lived in Romania until age 5, the rest all were born in the United States. For Meisel (2013), age 4 is already a sequential bilingual. Our reasoning for including these individuals in the simultaneous bilingual group was that 5 years old is still pre-school; the sequential bilinguals, who were older than 7 and 8 when they arrived in the United States, had experience with school in Romanian. Because age 5 is critical for heritage language children due to the drastic change in input upon school entry, we therefore included these early bilinguals in the simultaneous bilingual group.

The immigrants immigrated after age 18, had been living in the United States between 4 and 20 years, completed their education in Romania, and had knowledge of other European languages (Hungarian, German, Russian, French, and English). The simultaneous bilingual heritage speakers were young adults between the ages of 18–23 (mean 20.2) living in the United States and born to Romanian parents. Ten of them (50%) were born in Romania and immigrated with their parents between ages 1–4 (before the onset of schooling), and the rest were born in the United States. The sequential bilingual Romanian heritage speakers were between the ages of 18 and 32, immigrated to the United States with their Romanian parents between the ages of 7 and 14, and had been living in the United States for an average of 10.6 years at the time of testing. Their mean age of acquisition of English was 8.7 years. Unlike the simultaneous bilinguals, this group had a substantial period of monolingualism in Romanian. While the 7 to 14 age of arrival range seems wide, we decided to group these speakers together because they came to the United States *after* they started school, whereas the four simultaneous bilinguals who moved from Romania arrived before age 5, the onset of schooling. The linguistic environment of children changes significantly with the onset of schooling, and especially for immigrant children. Carreira & Kagan (2011) report that up to age 5, heritage speakers in the United States use their heritage language 70% of the time, while after age 6, use of the heritage language drops to 18.9% and then to below 4% after 23 years of age.

The heritage speakers reported using Romanian mostly with the caregivers (mother and/or father). All the sequential bilinguals spoke Romanian with their parents. Fifteen (75%) of the simultaneous bilinguals spoke English and Romanian before age 5, the rest only Romanian. Only 8 participants (35%) lived at home with a Romanian-speaking grandparent and all of them reported speaking only Romanian with their grandparents. The parents of all the heritage speakers (simultaneous and sequential bilinguals) spoke mainly Romanian and one or more European languages (Hungarian, French, Russian, German, Italian) as second or third languages, the same languages as the immigrants. The simultaneous bilingual heritage speakers reported using mostly English with siblings and English and Romanian with the parents. The sequential bilinguals used mostly Romanian with their parents, and only 2 reported using more English. All of the simultaneous bilinguals attended English-only schools in the United States. Of the sequential bilingual group, 7 attended elementary school in Romania and the rest attended English-only schools in the United States with no Romanian as a foreign or second language at school. The simultaneous bilingual heritage speakers were exposed to more English in childhood than the sequential bilingual speakers, which may explain why these heritage speakers exhibit lower proficiency in Romanian than the sequential bilinguals and the adult immigrants. However, all the simultaneous bilinguals reported receiving between 2 and 10 hours of instruction in Romanian during their elementary school period, mostly from their parents, and no hours at all during middle school and high school.

Native speakers of Romanian were tested in Romania. Younger speakers (n = 31) were another comparison group for the heritage speakers, and the 21 older speakers were the comparison group for the immigrants. The younger Romanian speakers were between the ages of 18 and 27 and were recruited from Transylvania University of Brașov. They all had some knowledge of English and of another European language, which they had learned as a second language in Romania. The older Romanian native speakers were recruited in the same city and were between the ages of 41 and 60 (mean 49.42) at the time of testing. They were all schooled and educated in Romania and spoke some English and other European languages.

There were significant differences between the groups on their ratings of their English ability ($F(4, 119) = 25.42$, $p < 0.0001$) and their ability in Romanian ($F(2, 119) = 9.89$, $p < 0.0001$) because the two groups of heritage speakers rated their English higher than the other three groups, and their Romanian significantly lower than the other three groups. The simultaneous bilinguals and the sequential bilinguals did not differ on their self-rating of English, but they differed on their self-rating in Romanian: the simultaneous bilinguals rated their Romanian much lower than the sequential bilinguals and the difference was significant ($p < 0.0001$). The sequential bilinguals and the immigrants did not differ from each other on their Romanian self-ratings or their English self-ratings. Consistent with common patterns in heritage speakers, the weakest skill in the Romanian heritage speakers was writing and their strongest auditory comprehension (listening). Romanian is the weaker language of the simultaneous and sequential bilingual heritage speakers according to their self-ratings compared to their English (simultaneous bilinguals $t\,(20) = 11.3$ $p < 0.0001$; sequential bilinguals $t(17) = 8.42$, $p < 0.0001$), while for the immigrants their ability in the two languages was balanced and there were no statistical differences in their own self-ratings of English compared to Romanian ($t(30) = 1.24$, $p = 0.22$). For the two Romanian native speaker groups, their Romanian was stronger than their English, as expected (younger Romanians $t(31) = 5.93$, $p < 0.0001$, older Romanians $t(21) = 7.17$, $p < 0.0001$).

Because the heritage speakers had some literacy in Romanian, we deemed that using a written proficiency test was appropriate. The results of the proficiency test showed highly significant group differences ($F(4, 119) = 15.18$, $p < 0.0001$). According to Tukey post-hoc tests, the simultaneous bilingual heritage speakers scored lower than the four other groups ($p < 0.0001$), and the sequential bilinguals scored lower than the immigrants and the two native Romanian groups (all ps < 0.05). The immigrants and the two native Romanian-speaking groups did not differ from each other on the Romanian proficiency cloze test (all ps > 0.05).

4.3 Tasks

4.3.1 Elicited Oral Production

The purpose of this task was to elicit uses of CD and *pe*-marking with different NPs. Participants were presented with a PowerPoint presentation with 28 pictures (one per slide) showing people performing an action with animate or inanimate objects: for example, in one image a boy is touching a plant, in another image a mother is carrying a baby. See Figure 1. The design consisted of seven verbs appearing with animate and inanimate objects (*a căra* ‘carry’, *a cunoaşte* ‘meet’, *a îmbrăţişa* ‘hug’, *a vedea* ‘see’, *a vizita* ‘visit’, *a săruta* ‘kiss’, *a atinge* “touch’), seven verbs that predominantly take animate objects (*a primi* ‘welcome’, *a ataca* ‘attack’, *a saluta* ‘greet’, *a răpi*, ‘kidnap’, *a ajuta* ‘help’, *a pedepsi* ‘scold’, *a judeca* ‘judge’), and seven verbs taking inanimate objects (*a studia* ‘study’, *a repara* ‘fix’, *a bea* ‘drink’, *a cumpăra* ‘buy’, *a asculta* ‘listen to’, *a citi* ‘read’, *a semna* ‘sign’). Verb and object selection were driven by picturabilty and clarity of images rather than by verb frequency. There were 28 target images (14 depicting animate objects and 14 depicting inanimate objects), and 7 fillers with psych verbs. Participants were asked to describe the pictures by forming an S-V-O sentence and conjugating the verb in the past or present tense. Describing an image that had a name as a direct object required using DOM and CD (von Heusinger & Gáspár 2008), while in describing an animate object, participants could optionally indicate DOM.

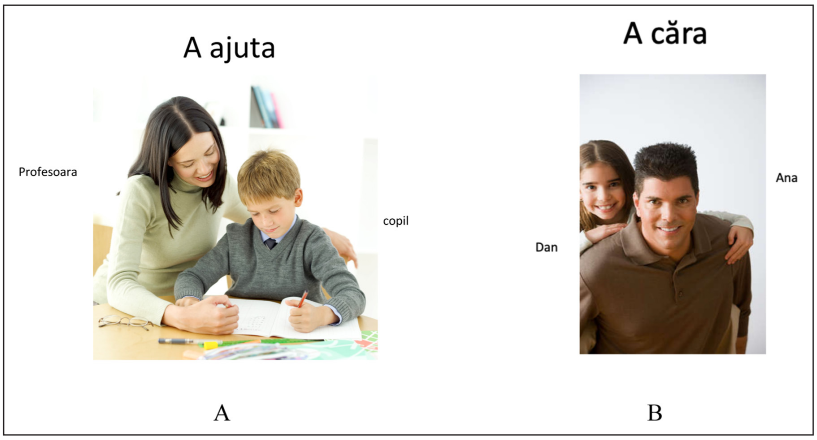


Figure 1: Example test items from the elicited Oral Production Task.

Target response A:

(a)

Profesoara	**îl**	ajută	**pe**	copil.
teacher.DEF.F	CL.3.SG.M	helps	DOM	child.SG.M

‘The teacher helps the child.’

(b)

Profesoara	ajută	copilul.
teacher.DEF.F	helps	child.DEF.SG.M

‘The teacher helps the child.’

Target response B:

Dan	**o**	cară	**pe**	Ana.
Dan	CL.3.SG.F	carries	DOM	Ana

‘Dan carries Ana.’

4.3.2 Written Production Task

The written production task (WPT) consisted of 25 target sentences. Participants were given three words—a noun, a verb in the infinitive, and another noun—and were instructed to write a complete sentence with the three words given by adding all the grammatical elements they considered necessary (articles, prepositions, inflections). Five sentences targeted transitive verbs with human objects, as in (21), another five targeted sentences with inanimate objects, as in (22), and five the preposition *pe* as a locative (23). Another ten sentences acted as fillers and included indirect objects (24) and dative experiencers with psych verbs (25). While indirect objects are not *pe*-marked in Romanian, some experiencers are.[4]

(21) <u>animate direct object</u>

prompt:	Marisa/	a cunoaşte/	sora	mea
	Marisa	know	sister.DEF.SG.F	POSS.1.SG.F
grammatical response:	Marisa	**o**	cunoaște	**pe**
	Marisa	CL.3.SG.F	knows	DOM
	sora	mea.[5]		
	sister.DEF.SG.F	POSS.1.SG.F		

‘Marisa knows my sister.’

[4] Because these items were fillers we do not expand on the syntax of indirect objects and psych verbs in the present study.
[5] Only two of the five stimuli in this category included possessive NPs. The other three were names.

(22) <u>inanimate direct object</u>

prompt:	Patricio/	a	vizita/	Muzeul Prado	
	Patricio	to	visit	del Prado Museum	
grammatical response:	Patricio	a	vizitat	muzeul	Prado.
	Patricio	has	visited	museum.DEF.SG.M	Prado
	‘Patricio visited the del Prado Museum.’				

(23) <u>*pe*-preposition as locative</u>

prompt:	Cartea/	a se	afla/			masă
	book	to be	found/be located			table
grammatical response:	Cartea	se		află	**pe**	masă.
	book.DEF.F	REFL.3.SG		FIND	on	table
	‘The book is on the table.’					

(24) <u>indirect objects</u>

prompt:	Francisco/	a	dezvălui/	mamă/	secret
	Francisco	to	reveal	mother	secret
grammatical response:	Francisco	i-		a	dezvăluit
	Francisco	CL.3.SG.DAT-		has	revealed
	mamei	un		secret.	
	mother.DAT.SG.F	INDF.SG.M		secret.SG.M	
	‘Francisco revealed mother a secret.’				

(25) <u>psych verbs (dative experiencers)</u>

prompt:	Juan/	a	plăcea/	Patricia		
	Juan	to	like	Patricia		
grammatical response:	Juan	**o**		place	**pe**	Patricia.
	Juan	CL.3.SG.F		likes	DOM	Patricia
	‘Juan likes Patricia.’					

The objective of this task was to see if the heritage speakers omit *pe* with animate specific direct objects in written production as well, when they supposedly have more time to compose and write their responses than when speaking.

4.3.3 Auditory/Written Comprehension Task

The goal of the comprehension task was to assess whether heritage speakers perceive and assign meaning to *pe*-marking in DOM sentences. A picture-sentence matching task was designed to test minimal pairs differing on the presence or absence of DOM and in their argument structure. The auditory version of the task tested perception of the preposition *pe* (the DOM marker) after the verb, and a written version was used to determine whether heritage speakers assign meaning to the DOM marker when they see it. To minimize chance performance, the test included a third choice (a foil sentence or distractor) per minimal pair (e.g. plural: *Au sunat pe Juan* ‘They called Juan’) and fillers with indirect objects. (See Montrul 2014 for the Spanish version of this task).

The written and auditory versions of the picture-sentence matching task included 12 target verbs with direct objects (*a invita* ‘invite,’ *a saluta* ‘say hi,’ *a suna* ‘call,’ etc.), where the preposition *pe* is a DOM marker as shown in Figure 2, and 8 verbs with indirect objects (*a cânta* ‘sing,’ *a scrie* ‘write,’ *a împușca* ‘shoot,’ etc.). Each verb and each series of three pictures appeared three times, once with each sentence type (A = DOM/dative, B = V-S, C = foil). The total number of target picture-sentences was 60 (split in half, so 30 each version) and 60 fillers with indirect objects (30 each version).

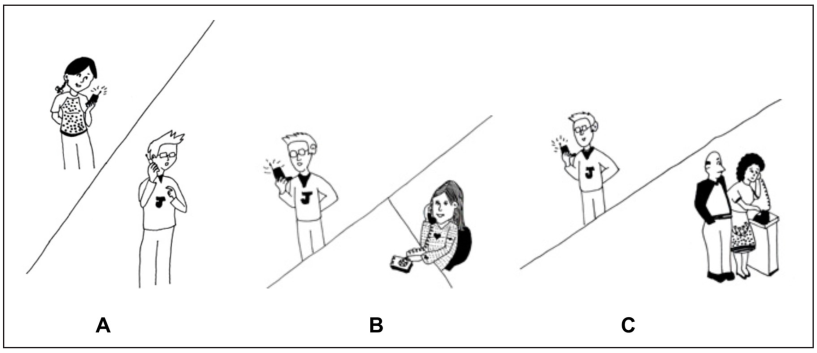


Figure 2: Sample pictures and sentence item from the comprehension task.

Prompt:	A	sunat	pe	Juan.
	has	called	DOM	Juan
	'He/she called Juan'			

Participants saw three pictures (A, B, and C) on a computer screen. In picture A of Figure 2, Juan is calling somebody by phone, in picture B Juan is receiving a call, and in picture C Mary and Jane are calling Juan on the phone. At the same time, participants heard/read one sentence at a time, such as *A sunat pe Juan* 'He/she called Juan', and had to indicate which picture matched the sentence, by pressing the A, B, or C on the keyboard. In this case, B is correct. The test was completed through Survey Gizmo, a web-based survey program. After the participant made a choice, the responses disappeared: the survey was programmed so that it was not possible for participants to compare sentences and go back and change answers.

The same pictures appeared two more times in random order, with two other sentences *A sunat Juan* 'Juan called.' and *Au sunat pe* Juan 'They called Juan.' If heritage speakers do not have a representation for DOM, they may not perceive the preposition *pe* or assign meaning to it as a DOM marker. They will not distinguish the meaning of sentences with V-O and V-S order. They will either be at chance or they will accept more sentences without *pe* marking (V-S) as referring to an object: so, *A sunat Juan* will be interpreted as *A sunat pe Juan*. Thus, we expect confusion between the sentences with and without *pe*, or a higher error rate with the sentences with no *pe* and V-S order.

5 Results

5.1 Oral Production

Verbal responses were audio recorded and transcribed for analysis. Transcriptions were done by five Romanian native speakers and checked by two additional native speakers, including the second author (a speaker of Romanian). Transcripts were coded for presence and absence of *pe* with animate, specific direct objects, and with inanimate objects. Because referentiality is important for *pe*-marking in Romanian, we coded the types of DPs (definite DPs, names, pronouns, modified DPs, bare nouns), animacy, and specificity of the object. We also coded for the presence or omission of DOM and accusative clitic doubling (CD). Human definite animates such as 'grandmother' were coded as 'names' because they represent specific familial relationships in the sentences elicited and such definites have been interpreted as names in the literature (c.f. Mardale 2009; von Heusinger & Gáspár 2008; Dobrovie-Sorin & Giurgea 2013). Exactly one slide in the task elicited the noun *bunica* 'grandmother', *Baiatul o vizitează pe bunica* 'The boy visits grandmother'. All other names in the task were proper names. Table A in the Appendix presents illustrative examples of how the data were coded. Because personal pronouns and names require both DOM and CD as the preferred and default option (Farkas & von Heusinger

2003; von Heusinger & Chiriacescu 2009; von Heusinger & Gáspár 2008), omission of CD with names was coded as an error.

Raw data were submitted to R (R development core team 2014) where we calculated frequencies and statistics (mixed effects logistic regressions, lmer4 package, lmertest, glmer() function in R (Baayen 2008).

The dependent variables were the presence and omission of DOM (*pe*) with animate and inanimate objects, and the presence or absence of CD. Errors with DOM could be of two types: omission of *pe* with animate, specific objects if they are pronouns and names (recall that these are referentially stable) and overextension of *pe* to inanimate objects that are not dislocated. *Pe* marking with definite DPs is optional because definite DPs are less referentially stable than pronouns and names. There were no pronouns in the data, so for animate and inanimate objects we distinguished between Names, definite DPs, indefinite DPs and definite modified DPs. Clitic doubling is correct with pronouns and proper names, but also with *pe*-marked bare Ns with human referents, and *pe*-marked modified definite DPs. CD is mostly unacceptable with inanimate objects.

We fitted several binomial logistic regression models with fixed factors as main effects or interactions. The models were built up incrementally with Group and accuracy on DOM or CD as main effects in the first model, followed with different models with interactions between different factors and group. The optimal model included the maximal random effect structure justified by the data, and this resulted in a subject intercept. We report the models that best fit the data and those that were specifically performed to address our research questions and hypotheses. Models that did not converge or which did not show any statistically significant result are not reported.

There were 3,302 observations (sentences) produced by all the participants: about half contained animate objects and the other half inanimate objects. Of these objects, 2602 (78.8%) were classified as specific, the rest non-specific (21.2%), depending on type of NP. The distribution of NP types was as follows: 21.32% names, 47.75% definite DPs, 16.11% indefinite DPs, 13.05% bare singulars (e.g., *muzică* 'music'), 1.3% bare plurals. About 941 objects of 3302 (28.5%) were *pe*-marked. This is because the vast majority of definite DPs and 60% of bare plurals Ns were unmarked: *pe*-marking is optional with definite DPs. A total of 657 (19.9%) of objects had clitic doubling (CD). Figures 3 and Figures 4 show the distribution of DOM and CD presence/absence by object animacy (Figure 3) and by specificity of the object (Figure 4) by type of NP. DOM marking and CD are largely absent with inanimate objects. Not all animate objects were DOM and CD marked: overall, names were marked but definite DPs were not.

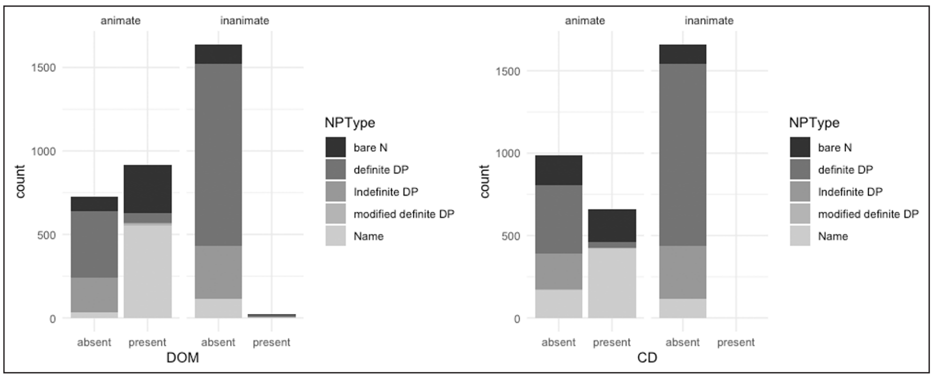


Figure 3: Overall Distribution of DOM and CD in the entire dataset by object animacy and NP type.

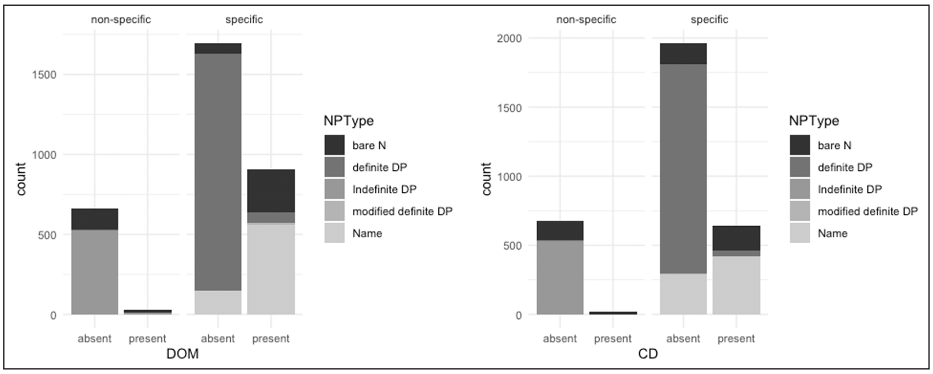


Figure 4: Overall Distribution of DOM and CD by object specificity and NP type in the entire dataset.

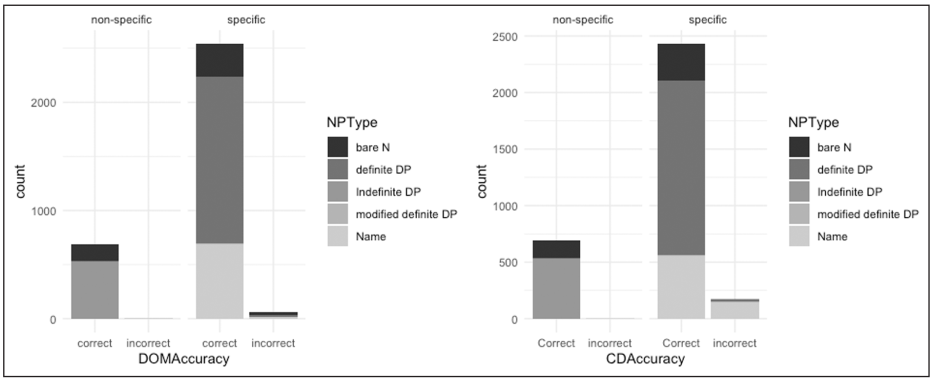


Figure 5: Overall DOM accuracy by specificity and CD accuracy by animacy in the entire dataset. Group codes: ADIM: immigrants, HSE: simultaneous bilingual HS, HSL: sequential bilingual HS, NSO: older Romanian native speakers, NSY: younger Romanian native speakers.

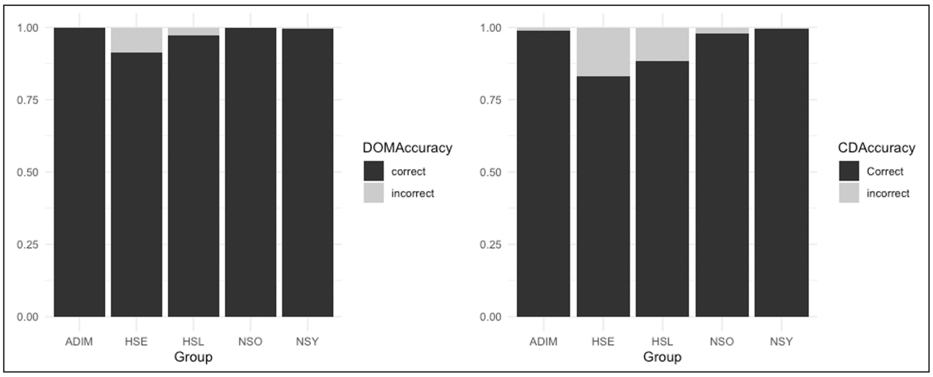


Figure 6: DOM and CD accuracy by group. Group codes: ADIM: immigrants, HSE: simultaneous bilingual HS, HSL: sequential bilingual HS, NSO: older Romanian native speakers, NSY: younger Romanian native speakers.

Figure 4 also shows that even though definite DPs were specific, they were unmarked because DOM is optional with definite DPs. Names, being referentially stable, were marked.

Errors were very few in general: there were 67 incorrect uses of DOM and 172 incorrect uses of clitic doubling. There was omission of DOM with specific direct objects and omission of CD with animate objects, mostly names, as shown in Figure 5.

Even though the number of errors was small, Figure 6 shows that the heritage speakers, especially the simultaneous bilingual group, produced the majority of the errors with both DOM (70% of all errors, 8.6% for the group) and CD (55% of all errors, 16.8% for the group). The sequential bilinguals made 2.9% errors with DOM and 11.5% errors with CD. Accuracy for the immigrants and the other Romanian native speaker groups ranged from 98.8–100% (ceiling).

We first ran two binomial regression analyses comparing the three native speaker groups: immigrants (ADIM), younger Romanian speakers (NSY) and older Romanian speakers on accuracy on DOM and accuracy on CD, and both analyses showed no significant differences between groups. We then compared only one of the native speaker groups—the immigrants (ADIM)—with the two groups of heritage speakers (HSE and HSL). There were significant differences between the immigrants and the heritage speakers in both DOM accuracy (Table 2) and CD accuracy (Table 3). The reference group is Immigrants.

DOM accuracy on animate objects was statistically lower than accuracy on inanimate objects. The model found significant differences between the immigrants and the heritage speakers. Pairwise comparisons showed that the immigrants were different from the two groups of heritage speakers (ADIM – HSE $p < 0.0001$, ADIM – HSL $p < 0.0044$, and the simultaneous bilinguals made significantly more errors than the sequential bilinguals (HSE- HSL, $p < 0.0329$).

With animate objects, the Immigrants were statistically more accurate at producing CD than the two heritage speaker groups, as confirmed by pairwise comparisons (ADIM – HSE $p < 0.0001$, ADIM – HSL $p < .0001$). As with DOM, the simultaneous bilinguals made significantly more errors with CD than the sequential bilinguals (HSE-HSL, $p < 0.0200$).

To summarize, we found that all speakers of Romanian are guided by the referentiality scale when marking direct objects with DOM and accusative CD in oral production. In terms of error rates, the three control groups of native speakers performed at ceiling and did not differ from each other. The heritage speakers made 8.6% omission errors of DOM with specific objects (range 75–100% accuracy) and 16.8% of omission errors of with CD (range 65.2–94.7% accuracy), mostly with names and specific definite DPs. Of the 20 simultaneous bilinguals 14 made errors with DOM and all of them made omission errors with CD). The sequential bilinguals made 2.9% errors with DOM (accuracy range 68–100%) and 11.5% errors with CD (accuracy range 73.9–100%). Of the 19 sequential bilinguals, only 4 made errors with DOM and 14 made CD omission errors).

Table 2: Fixed and Random effects of accuracy by object animacy and group.

Fixed Effects	***Estimate***	***Std. Error***	***z value***	***Pr(>|z|)***
(Intercept)	−6.5523	0.8111	−8.079	0.0001***
OBJECTinanimate	−0.7989	0.2866	−2.788	0.001**
GroupHSE	4.0096	0.8379	4.785	0.0001***
GroupHSL	2.6087	0.8232	3.169	0.001**
Random Effects	***Variance***	***SD***		
	1.461	1.209		

Table 3: Fixed effects CD accuracy with animate objects.

Fixed Effects	***Estimate***	***Std. Error***	***z value***	***Pr(>|z|)***
(Intercept)	−3.7885	0.3384	−11.195	0.0001***
GroupHSE	3.0812	0.3677	8.380	0.0001***
GroupHSL	2.5513	0.3759	6.787	0.0001***
Random Effects	***Variance***	***SD***		
	0.4117	0.2029		

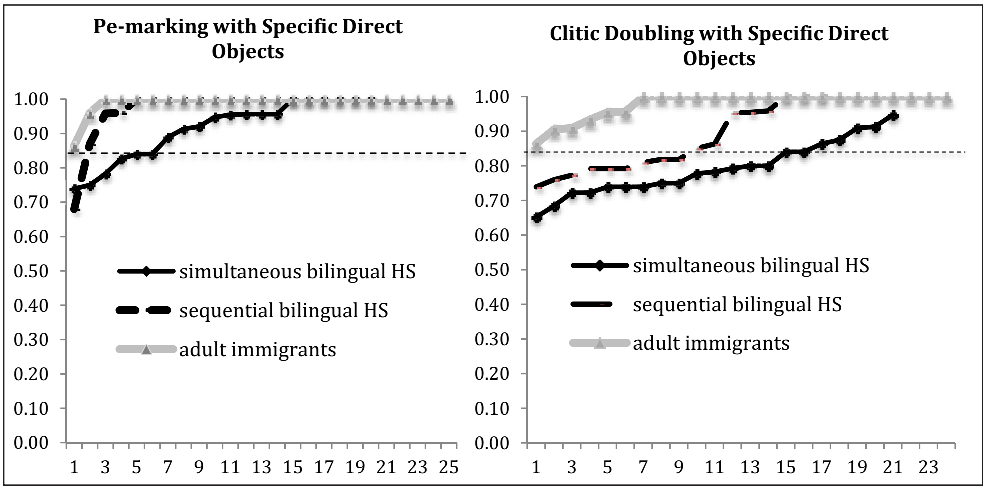


Figure 7: Individual participants' mean accuracy production of *pe*-marking (DOM) and clitic doubling (CD) with specific direct objects.

Figures 7 show the distribution of individual participants' accuracy by group (simultaneous bilingual heritage speakers, sequential bilingual heritage speakers and adult immigrants). Sample errors are shown in (26)–(31). The dashed line at 85% marks the lowest range for the first-generation immigrants: several heritage speakers had accuracy scores that fell below the lowest accuracy score of the first-generation immigrants.

(26)	*Hoţul	a	atacat	prezi… prezidente.		
	thief.DEF.SG.M	has	attacked	president.SG.M		
Target:	Hoțul	**l-**	a	atacat	**pe**	președinte.
	thief.DEF.SG.M	CL.3.SG.M-	has	attacked	DOM	president.SG.M
	'The thief attacked the president.'					

(27)	*Familia	a	primit	imigrant.		
	family.DEF.SG.F	has	received	immigrant.SG.M		
Target:	Familia	**l-**	a	primit	**pe**	imigrant.
	family.DEF.SG.F	CL.3.SG.M-	has	received	DOM	immigrant.SG.M
	'The family welcomed the immigrant.'					

(28)	*Banditul	a	răpit	femeie.		
	bandit.DEF.SG.M	has	kidnapped	woman.SG.F		
Target:	Banditul	a	răpit-	**o**	**pe**	femeie.
	bandit.DEF.SG.M	has	kidnapped-	CL.3.SG.F	DOM	woman.SG.F
	'The bandit kidnapped the woman.'					

(29)	*Băiatul	vizită	bunica	sa.		
	boy.DEF.SG.M	visits	grandmother.DEF.SG.F	POSS.3.SG.F		
Target:	Băiatul	**o**	vizitează	**pe**	bunica	sa.
	boy	CL.3.SG.F	visit	DOM	grandmother.DEF.SG.F	POSS.3.SG.F
	'The boy visits his grandmother.'					

(30)	*Eduard	cunoaşte	Alexandru.		
	Eduard	knows	Alexandru		
Target:	Eduard	**îl**	cunoaște	**pe**	Alexandru.
	Eduard	CL.3.SG.M	knows	DOM	Alexandru
	'Eduard knows Alexandru.'				

(31) *David supără Elena.
David upsets/annoys Elena

Target: David **o** supără **pe** Elena.
David CL.3.SG.F upsets/annoys DOM Elena
'David upsets/annoys Elena.'

There were also several errors of use of *pe* with DPs with definite suffixes, such as in (32), which violated the syntactic restrictions of prepositions followed by nouns with definite articles.

(32) *Profesoara ajută **pe** copilul.
teacher.DEF.SG.F helps DOM child.DEF.SG.M

Target: Profesoara **îl** ajută **pe** copil.
teacher.DEF.SG.F CL.3.SG.M helps DOM child.SG.M
'The teacher helps the child'

Although errors were relatively few (67 incorrect uses of DOM and 172 incorrect uses of clitic doubling in the entire dataset), overall accuracy with DOM and CD was statistically significant. As predicted by our hypothesis of age effects, more simultaneous bilinguals than sequential bilinguals scored below the range of variation of the adult immigrants (below 85%). The immigrant group showed no signs of attrition (accuracy rates between 86%–100%) since they did not differ from the older and younger Romanians tested in Romania.

5.2 Written Production

The written production data was coded in the same manner as the oral production data, for presence and absence of *pe* with human and inanimate direct objects, indirect objects, experiencer arguments of psych verbs, and objects of preposition (locative). Correct uses of *pe* received 1 point and incorrect uses 0. Raw data were submitted to statistical analysis in R, a binomial logistic regression, following the same procedure and analyses as with the oral production task. Overall accuracy on the written production task was at ceiling for the three reference groups: the immigrants (99.5%) and the younger (99.6%) and older Romanian (100%) speakers. Accuracy for the sequential heritage speakers was 92.7% and 90.8% for the early bilinguals. Some heritage speakers did score below 75% accuracy with most sentences, as Table 4 shows. There were more errors in the simultaneous bilingual group than in the sequential bilingual group.

Different models of binomial logistic regression were run and the best model used accuracy of *pe*-marking as dependent variable, with group and object type as fixed factors and participants as random effect. As with the oral task, we first ran the models comparing

Table 4: Mean Percentage Accuracy of *pe* with different arguments by group in the written production task. (Ranges in parentheses).

	Human object	Inanimate object	Indirect object	Dative experiencer	Locative *pe*
Older Romanians	99.3 (85–100)	100	100	100	100
Younger Romanians	98.9 (85–100)	100	100	100	99.2 (75–100)
Adult Immigrants	98.2 (80–100)	99.8 (94–100)	100	99.6 (97.5–100)	99.7 (90–100)
Sequential Bilingual HSs	97.8 (80–100)	99.4 (88.9–100)	100	90.6 (50–100)	92.4 (66.7–100)
Simultaneous Bilingual HSs	91.7 (50–100)	91.2 (50–100)	98.8 (75–100)	81.7 (20–100)	90.9 (66.7–100)

the three control groups: immigrants, younger Romanian speakers, and older Romanian speakers, and found no significant differences between the groups. The second step was to compare the adult immigrants and the heritage speakers. Table 5 shows the fixed effects for accuracy and by type of object and group. The only significant difference was between the immigrant group and the simultaneous bilingual heritage speakers (HSE).

Some examples of errors produced by the heritage speakers appear in (33), (34), and (35).

(33) *Sora a vedea Carmen ieri.
sister.DEF.SG.F to see Carmen yesterday

Target: Sora a văzut-**o** **pe** Carmen ieri.
sister.DEF.SG.F has seen-CL.3.SG.F DOM Carmen yesterday
'The sister saw Carmen yesterday.'

(34) *Studenta vizita Sabina.
student.DEF.SG.F visits Sabina

Target: Studenta **o** vizitează **pe** Sabina.
student.DEF.SG.F CL.3.SG.F visits DOM Sabina
'The student visits Sabina.'

(35) *Mama fascina Luciano Pavarotti.
mother.DEF.SG.F fascinate Luciano Pavarotti
'Mother fascinates Luciano Pavarotti.'

Target: **Pe** mama **o** fascinează Luciano Pavarotti.
DOM mother.SG.F CL.3.SG.F fascinates Luciano Pavarotti
'Luciano Pavarotti fascinates Mother.'

Table 5: Written Production Task: Effects for accuracy on type of object by group.

Fixed Effects	***Estimate***	***Std. Error***	***z value***	***Pr(>|z|)***
(Intercept)	−4.0662	0.5823	−6.983	2.88e-12***
GroupHSE	1.7053	0.6697	2.546	0.0109*
GroupHSL	0.2595	0.9220	0.281	0.7784
ObjectTypeinanimate	−1.5136	1.1588	−1.306	0.1915
ObjectTypeindirect	−15.4999	−792.7966	0.020	0.9844
ObjectTypelocative	−0.7701	1.1606	−0.664	0.5070
ObjectTypepsych	−0.8391	1.1604	−0.723	0.4696
GroupHSE:ObjectTypeinanimate	1.5520	1.2351	1.257	0.2089
GroupHSL:ObjectTypeinanimate	0.3163	1.6913	0.187	0.8517
GroupHSE:ObjectTypeindirect	13.1422	792.7973	0.017	0.9868
GroupHSL:ObjectTypeindirect	−0.2595	1327.5310	0.000	0.9998
GroupHSL:ObjectTypelocative	0.7728	1.2700	0.609	0.5428
GroupHSE:ObjectTypelocative	1.9966	1.4399	1.387	0.1656
GroupHSE:ObjectTypepsych	1.7565	1.2364	0.1554	1.421
GroupHSL:ObjectTypepsych	2.4211	1.4128	1.714	0.0866
Random Effects	***Variance***	***SD***		
	0.6551	0.8094		

There were very few overextensions of *pe* to inanimates, as in (36) and (37).

(36) *Patricio visiteasa **pe** Muzeul Prado.
Patricio visits DOM Museum.DEF.SG.M Prado

Target: Patricio vizitează Muzeul Prado.
Patricio visits Museum.DEF.SG.M Prado
'Patricio visits Del Prado Museum.'

(37) *Bărbatul a ascultat **pe** partida de fotbal de la Brazilia.
man.DEF.SG.M has listened DOM match.DEF.SG.F of soccer from Brazil

Target: Bărbatul a ascultat partida de fotbal cu Brazilia.
man.DEF.SG.M has listened match.DEF.SG.F of soccer with Brazil
'The man listened to the soccer match with Brazil.'

There were no errors of omitting *pe* with locatives, as most of the errors with locatives involved use of the wrong preposition (e.g. *in* instead of *pe*) (**Pisica a dormit în podea* 'The cat slept in the floor', or **Tata a sta în un scaun* 'Father sat on/in a chair'), which might be a transfer from English as the preposition *în* is closest in form to the English prepositions *in* and *on*.

In this written task as well, we coded for incorrect uses of CD, especially omission with human objects of transitive verbs and experiencers of psych verbs. As in the oral production task, the simultaneous bilingual heritage speakers produced 17.7% of clitic omission errors (82.3% accuracy) and the sequential bilingual heritage speakers produced 6.6% errors (93.4% accuracy). Compared to the reference group of immigrants who were at ceiling (99.2% accuracy), these error rates were statistically significant. The results of the binomial logistic regression for CD accuracy are in Table 6. Pairwise comparisons were significant at $p < 0.0001$ among the three groups.

Examples of errors with clitic omission in the written task are (38) and (39).

(38) *Soara a văzut **pe** Carmen ieri.
sister.DEF.SG.F has seen DOM Carmen yesterday

Target: Sora a văzut-**o** **pe** Carmen ieri.
sister.DEF.SG.F has seen-CL.3.SG.F DOM Carmen yesterday
'The sister saw Carmen yesterday.'

(39) *Studenta a vizitat **pe** Sabina.
student.DEF.SG.F has visited DOM Sabina

Target: Studenta a vizitat-**o** **pe** Sabina.
student.DEF.SG.F has visited-CL.3.SG.F DOM Sabina
'The student visited Sabina.'

Table 6: Written production task: Fixed effects of CD accuracy by group.

Fixed Effects	***Estimate***	***Std. Error***	***z value***	***Pr(>|z|)***
(Intercept)	−4.9040	0.4187	−11.714	0.0001***
GroupHSE	3.3130	0.4398	7.534	0.0001***
GroupHSL	2.1850	0.4642	4.707	0.0001***
Random Effects	***Variance***	***SD***		
	0.1348	0.3671		

Thus, as predicted, when errors were made, these came from the Romanian heritage speakers with exposure to English from a younger age (simultaneous bilinguals).

5.3 Comprehension

Correct answers on the written and auditory comprehension tasks received a 1 and incorrect 0. The accuracy data were submitted to a binomial logistic regression, following the same procedure as in the two other tasks. The best model included accuracy by group, and modality and sentence type as fixed factors with participants as random factor. Because there were no differences between the three native speaker groups, only the immigrant group was used as reference group for this analysis. All participant groups were very accurate on this task, and modality (written vs. auditory versions) did not affect the results. As Table 7 shows, all participants had higher accuracy with the indirect objects (filler) and plural sentences than with V-DOM and V-S sentences, which involved postverbal subjects. Of all the groups, the simultaneous bilinguals were more inaccurate than the sequential bilinguals and the immigrant group with V-S sentences.

The logistic regression model shown in Table 8 found no effect for group or modality. All groups made errors with V-DOM and V-S sentences compared to plural sentences, and the simultaneous bilingual heritage speakers were more inaccurate with these sentences (21.9% error rate) than the other groups. This means that they were choosing pictures depicting objects instead of subjects in V-S sentences without *pe* more than pictures depicting subjects in the sentences with *pe*-marked objects. Their range of accuracy with

Table 7: Percentage Accuracy on sentence types by group in the Comprehension Task.

	V-DOM	V-S	plural	Indirect Object
Older Romanians	88.7	86.2	92.7	94.6
Younger Romanians	88.5	84.7	94.6	94.4
Adult Immigrants	89.2	87.4	92.1	92.5
Sequential Bilingual HSs	88.1	85.2	91.2	92.7
Simultaneous Bilingual HSs	84.6	78.1	91.4	92.1

Table 8: Effects for accuracy on the comprehension task by task modality, sentence type and group.

Fixed Effects	***Estimate***	***Std. Error***	***z value***	***Pr(>|z|)***
(Intercept)	2.829913	0.243791	11.608	0.0001***
GroupSEQ	−0.048328	0.369341	−0.131	0.895895
GroupSIM	−0.066856	0.374215	−0.179	0.858207
SentenceTypeVDOM	−0.359745	0.179352	−2.006	0.044877*
SentenceTypeVS	−0.636874	0.173042	−3.680	0.000233***
ModalityW	0.007444	0.085252	0.087	0.930423
GroupSEQ:SentenceTypeVDOM	−0.019146	0.275853	−0.069	0.944666
GroupSIM:SentenceTypeVDOM	−0.429868	0.272872	−1.575	0.115176
GroupSEQ:SentenceTypeVS	−0.032488	0.266488	−0.122	0.902969
GroupSIM:SentenceTypeVS	−0.620854	0.262569	−2.365	0.018053*
Random Effects	***Variance***	***SD***		
	1.074	1.037		

both V-DOM and V-S sentences was 46 –100%, which means that some participants were at chance. Although errors in this task were very few, most errors were made by the heritage speakers with less exposure to Romanian since childhood.

6 Discussion

Previous studies of DOM in heritage languages, and in situations where the majority language does not instantiate DOM, have found divergence and variability in the uses of DOM in the form of omission of DOM with animate and specific direct objects. This study sought to ascertain the vulnerability of DOM in Romanian heritage speakers in the United States. The main research questions guiding our study were 1) whether heritage speakers know the relationship between *pe*-DOM and CD 2) whether adult heritage speakers of Romanian omit *pe*-marking in required contexts (animate, specific direct objects that are names or pronouns) in oral and written production; 3) whether heritage speakers correctly interpret *pe* as a direct object marker in comprehension; 4) whether errors with DOM and CD made by the heritage speakers of Romanian were related to similar errors made by immigrants, suggesting continuity and transmission of a contact variety, or due to difficulties with lexical and representational access arising in a few individuals with lower proficiency.

We investigated these questions in a cross-generational design that included heritage speakers with different ages of exposure to the majority language, English (early in simultaneous bilinguals and later in sequential bilinguals), and first-generation immigrants to the United States. Because the linguistic knowledge of heritage speakers is manifested differently by language skill (comprehension, production) and modality of tasks, we used elicited oral and written production and off-line comprehension tasks.

Our results found overall high performance in all tasks: the immigrants and the heritage speaker groups showed much less variability of DOM compared to adult immigrants and heritage speakers of Spanish (Montrul 2014). First, we found no signs of attrition in the adult immigrant group, as this group's responses converged in all the production and comprehension measures with those of the native speakers tested in Romania, both younger and older, who performed largely at ceiling in all three tasks, above 90% accuracy. All the adult immigrants, except one who performed at 86% accuracy with DOM and CD in oral production, performed above 90% accuracy. Assuming the structures for CD + DOM in (19) and DOM in (20), these results suggest that the Romanian immigrants do not exhibit attrition or inefficient and slow lexical access to *pe* and *clitics* for constructing a syntactic representation for DOM and CD in Romanian (Putnam et al. 2019).

The heritage speakers were more accurate than what has been reported for speakers of Spanish or Hindi as a heritage language, suggesting that they may also have similar syntactic representations to the monolinguals and the Romanian immigrants. At the same time there was more internal variability in the heritage groups than in the other groups as more heritage speakers exhibited divergent responses in all three tasks than in the other groups. That is, 17 of 20 heritage speakers exposed to English earlier in childhood (simultaneous bilinguals) made between 35%–12% errors (i.e., scored below 90% the lower bound for all the other native speaker groups) in the oral production task. These were significantly more errors than for the heritage speakers exposed to English later in childhood (sequential bilinguals) (7 of 19 made between 35–12% errors). Since monolingual Romanian children make less than 13.6% of errors with omission of DOM in required contexts before age 3;00 (Ticio & Avram 2015), an error rate above 15% for adult heritage speakers when native speakers and immigrants make almost none, cannot be dismissed as noise. (See also individual results in Figure 7). In the three tasks, the immigrants were statistically significantly different from the simultaneous bilingual heritage speakers, and in the two production tasks they were also significantly different from the sequential bilingual heritage speakers. These findings suggest that the few omissions of DOM and CD in required contexts produced by the heritage speakers do not arise from similar omission patterns present in the parental input (Sorace 2004; 2020; Pascual y Cabo 2013; Kupisch & Rothman 2018). Instead these errors may arise form slow access to the lexical elements and inefficient building of syntactic representations, related to lower proficiency than the other groups, in turn related to earlier age of onset of bilingualism, and less input in Romanian during older childhood (Flores 2010; Montrul 2018).

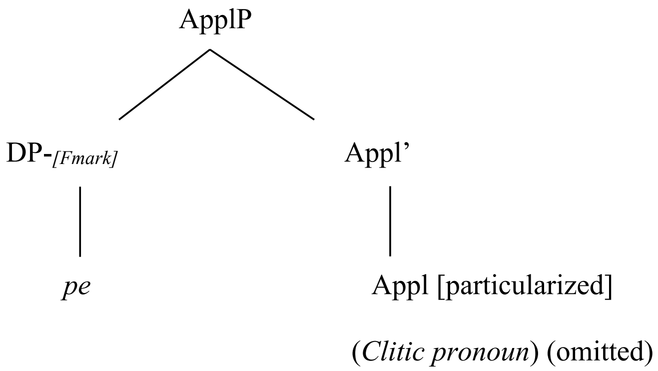
As predicted by Pérez-Cortés et al. (2019)'s Differential Access Model, we found dissociations in accuracy in comprehension and production for some of the heritage speakers, who were more accurate with DOM in comprehension than in production. There are two possible reasons for the production-comprehension dissociation found in our study: one is the tasks, the other the grammar. In the production tasks, participants were given the words and they had to verbally construct sentences adding the necessary morphology. In the comprehension task, they were given three pictures and they had to match a very short simple sentence with one of the pictures. It takes more processing resources to access the lexicon, activate the relevant features, bundle them and map them to morphophonological forms to produce sentences with the required morphology under time pressure in an experimental task (especially if it is oral) than to comprehend sentences when all the words are given. Language production is bottom-up processing, while language comprehension is top-down, relies on heuristics, and requires less cognitive resources (Paradis 2004). The fact that heritage speakers in this study had more errors in production than in the comprehension/written tasks supports the observation that heritage speakers exhibit online processing limitations when using their weaker language (Polinsky 2018; Pérez-Cortés et al. 2019; Putnam et al. 2019), despite their relatively advanced proficiency.

It can also be argued that the comprehension task was very easy and the results, therefore, not representative of the heritage speakers' knowledge. The comprehension task used in the present study is a version of the same task used with Spanish heritage speakers and immigrants in the Montrul (2014) study. The error rate reported by Montrul (2014) was higher than the error rate in the present study, which suggests that the task is not necessarily that easy. In general, we can say that the heritage speakers do have grammatical knowledge of DOM and CD in Romanian, but a few individuals in the heritage groups may have had difficulty accessing lexical and grammatical knowledge (including formal features and the projections where they are checked in the DP or ApplP), or integrating operations related to feature bundling, feature expression, and feature checking during oral and written production. These components of the grammar are activated and accessed differently for comprehension, since comprehension is a top-down driven process. There were also very few errors in the comprehension task compared to the production tasks, and these came from the same simultaneous bilingual heritage speakers who also performed the least accurately in the production tasks. Therefore, for a handful of individuals who scored consistently below the range of native speakers and the adult immigrants on the different tasks, a grammatical explanation is warranted.

Overall, the distribution of DOM and CD in the data is consistent with the description of DOM and CD in the Romanian syntactic and semantic literature (Farkas & von Heusinger 2003; Ciovârnache & Avram 2013; Mardale 2008; 2010; Hill & Mardale 2019; 2020), but the heritage speakers who omitted *pe*-in required contexts in the production tasks also omitted CD. Many other heritage speakers omitted CD but not *pe*, which is still possible (although dispreferred) in Romanian, as discussed in section 2. We found that DOM was optional with animate DPs, which are more referentially unstable than names according to Farkas & von Heusinger's (2003) referentiality scale in (1), and the majority of errors were of omission of DOM and CD with names. (There were no pronouns in the data).[6]

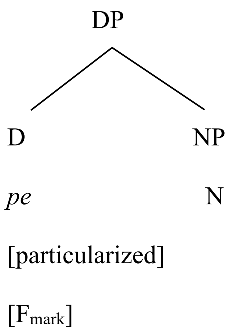
According to Paradis' (2004) Activation Threshold Hypothesis, production requires more neural impulses than comprehension, which explains why for many bilinguals who do not use the language frequently, production is more difficult than comprehension. For the cases of CD omission in CD + DOM contexts, one possibility is that heritage speakers who made these errors access the split feature ApplP analysis in (19) for names and pronouns efficiently or consistently, but due to cognitive pressure and slow lexical retrieval, they fail to spell out [particularized] overtly through the clitic in ApplP, a surface morphological problem (Putnam et al. 2019). *Pe* is retained and spelled out in these cases because it has semantic features, whereas the clitic has discourse features.

(19)



Recall that unmodified nouns and specific indefinites project to DP with *pe* merged in D, as in (20), where both [particularized] and [F_{mark}] bundle under D and are mapped to *pe* in D. The other possibility is that because both the ApplP in (19) and the DP in (20) are available for DOM, some heritage speakers, under communicative and cognitive pressure, activate the DP (available for unmodified nouns) instead of the ApplP to check DOM for both names and modified DPs, bundling the features [particularized] and [F_{mark}] under *pe* (as was done in Old Romanian).

(20)



So, even though Modern Romanian offers two possible structures for DOM (one with feature splitting and one with feature bundling), heritage speakers, sometimes, under cognitive pressure or inefficient lexical and structural access, use only one of the available structures for names and DPs. As proposed by Scontras et al. (2018) for representational changes in gender agreement in Spanish heritage speakers, the pressures to establish min-

[6] We also found that some heritage speakers made errors with the syntactic restriction on preposition + noun-definite article and there were very few extensions of *pe* to inanimate objects. These errors came mostly from the simultaneous bilingual heritage speakers (**Bratra… bra… batranul a tinut [pe un umbrela]* 'The old man held [DOM an umbrella]').

imal domains explains the bundling of the features [personalized] and [F_{mark}] under one head (D) by the lower-proficiency Romanian heritage speakers in the present study. When both *pe* and CD are omitted, the heritage speakers may still access the ApplP in (19) or the DP in (20), but fail to realize the marking overtly, again following Putnam et al. (2019). The fact that the errors attested are more likely to arise from lexical and representational access, rather than by a simpler structural or featural representation, is supported by the fact that the comprehension of CD and DOM-marked names and DPs was almost at ceiling for most speakers, with a very few exceptions.

Still, compared to what has been found in several studies of Spanish heritage speakers, including young bilingual children (Ticio 2015), older children and adults (Montrul & Sánchez-Walker 2013), the findings we have so far from Romanian L1 acquisition (Ticio & Avram 2015), Hungarian-Romanian bilinguals (Avram & Tomescu 2020), and now adult Romanian heritage speakers in the United States, suggest that the vulnerability of DOM in Romanian in contact with English is much less extensive than the divergence and potential language change observed with DOM in Spanish in contact with English (Montrul 2014; Montrul, Bhatt & Girju 2015). We also did not find in this study differences between the performance of the heritage speakers in spoken vs. written modality of the tasks, as has been found in other heritage speaker groups (Bowles 2011; Torres 2013).

There are two potential linguistic explanations for why DOM in Romanian heritage speakers and immigrants is apparently less vulnerable, overall, than DOM in Spanish heritage speakers and immigrants. One possibility is the phonological shape of the marker, which is the "*a*" in Spanish but "*pe*" in Romanian. The issue of perceptual salience in the acquisition and retention of morphology in heritage grammars has been discussed at length by Kim, O'Grady & Schwartz (2018), Montrul, Bhatt & Girju (2015), and Polinsky (2018). The idea is that morphemes that are more perceptually salient are acquired and retained better than morphemes that are acoustically less salient. In Spanish, many verbs in the 3rd person singular present tense of the *-ar* conjugation (*ayudar* 'help') end in the vowel /a/, and the DOM marker is also /a/ (*Ayuda a Juan* 'He/she helps Juan'). Being a canonical CV syllable, Romanian "*pe*" seems to be more acoustically perceptible than "*a*" and therefore more noticeable. If acoustic salience is an issue (Polinsky 2018: 165–169), it is not surprising to see that Romanian DOM is preserved more than Spanish DOM in heritage speakers. Therefore, it is likely that the structural properties of Romanian (perceptual salience of the marker and co-occurrence of DOM with accusative CD) may contribute to the higher preservation of DOM in Romanian heritage speakers compared to Spanish heritage speakers.

Other reasons for why the Romanian heritage speakers have relatively good command of Romanian could be extralinguistic, related to the fact that Romanian families appear to provide literacy opportunities to their children at home, especially because their children will not have access to the heritage language at school. We gathered this information from the language background questionnaire administered to the heritage speakers, where there were several questions about use of Romanian in the home and the number of interlocutors. The heritage speakers reported speaking Romanian with their parents and friends. They reported using Romanian often or seldom, and it was mostly when speaking with their parents and siblings, although they frequently used it with English. When asked whether parents read to them in Romanian growing up, 80% of the sequential bilinguals and 65% of the simultaneous bilinguals were read to in Romanian. We also asked whether parents corrected them when they made mistakes in Romanian and for 90% of the simultaneous bilinguals and 75% of the sequential bilinguals the answer was positive. These reports indicate that there was some exposure to early literacy in the home and that the parents promoted target-like use of Romanian. The fact that the immigrant group, who were the proxy of the heritage speakers' parents, does not seem to show signs of attrition suggests that the input heritage speakers are exposed to is target-like. Therefore, in addition to the structure of the language, there are several potential other external factors related to attitudes, efforts for language maintenance, and exposure to the language in the families that may explain the overall high command of Romanian by the heritage speakers and the immigrant groups.

7 Conclusion

This study joins many others in showing that DOM is a variable and vulnerable linguistic phenomenon diachronically and in situations of language contact. DOM is vulnerable to omission in heritage language speakers who are dominant in English, a language that does not mark DOM. CD is related to DOM in Romanian and is also vulnerable to omission with human specific objects. Consistent with other studies of bilingual heritage speakers, the results of this study add further evidence for the role of age of acquisition in the morphological variability exhibited by heritage speakers: most errors were made by simultaneous bilingual heritage speakers compared to sequential bilinguals. Finally, there was no evidence of language attrition in the adult, immigrant group, suggesting that divergences found in the grammars of heritage speakers with respect to DOM cannot be traced back from how the language is used in the diaspora that is also affected by language contact, at least in the specific population tested in the present study.

Abbreviations

1 = first person
2 = second person
3 = third person
CL = clitic
DEF = definite
DOM = Differential Object Marking/marker
F = feminine
M = masculine
POSS = possessive
REFL = reflexive
SG = singular

Additional File

The additional file for this article can be found as follows:

- **Table A.** Examples of coded data. DOI: https://doi.org/10.5334/gjgl.1135.s1

Ethics and Consent

The study was approved by the University of Illinois Institutional Review Board before any data were collected and all participants read and signed written consent forms before participation.

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Competing Interests

The authors have no competing interests to declare.

Author Contributions

Silvina Montrul designed and conducted the study and supervised the research assistants who collected and analyzed the data. Nicoleta Bateman checked all audio files and corrected transcriptions done by six research assistants, defined and completed the data coding, and managed data preparation for statistical analysis. Silvina Montrul (with help of data analyst Marissa Barlaz) conducted the statistical analysis. Both Silvina Montrul and Nicoleta Bateman discussed the data and co-wrote the paper.

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