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Heritage speakers and contact-induced language change: Motion event framing in Italian

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Abstract

This study investigates the role of heritage language (HL) speakers in language change, focusing on how they frame motion events compared to native monolingual homeland speakers. Language contact, particularly in HL contexts, is considered a significant factor in driving language variation and change. Drawing on research by Talmy (1975, 1983, 2007), we examine the alternation between verb-framed (VF) and satellite-framed (SF) constructions in Italian, which may be influenced by cross-linguistic contact with SF languages like German. The study reveals that Italian HL speakers produce significantly more SF constructions than homeland speakers, suggesting cross-linguistic influence from the majority language. Additionally, both

groups exhibit sensitivity to the semantic properties of Manner verbs, with non-directional Manner verbs eliciting fewer SF constructions than directional Manner verbs. This study investigates the emergence of innovative linguistic forms in bilingual contexts, which may mirror broader patterns of contact-induced language change. Finally, it highlights the importance of exploring variability in both syntactic and semantic domains to better understand which structures are more susceptible to change.

Keywords: Heritage Language, Italian, motion events, language change, production.

1. Introduction

Languages are dynamic systems that may evolve and change over time. Changes in speakers' linguistic choices are claimed to be caused by both language-internal and external factors, such as variation and variability of specific structures (Weinreich et al. 1968, Labov 1994) or contact with other languages (e.g., Heine & Kuteva 2005, Thomason & Kaufman 1988, Weinreich 1953). Recent research on language change has focused on how bilingual speakers, specifically heritage language (HL) speakers, may contribute to the understanding of these processes (Flores & Rinke 2020, Kupisch & Polinsky 2022, Lohndal et al. 2019). HL speakers – generally referred to as individuals who grow up with a minority language in a majority language environment (Valdés 2000) – often exhibit innovative linguistic behaviors that diverge from those of native monolingual (L1) speakers (Polinsky & Scontras 2020).[1] These divergences may stem from cross-linguistic influence, language attrition, or incomplete acquisition of the heritage language (for an overview, see Benmamoun et al. 2013, Kupisch & Rothman 2018, Montrul 2008, Polinsky & Scontras 2020). Understanding the linguistic patterns of HL speakers, therefore, can provide crucial insights into potential mechanisms of language change, making them an ideal testing ground for understanding language change in contact situations.

An area of variation across languages that is susceptible to language contact is the framing of motion events (e.g., Engemann 2016/2022, Anastasio 2023, Larrañaga et al. 2012, Montero-Melis et al. 2016, for evidence of cross-linguistic influence in this area in bilingual populations). Following Talmy's (1975/1983/2007) typology, in languages like Italian, motion events involving a boundary crossing (e.g., walking *into* a room) are typically encoded using verb-framed (VF) constructions, where the path of movement is encoded in the verb (e.g., *entrare*, 'to enter'). However, satellite-framed (SF) constructions, typically used in languages like English or German, where the path is expressed through a satellite (e.g., a particle such as 'out'), are also available in Italian (e.g., *fuori*, 'out'), though they are more frequently used in either non-boundary-crossing contexts or when Manner verbs present a specific semantic property related to the implied directionality (directional vs. non-directional motion) (see Section 2.2 for a detailed discussion). The alternation between these two

[1] Notably, this definition is very broad incorporating speakers with different linguistic backgrounds which could diverge substantially from each other, for instance heritage language speakers and speakers of minority communities (e.g., speakers of a variety which is a linguistic island).

constructions in Italian raises questions about the stability and susceptibility to change of motion event framing, particularly in bilingual contexts where both VF and SF languages are in contact.

Preliminary studies have begun to explore these issues in both homeland and HL Italian speakers. In one study, Michelotti et al. (2025) investigated whether variation in motion event framing preferences among younger and older L1 homeland Italian speakers in both comprehension and production might indicate ongoing language change. Additionally, they investigated whether the semantic property of Manner verbs related to implied directionality influenced the framing of motion events. In another study, Baroncini et al. (2025) examined motion event framing choices by Italian HL speakers living in Germany, focusing on whether structural priming could lead to longer-term changes in the speakers' linguistic choices and exploring the potential role of HL speakers as agents of linguistic change (see Section 2.3 for more details on these two studies).

These recent findings contribute to the literature on the mechanisms underlying language change and the identification of the agents producing and transmitting linguistic innovations. However, to interpret these results as evidence that HL speakers' motion events' mirror possible pattern of contact-induced change – by producing a higher baseline rate of innovative constructions compared to homeland speakers – a direct comparison between these two groups is necessary. While the impact of verb directionality has been explored in homeland speakers, it remains unclear whether HL speakers exhibit similar sensitivity to this semantic property. This study addresses these gaps by examining the emergence of innovative linguistic forms in HL speakers, which may mirror patterns of contact-induced language change, especially by focusing on the domain of motion event framing. Additionally, we investigate whether the verb's implied directionality influences the production of SF constructions in both homeland and HL speakers. By addressing these questions, we aim to deepen our understanding of how syntactic and semantic variability, along with specific contact conditions, may influence their likelihood of change over time.

2. Theoretical background

2.1 Heritage language: innovation and change

Heritage language speakers are typically either simultaneous or sequential bilingual speakers who have grown up in homes where the language spoken – the heritage or minority language – is different from the dominant majority language of the broader speech community. Different definitions and characterizations of HL speakers are provided across the literature (cf. Benmamoun et al. 2013, Flores, Kupisch & Rinke 2017, Kupisch & Rothman 2018, Rothman 2009, among others). However, it is commonly suggested that while the heritage language is maintained to varying degrees, the majority language becomes the dominant language of these speakers. While they typically receive rich and varied input as well as formal education in the majority language, the input from their HL is often reduced and less varied. HL speakers interact with a smaller and typically less homogeneous group of HL speakers compared to speakers in the homeland, and often they do not receive formal education in their HL. Therefore, HL speakers are exposed to input that differs both qualitatively

and quantitatively from that of the homeland variety. As a result, their output in the HL may differ from that of the homeland variety. Research on HL speakers has indeed provided evidence that this population often exhibits differential acquisition of their heritage language compared to monolingual L1 speakers (Kupisch & Rothman 2018).

These divergences from the homeland variety may result from language contact. In particular, HL speakers are argued to live in an "extreme language contact" environment (Kupisch & Polinsky 2022), where constant interaction between the HL and the dominant majority language leads to significant quantitative and qualitative differences from L1 speakers. For instance, cross-linguistic influence may occur when speakers of the HL employ lexical or grammatical features from the dominant majority language in their HL (see Polinsky & Scontras 2020 for other explanations, such as language attrition). As a result of this intense language contact, HL speakers may not only acquire their HL differently but also show accelerated language change, observable even across generations (Kupisch & Polinsky 2022). Speakers in language contact environments are thought to amplify incipient changes in the HL, which would otherwise be slowed down in the homeland variety by standardization mechanisms, like formal education. While these changes spread slowly in the homeland due to institutional constraints, heritage speakers are more frequently exposed to informal, non-standardized input, allowing linguistic changes to occur and propagate more rapidly across generations (Kupisch & Polinsky 2022).

Finally, it is important to note that divergences from the homeland variety are typically examined in terms of morphological and syntactic phenomena (for an overview, see Polinsky & Scontras 2020). While differences have been widely attested in the morphosyntactic domain, less is known about HL speakers' linguistic choices in the semantic domain and interface-based phenomena (see Ionin 2021, Jegerski & Sekerina 2021, Polinsky 2018 for an overview). Research on the semantics of the verbal domain has shown that HL speakers present difficulties acquiring the distinction between grammatical aspectual forms (e.g., preterite vs. imperfect in Spanish; perfective vs. imperfective in Russian, with no direct equivalent in English), consequently diverging from L1 speakers (for Spanish: Silva-Corvalán 1994, Montrul 2002, for Russian: Laleko 2011, Polinsky 2008). Montrul (2002) observed divergences in both the production and interpretation of aspectual forms in Spanish between HL and L1 speakers. Similar results were found in Russian by Polinsky (2008) regarding the use of perfective and imperfective forms by HL and L1 speakers. In another study, Montrul (2006) observed that HL speakers differed from L1 speakers in a grammaticality judgment task investigating the knowledge of unaccusative and unergative verbs in Spanish in telic and atelic contexts. Based on her findings, she argued that while HL speakers' syntactic knowledge may remain stable, their semantic representations might show variation or differences (Montrul 2006: 66). A key open question is how HL speakers map target forms to target meanings, and what drives cross-linguistic influence from the majority to the heritage language in form-meaning mappings, leading to differences from L1 speakers. The investigation of motion events will shed further light on this issue, as they involve complex semantic frames and allow for different argument structures.

2.2. Italian motion event framing

Motion events (ME) involve different semantic components which can be more or less salient in speakers' perception and linguistic expression. Talmy (1975/1983/2007) identifies several such components. For the sake of this paper, we will focus on only two of them: Path and Manner. Path can be defined as the "path followed or site occupied […]" by the entity undergoing motion (Talmy 2007: 70) and is considered one of the internal components which characterize MEs, whereas Manner refers to the way in which the ME is carried out and is typically considered to be a *co-event* of the ME.

Languages vary in the way they typically encode these two components. Some languages tend to encode Path in satellites and Manner in the verb root. Other languages tend to encode Path in the verb root and Manner in the verbal periphery. The former are called satellite-framed (SF) languages and the latter verb-framed (VF) languages (Talmy 2007). German is considered a SF language in which Path is typically encoded in a satellite such as a PP (1).

(1) Madlener-Charpentier & Liste Lamas (2022:3)
Der Taucher spring-t in den Swimmingpool
The.NOM diver jumps-3SG into the.ACC Swimmingpool
'The diver jumps into the swimming-pool'

On the other hand, Italian is considered a VF language in which Path is typically encoded in the verb root (2).

(2) Cardini (2012:168)
Massimo entrò in casa barcollando
Massimo enter.3SG.PST in house stumbling
'Massimo entered the house stumbling'

However, the distinction between VF and SF languages is not categorical. For instance, SF constructions are allowed in VF language when the ME does not imply a boundary crossing (Slobin & Hoiting 1994). Even in cases in which a boundary crossing is involved, Italian seems to license the use of SF constructions under specific circumstances. The availability of such constructions seems to depend, amongst other factors, on the semantic features of the manner verb. This can be observed from the examples in (3). While (3a) licenses both a non-boundary-crossing reading (The ball is under the table during the entire event) and a boundary-crossing interpretation (the ball initially is not under the table), (3b) can only be interpreted as a non-boundary-crossing motion event.

(3) Folli & Ramchand (2005:82)
a. La palla rotolò sotto il tavolo
the ball roll.3SG.PST under the table
'The ball rolled under the table'
b. La barca galleggiò sotto il ponte
the boat float.3SG.PST under the bridge
'The boat floated under the bridge'

What distinguishes (3a) from (3b) is the directionality of the Manner verb involved. Manner verbs which express directional motion are typically associated with motion along a specific spatial axis and therefore, based on our world knowledge, are likely to be associated with a change of location (Lewandowski & Mateu 2020). Going back to the examples in (3), one could imagine that an object rolling (3a) is more likely to undergo a change of location than an object floating (3b). In Italian, only directional manner verbs, such as (3a), license the use of SF constructions in boundary crossing contexts (Cardini 2012, Folli & Ramchand 2005).
In this study, we analyze the production of SF constructions expressing boundary crossings with either a directional Manner verb (4) or a non-directional Manner verb (5).

(4) La donna corre fuori dalla torre
the woman run.3SG out of_the tower
'The woman runs out of the tower'

(5) La donna balla fuori dalla torre
the woman dance.3SG out of_the tower
'The woman dances outside of the tower/ *The woman dances out of the tower'

We consider both constructions to be innovative to the extent that they deviate from the typical VF pattern which prevails in Italian. However, we do acknowledge that these two constructions are innovative to different degrees. On the one hand, we consider SF constructions with a directional manner verb expressing a boundary crossing as in (4) to be less innovative than in (5), as several studies have reported that the former constructions are licensed in Italian (e.g., Cardini 2012, Folli & Ramchand 2005). On the other hand, we consider SF constructions with a non-directional manner verb expressing a boundary crossing as in (5) to be more innovative, since SF constructions with these verbs are claimed in the literature to only license a non-boundary crossing interpretation, but not a boundary-crossing one. Notably, variation and variability within a language are considered prerequisites for language change (Flores & Rinke 2020, Labov 1994, Weinreich et al. 1968). Since motion event framing in Italian exhibits variability, it fulfils one of the prerequisites for language change. Moreover, psycholinguistic research has found evidence that cross-linguistic influence, a mechanism potentially leading to the emergence of innovative constructions (Serratrice 2016/2022), is more likely to occur when one language presents alternative forms (variation) while the other strongly favors one (e.g., SFs in German). Therefore, if HL speakers produce a higher rate of such innovations in this domain compared to homeland speakers, we may speculate that their linguistic choices mirror contact-induced language change outcomes.

Notably, the discussion on Italian SF constructions and phrasal verb constructions (PVCs) necessitates a presentation of the still ongoing debate in the literature regarding their usage, diffusion, and whether these factors depend on diatopic and diamesic factors. Scholars such as Simone (1997; among others) argue that PVCs are predominantly attested in Northern Italian dialects and regional varieties, with their spread into standard Italian attributed to contact between these dialects and Italian. Conversely, other scholars (Amenta 2017, Iacobini & Masini 2009) suggest that PVCs are also attested in Southern dialects and regional varieties.

They argue that PVCs have been present since their origins, for example in Sicilian, and are widespread, independently of diamesic factors such as speakers' educational level (Amenta 2017). The question of how PVCs emerged and spread into Standard Italian remains open (see Iacobini & Masini 2007, Masini 2005, among others, for further discussion on their diachronic development). In the current contribution, we acknowledge potential regional differences in the use of SF constructions. Our study focuses only on Italian homeland speakers living in Northern Italy, comparing them with HL speakers of Italian with diverse regional backgrounds (Southern, Central and Northern Italy). The investigation of whether speakers with various regional varieties encode motion events differently, however, will not be investigated in the current study.

2.3. Preliminary studies

The present study compares two subgroups of speakers from two different studies investigating the framing of ME in Italian. In particular, Michelotti et al. (2025) tested both the interpretation and production of SF constructions in younger and older L1 homeland Italian speakers living in the Northern Italy. By simulating the chain of language change adopting an apparent-time approach they investigated whether variation in encoding Italian motion events could indicate incipient language change. Their findings showed that younger speakers were more likely to accept SF constructions with a boundary-crossing reading compared to older speakers. A similar trend, although not significant, was observed also in production, suggesting that language change may initially arise within comprehension and subsequently spread to production (in line with Arechabaleta & Montrul 2021, Czypionka & Kupisch 2019, Lundquist et al., 2016). Moreover, in the same study, Michelotti et al. (2025) investigated whether the semantic property of manner verbs related to directionality (directional vs. non-directional) had an impact on the interpretation and production of SF constructions in Italian. Their results revealed that this semantic property affected both the interpretation and production of SF constructions, with a higher rate of acceptability and production of SF constructions with directional manner verbs compared to non-directional ones.

In another study, Baroncini et al. (2025) tested a group of Italian HL speakers of different ages living in Germany on their framing choices of ME constructions. By adopting the structural priming paradigm, they investigated whether this mechanism underlies language change and whether it influences speakers' long-term linguistic choices by comparing two unprimed production tasks before and after the priming task. Their findings showed that priming of SF constructions can occur both within and across languages, suggesting that language contact can give rise to linguistic innovations, as across-language priming may play a role in replicating these changes. Moreover, in the same study, Baroncini et al. (2025) found similar trends regarding the impact of age on the production of SF construction, whereby younger speakers tend to produce more SF constructions compared to older ones, aligning with the results obtained by Michelotti et al. (2025). As for their unprimed preferences, the authors observed that HL speakers showed a tendency of producing more SF constructions than VF ones in the first production task, contrary to what would be expected on typological grounds and in contrast to previous findings on L1 Italian speakers.

3. The present study

In this study, we investigate whether HL speakers are more prone to producing innovative constructions by comparing them with a group of homeland speakers in their framing of ME in Italian. In doing so, we aim to answer the following research questions:

RQ1: Do homeland and HL speakers differ in their framing of ME?

If HL speakers are influenced by the majority language (German) and are more prone to producing innovative constructions, we expect to observe differences between the two groups, with HL speakers producing more SF constructions compared to homeland speakers. Additionally, we test whether the semantic property of manner verbs related to directionality influences the production of SF constructions in both the homeland and HL speakers. Specifically, our second research question is the following:

RQ2: Are homeland and HL speakers sensitive to the semantic property of Manner verbs (directional vs. non-directional)?

If HL speakers are sensitive to this specific semantic property of Manner verbs, we expect to observe that directionality influences the production of SF constructions, as it does for the homeland speakers. Specifically, we expect a more frequent production of SF constructions with directional Manner verbs compared to non-directional ones in both groups of speakers.

4. Method

4.1. Participants

In the present study, we compare two groups of young speakers: homeland and HL speakers of Italian. For the homeland speakers, we include in our analysis 30 young adults (20 female, 10 male) with an age range between 19 and 28 years, (mean age = 22.1 years, age *SD* = 3.0) who were born and raised in Italy. All homeland speakers were living in Northern Italy at the time of testing.

As for the HL speakers, we focus on 33 children and young adults (19 female, 14 male) with an age range between 11 and 26 years old, (mean age = 16.15, age *SD* = 4.45). The participants were either simultaneous bilinguals, being exposed to both languages from birth (*N* = 24), or early sequential bilinguals being exposed to their second language between 3 and 6 years old (*N* = 6 with an Age of Onset of German between 3 and 6 years old, and *N* = 3 with an Age of Onset of Italian between 3 and 6 years old). The participants were either born in Germany (*N* = 28) or moved to Germany at an early age, before age 6 (*N* = 5). All HL speakers were living in Germany at the time of testing. Regarding their regional background, we collected information regarding the Italian variety participants were mostly in contact with. In particular, nine participants reported to be mostly in contact with Northern Italian varieties, eight to Southern ones, five to Central ones, three to all regional varieties, two to Northern

and Central ones, one to Northern and Southern ones, one to Central and Southern ones, and four did not provide this information. Although this data is not exhaustive, it indicates a degree of variation within our HL speaker group.

4.2. Materials and Procedure

We analyzed the description of 15 black-and-white short videos of approximately 3 to 6 seconds depicting different motion events, all involving a boundary crossing, created by a professional illustrator. In particular, the characters in the videos exhibited five different Manners, which were crossed with three boundary-crossing Paths (entering, exiting and crossing). Notably, we manipulated the directionality of the Manner presented in the videos (directional vs. non-directional), see Table 1. In addition, we controlled for the direction of motion in the videos (from left to right and from right to left) as well as the gender of the characters depicted in the videos (female and male). Note that the experiment conducted with Italian homeland speakers included a larger overall set of items (total N = 30 motion events; including causative manner verbs, which were not tested in the HL speakers).

Table 1. Full list of manners depicted in the videos according to directionality.

Directionality	Manners
Directional	*volare* (‘to fly), *scivolare* (‘to slide’)
Non-directional	*zoppicare* (‘to limp’), *sciare* (‘to ski’), *nuotare* (‘to swim’)

Consent forms were collected prior to testing, either from the participants themselves or from the legal guardians of the minors. HL speakers were tested individually either online via a video call or in person in their school, while homeland speakers were all tested only online via a video call. The experiment was designed and run in OpenSesame (version 3.3.14) (Mathôt et al. 2012) on the experimenter’s laptop. The participants were asked to watch the short videos and to briefly describe them once each video was finished. By answering in Italian the question ‘what is the character doing?’ (*cosa fa il personaggio?*) we elicited semi-spontaneous productions. The order of videos was pseudo-randomized such that participants were always presented with a filler followed by an experimental item. The tasks also contained memory questions to conceal the experiment's objective. Every task started with two/four practice items.

5. Analysis

5.1. Coding

The descriptions produced by the participants were audio-recorded and manually transcribed by native speakers of Italian. The coding was partially automatized: by developing a python script we automatically coded the sentences produced for several structural and semantic aspects using regular expressions. In a second phase, the

automatized output was checked and corrected manually. We classified the sentences according to the framing used, either VF or SF, when both Manner and Path were encoded in the sentence, the remaining sentences were classified as "other".

We classified as VFs those sentences that presented Path in the main verb and Manner in either a gerundive, like in (6), in a PP as in (7), or in a subordinate clause as in (8).

(6) Un supereroe esce da una grotta volando
a superhero exit.3SG from a cave flying
'A superhero exits a cave flying'

(7) Una ragazza sugli sci entra in un igloo
a girl on the skis enter.3SG in an igloo
'A girl on skis enters an igloo'

(8) La persona esce dall' igloo per andare a sciare
the person exit.3SG from the igloo to go to ski
'The person exits the igloo to go skiing'

We classified as SFs those sentences that presented Manner in the main verb and Path in either a satellite, like in (9), in a gerundive as in (10), or in a subordinate clause as in (11).

(9) Un ragazzo nuota fuori da una grotta
a boy swim.3SG out of a cave
'A boy swims out of a cave'

(10) Una persona zoppica entrando in un negozio
a person limp.3SG entering in a shop
'A person limps entering in a shop'

(11) La persona vola per attraversare la pista di scii
the person fly.3SG to cross the slope of ski
'The person flies across the ski slope'

In the analysis we focused only on those sentences that encoded both Manner and Path by using a VF or a SF construction, in order to compare the speakers' framing preferences when both Manner and Path components are expressed. The remaining sentences were classified as "other" and were excluded from the analysis (50.44% in the homeland speakers and 60.81% in the HL speakers).[2] In Table 2 we present the

[2] In particular, the "other" structures that we excluded from the analysis were: coordinated sentences (3.52% for the homeland and 11.96% for the HLS); double framing (10.13% for the homeland and 4.65% for the HLS); Manner only (12.78% for the homeland and 12.29% for the HLS); Path only (57.71% for the homeland and 45.85% for the HLS); Manner verb + Path in satellite non-boundary-crossing (13.66% for the homeland and 17.28% for the HLS); other (2.20% for the homeland and 7.97% for the HLS). Note that these percentages are based on the total of "other" structures produced.

occurrences and percentages of VF and SF sentences analyzed in the present paper, according to the type of sentences produced by the homeland and the HL speakers.

Table 2. Percentages and occurrences (in brackets) of the type of VF and SF sentences produced by the L1 and HL speakers.

Type of sentences		Homeland speakers	HL speakers
VF	Path verb + Manner gerund	65.92% (147)	27.84% (55)
	Path verb + Manner in PP	13.45% (30)	14.95% (29)
	Path verb + Manner in subordinate	1.35% (3)	2.58% (5)
	Total n. of VFs	(180)	(88)
SF	*Manner verb + Path in satellite*	17.94% (40)	49.48% (96)
	Manner verb + Path gerund	1.35% (3)	3.09% (6)
	Manner verb + Path in subordinate	(0)	2.06% (4)
	Total n. of SFs	(43)	(106)
Total n. of sentences		(223)	(194)

5.2. Statistical analysis

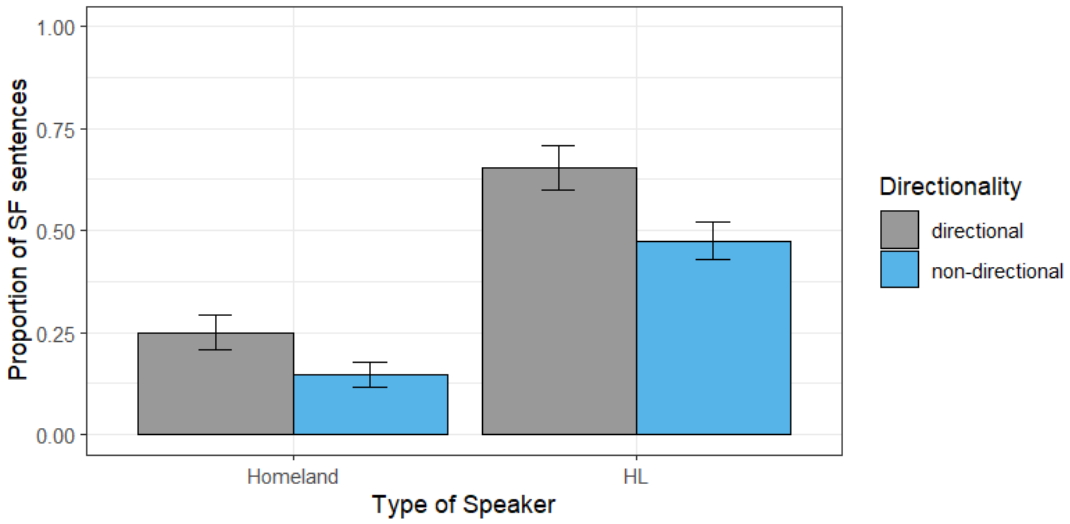
To compare the results from the two groups, we used R (version 4.4.0, R Core Team, 2024) along with lme4 (Bates et al. 2015) to run a generalized linear-mixed effects model. The model (*m1*) was tailored to examine the predictors of interest for addressing our research questions. Our dependent variable was the production of VF vs. SF constructions (coded as 0 and 1, respectively). The predictors of interest were *type of speaker* (homeland vs. HL) (RQ1), *directionality* (directional vs. non-directional) and the interaction between these two variables (RQ2). In order to address potential variation among individual participants and items in the production of SF constructions, we integrated random intercepts for participants and items into the model, but we did not specify random slopes as the model failed to converge.[3] The categorical variables *type of speaker* and *directionality* were sum-coded to have a mean of 0 and a range of 1 (homeland, - 0.5 vs. HL, + 0.5; directional, - 0.5 vs. non-directional, 0.5). Given the heterogeneity of our groups, in particular in terms of age, we conducted an additional exploratory analysis including *age* as a continuous variable. The analysis and results of such exploratory model are available in the OSF repository, along with the analysis and output of a model derived through model selection. Additionally, the OSF repository includes an *a posteriori* principled model pruning, which yields the same results as those presented below, as well as the corresponding goodness-of-fit statistics.

[3] The final model was: m1= glmer (Structure ~ 1 + Type_speaker * Directionality + (1|ID) + (1|ITEM), data = data_production, family = binomial (link = “logit”), glmerControl (optimizer = “bobyqa”)).

6. Results

The results of the production tasks revealed that homeland speakers overall used more VF constructions (80.72%) compared to SF ones (19.28%) to describe motion events.[4] By contrast, HL speakers presented a different pattern, producing overall more SF constructions (54.64%) than VF ones (45.36%). As for their directionality distribution, SF constructions with directional manner verbs were produced 25% of the time by homeland speakers and 65.38% of the time by HL speakers, whereas SFs with non-directional manner verbs were produced 14.63% of the time by homeland speakers and 47.41% of the time by HL speakers (Figure 1).

Figure 1. Proportions and standard errors of SF sentences produced by type of speaker as a function of directionality.



The between-group difference in the production of overall SF constructions is confirmed by our statistical analysis (see Table 3 for the results, and OSF repository for Figures with predicted probabilities). Specifically, we observed a significant effect of *Type of Speaker* (homeland vs. HL), whereby SF constructions were produced significantly more frequently by Italian HL speakers compared to the Italian homeland speakers (RQ1). To analyze the effect size, we calculated the difference in percentage of the SF constructions produced by HL speakers and the homeland speakers, which amounts to 35%. Moreover, we found a significant effect of *Directionality* (directional vs. non-directional), whereby speakers produced fewer SF constructions with non-directional manner verbs, as expected on typological grounds from previous studies. To analyze the effect size, we calculated the difference in percentage of the SF constructions produced in the directional and non-directional condition, which amounts to 12%. Interestingly, this effect did not vary across groups – no interaction was found between *Type of Speaker* and *Directionality* – suggesting that HL speakers are sensitive to this semantic property of manner verbs as are the homeland speakers (RQ2).

[4] Here we present the relative frequencies of the structures produced.

Table 3. Parameters of the generalized linear mixed-effects analysis (*m1*) of the likelihood of producing an SF construction (dependent variable) as a function of type of speaker (homeland, - 0.5 vs. HL, + 0.5), directionality (directional, - 0.5 vs. non-directional, 0.5), and their interaction.

	Estimate	**Std.Error**	**95% CI**	**z-value**	**P-value**
Intercept	-0.87	0.27	[-1.40, -0,33]	-3.17	.002
Type of Speaker: homeland v. HL	2.15	0.54	[1.09, 3.21]	3.98	< .001
Directionality: directional vs. non-directional	-1.02	0.37	[-1.75, -0.29]	-2.75	.006
*Type of speaker * Directionality*	-0.03	0.74		-0.04	.966
Random effects					
				Variance	***SD***
ID (Intercept)				2.12	1.46
ITEM (Intercept)				0.31	0.56

7. Discussion

The present study investigated the framing of motion events in two groups of speakers: homeland and HL Italian speakers. Specifically, we compared these two groups in their descriptions of videos depicting motion events with clear boundary-crossing reference, in order to explore the extent to which SF constructions are produced in this context and whether the semantic property of the Manner verb influences their production. Our results reveal three main findings: i) homeland and HL speakers differ in the preferred framing of motion events, with HL speakers being more likely to produce an SF construction compared to the L1s; ii) the directionality of the Manner verb influences the production of SFs, with non-directional Manner verbs eliciting fewer SF constructions than directional ones; iii) HL speakers are sensitive to the semantic property of Manner verbs, as no difference is observed between homeland and HL speakers in their distribution of SF constructions between directional and non-directional Manner verbs. We will discuss these findings in the following sections.

7.1. Do HL speakers' linguistic choices mirror contact-induced language change patterns?

The first key finding that emerges from the comparison between HL and homeland speakers of Italian is that the two groups differ in how they encode ME. We observe that Italian homeland speakers predominantly produce VF (e.g., *l'uomo esce dalla grotta volando* 'the man exits the cave flying') constructions (80.72%) compared to SF ones (e.g., *l'uomo vola fuori dalla grotta* 'the man flies out of the cave') (19.28%) when describing a video depicting a ME with a boundary-crossing reading. In contrast,

HL speakers produce significantly more SF constructions (54.64%) than homeland speakers. Moreover, unlike the Italian homeland participants, the HL speakers exhibited a slight overall preference for SF constructions relative to VF constructions (45.36%). In Italian, as presented in Section 2.2, ME involving a change of state are typically expressed using a VF construction (e.g., *entra zoppicando* 'to enter limping'). The use of an SF construction in such contexts is relatively infrequent and can be considered innovative, especially when the SF occurs with a non-directional Manner verb (e.g., *zoppica dentro la casa* 'to limp into the house').

This result aligns with the literature presenting differences between HL and homeland speakers (see Section 2.1), and specifically, with studies reporting on HL speakers exhibiting innovative language use (Kupisch & Polinsky 2022). Often such results are explained as a consequence of cross-linguistic influence typically from the majority language to the heritage or minority language (Polinsky & Scontras 2020). In this study, we tested HL speakers of Italian whose majority language is German, which is considered a SF language. We could argue that the extensive use of SF constructions in Italian by this group of HL speakers could be the result of cross-linguistic influence from German (a SF language) to Italian (a VF language). ME have been identified as susceptible to cross-linguistic influence across various bilingual groups by previous research (e.g., Engemann 2016/2022/2024, Anastasio 2023, Larrañaga et al. 2012, Montero-Melis et al. 2016). In particular, it has been observed that when cross-linguistic influence occurs from an SF to a VF language, it often manifests itself as an overuse of SF constructions in the bilingual population compared to a monolingual control group (e.g., Engemann 2022/2024, Anastasio 2023, Larrañaga et al. 2012). For instance, advanced English-speaking learners of Italian produced more SF constructions in Italian compared to French-speaking (a VF language) learners of Italian (Anastasio 2023). Similar outcomes were also reported for English–French simultaneous bilingual children who evinced cross-linguistic influence in their semantic encoding of main verbs (Engemann 2022). Notably, it could be suggested that the findings of the present study may be driven by a general process of syntactic simplification, rather than being solely attributed to cross-linguistic influence (Ionin 2021, Kupisch & Polinsky 2022, Polinsky & Scontras 2020). SF constructions may be considered less syntactically complex relative to VFs on the grounds that the latter typically consist of a gerundive construction, whereas SFs are usually formed by a main verb and a satellite within the same clause. However, we can potentially rule out this hypothesis by looking at the percentages of the constructions that involve a gerundive. If HL speakers were indeed simplifying their productions by avoiding the use of gerundives, we should observe a lower rate of those constructions compared to homeland speakers across the board. Our results show that while HL speakers produce a lower rate of VF constructions which involve a gerundive (27.84%) compared to homeland speakers (65.92%), SF constructions which involve a gerundive (e.g., *una persona nuota entrando in una caverna* 'a person swims entering into a cave') are produced to a slightly higher extent (3.09%) compared to homeland speakers (1.35%) (see Table 2).[5] Hence, it appears that SF constructions are not produced to avoid syntactically more complex structures. However, given the low number of utterances

[5] Note that the percentages presented are calculated based on the total number of utterances produced by each group. However, we only present here a descriptive trend, a statistical analysis would not be sustainable given the small number of observations in our data.

produced, this remains a tentative conclusion, and further studies are needed to shed more light on the matter.

Moreover, the difference between HL and homeland speakers does not concern only the syntactic domain but also the semantic one. As discussed in 2.2, motion event constructions consist of various semantic components, such as Figure, Path and Manner. This complex semantic frame may allow for different argument structures, with the possibility to encode Path in the main verb for example or in a satellite. Notably, while studies on HL speakers focus primarily on morphological and syntactic features of their HL, very little is known about their semantic representations and interface-based phenomena (Ionin 2021, Jegerski & Sekerina 2021, Polinsky 2018 for an overview). Research on the semantic domain has shown that HL speakers present differences, and more variability compared to L1 speakers (Montrul 2002, Polinsky 2008, among others). Our results are in line with these studies, since we observe a difference between HL and homeland speakers in the form-meaning mapping of ME. We suggest that cross-linguistic influence may extend beyond syntactic structures, with HL speakers experiencing transfer of form-meaning mappings between languages, at least with respect to how ME are framed. Semantic transfer, which involves carrying the meaning of a phrase from one language – typically the majority language – into another, such as the HL, may lead to heritage speakers using structures that carry innovative interpretations (Polinsky 2018). This could explain our findings, whereby HL speakers tend to produce more structures with an innovative interpretation, namely SF constructions with a boundary-crossing reading, compared to homeland speakers.

In this regard, our results provide evidence that HL speakers are more likely to produce innovative constructions, possibly due to cross-linguistic influence from their other language. The higher rate of such innovations among HL speakers compared to homeland speakers may mirror contact-induced language change outcomes, making them a valuable testing ground for studying language change (Kupisch & Polinsky 2022). As presented in Section 2.1, HL speakers are suggested to amplify tendencies that are already present in the homeland variety (Kupisch & Polinsky 2022). Evidence shows that younger Italian homeland speakers are more likely to accept SF construction with a boundary-crossing reading compared to older homeland speakers, a trend also observed in production (Michelotti et al., 2025). Based on these findings, the authors suggest that the framing of ME in Italian may be undergoing incipient language change, with changes initially affecting comprehension and later spreading to production. Since our study shows that HL speakers produce significantly more SF constructions than homeland speakers, we conclude that HL speakers appear to amplify existing linguistic tendencies in the HL. Notably, HL speakers' contact with Italian regional varieties varied within the group, including exposure to Northern, Central and Southern varieties. Their linguistic backgrounds and contact with these regional varieties may have influenced their production of SF constructions. However, since we lack a fine-grained measure of the quantity and quality of this contact, we cannot investigate how specific homeland varieties might have influenced HL speakers' productions. We leave this issue to be investigated by future research.

Additionally, since this study focuses on younger speakers in both HL and homeland groups, we anticipate that comparing HL speakers with older homeland speakers would reveal even greater differences, as younger homeland speakers already tend to produce more SF constructions than their older counterparts (Michelotti et al.,

2025). However, we need to acknowledge that the HL and homeland speakers in the present study were not entirely aged-matched (HL speakers ranged between 11 and 16 years old and homeland speakers between 19 and 28 years old). In order to take this difference into account, we conducted an exploratory analysis in which we added *age* as a fixed effect to our original model. The results of this analysis, that can be found in the OSF repository, revealed that *age* was not significant. However, we cannot entirely exclude the possibility that the differences in framing preferences observed between the two groups are to some extent also due to age differences in the two samples.

In sum, our findings provide further evidence that HL speakers are more likely to produce innovative constructions in their HL, mirroring the effect of cross-linguistic influence on contact-induced processes of language change. This study reinforces the idea that HL speakers push the boundaries of emerging language changes by building on tendencies already present in the homeland variety. This aligns with the broader sociolinguistic literature on language change being spearheaded by younger speakers and confirms the role of HL speakers as valuable contributors to the study of this dynamic process.

7.2. Sensitivity to semantic properties: quantitative or qualitative differences?

The second key finding that emerges from this study is that both homeland speakers and HL speakers are sensitive to the semantic properties of the Manner verbs used to express SF constructions. In particular, we found that, although HL speakers generally overproduce SFs with a boundary-crossing interpretation compared to homeland speakers, both groups produce SF constructions significantly less when the Manner verb used in these constructions is non-directional (for example, *ballare* 'to dance').

As mentioned in Section 2.2, it is well established in the literature that the availability of SF constructions in Italian is modulated by the directionality of the Manner verb (Cardini, 2012; Folli & Ramchand, 2005). However, to the best of our knowledge, this is the first study testing whether HL speakers are sensitive to this property. We argue that our findings suggest that HL speakers show a similar sensitivity to semantic properties of the verb when choosing how to encode MEs as homeland speakers. A similar pattern was found by Montrul (2006) in a grammaticality judgement task investigating Spanish-English HL speakers' and Spanish L1 speakers' knowledge of unaccusative and unergative verbs in Spanish.[6]

Despite being sensitive to the directionality of Manner verbs involved in SF constructions, the HL speakers in our study still generally overproduced SF constructions. In other words, while they overproduced SF constructions overall, they did so to a lesser extent with non-directional Manner verbs. This leaves us with the question of whether the differences we found in ME encoding in the two speaker groups should be considered quantitative or qualitative in nature. On the one hand, HL speakers' SF production demonstrates the same distinction of directional vs. non-directional verbs as seen in homeland speakers. The only difference between the two

[6] Montrul (2006) investigated contexts in which only telic unaccusative verbs but not atelic unaccusatives are acceptable (absolutive constructions) and found that both speaker groups assigned lower ratings to atelic than telic unaccusatives, suggesting that HL speakers were sensitive to the telic-atelic distinction and its implications for the acceptability of these constructions.

groups lies in the quantity of these constructions, with HL speakers overproducing them with both types of verbs relative to homeland speakers. On the other hand, the extent to which HL speakers produce SF constructions in boundary-crossing contexts (65.38% with directional Manner verbs and 47.41% with non-directional manner verbs) makes us wonder whether the boundary-crossing constraint is still active in HL speakers. Montrul's (2006) study proves illuminating in this respect. In her study, she found that Spanish-English HL speakers performed relatively accurately in a grammaticality judgement task on unaccusative and unergative Spanish verbs, but they significantly differed from L1 Spanish speakers in their judgment of ungrammatical sentences which presented Spanish unaccusative passives. These constructions were accepted to a higher extent by English-Spanish HL speakers than L1 Spanish speakers, and this tendency was especially marked with unaccusative verbs which display more unstable behavior (e.g., variable auxiliary selection) than with unaccusatives with more stable properties. The author argues that these results suggest that HL speakers' syntactic knowledge of unaccusativity is stable whereas HL speakers' semantic representations might show variation or differences (Montrul 2006: 66). We argue that a similar situation might apply in the context of our study. As mentioned in Section 2.2, SF constructions are perfectly licit in Italian without a boundary-crossing interpretation (Slobin & Hoiting 1994). As such, while SF constructions are syntactically correct, it is the specific form-function mapping of a SF construction with a boundary-crossing reading that makes them unacceptable or, at least, infelicitous. Hence, HL speakers' overproductions of SF in these contexts might indicate differences in their semantic representations. We could argue that they extend the semantic properties of German SF constructions, which are possible in Italian with a non-boundary-crossing event, to include a boundary-crossing interpretation.

8. Limitations and further directions

This study presents some limitations. For example, the groups we investigated were relatively heterogeneous, particularly the HL speaker group, which included both minors and young adults. Additionally, systematically comparing simultaneous and sequential bilinguals would have provided further insight into the influence of age of acquisition of the majority language (German) on the production of innovative constructions in the HL. Unfortunately, the relatively small number of participants prevents us from further exploring potential differences according to acquisition context. Finally, we acknowledge that this study includes only speakers from Northern Italy. Expanding the research to L1 Italian speakers from Central and Southern regions would help determine whether SF constructions are also produced by speakers with different regional backgrounds. Additionally, a more detailed analysis of HL speakers' exposure patterns to Italian regional varieties could clarify whether such exposure influences their production of SF constructions

9. Conclusions

In this study, we investigated whether homeland and HL speakers of Italian differ in how they frame motion events. Specifically, we examined to what extent SF

constructions are used to describe boundary-crossing events. Our findings contribute to the literature by highlighting divergences between HL and homeland speakers in both syntactic and semantic domains. Notably, we provide evidence that the linguistic production of HL speakers may serve as a testing ground for contact-induced language change, as they exhibit amplified use of innovative linguistic forms.

Interestingly, these amplified patterns are primarily observed in structures that show variation within the language (e.g., boundary-crossing contexts with directional Manner verbs), suggesting that language change is more likely to occur in structures with inherent variability. To further expand on these findings, future studies should explore whether similar patterns of amplified variation are present in other linguistic domains and across different language pairs. Additionally, studies should aim at investigating the processing mechanisms underlying these changes and identify to what extent language contact plays a key role in the rise and spread of linguistic innovations.

Data availability

Data supporting the findings of this study are openly accessible in the OSF repository https://osf.io/9weau/?view_only=2b4e5d71191846d09c27573844106dc5.

Ethics statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of the University of Mannheim (EK Mannheim 28/2021, 25.05.2021). Informed consent was obtained from all participants involved in the study. For minors, consent forms were collected from their legal guardians.

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