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Getting it right:

Advanced Danish learners of Italian acquire speech and gesture L2 forms

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Abstract

This paper investigates whether advanced Danish learners of Italian are able to acquire speech and gesture patterns typical of a typologically different target language and consequently move away from patterns typical of their L1. Results show that the Danish learners are able to acquire and use typical Italian lexicalization patterns, but more importantly their L2 speech-gesture co-expressivity reveals that they have reorganized semantic representations and shifted attention towards new types of information.

Index Terms: Second Language Acquisition, motion events, thinking for speaking, gesture, conceptualization.

1. Introduction

Findings within the *Thinking-for-speaking* (TFS) - *Second Language Acquisition* (SLA) paradigm often show very different results in terms of whether learners of a second language (L2) are able to acquire L2 form-meaning pairings and lexicalization patterns, and subsequently shift attention towards new types of information typical of the target language (for recent overviews see:[1, 2]). Nearly all studies highlight the difficulties learners face on the road to acquiring target-like ways of expressing themselves in another language. Learners often continue to be influenced by lexico-semantic and morpho-syntactic structures of their first language (L1) when speaking an L2, a feature known as cross-linguistic influence or transfer. Only a handful of studies find no major evidence of L1 transfer, which in turn is interpreted as a shift in TFS towards new L2 TFS-patterns. But these studies focus only on lexicalization patterns in L1 and L2 speech and say very little about the cognitive functions or conceptualizations at play in native speakers and language learners. We argue, in line with [3], for a methodological shift towards co-verbal behavior (e.g. co-speech gestures) in studies of SLA to 1) better understand linguistic conceptualization of speakers learning another language, and 2) investigate whether acquiring target-like lexicalization patterns also involves a change in *thinking-for-speaking*.

2. Background

We depart from the conceptual domain of motion. Speaking about motion is central to human communication and all languages have lexical means for describing it. But speakers of different languages show striking variation of how semantic features of a motion event, e.g. path (directionality) and manner (the way movement is carried out) are mapped onto linguistic surface forms. This has lead Talmy [4, 5] to propose a two-way typological classification of languages depending on how the main constituent, PATH OF MOTION, is framed across languages. Speakers of *verb-framed languages* (Romance, Japanese, Semitic) often express path in the main verb (e.g. *ascend*, *enter*) as in (1), whereas speakers of *satellite-framed languages* (e.g. Indo-European - except Romance – Slavic) mainly express path outside the main verb in adverbials or PPs (e.g. *up*, *down*, *into*, *out of*) as in (2). As seen in the examples, the allocation of path also has consequences for expressing manner of motion. Since the main verb is occupied by the expression of path in verb-framed languages, manner must be subordinated in PPs, gerunds or subordinate clauses, if not omitted altogether. In satellite-framed languages the main verb slot is left open to express manner.

(1) La botella **entrò** a la cueva (*flotando*)[1]
'The bottle enters the cave (*floating*)'
(2) The bottle floats **into** the cave

Based on the differences in lexicalization of manner and path, Berman & Slobin [6] have examined whether and to what extent the typological variation among different languages has an effect on speakers' conceptualization, and expression, of motion events.

2.1. Thinking-for-speaking about motion

Slobin hypothesizes that in the process of speaking, experience is filtered through language into verbalized events, what he calls *thinking-for-speaking* [7, 8]. Studies on language diversity and TFS explore how speakers of different languages select and organize information, e.g. about path and manner, depending on the morpho-syntactic possibilities (and constraints) provided by their particular language. The TFS hypothesis thus centers on the effect of language on the cognitive processes during speaking. Native speakers are from childhood (L1 acquisition) trained to pay attention to specific aspects of a motion event, which leads to language-specific rhetorical styles in the way speakers not only speak about path and manner, but also the amount of attention paid towards them. Therefore, if differences in lexicalization across languages give rise to cross-linguistic differences in cognition, it can have important implications for SLA [9].

2.2. Thinking-for-speaking in L2

Learning another language not only entails learning new form-meaning pairings, it also involves selecting and

[1] Standard textbook examples by Talmy [4, pp. 69]

(syntactically) organizing information in target-like ways. The process of SLA therefore involves restructuring existing conceptual categories [10] and learning new ways of TFS [11]. This can be a challenging task for L2 learners as L1 patterns learned in childhood seem "*resistant to restructuring in adult second language acquisition*" [8, pp. 89]. Learners may learn new L2 forms, but apply them from an L1 perspective [12].

One of the major questions in SLA is whether L2 learners can overcome the constraints imposed by their native language and learn to conceptualize motion in ways typical of the target language. Studies show that even advanced language learners have problems in reorganizing semantic components and shift attention towards new ways of thinking (for speaking) [10, 13]. Only a handful of studies find little evidence of L1 transfer and suggest restructuring of semantic representations are possible. In a series of studies of Danish (satellite-framed language) L2 learners of Spanish (verb-framed language), Cadierno and colleagues find that learners have no problems acquiring typical Spanish constructions, but still show traces of L1 transfer by more elaborate descriptions of path using redundant path particles (adverbials) with path verbs, a term coined '*satellization*' by Cadierno [14]. However, no transfer of dominant Danish manner verb + PP structure is visible.

Bernini et al. [15] however argue that L1 background alone cannot clearly predict L2 behavior. Comparing German and English learners (both satellite-framed languages) of Italian (verb-framed), the learner groups showed different lexicalization patterns in L2 Italian. English L2 speakers acquired Italian verb-framed patterns, whereas the German speakers did not fully master this. They used more light path verbs (deictic) like *andare* – 'to go', fewer path only verb constructions and preferred to lexicalize path in PPs. Although studies often find L1 transfer, or traces of general language learner behavior, some argue that learners can develop appropriate L2 TFS patterns over time [16].

One factor all of the abovementioned studies have in common is that they focus on speech alone. In a critique, Athanasopoulos & Bylund point out that many of these studies investigating TFS "*do not in fact provide sufficient data on thought processes during speaking, but only describe linguistic diversity in the sense that they report typologically-constrained verbalizations produced by speakers of different languages*" [3, pp. 95]. That is, the studies may provide detailed linguistic analyses on information structure in L1 and L2, which is an essential starting point for investigating language diversity, but they reveal little about online linguistic conceptualization. Athanasopoulos & Bylund, among others, argue that looking at co-verbal data (ERP, eye-tracking, nonverbal tasks, gesture) might reveal more about cognitive processes during speaking than speech alone.

2.3. Why gestures?

We often gesture when we speak. Gestures are semantically and temporally tightly related to speech and language, and are seen as "*forming an 'integrated' system which is planned and processed together*" [17, pp. 78]. Because of the tight semantic and temporal relationship, co-speech gestures are influenced by information structure, that is: what type of information is selected for speech, and how the information is linguistically organized. Several cross-linguistic studies show that speakers of different languages not only encode and express meaning differently, but also distribute gestures differently when re-narrating the same storylines [18]. Speakers of verb-framed languages, who often need two verbal clauses to express manner and path, also tend to divide manner and path into two separate gestures: one for manner, one for path. Speakers of satellite-framed languages, on the contrary, often express manner and path within one clause and consequently produce one gesture conveying information about path alone or conflate manner and path into one single gesture [19]. The co-expressivity of meaning in speech and gesture indicates that they are conceptually linked and may as such reflect how events are conceptualized. The speech-gesture co-expressivity is therefore interesting for studies of TFS in SLA. Co-speech gesture may be used to investigate whether, and to what extent, L2 learners are able to reorganize semantic representations from their native language onto an L2 with different types of representations.

If learners acquire target-like representations of motion, their co-speech gestures should reflect this in target-like gesture patterns. Studies investigating L2 speakers' speech and gesture patterns, and acquisition of such, mainly find 1) difficulties for learners in expressing motion in target-like ways both in speech and gesture, and thereby seem to retain L1 TFS patterns [20, 21], 2) properties of both source and target language in L2 production [22], and thus that a shift towards L2 TFS *is* possible for some aspects of motion [23, 24], 3) evidence of restructuring of representations exemplified in typical speech and gesture L2 forms [16, 25]. Stam [24] finds that L2 learners' gestures reveal L1-based TFS with fluent L2 speech, but subsequently show that over a period of 14 years exposure to the target-language, *one speaker's* speech and gesture patterns shift towards L2 typical patterns. Özyürek [25] find that very advanced Turkish learners of English, being submerged into target-language culture for more than 10 years, acquire typical L2 speech forms which is also reflected in L2-like gesture patterns.

We might assume that advanced learners, who are grammatically correct and fluent in the L2, have restructured semantic representations and acquired L2 TFS-patterns. Evidence from co-speech gestures, however, questions such assumptions. If L2 speakers' gestures show L1-based gesture with L2-fluent speech instead of L2-typical gesture form and distribution, then we can hypothesize that learners have not fully re-conceptualized motion events and shifted attention towards new information structures.

2.4. Present study: Motion in Danish and Italian

Danish and Italian represent two typologically different languages. Danish is categorized as a prototypical satellite-framed language as path of motion is almost exclusively expressed in verb particles (adverbs, PPs) and manner is likewise most often expressed in the main verb [26, 27] as in (3) where the path particle is in boldface.

(3) Bolden ruller **ind** i huset
'Ball.the rolls in-to house.the'

Italian is, along with the other Romance languages, considered a verb-framed language, as path is often expressed in the main verb and manner subordinated in adverbial manner expressions or subordinate clauses as in (4).

(4) Il pallone **entra** nella casa (*rotolando*)
'The ball enters in.the house (*rolling*)'

But lexicalization patterns are not fixed. Most languages possess a variety of different means of expressing motion [28]. In fact, verb-particle constructions are allowed in Romance languages (at least in non-boundary-crossing situations), also in combination with manner verbs as in (5).

(5) Il Pallone rotola **giù** per la strada
'The ball rolls down on the street'

In light of recent research into verb-particle constructions, Italian may be different in respect to other verb-framed languages in the colloquial and frequent use of verb-particle constructions [29]. This has led Talmy to (*re*-)classifying Italian as a language with 'split system' possibilities [5]. Although verb-particle constructions are frequently used in Italian, the preferred way of lexicalizing motion is based on a verb-framed schematic with path in the main verbal clause +/- subordinated manner expressions. Recent studies of Italian speech-gesture patterns show that when Italian speakers divide path and manner in speech, they typically also produce two separate gestures. However, when they conflate manner and path in a verb-particle construction, they produce one gesture [30, 31].

2.5. Research question

The question is whether and how deep semantic preferences from the L1 may influence conceptual representations in L2, and whether such representations can be restructured towards target-language representations. We look at co-speech gestures to investigate L1-based thinking in otherwise fluent L2 production or indications of a change in TFS towards the L2.

3. Method

3.1. Participants

A total of 10 speakers participated in the study: 5 native Italian speakers (female 4, Mean age 29.4, SD 7.05), all grad students of Roma Tre (Rome, Italy) and 5 highly advanced Danish learners of Italian (female: 4, mean age 36, SD 6.71), all post-grads, Masters of Arts in Italian Language and Literature from the University of Copenhagen and Copenhagen Business School. In a language proficiency test (cloze test) they scored a mean 91.38% correct (SD 3.28) and in a self-rated language background questionnaire on proficiency they scored a mean 4 (SD 0.72) of 5 – 5 is best). All had lengthy experience living in the target language culture (mean 19.6 months/SD 12.52) and to some extent spoke Italian on a weekly basis (3.8 hours/SD 4.82). The Danish speakers represented both the Danish L1 and L2 Italian group.

3.2. Experimental design

The participants individually watched 16 short cartoon videos (8 fillers) consisting of material from The Tomato Man Project [32] and from Boundary Ball [33] involving animated figures, a tomato or triangle, jumping or rolling up and down a hill or into and out of a house. The participants narrated the events to a confederate native listener with the instruction that a third naïve listener would watch the recordings and be able to understand and elaborate on the details of the storylines based on their narrations. The order in which the Danish L1 and L2 speakers were tested was counterbalanced.

3.3. Encoding

Speech was tokenized and the events categorized as to how manner and path was expressed syntactically in the narration of target events. Narrations with manner verbs + a path denoting *satellite* (e.g. adverbs, preposition) were categorized as 'one-clause' manner-path conflating constructions (MP). Constructions containing only manner or only path were labelled MO and PO respectively, and constructions containing both manner and path in two separate (verbal) elements (e.g. path verbs + subordinate manner expressions or subordinate clauses) were categorized as a 'two-clause' construction (PO+MO). Examples and labels can be seen in Table 1. Although the Italian adverbial gerund form may not *per se* be categorized as a subordinate clause in itself, we categorize expressions with a path verb and a gerundive manner expression as a '*two clause*' construction type, since gerunds in previous studies often are dealt with as subordinated manner elements outside the main verbal phrase, and because they may constitute a processing unit in themselves similar to subordinated manner expressions in subordinated clauses.

Clause type	Example	Labels
One clause	And he **rolls up** the hill	MP
One clause	He **jumps into** the house	MP
One clause	The tomato **rolls**	MO
One clause	He **descends** the hill	PO
One clause	It **goes down** the hill	PO
Two clauses	He **descends** while **rolling**	PO+MO
Two clauses	He **enters** the house **jumping**	PO+MO

Table 1: Speech constructions, examples and labels

Gestures were categorized as to what information the co-speech gesture contained as seen in Table 2. The label 2G is given to gesture constructions in which two separate gestures are expressed within a target event, e.g. one for path and one for manner.

Gesture type	Representation	Labels
Path	Representing only the path of motion with no explicit reference to manner	PG
Manner	Depicting only the manner of motion, that is how the figure moves, with no indication of the path	MG
Manner-path conflating	Conflating both the manner and the path of motion into one single gesture	MPG
Two separate gestures	Two separate gesture containing manner and path information	2G

Table 2: Gesture examples and labels

4. Analysis

The participants produced a total of 137 motion events and a total of 180 gestures. In what follows we present a quantitative analysis of speech patterns between the three groups of speakers and an analysis of speech-gesture co-expressivity. We use within-group repeated measures ANOVA for the Danish-L2 group (as both groups contained the same speakers), and a between-group factorial mixed effects ANOVA for the Danish-Italian and Italian-L2 group. We subsequently performed Bonferroni post-hoc tests. For path only (PO) and separate clause constructions (PO+MO) and

gesture type we only carried out statistical analysis between the Italian and L2 speakers since the Danish speakers did not produce any of these clause constructions.

4.1. Clause type constructions

Figure 1 visualizes the lexicalization patterns most frequently used by the three groups. The plot shows Danish L1 speakers' exclusive use of a tight manner verb + path satellite configuration (MP), which is in line with previous studies of Danish lexicalization patterns [14]. Furthermore, the pattern confirms Danish to be a rigid and prototypical satellite-framed language with few possibilities for lexicalizing motion in different ways.

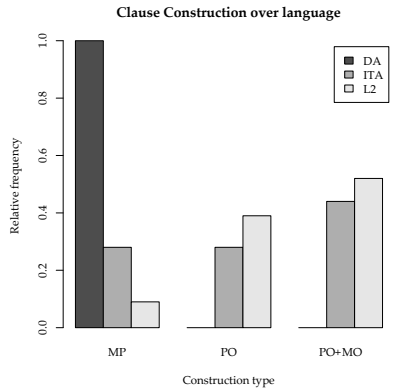

Figure 1: Relative frequency of Clause Construction in the three Language groups

The data for Italian confirms its rather particular position as a typological 'split' system language. In 28% of narrations manner is expressed in the main verb and path in a satellite to the verb (MP). However, a total of 72% of narrations are construed by means of typical verb-framed patterns with path expressed in the main verbal clause +/- subordinate manner expressions. Although Italian speakers have at their disposition conceptually lighter manner verb + particle constructions, the speakers overall frame motion in standard verb-framed fashion, especially in 'two clause' constructions with subordinated manner expressions (44%).

Generally, Italian speakers in this study do not omit manner; rather it is expressed extensively both through main verb + satellite and subordinated constructions. Given that Italian speakers can frame manner and path within one clause, why is this pattern not more widespread? One explanation is the boundary-crossing constraint which hinders speakers of verb-framed languages from expressing path in a satellite (in conjunction with a manner verb) when a figure crosses a spatial boundary [34]. Another explanation is that lexicalization patterns are so deeply entrenched in human cognition that the Italian speakers may prefer heavier constructions (PO+MO) to lighter constructions (MP or PO) to fulfill verb-framed schematics also including manner.

The Danish L2 Italian speakers, whose L1 lexicalization patterns clearly are grounded in a preference for tight manner verb + path satellite construction, must reorganize semantic representations and move away from mapping manner in the main verb and path in a satellite to fit standard target-like patterns. The L2 learners succeed in expressing motion in ways similar to the target language, and well distanced from their L1 patterns. They succeed in suppressing manner in the main verb (9%) and produce typical target-like constructions with path only (PO) and path only constructions + manner subordination (PO+MO) (91%). When comparing the Danish-Italian group there is a main effect of Language ($F(1,8) = 6930 < 0.001$) and a main effect of Construction ($F(2,8) = 65 < 0.001$) and an interaction between the two ($F(2,8) = 78 < 0.001$). Between the Danish-L2 group there is a main effect of Language ($F(1,4) = 1047 < 0.001$), a main effect of Construction ($F(2,4) = 28 < 0.001$) and an interaction between the two ($F(2,4) = 78 < 0.001$). Bonferroni post-tests showed significant pairwise differences between construction types and languages. Between the Italian-L2 group we find no effect of Language ($F(1,8) = 3.71 = 0.09$), only a marginal effect of Construction ($F(2,8) = 3.64 = 0.049$) and no interaction between the two ($F(2,8) = 1.28 = 0.3$). A Bonferroni post-test shows a marginal pairwise difference in expressing MP (0.03), but no difference in PO and PO+MO between the groups.

The statistical analysis for clause type constructions overall shows that Danish and Italian speakers express motion in significantly different ways. The L2 speakers express motion in ways significantly different from their L1, and these expressions in L2 are not significantly different from L1 Italian. The results for speech also show that the L2 speakers lexicalize motion in a more standard verb-framed fashion than the L1 Italian speakers producing fewer manner verb + path particle constructions, a pattern present in colloquial Italian. From the speech data we could infer that the L2 learners had restructured semantic representations. However, co-speech gestures may give a clearer view on linguistic conceptualization of the events in L2.

4.2. Clause type constructions and gestures

Looking at speech and gesture combined, we investigate how the packaging of manner and path in speech constructions is reflected in co-speech gesture. We divide the bar plots by language for reasons of simplicity, but statistical analysis is carried out within clause constructions and gesture types. Figure 2, 3 and 4 visualize how gestures are combined with speech constructions within the three language groups.

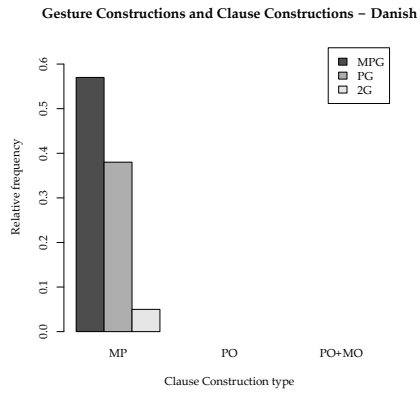

Figure 2: Relative frequency of Gesture Constructions over Clause Construction – Danish

Figure 2 shows that Danish L1 speakers almost exclusively produce manner-path conflated gestures (MPG) and path only gestures (PG) combined with their exclusive use of one clause manner-path constructions (MP). This speech-gesture pattern supports previous research for satellite-framed languages [19] showing that when speakers linguistically conflate manner and path in one single clause (or processing unit following Kita & Özyürek and colleagues), they also produce one single gesture which may either represent the same information as speech (MPG) or downplay manner in gesture (PG) possibly due to high presence in speech.

Figure 3 shows Italian L1 speakers mainly use manner-path conflated gestures (MPG) or path only gestures (PG) when expressing manner and path within a single clause (MP). Moreover, they tend to produce path only gestures with path only constructions (PO) and when separating manner and path in 'two clauses' (PO+MO), also separate manner and path in gesture (2G). The division of manner and path in gesture with the 'two clause' constructions reflect the conceptual separation of manner and path as pertaining to two separate processing units [19]. The division of gestures is also found in other studies for Italian [30] and other verb-framed languages [See:18].

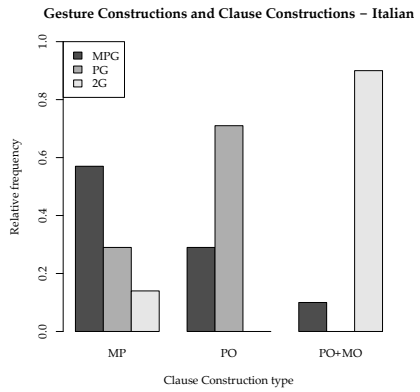

Figure 3: Relative frequency of Gesture Constructions over Clause Construction - Italian

For the L2 learners to fully acquire gesture patterns in L2 Italian, they must resemble the Italian speech-gesture patterns expressing path gestures with path constructions and two separate gestures when separating manner and path in speech.

Figure 4 illustrates how the L2 speakers align path gestures (PG) with path constructions (PO) and produce two separate gestures (2G) when separating manner and path in speech (PO+MO). Although frequencies for (MP) may seem high, remember that L2 speakers only produced manner verb + path satellite constructions in 9% of all narrations which with gesture production amount to 4 observations within the MP category in total.

The findings show that the learners not only acquire target-like speech patterns, but also use target-like gesture when expressing motion. The speech-gesture synchrony may suggest a restructuring of semantic representations from a rigid satellite-framed system towards a more standard verb-framed Italian.

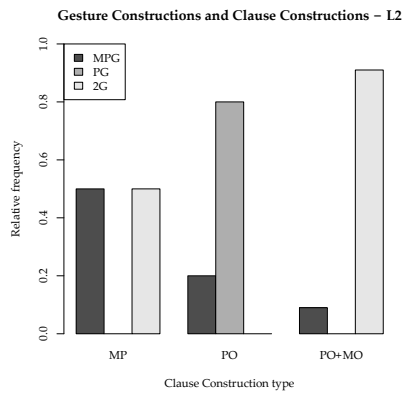

Figure 4: Relative frequency of Gesture Constructions over Clause Construction – L2

4.2.1. *Manner-path conflated constructions*

When comparing the Danish-Italian speakers within the MP constructions we find a main effect of Language ($F(1,8) = 115 < 0.001$), a main effect of Gesture ($F(3,8) = 12 < 0.001$) and an interaction between the two ($F(3,8) = 4.6 < 0.005$). Between the Danish-L2 speakers there is a main effect of Language ($F(1,4) = 509 < 0.001$), a main effect of Gesture ($F(3,4) = 7.4 < 0.005$) and an interaction between the two ($F(3,4) = 12 < 0.001$). Between the Italian-L2 speakers there is a marginal effect of Language $F(1,8) = 6.59 < 0.05$) no effect of Gesture ($F(3,8) = 2.39 = 0.09$) and no interaction between the two ($F(3.8) = 1.43$, $p = 0.26$). Bonferroni post-testing shows a pairwise difference between the Danish-Italian speakers only for MPG (0.003), for the Danish-L2 speakers only for MPG (< 0.001) and PG (0.01) and for the Italian-L2 speakers only for MPG (0.043).

For speech-gesture relationship within the MP category we observe a variation between the three groups. Even when using the same tight one-clause manner verb + path satellite construction, we see a difference in what type of gesture speakers produce. Although we might assume that producing the same type of construction (MP) would result in the same type of gesture distribution across the languages (MPG or PG), it is not entirely the case. Few gesture observations, especially in the L2 dataset within the MP construction, could bias the statistics.

4.2.2. *Path only constructions (L2-ITA)*

For the path only (PO) constructions there is a marginal effect of Language ($F(1,8)$ 6.59, $p < 0.05$), no effect of Gesture ($F(3,8) = 2.39$, $p = 0.09$) and no interaction ($F(3,8) = 1.43$, $p = 0.25$). A Bonferroni post-test shows pairwise difference only for MPG (0.04). There is a marginal effect of Language between the L2 and Italian L1 speakers, but generally the learners achieve mapping path gestures onto path only constructions in target-like ways with negligible differences.

4.2.3. *Path+Manner separated constructions (L2-ITA)*

For the PO+MO constructions there is no effect of Language ($F(1,8) = 0.57$, $p = 0.47$), a main effect of Gesture ($F(3,8) = 17$, $p < 0.001$), but no interaction ($F(3,8) = 0.46$, $p = 0.72$).

A Bonferroni post-test show a pairwise difference only for MPG (0.04). The L2 speakers acquire and use two separate manner and path gestures when separating manner and path in speech. The data shows, at least for the 5 Danish learners of Italian, a shift towards a more uniform verb-framed Italian.

5. Discussion

Learning to map semantic features of motion onto new L2 linguistic forms is notoriously difficult for L2 learners, because the L1 patterns are deeply rooted in conceptualization. This study indicates that a restructuring of semantic representation is possible. The findings support previous studies by Özyürek [25] and Stam [16], who also find that advanced language learners' gestures reflect the learners' acquired target-like speech patterns. The learners in this study are highly advanced learners of Italian, they have learned Italian in formal ways during university studies, they have all been submerged into target language culture, and have been in social and linguistic contact with native Italian speakers. Their acquisition of more standard verb-framed forms exemplified in a higher production of PO+MO (than the L1 Italian speakers) may be attributed to formal textbook schooling through university learning combined with a continued L1 focus on expressing manner.

The learners do not overtly use the MP construction in L2 production although the construction is valid in non-boundary-crossing situations. This could indicate minimal transfer from L1 MP rigid patterns, but also that the learners are aware that expressions of directionality are associated with the verb and not explicitly with the particle (satellite). Another factor could be that even advanced learners stick to known formal structures and do not 'play' much with language variation risking ambiguity and being misunderstood.

Looking at gestures, we see that a conceptual shift towards target-like, and even standard target-language, is possible for very advanced learners [25]. The learners are able to reorganize semantic representations towards an Italian TFS-pattern for the domain of motion. Since gestures reflect linguistic conceptualizations, we see that the L2 speakers succeed in aligning path gestures with path only expressions and separate manner and path in gesture when separating manner and path in speech, two types of speech-gesture patterns not found in their L1.

We are careful not to conclude that these data show a full shift in TFS towards target-language patterns. The thinking-for-speaking hypothesis deals with much more than just allocation of manner and path of motion e.g. definiteness and aspect. Moreover, this study is limited to 5 advanced learners with a limited set of motion constructions and verb variation. Despite this, we continue to argue for a 'multimodal approach' to studying Thinking for Speaking [3] and Second Language Acquisition [35].

6. Acknowledgements

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