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Abstract

Situations of language contact are often the norm for sign languages. This article investigates a case of unimodal contact between Cena, a young sign language in its third generation that is used in a small rural community in Brazil, and Libras, the national sign language of Brazil. Our analysis concerns one by-product of this contact: reiterative code-switches, wherein signers produce a sequence of two signs—one from each language—with the same meaning to label a single referent. We consider several motivations detailed in existing literature on code-switching, before proposing an explanation motivated by the disambiguation of reversible (therefore potentially ambiguous) verb events, primarily by using reiteration to focus agents. We suggest that with this phenomenon, we see signers employ a previously unattested strategy to mark arguments and thereby aid syntactic disambiguation.

Sign Languages in Contact

THE EFFECTS AND BYPRODUCTS of language contact are numerous, with observable phenomena on the lexical or phrasal level in borrowings and code-switches, in convergences in morphosyntax and phonology (Appel and Muysken 2005), in language shift, (Yoel 2007, 2009), and the creation of novel linguistic structures in the form of pidgins or creoles. The pervasiveness of language contact in sign lan-

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guage communities offers a diverse array of circumstances to observe language contact on several levels of linguistic structure. Perhaps the most frequent type of contact is bimodal (signed-spoken), between a given sign language and the spoken language(s) of the region. Effects of this continuous interaction are often visible in sign languages themselves, in mouthings that correspond to spoken words or sounds (see Boyes-Braem and Sutton-Spence 2001 for an overview), or in initialized signs.

Unimodal (sign-sign) contact occurs when two or more signed languages come into contact. This may occur for a variety of situational reasons. Geographical proximity between groups of language users within border regions gives rise to sustained contact, such as between American Sign Language (ASL) and Mexican Sign Language (LSM) along the US-Mexico border (Quinto-Pozos 2002). More than one sign language may also be used within the same country or community, as frequently happens with sign languages used in small communities and the national sign language of their respective country. Often called *village sign languages* (Zeshan and de Vos 2012) or *micro-community sign languages* (Schembri 2010), such labels foreground their sociogeographical contexts of emergence: a single village or community in which a sign language emerges as a result of a high incidence of deafness, frequently—at least initially—without much contact with the broader national or international deaf community. As a result, early generations of deaf people born into such circumstances may not receive an education through the institutions available in the region, particularly if there is no framework to accommodate deaf students. The sign languages that emerge within these communities thus often develop in linguistic isolation, relative to other sign languages.

Al-Sayyid Bedouin Sign Language (ABSL) is a relatively well-studied example fitting the typical village sign language profile; it arose in a small, close-knit community in Israel following the birth of four deaf siblings (Kisch 2008), and is currently in its fourth generation. Various studies have investigated several levels of its linguistic structure, from prosody (Sandler et al. 2011a), word order (Sandler et al. 2005), and phonology (Sandler et al. 2011b), to aspects of social structure (see Meir et al. 2012 for the interface between social factors

and linguistic structure), including social relationships among deaf individuals (Kisch 2008). As is common with village sign languages, it was through education that deaf ABSL signers first came into regular contact with Israeli Sign Language (ISL). Starting in the 1980s, a group of deaf children from Al-Sayyid began attending a school also attended by users of ISL (Kisch 2008). Subsequent exposure followed by virtue of a residential school with deaf teachers in Tel-Aviv, attended by some deaf teenagers from the community (Meir et al. 2012), as well as through social events organized by ISL signers (Meir and Sandler 2019).

A similar story can be found with several other village sign languages. Central Taurus Sign Language (CTSL) emerged in a remote community of neighboring villages in southern Turkey as a result of a relatively high rate of hereditary deafness (Ergin 2017). As with ABSL, a subset of deaf individuals attended deaf schools outside of the community, meaning this small group of four people came into contact with Turkish Sign Language (TİD). However, for the rest of the deaf population, exposure remains low; CTSL-TİD bilingualism is restricted to four signers, who have been observed only to use TİD among themselves (Ergin 2017). Accordingly, linguistic influence from TİD is minimal, contributing just a few lexical borrowings such as *WOMAN* and *MAN*.

The case of Ban Khor Sign Language (BKSL) provides another example in which external schooling and increased social and economic mobility of deaf people in a small village have resulted in a dramatic increase in exposure to the national sign language of the country—Thai Sign Language (TSL) (Nonaka 2012). BKSL emerged in the rural village of Ban Khor around ninety-five years ago by reason of hereditary deafness in the village. The language is thought to have developed within the family into which the first two deaf children in the village were born (Nonaka 2014). Compared to CTSL and TİD, there have been more numerous avenues through which TSL has permeated the BKSL community. Community outreach initiatives (including the availability of printed TSL materials), job opportunities, and transport links, as well as national television programs with TSL interpreters, all contributed to increasingly frequent and sustained exposure to TSL in the village. Unsurprisingly, the scope of lexical borrowing largely

correlates with this greater exposure, and TSL signs now appear in the BKSL lexicon “across virtually all lexical domains” (Nonaka 2012, 293). Jaraisy and Stamp (2022) describe another comparable situation in Israel between Kufr Qassem¹ Sign Language (KQSL), a village sign language now in its fourth generation, and ISL. Members of the second generation of KQSL signers were first exposed to ISL through education in the late 1970s. Contact has since persisted with subsequent generations of signers through a deepening link with the wider Israeli deaf community, so much so that the authors posit KQSL as a minoritized language within the ISL community. They found an extreme increase in the proportion of ISL signs used by younger members of the Kufr Qassem deaf community who are exposed to ISL by various means, including but not limited to school and social media. In a task testing third-generation KQSL-ISL bilingual signers, an average of 17 percent of the signs they produced were KQSL signs across conditions of language partners with different languages competencies. When paired with a KQSL monolingual signer, this number only rose to 20 percent.

These examples all serve to demonstrate that contact effects depend on many variables. The breadth and regularity of contact is a primary factor—what proportion of the population is exposed to another language, and is that contact repeated or sustained? This question is itself influenced by many further factors, including the state of job opportunities and the types of work available for deaf adults inside and outside of their home community. This undoubtedly affects whether deaf individuals might choose to reside in their home village long-term (perhaps after exposure to the national sign language at school) and thus, in turn, affects contact patterns.

Code-Switching and Reiteration

Effects of such contact are not only baked into the language itself but are navigated in myriad ways by deaf individuals on a daily basis. In recent years, it has been argued that the communicative practices of deaf people in such situations are better thought of as *translanguaging* (De Meulder et al. 2019): a concept that seeks to capture the broad repertoire of linguistic resources employed within language use, including, but not limited to, signing, speaking, mouthing, pointing,

writing/typing, fingerspelling, and gesturing. Since signers often have varying codes or modalities at their disposal, code-switches are a common byproduct. *Code-switching* is defined as the act of mixing lexical items or phrases from two or more linguistic codes within the same unit of discourse (Tay 1989). Sequences of lexical signs and their fingerspelled counterparts (e.g., THEORY T-H-E-O-R-Y THEORY; Humphries and MacDougall 1999, 90) form a type of code-switch between a sign language and the alphabet of a spoken language. Although bimodal contact is perhaps the more ubiquitous form of language contact for signed languages, it is not the focus of the current study, and we instead point readers towards Lucas and Valli (1992) for an overview of potential resulting phenomema and Quinto-Pozos and Adam (2015) for a more concise and recent account.

The type of code-switches under investigation in our work are *re-iterative code-switches* (hereafter RCSs), where two semantically equivalent words or signs from different languages are produced in sequence. Quinto-Pozos (2002, 2009) provides an account of various reiterative code-switches between ASL and LSM, of which over half were nouns. Example 1 contains an extract from a conversation between three LSM signers, two of whom are LSM-ASL bilinguals. In the example, one of the bilinguals is summarizing cooking instructions given by the other bilingual to the third LSM signer, while all three signers were present. The code-switched item, used by the LSM-ASL bilingual who is signing, is in bold.

EXAMPLE 1

point-middle finger TOMATO **TOMATE** ADD-INGREDIENTS MIX gesture:
 “thumbs-up”
 “. . . and then you take) tomatoes and you add them to the other
 ingredients and mix everything together. It’s great.”
 (Quinto-Pozos 2002)

Our data concern RCSs between Cena, a sign language in its third generation that has emerged in a rural village in Brazil, and Libras, the national sign language of Brazil. Throughout our data, many signers code-switched using the signs WOMAN and MAN in Cena and Libras. The Libras variants can be seen in figure 1 and figure 2, while examples of the code-switches are shown in table 1. These

appeared in all possible orders and were produced by ten out of the nineteen participants.










FIGURE 1. WOMAN in Libras. Adapted with permission from Universidade Federal de Viçosa (Cead 2017).



FIGURE 2. MAN in Libras. Adapted with permission from Universidade Federal de Viçosa (Cead 2017).

In this article, we investigate why signers might reiteratively code-switch. There are various possible motivations suggested in existing literature, but two themes that emerge repeatedly are accommodation (Appel and Muysken 2005; Pakir 1989) and amplification—either in the sense of clarification or emphasis (Auer 1995; Eldridge 1996;

TABLE 1. Code-Switches between Cena and Libras with Signs for “Woman” and “Man.”

Order	Code-switched item			
	Woman		Man	
Cena-Libras				
Libras-Cena				

Tay 1989, Quinto-Pozos 2002). *Accommodation* can be understood as “conscious or unconscious attempts by interlocutors to adapt their linguistic habits [. . .] to the habits of other interlocutors” (Beaver and Zeevat 2012, 2). This may be motivated by a desire to construct or maintain an in-group by switching between codes known by a specific group to the exclusion of outsiders, as Tay (1989) claims about re-iterative code-switching within a multilingual ethnic minority group in Singapore.² A similar motivation was attributed to cases of RCSs observed in deaf Burundian students residing in India by Zeshan and Panda (2015). In both cases, the groups in question were ethnic minority groups in their respective wider communities.

Accommodation may also be motivated by uncertainty over whether the recipient will understand the message correctly,³ as Quinto-Pozos (2002) speculates about the case in example 1. The bilingual signer who originally provided the instructions had used the ASL sign TOMATO. As one recipient was proficient primarily in LSM, while the other was a LSM-ASL bilingual, Quinto-Pozos suggests that perhaps the code-switch was for the intended benefit of the nonbilingual signer to better their chance of understanding. This explanation can be understood as a type of clarification, in that the reiteration in example 1 functions as preemptive clarification based on the known or perceived language competencies of others. Of course,

a message may also be clarified with reiteration in response to uncertainty (cf. Quinto-Pozos 2002, 154, on ASL and LSM number signs) or following an explicit misunderstanding (Auer 1995). Emphatic uses of RCSs often serve to amplify the content of an utterance. Gumperz (1982, 78) provides several examples between spoken languages in a variety of contexts, as well as Tay (1989), who describes a speaker repeating a description of their proficiency in English in which the RCS adds additional descriptive flair.

The analysis in the current study explores similar motivations for the RCSs used by several signers in our data set. In investigating possible motivations, we broadly divide them into the two categories outlined in this section: accommodation and clarification. Before detailing our methods, we provide a background of the two languages in question in the following section.

Language Background

Cena is a sign language used by deaf (and hearing) inhabitants of *Várzea Queimada*, a rural community in the state of Piau  in north-eastern Brazil with a population of around 900. It is native to the region, having emerged following a high rate of congenital deafness among the local population with no known contact with Libras—the national sign language of Brazil—until a group of nuns visited the community in 2008. There are currently thirty-four known deaf people who were born into the community who range between around fifteen to ninety-two years of age and form three cohorts of signers. The first and oldest of these deaf signers was born in 1931 and is still alive, although she now lives apart from the bulk of the community. Like this signer, a handful of deaf people have left the region, but most live in one of three villages spread a few kilometers apart. These villages form a tight-knit community, in which the majority of deaf people use Cena as their primary language. Competency in Cena varies widely among hearing members of the community but is often higher among the children and family members of deaf people. At the time of publication, there are no known deaf children in the community (the youngest Cena signer is a teenager of around fifteen); all children who are competent Cena signers are Cotas—children of deaf adults.

Pereira (2013) provides an anthropological description of deaf sociality in Várzea Queimada, later complemented by an account of language use between deaf and hearing inhabitants of the community by Silva (2021). Almeida-Silva and Nevins (2020) contribute the first steps toward a linguistic description of Cena. They report various phenomena typical of a young sign language, including the use of real-world locations such as homes and other locations in the village to denote referents, highly flexible word order, and widespread inter-signer variation, both lexical and phonetic. Subsequent work details the variation and complexity of handshapes in classifier constructions, as well as preferences for the encoding of manner and path in motion verbs (Stoianov et al. 2022).

Of interest to our study is the contact between Cena and Libras and the linguistic phenomena this affects. Much like the cases previously presented, education forms the main channel through which deaf people in Várzea Queimada have been exposed to the national sign language (cf. ABSL in Kisch [2008], Meir and Sandler [2012]; and Meir and Sandler [2019]; KQSL in Stamp and Jaraisy [2021]; BKSL in Nonaka [2012, 2014]; and Mardin Sign Language in Dikyuva [2012]). After basic education as children, many deaf adults attended the village school for a period during which a Libras teacher taught at school on a temporary contract. The deaf students were taught both written Portuguese and Libras, although the benefits were limited by a lack of teaching resources and curricula fit for deaf students (Franco 2023). The Cena-Portuguese-Libras trilingual environment posed a challenge for teachers working with deaf students, compounded by the lack of competency in Cena of all but one of the staff. Likely with such obstacles as a significant contributing factor, several deaf adults stopped attending, reporting great difficulty in learning and an overall negative experience due to various situational factors (Franco 2023). As such, fluency in Libras within the community is uncommon, particularly among the older deaf population. From longitudinal field observations and interviews with signers themselves, we conclude that Cena is the dominant language in the community, and signers are not bilingual in Cena and Libras. Former teachers who worked with Várzea Queimada's deaf population described a rejection of Libras within an educational setting, and

deaf signers themselves report (and exhibit) a widespread preference for Cena in daily life (Franco 2023).

However, in recent years, the situation has begun to change. Some of the younger deaf population who started school at an earlier age are more proficient in Libras, and the increasing prevalence of technology and social media within the community provides broader exposure. This has a knock-on effect on older signers, wherein immediate family members or those who share a household with younger signers with greater competency in Libras are exposed through proximity. Still, knowledge of Libras in the community is largely restricted to the lexical level. There are many lexical borrowings from Libras in Cena; often a Cena variant and a Libras variant for a single lexical item coexist in common usage, as is the case with signs for “water.” Generally, signers demonstrate knowledge that these are part of different codes. Libras signs are often referred to as *[teacher’s name] signs*, denoting the aforementioned hearing teacher who knows some Libras and Cena, and who has played an important role in the educational history of the deaf community of Várzea Queimada. Use of these borrowings is widespread among signers, regardless of where signers may sit on the continuum between monolingualism and bilingualism. Despite this, the data collected by Almeida-Silva and Nevins (2020) and Almeida-Silva (forthcoming) confirms the existence of a robust lexicon of both native signs and of compounds that are unattested in Libras. The community of Várzea Queimada is indeed a multilingual one, but not akin to the communities described by Pakir (1989), such as the Baba Malay community, where a group of language users are fluent in multiple codes and thereby tend to switch between them consistently. Várzea Queimada more closely resembles a situation described by Tay (1989, 412), where those in communities with languages in contact share a common vocabulary composed of units from those languages, “irrespective of whether [an individual] can speak the original languages or not.”

The Current Study

Our investigation concerns RCSs between Cena and Libras used by several Cena signers during a communicative production task. Much of the existing work on RCSs and the wider literature on

code-switching concerns fluently bilingual or multilingual participants (Pakir 1989; Tay 1989; Zeshan and Panda 2015). Given that we still observe Cena signers to be largely monolingual within the sign modality, we are interested in the motivation for and function of these code-switches. Experimental tasks may be perceived as test-like activities reminiscent of their school experience, and as such may be likely to elicit responses using Libras signs as it has been a dominant language in their schooling⁴. However, a large proportion of participants specifically choose to code-switch when labeling referents in place of merely using the corresponding Libras sign. Based on the existing literature, we begin our investigation with a hypothesis that these code-switches are used for reasons of accommodation, clarification, or emphasis.

Accommodative functions in the sense of constructing or maintaining an in-group as reported by Tay (1989) and Zeshan & Panda (2015) are difficult to gauge outside of naturalistic conversations, where use of language is not dictated by some task or predetermined topics of conversation. However, we can hypothesise about accommodative functions motivated by goals of mutual comprehension by considering the pairings of participants within the task, their respective language competencies, the level of familiarity between members of each pair, as well as considering the items which were code-switched. We then turn to clarification. As there is an ostensive communicative aspect to the task in question, we can observe the distribution of code-switches between initial attempts of communicating the task item versus later attempts once the initial attempt has failed or was misunderstood. After presenting an analysis of the code-switches in our data with reference to verb valency, we consider clarification functions as they relate to information structure and the presence of alternative understandings of a message.

Ultimately, we find that code-switches which denoted arguments within reversible events were significantly overrepresented in the data. Reversible events involve multiple animate arguments, and as a result, the relationship of each argument to a verb such as *push* may not be clear from semantics alone. We argue that this suggests in addition to functions reported in existing studies, RCSs may also help to draw salience to specific arguments in a verb event to aid

syntactic disambiguation and clarify argument structure, particularly in Cena where strategies for argument marking are not yet widely conventionalized.

Participants

We recruited nineteen deaf native Cena signers to participate (median age = thirty-nine; range = thirteen to fifty-three; nine females, ten males), seventeen of whom still live in Várzea Queimada and two of whom have left and live elsewhere. Our working definition of *native signers* is any deaf signers for whom Cena is their first or preferred language, regardless of the deaf/hearing status of their parents. The participants consist of one first-cohort signer, twelve second-cohort signers, and six third-cohort signers. Participant information is summarized in table 2.

TABLE 2. Cena Participant Demographics

Participant no.	Sex	Age	Cohort
1	F	38	2
2	F	34	2
3	F	51	2
4	M	20	3
5	F	50	2
6	M	51	2
7	M	51	2
8	M	~47	2
9	M	49	2
10	F	45	2
11	F	59	1
12	M	37	2
13	M	35	3
14	F	42	2
15	M	40	2
16	M	31	3
17	F	31	3
18	M	25	3
19	F	13	3

Task

Participants performed the Haifa Clips task, designed by Sandler et al. (2005). The stimuli set is comprised of thirty short (less than five seconds) clips depicting various simple events involving human agents and/or inanimate objects with varying argument structures. Depicted events could be intransitive, transitive, or ditransitive. Within transitive events, there are two further relevant subgroups: reversible events and irreversible events. In irreversible events, the semantic properties of the arguments in relation to the verb imply or necessitate a particular argument structure (an animate agent can drink water, but not vice versa). In reversible verb events, the presence of multiple human arguments means that unlike verbs such as *drink*, semantics does not provide clues to the correct argument structure. As such, all ditransitive events in the stimuli are reversible, as they all involve two animate arguments, in addition to a third inanimate object. Two examples are given in figure 3, showing two possible argument structure conditions.

Each participant is paired with an interlocutor to whom they must relay each event after watching the clip. The interlocutor then must select the correct corresponding event from three multiple-choice images depicting events. If an interlocutor failed to choose correctly, the clip was replayed, and the participant was prompted to describe the event again.

After completing the task, signers would act as interlocutors for future participants at a later date. Reusing participants in this fashion



(a) A woman looks at a man



(b) A girl runs in a circle

FIGURE 3. Examples of stimuli from the Haifa Clips (arrow added to still image).

is a methodological choice, partially informed by a small participant pool and made purposefully to facilitate more naturalistic interactions between deaf signers and to minimize any potential effects of accommodation stemming from mismatches in fluency between deaf and hearing signers. This was important to control for as far as possible, as the very goal of the Haifa Clips task is the coherent and accurate transfer of information between participants. To this same end, we matched participants and interlocutors for age and geographical proximity, ensuring participants were paired either with family members or fellow residents of their own village as close to their own age as possible.

Analysis

The data was glossed by two hearing researchers who have acquired competency in Cena through multiple field visits and involvement in various research projects, including sociolinguistic analysis (Silva 2021) and language documentation through the creation of a dictionary (Almeida-Silva, forthcoming). Both researchers are also fluent Libras signers with many years of professional experience as interpreters. During glossing, any Libras signs that appeared in the data were consistently labelled, ensuring we could easily search the data set in the future for the code-switches that became apparent during the glossing. A search in the complete glosses for any sequence of two semantically equivalent signs produced in both languages found sixty-four instances.

We then applied several exclusion criteria. We discarded any sequence that had a long pause between the two constituent parts. We did not use a specific threshold of pause length but rather excluded tokens if we observed signers pausing to ponder or plan the utterance between the repeated lexical items or if their hands came to rest. Cases of self-correction were also excluded, where signers provided one variant before correcting themselves and providing the other.⁵ Similarly, items that had false starts between the two signs were excluded, as were items with any indication that the sequence was influenced by an ongoing dialogue between the participant pair (e.g., head nodding co-occurring with the sequence). Some cases were contained within three-item code-switches; in these, the item was produced



OLD MAN_[CENA] MAN_[LIBRAS] MAN_[CENA] SLEEP
 “An old man sleeps”

FIGURE 4. A three-item code-switch.

in an alternating A-B-A sequence (see figure 4), where A and B represent two languages. There is no existing body of literature on three-item code-switches, and as such, their distribution and function is not well understood. There were only four tokens of these code-switches in our data, and in absence of existing frameworks of analysis, we excluded them.⁶ After exclusions, we were left with thirty-eight items. Finally, we compared the proportion of reversible events within the stimuli to the proportion of responses describing reversible events in which RCSs were produced with a statistical analysis of variance (ANOVA).

Results

Table 3 provides a summary of the thirty-eight RCSs in our analysis, after applying our exclusion criteria. These include productions from ten of the nineteen participants. Twenty-five RCSs concerned

TABLE 3. Tokens of Reiterative Code-Switches for WOMAN and MAN by Order

RCS	Number of tokens
WOMAN[CENA]	16
WOMAN[LIBRAS]	
WOMAN[LIBRAS]	9
WOMAN[CENA]	
MAN[CENA]	6
MAN[LIBRAS]	
MAN[LIBRAS]	7
MAN[CENA]	

signs meaning “woman” compared to thirteen pertaining to signs meaning “man”; this is a somewhat expected asymmetry given the distribution of males and females in the stimuli clips.⁷ In both of these categories, RCSs in which the Cena variant was produced first were more frequent.

Figure 5 compares the proportion of different argument structures as seen in the events in the stimuli and in sentences which contained reiterative code-switches.⁸ While 43 percent of the stimuli items are intransitive, the proportion of intransitive contexts in which we find RCSs is much smaller. Conversely, there is a far larger proportion of ditransitive events in sentences containing RCSs than that of the stimuli set. The proportion of transitive events remains consistent between the stimuli set and instances of RCSs. Figure 6 compares the proportion of reversible events within the stimuli to the proportion

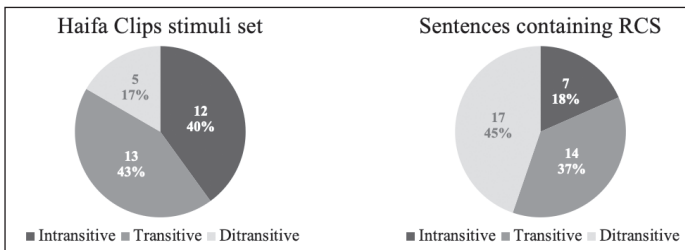


FIGURE 5. A comparison of the distribution of different argument structures within the Haifa Clips stimuli set and sentences that contained RCSs.

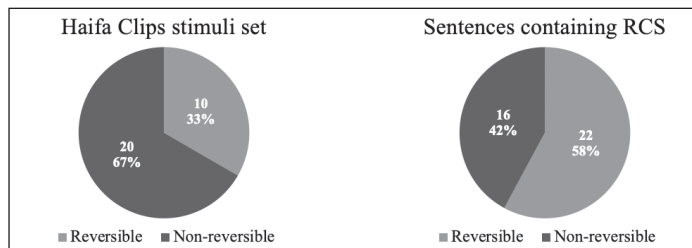


FIGURE 6. A comparison of the distribution of reversible and nonreversible events within the Haifa Clips stimuli set and sentences which contained RCSs.

of reversible event descriptions in our data that contained RCSs. Again, there is a marked difference in proportions, in that reversible events are overrepresented in the RCS data relative to proportions in the stimuli set. An ANOVA confirms the difference is statistically significant ($p = 0.04$).

Analysis of Results

Before turning to aforementioned motivations for reiteration, we first address what Ghomeshi et al. (2004) call *contrastive reduplication*, where a reduplicated sequence refers to a stricter, more prototypical definition of the repeated lexical item. The question at hand is whether reiterative code-switches contribute some new or adapted semantic content in comparison to the lexical items that comprise them. Examples of contrastive reduplication are given in example 2a and example 2b. In example 2a, the reduplication refers to a typical salad—leafy and green—while the question in example 2b asks whether the recipient is truly leaving, rather than perhaps moving to another room.

EXAMPLE 2

- (a) I'll make the tuna salad, and you make the **salad**–salad.
- (b) Are you **leaving**–leaving?

Adapted from Ghomeshi et al. (2004).

Considering the lexical items contained within the RCSs in the data (WOMAN and MAN) and the human agents in the clip (a woman, a man, and a girl), one can imagine how, for example, a reiterative code-switch for “woman” may convey something like “the **woman**–

woman [i.e., not the girl].” In Cena, there is no specific sign for “girl.” Signers may use the Libras sign *GIRL*, which is a compound of *WOMAN* and *CHILD*, or use *CHILD* on its own. For clips that involve the woman and the girl, signers often disambiguate by using *MOTHER* and *DAUGHTER*, or by demonstrating their different heights. In short, we observed various methods to disambiguate between the woman and the girl, but this alone does not discount the possibility of signers using reiteration for purposes similar to those in example 2. However, even in responses to clips that involve both the woman and the girl, RCSs for “woman” label the woman and the girl interchangeably. Despite the lack of a boy in the clips, we still see cases of RCSs with signs labeling a man. We take this to suggest that RCSs are not being used to distinguish semantically related concepts that differ (in the case of the woman and girl, in age). What the woman and girl do differ on across different clips is their semantic role in the verb event.

Stamp and Jaraisy (2021) recount the development of what appears to be a reiterative code-switch used by KQSL signers, shown in figure 7. As the authors note, if only considered in its current form, the code-switch may be perceived as a neologism of sorts, where a reiterative code-switch creates a novel meaning distinct from that of its constituent parts. Upon closer inspection of its genesis, Stamp and Jaraisy find that the ISL component was inserted into a preexisting KQSL compound, taking the place of one of the KQSL signs in the compound. It remains an open question whether the form of the code-switches in our data may be influenced by existing morphology of compounds in Cena and its interaction with Libras.



FIGURE 7. A compound meaning “wife” in KQSL. Adapted from Stamp and Jaraisy (2021)

Code-Switching for Accommodation

In order to investigate the likelihood of the code-switches being used to accommodate the interlocutor, two factors are of importance: the pairings of participants and the code-switched items in question. Participants were paired with interlocutors who were very well-known to them, and with whom they interacted frequently. As such, pairs were often family members and/or members of the same household. This is pertinent when evaluating the likelihood of accommodation; less accommodation is thought to occur between people known to one another (Labov and Ash 1997). Stamp et al. (2016) and McCann and Giles (2007) also found that age is a significant factor in a person's likelihood to linguistically accommodate their conversational partner, with younger signers accommodating more in both studies. Their specific findings on age difference, however, differ. McCann and Giles (2007) specifically looked at intergenerational communication in the workplace in Thai and American cultures, finding that irrespective of cultural differences in overall tendencies to accommodate, younger workers felt greater pressure to accommodate older colleagues, and, in turn, perceived older colleagues as less accommodative. The key factor in their results seems to be age difference, whereas in Stamp et al. (2016), age difference in deaf British Sign Language (BSL)-signing dyads was not found to predict the degree of accommodation. Stamp et al.'s findings instead suggest that degree of accommodation is predicted by the age of the signers themselves. In light of these mixed findings, we aimed to minimize any potential effects of intergenerational accommodation motivated either by social hierarchy or generational differences in signing, given the varied nature of the vertical and horizontal language input a deaf person may receive depending on cohort. To this end, we matched participant pairs for age, except in cases where a pair was a parent and their child. Considering these methodological choices, accommodation motivated by uncertainty about interlocutor's competency, age-related social hierarchy, or nonfamiliarity seem unlikely. Perhaps then an accommodative code-switch may be motivated by the item itself. As the primary agents in the Haifa Clips stimuli are a woman, a man, and a girl, the ubiquity of both *Cena* and *Libras* signs *WOMAN* and *MAN* within the data does not tell us much.

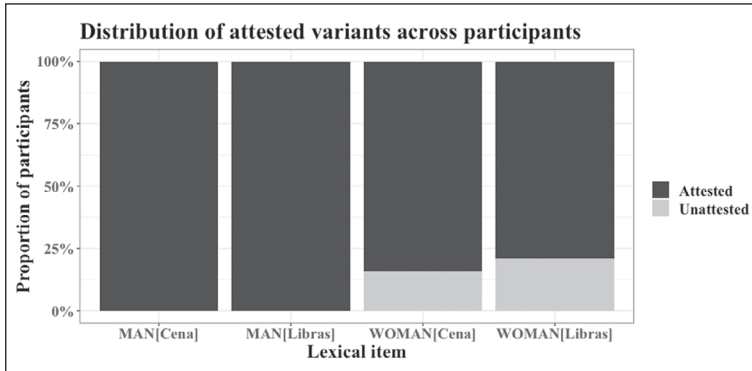


FIGURE 8. The distribution of attested variants of MAN and WOMAN across participants.

To gauge whether each variant is likely known to most participants, we consider how widely they were used among the participants themselves. Figure 8 shows for each variant, what proportion of participants produced each sign at least once during the task. Libras variants were produced by all participants, and Cena variants were produced by a strong majority. Those who never produced Cena variants during the task were largely younger signers in greater contact with Libras. Although possible, it is unlikely that such signers would be unfamiliar with ubiquitous variants for high-frequency items. In any case, there were no instances of reiterative code-switches used by signers when their interlocutor was one of the few signers who never produced a Cena sign for WOMAN or MAN. In sum, we do not find any evidence suggesting that usage of RCSs is motivated by reasons of linguistic accommodation.

Code-Switching for Clarification

The Haifa Clips task is fundamentally a communicative task, where the participant must accurately relay an event which then must be understood by the interlocutor. Successful communication can fail for many reasons, but within the Haifa Clips task, it is of paramount importance to successfully recover the argument structure of the event, including the identity of the arguments. This is especially pertinent in reversible events involving two animate arguments, as semantic properties of the arguments offer no clues about argument structure.

Preferences for devices for different strategies to mark argument structure vary across languages and between signers. Referential use of space (i.e., verb agreement), where a signer positions a referent in space and refers back to it, is an extremely common device in urban sign languages to express spatial relations, argument structure, and other information. However, verb agreement is not present fully formed in systems from the beginning. Meir (2012) describes the step-by-step emergence of verb agreement in ISL, and Ergin et al. (2018) detail the first stages of the development of verb agreement currently happening in CTSL. In some sign languages, such as ABSL, it is as yet unattested (Padden, Meir, Aronoff, and Sandler, 2010), as signers rely more heavily on word order to express argument structure. In second- and third-cohort Cena signers, we see the seeds of referential use of space, although uses are infrequent, and it is far from a conventionalized system (Ergin et al. in prep.) Young sign languages may rely on other strategies in the meantime, such as word order (see Meir et al. 2017 and Schouwstra, Naegeli, and Kirby 2022 on the emergence of consistent word order), successive one-argument structures such as *MAN THROW*, *GIRL CATCH*, or character assignment—where the signers assign themselves or other physically present people roles in acting out a verb event (see Meir 2010 on this phenomenon in ABSL and Ergin et al. 2018 for CTSL). Preferences for different strategies also vary between successive cohorts of signers in the initial stages of a young language (Ergin 2017; Senghas, Coppola, Newport, and Supalla 1997), meaning that there may be various strategies in use by different signers at one point in time, rather than a single conventionalized mechanism that crystallizes quickly. Word order in Cena can be highly variable, but there is evidence for the beginnings of conventionalization (Ergin et al. in prep). As for successive one-argument structures, Cena signers sometimes used these kinds of structures during the task, but not frequently enough to serve as a general device for disambiguation.

With this in mind, we might expect that it may take interlocutors various attempts to answer correctly given the task. Indeed, just under half (49.2 percent) of the first attempts in our data were incorrect, not unlike the behavior of CTSL participant pairs who commonly required various attempts (Ergin 2017). The higher the proportion

of reiterative code-switches that were used after a failed attempt, the stronger evidence there is for a clarification function. 42 percent of reiterative code-switches were used in a participant's first attempt; in other words, almost half of the code-switches were used before any miscommunication had a chance to take place.

The Role of Code-Switching in Information Structure

While clarification perhaps cannot explain all instances, it may be one motivation for the majority 58 percent of cases used in noninitial attempts—in any attempts following a first unsuccessful attempt. Here it is useful to consider the notion of information structure, which concerns how language users package and disclose information in utterances with respect to what is and is not already shared knowledge between interlocutors. In the information structure of an utterance, focus is a device used to direct the interlocutor's attention toward new information, indicating the presence of alternatives. How one marks focus varies across languages, but it is commonly marked with intonation, word order, and morphological markers in many spoken languages (Zimmermann and Onea 2011). In sign languages, reiteration is one possible strategy for focus-marking attested across several sign languages, including ASL and Libras (Kimmelman 2019).⁹ This can either be a sequence of the same item twice (i.e., BOOK BOOK) or a sequence with an intermediary item (BOOK BLUE BOOK). An example of the latter from ASL is given in example 3, where the verb is focused.

EXAMPLE 3

ANN LIKE ICE-CREAM LIKE
 “Ann likes ice-cream.”

(Petronio 1993)

Cases of clarification following an incorrect answer concern what is known as *contrastive focus*, applied to information that negates some previous information in the discourse or provides some alternative or contradictory information. In English, this is generally done by stress assignment. Example 4 demonstrates how alternative information can be focused through stress on the relevant constituent shown in bold.¹⁰

EXAMPLE 4

A: Maria came third in the race.

B: Maria came **fourth** in the race.

In our task, while the instructions given to interlocutors were to mark their answer on the paper depicting the three multiple-choice options for each clip, it was common for participants and interlocutors to confer in cases of confusion or ambiguity. Only the participant was recorded during the task, so we have no observable record of the interlocutor's side of any interaction between them and the participants (short of their answers on paper), but data from participants suggests a situation similar to that in example 2 for many RCSs used in noninitial attempts. The exchange between a participant A1 and an interlocutor B1 in example 5 concerns a clip in which a woman gives a shirt to a man. While there is no record of the content of B1, a previously mentioned constituent in A2 now appears phrase-initially and is reiterated.¹¹

EXAMPLE 5

A1: MAN WOMAN GIVE MARRIED GIVE

“A woman gives something to a man.”

B1: [unknown]

A2: **woman**[Libras] **woman**[Cena] GIVE MAN

“A **woman** gives something to a man.”

The content of A1 and A2 appear much like a canonical example of contrastive focus, where a constituent is emphasized and contrasted with alternatives, in this case, by virtue of reiteration. The task in our study creates a situation which likely elicits uses of contrastive focus for pragmatic reasons, one where the interlocutor must rely on the descriptions and cues of the participant to choose the correct answers. It should also become relatively clear to participants and interlocutors after a few trials that there are only three people in the stimuli clips who appear repeatedly. This provides a fairly closed set of alternative human agents, although from the perspective of those participating, an exception is possible until the end of the task. All of these facts contribute to the *common ground*: information shared by those par-

ticipating in the conversation (Stalnaker 1974; Krifka 2008). Since contrastive focus highlights the focused constituent for the receiver, evoking the existence and rejection of alternative options, contrastive focus seems a fitting lens through which to interpret such uses of RCSs in noninitial attempts which follow incorrect answers or conferring from the interlocutor. In terms of existing work, this function of RCSs conforms most closely to the motivation of clarification, where a signer clarifies the identity of an argument and marks it with focus through reiteration in another language.

Reversibility as a Conditioning Factor

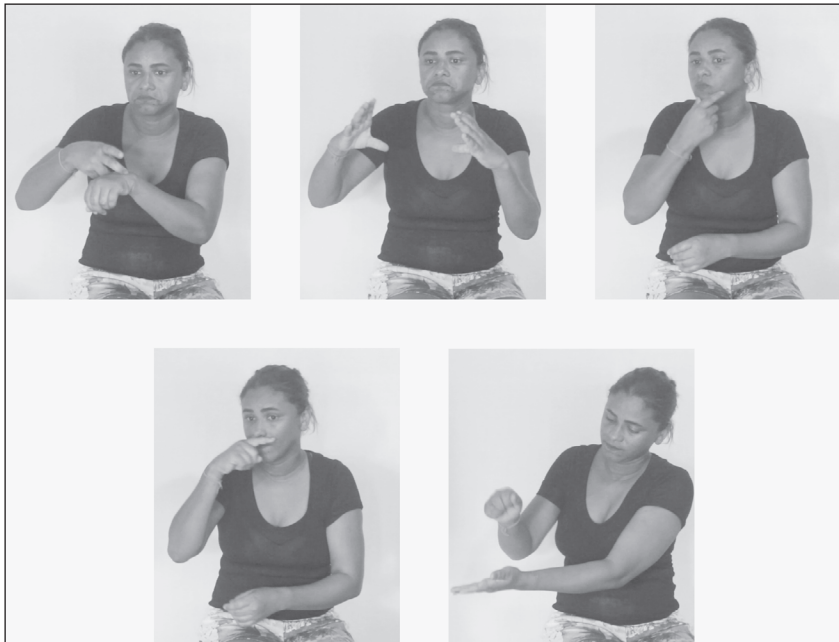
So far, we have identified a case of how a signer might focus or emphasize a particular argument within an utterance (through reiteration), and how this fits into existing strategies of focus. We now turn to the question of why. Why might it be advantageous to foreground a particular constituent, either in a first attempt or any subsequent attempts? It is pertinent here to consider the very purpose of the Haifa Clips task, which is to see how participants convey events varying in argument structure to an interlocutor. RCSs were used in descriptions of events of all possible argument structures: intransitive, transitive, and ditransitive. Examples are given in figures 9 to 11, where word order appears alongside the English gloss. However, tokens of RCSs were not distributed equally across each argument structure condition, nor did the distribution reflect that of the stimuli set (figure 5). We see a smaller proportion of intransitive events and a larger proportion of ditransitive events in sentences that contained RCSs. Overall, signers mostly used RCSs in descriptions of transitive and ditransitive events.

Within the transitive and ditransitive categories, events vary in the animacy of their arguments. Ditransitive events in the stimuli contain two animate human arguments and an inanimate argument. In all cases, the inanimate argument is transferred between the two human animate arguments with verbs like *give*, *take*, and *throw*. Transitive events may contain either: two animate human arguments (e.g., a woman pushes a girl) or one animate human argument and one inanimate argument (e.g., a woman rolls a ball). The property of animacy is key, since it is animacy that is responsible for whether a



WOMAN[Cena] WOMAN[Libras] RUN
“A woman runs.” (SV)

FIGURE 9. A reiterative code-switch used in an intransitive event.



WATERMELON CL:object(round) MAN[Libras] MAN[Cena] KNOCK-CL:surface(flat)
“A man knocks on a watermelon.” (OSV)

FIGURE 10. A reiterative code-switch used in a transitive event.



MAN[Libras] STAY-loc1 WOMAN[Cena] WOMAN[Libras] CL:object-HOLD GIVE-loc1
 “A woman gives something to a man.” (OSV)

FIGURE 11. A reiterative code-switch used in a ditransitive event.

verb event is reversible. More specifically, it is the presence of two animate arguments that creates ambiguity in ditransitive and transitive verb events since either or both animate arguments may have performed the verb in question. Once we refined the variable of comparison from the argument structure in figure 5 to reversibility in figure 6, a pattern more clearly emerged. Proportionally speaking, signers used RCSs in describing reversible events more frequently than one might predict, given their distribution in the stimuli set.

What (or Whom) Do RCSs Mark?

This provides insight into when RCSs are likely to be produced in Cena—they are elicited by reversible events at a significantly higher rate when compared to the stimuli set as a baseline. If reversibility,

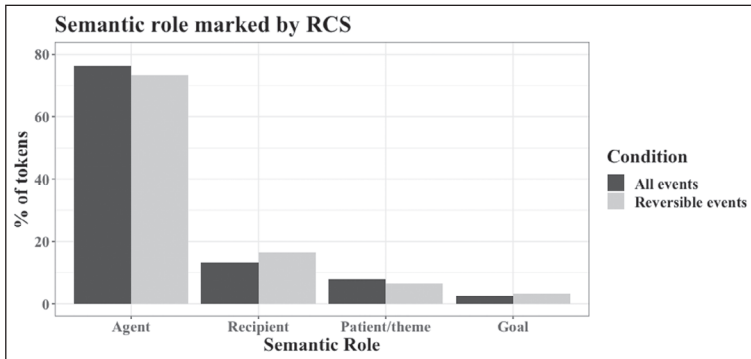


FIGURE 12. Semantic roles of RCS referents in all events compared to reversible events only.

and thus ambiguity, is a contributing factor, then disambiguation is a logical hypothesis for how RCSs may be beneficial for the receiver. This leads us to the question of what RCSs mark in signers' responses. Consistency would be key to mark referents in a way that is recoverable to interlocutors across different events. If the RCSs are generally used to mark the same argument across different verb events, this would help interlocutors discern event structure more reliably. Figure 12 shows the distribution of who RCSs mark across all tokens and in reversible events only.

In both conditions in figure 12, the data demonstrate a tendency to mark agents, although it should be noted that the data on all events includes intransitive events in which there is only one human agent (or in the case of one nonagentive verb event for *fall*, a patient). In reversible events, we still see a tendency for RCSs to denote agents, and as such, mark grammatical subjects. Given cases such as example 4, which shows that the element that is contrastively focused may be determined by what has come before in the discourse, it is unsurprising that agents are not the only arguments which are marked by RCSs. Consider the hypothetical situations in example 6a and example 6b, where A (the interlocutor) attempts to describe the event correctly from the participant's (B) description. In each case, the interlocutor includes one incorrect argument in the event. Which

argument is incorrect would determine which argument might then be contrastively focused by the participant in their response.

EXAMPLE 6

- (a) A: A woman throws a ball to a girl.
 B: A **man** throws a ball to a girl.
- (b) A: A man throws a ball to a man.
 B: A man throws a ball to a **girl**.

The valency of the verb event being described may also affect which argument tends to be marked by Cena signers. Table 4 indicates the roles most frequently marked by RCSs and the most predominant word order for each argument structure condition, as well as the relative frequency for each. Descriptions involving transitive reversible verbs like *look at*, *tap*, and *push* form the only category for which agents are not the most frequently marked—agents—and patients are marked equally frequently. The relative prominence that RCSs assign to patients in transitive reversible events (compared to other argument structure conditions) mirrors a wider pattern of focusing the object through word order; the most frequent word order in Cena for this argument structure condition was object-subject-verb (OSV). As all the attested RCSs in transitive reversible events were produced in noninitial attempts (after the first attempt was unsuccessful), it may

TABLE 4. Most Frequent RCS-Marked Argument and Word Order and Their Relative Frequencies by Argument Structure Condition

Argument structure	Most frequent RCS-marked argument	Relative frequency	Dominant word order	Relative frequency
Intransitive	Agent	0.85	SV	0.63
Transitive (irreversible)	Agent	1	SOV	0.26
Transitive (reversible)	Agent/patient	0.4/0.4	OSV	0.35
Ditransitive	Agent	0.7	ISOV	0.10

be the case that in cases of misunderstanding, RCSs can help to focus a patient/object just as word-order preferences are also converging to do. For ditransitive events, RCSs marked agents in the majority of cases. Word order was extremely variable for ditransitive events, with the most frequent word order - ISOV - (indirect object-subject-direct object-verb) only accounting for 10 percent of tokens. Concerning ditransitive events, RCSs may help to draw saliency to agents in an argument structure condition where word order is the least useful for event structure disambiguation.

Even with variability across argument structure conditions and potential influence from discourse items given by interlocutors, a tendency to mark agents still emerges—an observation compatible with the interpretation of RCSs as useful for disambiguation. As for why agents, we turn to the concept of the Thematic Hierarchy (Fillmore 1968; Levin and Rappaport Hovav 2009; and Rissman and Majid 2019). The Thematic Hierarchy attempts to order thematic roles according to the extent to which they contribute to the event structure, in order to capture generalizations about the syntactic realization of semantic roles (e.g., agents as subjects, patients as objects). Agents, as the role that causes the action, are ranked at the top of the hierarchy and are thus the most prominent role. Out of the options available, agents likely attract the marking of RCSs due to their prominence. Such an understanding of the data would also account for the RCSs used to refer to a girl falling. Because *fall* is an agentless verb, the girl is instead the patient of the verb. Here, the status of grammatical subject is assigned to the highest semantic role in the sentence—the patient, in lieu of an agent—thus the most prominent role is still labeled with a reiterative code-switch. This pattern is also followed by the small number of RCSs used to label inanimate referents in the data; signs for “water” were used in reiterative code-switches in response to a stimulus item of water being poured by a person who is out of the shot. As such, the water is the patient and the highest-ranking role of observable arguments.

The marking of specific semantic roles—case marking—has many communicational advantages (van Trijp 2012), including indicating event structure for the receiver. Case marking indicates who does what

to whom through explicit marking on constituents. Although this function of case marking is advantageous for the receiver in a similar way to that which we are claiming here, a tendency for RCSs to mark agents should not necessarily be taken as evidence for an entire case-marking system emerging in Cena. Nonetheless, there is clear evidence for a method of agent-marking being used by many signers.

The emphatic effect of reiterative code-switches, be it for contrastive focus, event structure disambiguation, or another purpose—relies upon the knowledge of each lexical item in two codes. Specifically, if the receiver does not recognize both signs for a single referent, the emphatic effect of reiteration is lost. The production of the phenomenon in the first place relies too on the signer's knowledge of the item in two codes. It is not the case that two languages (in contact or not) share equivalent lexical items for all concepts a signer or speaker might wish to reiterate, nor that levels of competency in both Cena and Libras are distributed equally among deaf signers in Várzea Queimada. It is possible that we only see so many RCSs for “woman” and “man,” as they are relatively high-frequency lexical items that are commonly used as single signs throughout the community, or because they appear repeatedly in the stimuli set. RCSs are likely not so common with signs for which Cena signers overwhelmingly prefer either the Cena or the Libras variant. For this reason, it is not difficult to imagine how a strategy which aims at disambiguation, such as RCSs, may eventually be usurped by a device with the same outcome, but one that can be more easily systematized as Cena continues to change, such as regular word order or spatial marking.

Conclusion

Much like reiteration in other languages, reiterative code-switches function as an emphatic device that marks arguments with prominence. By considering the discourse context in which RCSs are used, we argue first that they can function as a device for contrastive focus, emphasizing a particular argument in contrast to other previously mentioned or implied alternatives. Secondly, we find that RCSs are elicited by reversible events (those containing two animate arguments where the argument structure is not recoverable by semantics alone)

at a significantly higher rate when compared to the stimuli set as a baseline. As reversibility appears to be a conditioning factor, we suggest that a likely motive or at least potential benefit is disambiguation. Together we take this as evidence that signers use RCSs to emphasize a particular argument in syntactically ambiguous verb events, and, as such, are a device helping to clarify argument structure. The use of RCSs in irreversible events and/or initial attempts in the task leaves room for further inquiry, as these cases suggest that RCSs may serve more than one function depending on their context.

However, emphasis alone does not necessarily help the interlocutor recover the correct argument structure. Such emphasis could mark any argument in the verb event. What we observe is that signers do not mark the different possible arguments at equal rates. RCSs generally mark agents, even when other animate arguments are available. Some of the variability in which animate referent RCSs mark is likely influenced by what precedes in the discourse, analogous to how which constituent contrastive focus highlights is determined by the content of the preceding discourse. Valency may also play a role; transitive reversible events elicit both relatively more patient-marking through RCSs, and a predominance of OSV word order. Our data provides insight into strategies that aid the successful transference of potentially ambiguous information in a young language, in which other strategies to do so have not yet become conventionalized. Reiterative code-switches contribute a novel device for this purpose to the existing literature, once again illustrating the capacity for language users to utilize the tools available to them in myriad ways to adequately navigate potential ambiguity.

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Notes

1. Spelling varies among some English transliterations. The language may also be referred to as Kafr Qasem Sign Language (as in Kastner et al. 2014), and possibly further variations. We follow the spelling conventions of Jaraisy and Stamp (2022) in discussion of their work.

2. An interesting aspect of the reiterative code-switching found in Tay's (1989) data was that, in some cases, this was a collaborative speech act, with different speakers, in turn, reiterating semantically equivalent items in different codes.

3. This could be motivated by the content of the message (cf. Quinto-Pozos 2002, 141 on the confusability of ASL sign SIX and LSM sign THREE).

4. We thank the editors for this observation.

5. In cases of self-correction, usually signers provided the Cena sign before self-correcting to the Libras sign.

6. We performed a version of the analysis, including three-item code-switches, finding that the analysis still produced a significant result in our ANOVA test of variance, detailed in the following section. The inclusion of three-item code-switches resulted in a p -value < 0.047 .

7. We do not observe phonological influence on the order of lexical items within the RCSs. In code-switches between signs for "man," both orders are attested similarly frequently, showing no preference for contralateral to ipsilateral movement or vice versa. Similarly, signers do not seem to exhibit a preference for upwards or downwards movement in terms of constituent order in RCSs with signs for "woman."

8. We have reclassified some of the stimuli events with regards to argument structure from how they have appeared in previous published works, in particular in Ergin (2017) and Ergin et al. (2018). Appendix 1 contains a full list of the stimuli clips and their argument structure, showing where divergences from previous published works are noted.

9. Kimmelman (2019) uses the term *doubling* to refer to the type of reiteration described here, not to be confused with phonological doubling (or "weak prop"), where a one-handed sign is articulated using both hands.

10. We diverge from conventions in some existing literature, which use capital letters to denote stress in example sentences since some of our examples concern sign language glosses, which are conventionally capitalized.

11. We do not intend to imply that the constituent denoting the woman has undergone movement in example 5 *per se*, despite syntactic reordering (including, but not limited to, fronting) being a focalization device in several languages (Zimmermann and Onea 2011). Word order in Cena is highly variable, so the difference in constituent order between A1 and A2 in example 5 is not necessarily evidence of movement from some typical position for the purpose of focalization.

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Appendix 1. Events Depicted in Stimuli Clips

Event	Argument structure
A woman moves a box	Transitive
A woman gives a shirt to a man	Ditransitive
A girl pulls a cart	Transitive
A woman looks at a man	Transitive
A bottle falls	Intransitive
A girl falls	Intransitive
A woman rolls a ball	Transitive
A woman takes scissors from a girl	Ditransitive
A man knocks on a melon	Transitive
A girl pulls a man	Transitive
Water falls	Transitive ^a
A man stands	Intransitive
A girl runs in a circle	Intransitive ^b
A man shows a woman a picture	Ditransitive
A girl tears some paper	Transitive
A woman pushes a girl	Transitive
A bag floats	Intransitive
A woman runs	Intransitive
A woman walks	Intransitive
A man throws a ball to a girl	Ditransitive
A man washes a plate	Transitive
A girl combs a woman's hair	Transitive
A ball bounces	Intransitive
A man sleeps	Intransitive
A man puts a book on a shelf	Transitive
A girl feeds a woman	Ditransitive ^c
A woman writes	Intransitive
A man taps a girl	Transitive
A ball rolls	Intransitive
A girl cries	Intransitive

a. In this video, a person pours a bucket of water, but only the hands of the person can be seen. In Ergin (2017) and Ergin et al. (2018), this is classified as intransitive and described as *water pours* with water as the grammatical subject. We observe that signers overwhelmingly depict this with a handling classifier, suggesting a human agent who is not referred to explicitly.

b. This verb has no object, hence it is intransitive.

c. We agree with the classification of this event as ditransitive given in Meir et al. (2017). The English verb *feed*—in which the explicit mention of a direct object is not obligatory—obscures the fact that the event contains a transfer (of food).