Gesture viewpoint in Japanese and English

Cross-linguistic interactions between two languages in one speaker

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Abundant evidence across languages, structures, proficiencies, and modalities shows that properties of first languages influence performance in second languages. This paper presents an alternative perspective on the interaction between established and emerging languages within second language speakers by arguing that an L2 can influence an L1, even at relatively low proficiency levels. Analyses of the gesture viewpoint employed in English and Japanese descriptions of motion events revealed systematic between-language and within-language differences. Monolingual Japanese speakers used significantly more Character Viewpoint than monolingual English speakers, who predominantly employed Observer Viewpoint. In their L1 and their L2, however, native Japanese speakers with intermediate knowledge of English patterned more like the monolingual English speakers than their monolingual Japanese counterparts. After controlling for effects of cultural exposure, these results offer valuable insights into both the nature of cross-linguistic interactions within individuals and potential factors underlying gesture viewpoint.

Keywords: bi-directional cross-linguistic influence, gesture viewpoint, motion events, second language acquisition, Japanese

The existence of interactions between languages within the multilingual mind is relatively uncontroversial. With abundant evidence across language pairings, across linguistic domains, and across proficiency levels, we know that properties of a first language (L1) influence performance in a second language (L2). Moreover, very recent research shows how effects of an L1 can be observed across modalities. Yet after substantial research, our understanding of the L1-L2 relationship is still largely one-sided.

This paper presents an alternative perspective on the relationship between established and emerging languages within the mind of a second language learner by showing that not only does a developed L1 influence a developing L2, but that the presence of the developing L2 may exert its own influence on the L1, even at relatively low proficiency levels. Controlling for effects of culture, we investigate the viewpoint adopted in gesture production among monolingual Japanese and monolingual English speakers as compared to native Japanese speakers with knowledge of English in their L1 and L2. Results offer valuable insights into both the nature of cross-linguistic interactions within individuals and potential factors underlying gesture viewpoint.

Background

Perspectives on cross-linguistic interactions

In one guise or another, "cross-linguistic influence", defined as "the interplay between earlier and later acquired languages" (Kellerman & Sharwood Smith, 1986, p. 1), has benefited from a long research tradition in the fields of second language acquisition and bilingualism, as well as other areas of linguistics such as language contact (see Odlin, 1989, for a historical overview). However, the phenomenon has typically been synonymous with the unidirectional "transfer" of features from a first language to a second language. One of the most obvious manifestations of this phenomenon is foreign accent, but effects of the L1 have been discovered in almost every aspect of L2 performance (see overviews in Gass & Selinker, 1992; Kellerman & Sharwood Smith, 1986; Odlin, 1989, 2003).

Yet a crucial component in the definition of cross-linguistic influence is the word "interplay", which assumes that relationships between first and second languages are *bi-directional* and that the systems *interact*. While this is fully acknowledged in the bilingualism literature and recent studies in second language acquisition have begun to investigate the effects of an L2 on the L1, sometimes called "borrowing transfer" (Odlin, 1989), many gaps in our knowledge remain.

In the few studies that have found a variety of linguistic effects of a second language on a first language in adult second language learners (e.g., Cook, 2003; Dussias & Sagarra, 2007; Pavlenko & Jarvis, 2002, inter al.), the populations investigated have typically been functional bilinguals, i.e., those with very advanced functional proficiency in the second language. Furthermore, as much of the research focuses on errors in the L1 and participants are frequently resident in the second language community, effects of the L2 are often interpreted as contributing to loss of the L1. We do not know, therefore, whether the presence of an L2

genuinely still in development can influence an L1, and if so, whether errors are uniquely part of the process.

Cross-linguistic interactions in co-speech gesture

Given the tight semantic and temporal coordination between speech and co-speech gesture (cf. Kendon, 1993; McNeill, 1992; Schegloff, 1984), it is not surprising that signs of cross-linguistic influence have surfaced in the manual modality. Several studies have found evidence of a "manual accent" (Kellerman & van Hoof, 2003) in L2 production. These include studies of gesture placement within the L2 utterance (Kellerman & van Hoof, 2003; Negueruela, Lantolf, Jordan, & Gelabert, 2004; Stam, 2006) and prominent marking of specific concepts in L2 gestures such as movement over location (Yoshioka & Kellerman, 2006) and manner of motion (Brown & Gullberg, 2008). Moreover, in some cases, gesture analyses uniquely reveal L1 conceptualizations masked in otherwise proficient L2 speech (Gullberg, submitted).

    In contrast to the handful of studies of L1 effects on L2 gesture, almost no research exists concerning the reverse direction of influence, i.e., whether effects of an L2 can be observed in L1 gesture. Pika, Nicoladis, and Marentette (2006) found that, at least for functional bilinguals, the frequency of gesturing in the L2 community may affect the frequency of gesturing in L1 production, seemingly an effect of cultural exposure. However, there is some evidence to suggest that even with lower proficiency in a second language, the distribution of semantic information across modalities in the L1, for example, depiction of manner of motion in L1 speech and/or gesture, may exhibit properties of the L2 (Brown & Gullberg, 2008).

    As far as our understanding of cross-linguistic interactions between languages in the mind of a second language learner goes, novel methodologies such as gesture analyses have much to contribute. All that remains is to outline a suitable domain in which this methodological tool may be exploited. In doing so, we make use of bilingual data to address current issues in gesture studies.

Gesture viewpoint in descriptions of motion

The domain of motion has seen an enormous amount of cross-linguistic work over the last two decades. Cross-linguistic differences have been discovered in the way languages map semantic elements such as manner and path of motion onto morphosyntactic devices (Talmy, 1985), in the frequency and specificity with which these semantic elements are encoded in spoken discourse (Slobin, 1996, 2004), and in the composition of co-speech gestures depicting these semantic elements (Kita & Özyürek, 2003; McNeill, 2001; Özyürek, Kita, Allen, Furman, & Brown,

2005). Within this domain, the issue of gesture viewpoint, though as yet under-investigated, offers some potential for addressing whether and how languages interact in second language acquisition.

Gesture viewpoint describes the perspective from which a gesture is deployed. According to McNeill (1992, 2005) gestures typically display either Character Viewpoint (C-VPT) or Observer Viewpoint (O-VPT), although these categories are not mutually exclusive. In C-VPT, the event is depicted in first person, as it was experienced by the protagonist, and the hands represent the hands of the protagonist. In O-VPT, the event is depicted in third person, as it was observed by the speaker, and the hands represent whole entities. McNeill provides two examples of a climbing gesture illustrating the difference: one involving the speaker enacting the climbing motion by adopting a clutched hand-shape and moving his/her hands up and down (C-VPT), and the other a simple upward movement depicting the character's ascension (O-VPT) (McNeill, 1992, p. 119).

McNeill notes that C-VPT, which minimizes the distance between the narrator and the event, is more likely to occur with transitive verbs and single clause sentences, which also serve to minimize the narrator-event distance. It is also most common in depictions of central events in the story line. O-VPT, on the other hand, occurs more with intransitive or stative verbs as well as multi-clause sentences, all devices that introduce distance between the narrator and the story line. O-VPT, then, can be found more often in depictions of events peripheral to the story line. These linguistic factors are predicted to be universal across languages; however, recent work suggests that there may also be additional cross-linguistic differences in use of gesture viewpoint.

In a cross-linguistic study of motion event descriptions, Kita and Özyürek (2003) noted that while O-VPT (in their terminology "event-external perspective") was the most common perspective, Turkish speakers produced twice as many C-VPT ("event-internal perspective") gestures as English and Japanese speakers. Furthermore, cross-linguistic differences in viewpoint do not seem to be restricted to gesture. In a comparison of German Sign Language and Turkish Sign Language (Perniss & Özyürek, in press), although C-VPT was the preferred option, Turkish signers used O-VPT with handling classifiers.

In sum, perspective taking in the manual modality, be it gesture or sign, seems to vary cross-linguistically. It is these cross-linguistic differences that constitute an ideal environment in which to investigate cross-linguistic interactions in second language acquisition. Furthermore, we do not yet have a clear understanding of what motivates particular gesture viewpoints within and across languages, for example, the role of culture versus linguistics. Therefore, a comparison of monolingual and bilingual data, while holding the effects of one variable constant, may shed some light on factors underlying the perspective taken in gesture production.

This study

The aim of the present study is to present an alternative perspective on the relationship between languages in the multilingual mind. In addition to the many known effects of the L1 on the L2 in second language acquisition, this paper examines whether an established L1 can also be influenced by an L2 still in development. On the assumption that gesture is fully part of the linguistic system, gesture analysis is proposed here as a novel methodological window on such cross-linguistic interactions.

Interactions between an L1 and an L2 are investigated in the realm of gesture viewpoint in motion event descriptions. Although factors motivating gesture viewpoint are still unclear, there is evidence to suggest cross-linguistic differences. To confirm this difference, gesture patterns are observed in two typologically different languages, Japanese and English, in order to establish a monolingual baseline. To investigate the issue of cross-linguistic interactions, monolingual baseline results are compared to L1 and L2 production from native Japanese speakers with intermediate knowledge of English as a second language. After controlling for effects of cultural exposure, differences between monolingual and bilingual gesture production are discussed with respect to the nature of bi-directional cross-linguistic influence and to the source of gesture viewpoint.

Methodology

Participants

A total of fifty adults aged between 18 and 48 participated in this study, distributed across four groups: monolingual Japanese speakers resident in Japan (11 speakers), monolingual English speakers resident in the USA (11 speakers), and native Japanese speakers with knowledge of English resident in Japan (15 speakers) or the USA (13 speakers). Biographical information and information on general language usage was gathered using a detailed questionnaire developed by the Multilingualism Project at the Max Planck Institute for Psycholinguistics.[1] The native Japanese speakers with knowledge of English declared that they were engaged in active use of their L2, whereas the functionally monolingual speakers of each language stated that they had had minimal exposure to an L2, they were not engaged in active study of an L2, and they did not use an L2 in their everyday lives.

The choice of two learner groups living in different language environments was designed to test for the impact of culture on gesture viewpoint. The second language speakers in Japan had never lived in an English-speaking country, while

those in the USA had been residents for between one and two years. Effects seen only in the gestures of second language speakers in the USA, then, would suggest an influence of culture, whereas comparable gesture patterns between both groups would render culture less likely as a factor underlying cross-linguistic interactions and gesture viewpoint.

Knowledge of English as a second language was measured in three ways. All Japanese-speaking participants, including the functional monolinguals, rated their own English proficiency in speaking, listening, writing, reading, grammar, and pronunciation. Learner groups also completed the first grammar section of the Oxford Placement Test (Allan, 1992), and their oral proficiency was evaluated using the University of Cambridge Local Examinations Syndicate (UCLES) oral testing criteria for the First Certificate in English (FCE).[2] Grammar and vocabulary, discourse management, pronunciation, and global skills were scored by consensus judgment of two Cambridge-certified examiners. Both the Oxford and the FCE proficiency measures descriptively placed the learners within intermediate range. Second language speakers resident in Japan versus the USA did not significantly differ in proficiency as measured by the Oxford Placement Test, $t(25) = .795$, $p = .434$, and only marginally differed in proficiency as measured by the Cambridge FCE criteria, $t(26) = 1.982$, $p = .058$, with those in Japan scoring slightly higher than those in the USA. Learner groups were thus matched on formal proficiency in English.

Participants' biographical and language usage data as well as English proficiency data are summarized in Table 1.

Table 1. Summary of biographical and language usage/proficiency data

Language back-ground	Monolingual Japanese ($n = 16$)	Learners in Japan ($n = 15$)	Learners in USA ($n = 13$)	Monolingual English ($n = 13$)
Mean AoE:[a] English	12.3 (range 7–14)	11.9 (range 9–13)	12.8 (range 12–14)	Birth
Mean usage:[b] English	NA	3 hrs (range .5–8.5)	6 hrs (range 1–12)	NA
Mean self-rating:[c] English	1.35 (range 1–2.5)	2.97 (range 2–4.17)	3.27 (range 1.8–4.3)	NA
Mean Oxford Score	NA	78% (range 60–88%)	75% (range 58–85%)	NA
Mean FCE[d] Score	NA	4.27 / 5 (range 2–5)	3.69 / 5 (range 2.3–5)	NA

[a] Age of first exposure; [b] Hours of usage per day; [c] A composite score of individual skill scores; [d] Cambridge First Certificate in English

Stimuli

Data were obtained through a narrative retelling task. Short narrative descriptions were elicited based on the six-minute, animated Sylvester and Tweety Bird cartoon, "Canary Row" (Freleng, 1950), commonly used in gesture research on motion events. The cartoon was divided into scenes following McNeill (1992), and two different orders of scenes were systematically varied in the presentation of the stimulus across all groups. Each scene contains numerous motion events, and narrative description of the scenes typically elicits abundant gestures (cf. Kita & Özyürek, 2003; McNeill, 1992, 2001, inter al.). From the stimulus material, four motion events consistently described by participants were selected for coding and analysis: (1) Sylvester climbs through a pipe, (2) Sylvester rolls down a hill, (3) Sylvester clambers up a pipe, and (4) Sylvester swings across the street on a rope.

Procedure

All participants narrated in their L1. The native Japanese speakers who knew English also produced narratives in their L2. Note, however, that the language order in which the second language speakers gave descriptions was counter-balanced across participants with a minimum of three days between appointments. This minimized the likelihood of both L1 and L2 being fully active at the same time, i.e., controlling for the effects of "language mode" (Grosjean, 1998). Depending on the language of the experiment, participants were tested individually by either a native English- or native Japanese-speaking confederate. The participant and experimenter first engaged in a brief warm-up, consisting of small talk in the target language, in order to relax participants, increasing the likelihood of gesturing, and to put participants in "monolingual mode". Next, the experimenter told participants that they would be watching a series of animated scenes from a cartoon on a computer screen and should retell what they had seen to the experimenter in as much detail as they could remember. The experimenter was trained to appear fully engaged in the participants' narratives, but to avoid asking questions or prompting answers.

Data treatment

All narratives were first transcribed from digital video by a native speaker of the relevant language. Then, narratives were divided into clauses, defined as "any unit that contains a unified predicate … (expressing) a single situation (activity, event, state)", following procedures laid out in Berman and Slobin (1994, p. 660). Next, clauses describing the four target motion events were identified.

Gesture segmentation and coding

Representational gesture strokes (iconic, metaphoric, and deictic) (Kita, 2000), hereafter simply *gestures*, which depicted target motion events and which co-occurred with clauses containing target motion event speech, were identified and coded for gesture viewpoint. Elan (Wittenburg, Brugman, Russel, Klasselmann, & Sloetjes, 2006), a digital video tagging software program developed at the Max Planck Institute for Psycholinguistics, was used for gesture coding.[3] Elan enables a frame-by-frame analysis (at 40 ms intervals) of movement as well as sound.

Gestures were coded for viewpoint, i.e., depiction of the protagonist's movement as experienced (Character Viewpoint) or as observed (Observer Viewpoint). Broadly in line with Gullberg (1998), viewpoint was operationalized along three dimensions: direction, hand-shape, and handedness. With respect to direction, gestures on a sagittal axis, i.e., originating at and moving away from the body, depicted movement as experienced, while gestures on a lateral axis, i.e., originating to the right or left and moving across the body, depicted movement as observed. With respect to hand-shape, gesture forms enacting the protagonist's movement, i.e., where the hands resembled the hands of the protagonist, depicted movement as experienced, while gesture forms with a non-enactment hand-shape, i.e., where the hands represented objects, depicted movement as observed. Finally, gestures involving more of the body, defined here as both hands, depicted movement as experienced, while gestures involving only one articulator, defined here as one hand, depicted movement as observed. A mimetic combination, then, of sagittal direction, with an enactment hand-shape employing both hands was considered Character Viewpoint. In contrast, a combination of lateral direction, with no enactment hand-shape, employing only one hand was considered Observer
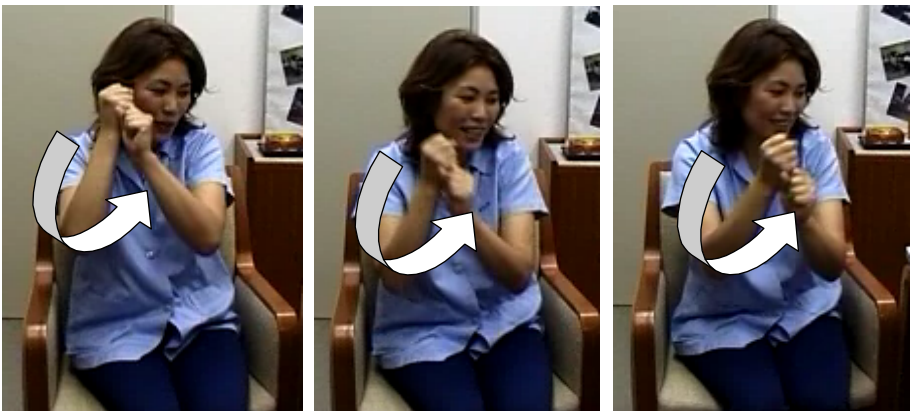

Figure 1. Stills from a C-VPT gesture (sagittal, enactment, and bi-manual) in a Japanese description of the swinging across event.

Figure 2. Stills from an O-VPT gesture (lateral, non-enactment, and one-handed) in an English description of the swinging across event

Viewpoint. Analyses of gesture consisted of identifying the frequency of C-VPT and O-VPT.[4]

Figures 1 and 2 show stills of typical motion event gestures produced in descriptions of the *swinging across* event. Along the dimensions of viewpoint, the gesture in Figure 1 displays sagittal direction, enactment hand-shape, and bi-manual handedness — a C-VPT gesture. The gesture in Figure 2, on the other hand, displays lateral direction, non-enactment hand-shape, and one-handed handedness — an O-VPT gesture.

Reliability of speech and gesture data coding

To establish reliability of data coding, 15% of the entire data set was segmented and coded by an independent second coder. 88% agreement was reached on identification of a relevant representational gesture depicting a target motion event, 80% agreement on identification of the stroke, and of the strokes that both coders identified as relevant, there was 94% agreement on viewpoint code. In cases of disagreement, the coding of the initial coder was adopted.

Results

Results are presented in three parts. First, gesture viewpoint among L1 groups is compared. As not all participants gestured in their L1, only a subset are included in gesture analyses (sample numbers are indicated in each figure). Second, gesture viewpoint in L2 and monolingual groups is compared. Finally, gesture viewpoint within the same participants in L1 and L2 is compared. Before these analyses, the native Japanese speakers with knowledge of English resident in Japan were

compared to their counterparts resident in the USA. As no differences were found between them, the data were collapsed to form a single group of second language speakers. Non-parametric statistical tests were employed throughout, specifically Kruskal-Wallis for multiple group analyses and Mann-Whitney for between group analyses.

Gesture viewpoint in L1

The first analysis concerns gesture viewpoint in monolingual and bilingual L1. Examples from the monolingual data were given in Figures 1 and 2 above. These

Figure 3. Stills from an O-VPT gesture (non-enactment and one-handed) in a monolingual Japanese (J) description of the clambering up event (the dimension of direction was not applied to coding of gestures for this event).

Figure 4. Stills from a C-VPT gesture (enactment and bi-manual) in a monolingual English (E) description of the clambering up event (the dimension of direction was not applied to coding of gestures for this event).

showed a C-VPT gesture from a monolingual Japanese speaker (J) and an O-VPT gesture from a monolingual English speaker (E). However, alternative viewpoints were employed by speakers in both monolingual groups, as can be seen from the following figures.

Figure 3 shows the same monolingual Japanese speaker as in Figure 1, this time producing an O-VPT gesture, while Figure 4 shows the same monolingual English speaker as in Figure 2, this time producing a C-VPT gesture. Similarly, in their L1, native Japanese speakers with knowledge of English (J (E)) produced gestures of both types. Figures 5 and 6 show the same speaker producing a C-VPT and O-VPT gesture in an L1 description of the swinging across event.

A quantitative analysis of all speakers, however, revealed differing preferences for gesture viewpoint. As preliminary analyses showed no significant difference

Figure 5. Stills from a C-VPT gesture (sagittal, enactment and bi-manual) in a learner L1 (J (E)) description of the swinging across event.

Figure 6. Stills from an O-VPT (lateral, non-enactment and one-handed) in a learner L1 (J (E)) description of the swinging across event.
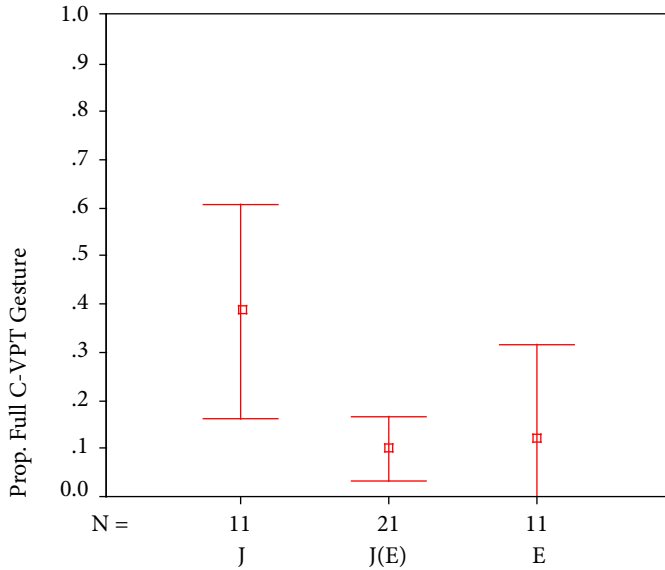
Figure 7. Mean proportion of C-VPT gestures out of all motion gestures in L1 groups: J (monolingual Japanese speakers), J (E) (native Japanese speakers with knowledge of English), and E (monolingual English speakers).

between the L1 of the native Japanese speakers with knowledge of English resident in Japan versus the USA ($z = -.323$, $p = .747$), the data were collapsed to form one group. Figure 7, then, shows the mean proportion of C-VPT gestures out of the total number of motion event gestures in each language group.[5]

There was a significant difference between the groups in their tendency to employ C-VPT in motion event gestures (χ^2 (2, $N = 43$) = 9.294, $p = .01$). Specifically, monolingual Japanese speakers produced significantly more C-VPT gestures than both monolingual English speakers ($z = -2.485$, $p = .013$) and native Japanese speakers with knowledge of English in their L1 ($z = -2.663$, $p = .008$), who did not significantly differ from each other ($z = -.609$, $p = .542$). Note that, although the data were rather variable, there was no evidence of a bimodal distribution in any group; hence, means did not conceal underlyingly different patterns. In other words, speakers in each group behaved in comparable ways, and it was not the case, for example, that some monolingual Japanese speakers always produced C-VPT and others never did.

In sum, L1 results reveal between- and within-language differences. First, there is a clear baseline difference in gesture viewpoint such that monolingual Japanese speakers used many more C-VPT gestures than monolingual English speakers did. More striking, however, is that native Japanese speakers with knowledge of English patterned more similarly to monolingual English speakers in their L1,

Japanese, than to their monolingual Japanese counterparts, that is with predominant use of O-VPT. Crucially, non-monolingual L1 patterns were not affected by the contrast in residence between Japan and the USA.

Gesture viewpoint in L2 and monolingual groups

The second analysis concerns gesture viewpoint in monolingual L1 and learner L2. As in the L1, native Japanese speakers with knowledge of English (E (J)) employed both C-VPT and O-VPT in their L2 gestures, as shown in Figures 8 and 9.

However, a quantitative analysis of all speakers again revealed viewpoint preferences. Figure 10 shows the mean proportion of C-VPT gestures out of the total number of motion event gestures in each language group. Again, there was no
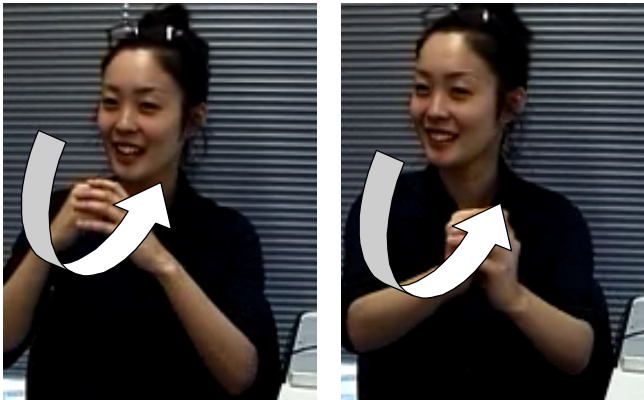

Figure 8. Stills from a C-VPT gesture (sagittal, enactment and bi-manual) in a learner L2 (E (J)) description of the swinging across event.
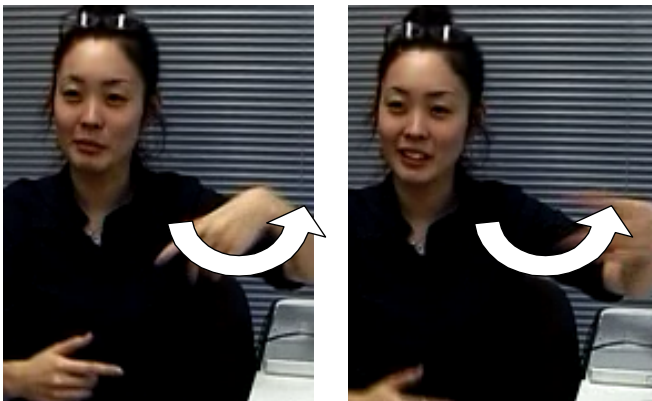

Figure 9. Stills from an O-VPT gesture (lateral, non-enactment and one-handed) in a learner L2 (E (J)) description of the swinging across event.
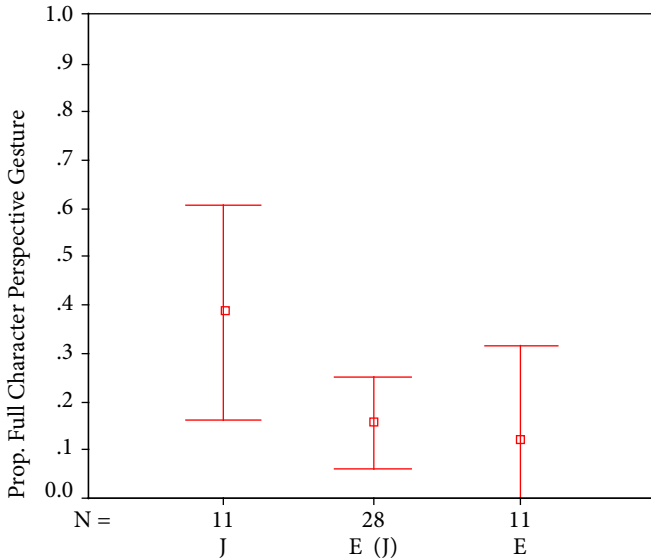
Figure 10. Mean proportion of C-VPT gestures out of all motion gestures in L2 English and monolingual groups: J (monolingual Japanese speakers), E (J) (native Japanese speakers with knowledge of English), and E (monolingual English speakers).

significant difference between the L2 of the second language speakers resident in Japan versus the USA ($z = -.936$, $p = .349$); therefore, the data were collapsed to form one group.

There was a significant difference between the groups in their tendency to employ C-VPT in motion event gestures χ^2 (2, $N = 50) = 8.185$, $p = .017$.). Specifically, monolingual Japanese speakers produced significantly more C-VPT gestures than both monolingual English speakers ($z = -2.485$, $p = .013$) and native Japanese speakers with knowledge of English in their L2 ($z = -2.299$, $p = .022$), who did not significantly differ from each other ($z = -1.206$, $p = .228$).

In sum, rather surprisingly, L2 results showed only between-language differences. Despite merely an intermediate level of proficiency in L2 English, native Japanese speakers with knowledge of English in their L2, English, looked remarkably target-like, patterning more similarly to monolingual English speakers than to monolingual Japanese speakers, that is with predominant use of O-VPT.

Within-subject comparison of gesture viewpoint in L1 and L2

The final analysis concerns the relationship between gesture viewpoint in L1 and L2 production within the same individuals. The following figures show the same speaker producing both gesture types in his L1, Japanese, and L2, English.

Figure 11. Stills from an O-VPT gesture (non-enactment and one-handed) and a C-VPT gesture (enactment and bi-manual) in L1 Japanese descriptions of the clambering up and climbing through events (the dimension of direction was not applied to coding of gestures for these events).

Figure 12. Stills from an O-VPT gesture (non-enactment and one-handed) and a C-VPT gesture (enactment and bi-manual) in L2 English descriptions of the clambering up and climbing through events (the dimension of direction was not applied to coding of gestures for these events).

A Wilcoxon repeated-measures analysis showed no significant within-subject difference in L1 and L2 production ($z = -.848$, $p = .396$). In other words, despite the existence of both gesture viewpoints within the learner data, native Japanese speakers with knowledge of English displayed the same preferences for O-VPT in their L1, Japanese, and L2, English.

Discussion

The aim of this study was to investigate interactions between first and second languages, namely effects of a first language on a developing second language and effects of relatively low proficiency in a second language on an ostensibly mature first language, in the domain of gesture viewpoint. The variable of residence was manipulated in order to enable preliminary testing of the nature of cross-linguistic interactions as well as the factors underlying gesture viewpoint with respect to effects of culture.

Analyses of the gesture viewpoint adopted in motion event descriptions by monolingual Japanese speakers, monolingual English speakers and native Japanese speakers with knowledge of English revealed systematic between-language and within-language differences. In line with previous findings (cf. Kita & Özyürek, 2003), monolingual English speakers predominantly used Observer Viewpoint. These gestures were lateral to the body, produced with a non-enactment hand-shape, and only employed one hand. Monolingual Japanese speakers, in contrast to previous findings (cf. Kita & Özyürek, 2003), used a significant number of Character Viewpoint gestures that were bi-manual with sagittal direction and enactment hand-shape. Most striking was the observation that monolingual Japanese speakers significantly differed from native Japanese speakers with knowledge of English in use of gesture viewpoint. In both their L1 and their L2, Japanese speakers with knowledge of English more closely resembled monolingual English speakers.

These results suggest the existence of cross-linguistic interactions between languages within the minds of second language learners. Remarkably, however, this interaction was more evident in L1 Japanese production than in L2 English production. While robust evidence typically supports effects of the L1 on the L2 in numerous domains, these effects were not apparent in gesture viewpoint. Instead, given the similarities between monolingual English speakers and native Japanese speakers with knowledge of English in their L1 and L2, there appears to be an effect of the L2 on the L1 in this particular domain.

With respect to the nature of the cross-linguistic interaction observed here, one possibility is an effect of cultural knowledge such as that seen in Pika et al. (2006). Under this account, we would have expected effects only in the group of second language speakers resident in the second language community, i.e., those in the USA. However, this was not observed. Instead, the native Japanese speakers with knowledge of English resident in the USA patterned similarly to those resident in Japan. Although the second language speakers living in Japan did have some exposure to American culture through television, etc., it was quite different in quantity and quality to that experienced by those who were immersed in the culture. Of course, residence in a country alone does not ensure immersion in the

culture, but according to self-reported usage of English, the participants living in the USA were at least speaking English and not Japanese for a large part of their day. Thus, it is tentatively proposed that differences in gesture viewpoint between monolingual Japanese speakers and native Japanese speakers with knowledge of English are not the result of cultural exposure.

An alternative possibility warranting further investigation is that cross-linguistic interactions in the domain of gesture viewpoint arise from parallel cross-linguistic interactions in underlying linguistic domains such as semantics or syntax, a process commonly known in the acquisition literature as "cross-linguistic influence". Here, "cross-linguistic influence" would be distinguished from "cross-cultural influence", a difference that explains various existing empirical findings in the gesture literature such as preferential marking of movement over location in the gestures of second language speakers as a result of typological differences in the mapping of semantics onto morphosyntactic resources (cf. Yoshioka & Kellerman, 2006) versus unique gesture frequencies in the gestures of second language speakers as a result of cultural differences in rates of gesture production (cf. Pika et al., 2006).

As no analyses of the relationship between linguistic variables in speech and viewpoint in gesture were undertaken here, the precise nature of such cross-linguistic influence on gesture viewpoint, if it exists, remains to be identified. Previous claims about purportedly universal linguistic relationships between transitivity, clause complexity, event saliency, and gesture viewpoint (McNeill, 1992) may account for the variations observed within speakers; however, they may not account for cross-linguistic differences, as, for example, one would expect that an event salient for English speakers would also be salient for Japanese speakers. Alternative explanations may relate to specific cross-linguistic differences between English and Japanese in the expression of motion, for example, frequent use of mimetic (onomatopoetic) constructions in Japanese but not in English, or more general system-wide differences between the languages, for example, frequent pragmatically licensed argument omission in Japanese but not in English.[6]

Leaving identification of causal factors motivating gesture viewpoint aside for future research, there are several implications from the current findings such as they are. From the perspective of second language acquisition, these results suggest that the relationship between an established first language and an emerging second language is bidirectional: that not only does an L1 influence an L2, but that an L2 can also influence an L1. Moreover, these influences may be considered a normal part of the process of acquiring a second language and not only the result of a shift in language dominance leading to grammatical errors and loss of the L1. This in turn has further implications for the so-called "native speaker standard" (Davies, 2003). This standard, which is used in both research on second language

acquisition and language testing, is typically regarded as a stable benchmark. However, if an L2 can affect an L1 even at relatively low proficiency levels, there is reason to suspect that "native speaker" performance may actually be rather variable depending on the language experience of each individual. Indeed, this may even explain the differences between the native Japanese speakers in Kita and Özyürek (2003) and the monolingual Japanese speakers here. Therefore, there is a need to fully describe the potentially wide parameters and contexts within which speakers of a language can operate, particularly in investigations of ultimate attainment in an L2 (Birdsong, 2005) and in language assessment.

From the perspective of gesture studies, in addition to evidence that the viewpoint from which gestures are deployed varies within individual speakers, we also have empirical support for the notion that gesture viewpoint varies systematically across languages. Moreover, data from multilingual speakers can inform our understanding of this phenomenon. Although some gesture phenomena, for instance rate of gesturing, may be culturally motivated, it appears that gesture viewpoint may not be one of those phenomena.

Finally, more data is needed on other language pairings as this would distinguish between patterns arising from the convergence of knowledge of particular languages and those arising from general effects of bilingualism. In addition, one study has shown that three or more years of residence in the L2 community is required before effects of the L2 on object categorization in the L1 are visible (Cook, Bassetti, Kasai, Sasaki, & Takahashi, 2006). Therefore, at the risk of confounding exposure with proficiency, participants with longer residencies in the L2 community might be tested.

In conclusion, this study investigated the relationship between languages in second language acquisition. Effects of the presence of a second language were found in the gesture viewpoint employed in first and second language production, even at intermediate levels of L2 proficiency. These effects did not appear to arise from cross-cultural influence, which leaves cross-linguistic influence as a more likely possibility. Although the crucial linguistic constituents of the accompanying speech remain unspecified at this point, gesture analyses are proposed as a unique window through which to observe the online interaction between languages in the multilingual mind.

Acknowledgements

Notes

1. See http://www.mpi.nl/research/projects/Multilingualism.

2. More information can be found at http://www.cambridgeesol.org.

3. See http://www.lat-mpi.eu/tools/tools/elan.

4. The dimensions of direction and hand-shape did not apply to all events. Direction was not applied to the *climbing through* or *clambering up* events since the upward movement was neither sagittal nor lateral. Hand-shape was not applied to descriptions of the *rolling down* event because the criteria for enactment hand-shape would involve speaker actually rolling, which was considered highly unlikely in adult data.

5. As not all of the dimensions were appropriate for all event descriptions, C-VPT in all analyses describes gestures exhibiting properties of Character Viewpoint in the maximum number of dimensions appropriate for a given event. For example, a gesture depicting the swinging across scene that was lateral and bi-manual with an enactment hand-shape was coded as C-VPT, whereas a gesture depicting the climbing through scene that was only bi-manual with an enactment hand-shape was coded as C-VPT.

6. Many thanks to one of the anonymous reviewers as well as an audience at the Syracuse University Linguistics Symposium for this latter suggestion.

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