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Authors

Azar, Zeynep

Backus, Ad

Özyürek, Asli

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Highly Proficient Bilinguals Maintain Language-Specific Pragmatic Constraints on Pronouns: Evidence from Speech and Gesture

Zeynep Azar (zeynep.azar@mpi.nl)

Radboud University, Center for Language Studies, Nijmegen
International Max Planck Research School for Psycholinguistics, Nijmegen
Wundtlaan 1, 6525 XD Nijmegen, The Netherlands

Ad Backus (A.M.Backus@uvt.nl)

Tilburg University, Department of Culture Studies
Warendelaan, 5037 AB Tilburg, The Netherlands

Ash Özyürek (asli.ozyurek@mpi.nl)

Radboud University, Center for Language Studies, Nijmegen
Max Planck Institute for Psycholinguistics, Nijmegen,
Donders Center for Cognition, Nijmegen
Wundtlaan 1, 6525 XD Nijmegen, The Netherlands

Abstract

The use of subject pronouns by bilingual speakers using both a pro-drop and a non-pro-drop language (e.g. Spanish heritage speakers in the USA) is a well-studied topic in research on cross-linguistic influence in language contact situations. Previous studies looking at bilinguals with different proficiency levels have yielded conflicting results on whether there is transfer from the non-pro-drop patterns to the pro-drop language. Additionally, previous research has focused on speech patterns only. In this paper, we study the two modalities of language, speech and gesture, and ask whether and how they reveal cross-linguistic influence on the use of subject pronouns in discourse. We focus on elicited narratives from heritage speakers of Turkish in the Netherlands, in both Turkish (pro-drop) and Dutch (non-pro-drop), as well as from monolingual control groups. The use of pronouns was not very common in monolingual Turkish narratives and was constrained by the pragmatic contexts, unlike in Dutch. Furthermore, Turkish pronouns were more likely to be accompanied by localized gestures than Dutch pronouns, presumably because pronouns in Turkish are pragmatically marked forms. We did not find any cross-linguistic influence in bilingual speech or gesture patterns, in line with studies (speech only) of highly proficient bilinguals. We therefore suggest that speech and gesture parallel each other not only in monolingual but also in bilingual production. Highly proficient heritage speakers who have been exposed to diverse linguistic and gestural patterns of each language from early on maintain monolingual patterns of pragmatic constraints on the use of pronouns multimodally.

Keywords: bilingualism; heritage speakers; gesture; cross-linguistic influence; pronoun; pragmatics; discourse

Introduction

The use of subject pronouns by bilingual speakers of a pro-drop (e.g. Spanish) and a non-pro-drop language (e.g. English) in contact situations has been a commonly studied test case of cross-linguistic influence. Pro-drop languages habitually drop arguments and use overt pronouns mainly to mark

pragmatic information such as contrast and emphasis (e.g. Enç, 1986). The alternation between overt pronouns and dropped arguments is determined by discourse-pragmatics in those languages unlike in non-pro-drop languages such as English. Studies looking at heritage speakers who had lower proficiency in their pro-drop language than in their non-pro-drop language found an increase in the frequency of pronouns or a loss of the pragmatic constraints on the use of pronouns in the pro-drop language (Paradis & Navarro, 2003; Polinsky, 1995; Silva-Corvalan, 1994). On the other hand, studies looking at heritage speakers who are exposed to the pro-drop language more regularly and who have high proficiency in both languages found no cross-linguistic influence (Cerrón-Palomino, 2016; Keating, Jegerski & van Patten, 2016; Montrul, 2004). Most studies, however, have focused on Spanish as a pro-drop language and English as a non-pro-drop language in the United States.

In this paper, we look at language contact influence on subject pronouns studying Turkish heritage speakers in the Netherlands. Pronouns are less frequently used in pro-drop Turkish than in non-pro-drop Dutch, and they are pragmatically marked forms in Turkish (Enç, 1986) (similar to Spanish) but not in Dutch. Additionally, unlike previous studies in this domain, we examine not only patterns in the pro-drop language but also in the non-pro-drop language. We ask whether bilingual speakers maintain differences between Turkish and Dutch in terms of pragmatic constraints on the use of pronouns. Furthermore, as a novel contribution to research on cross-linguistic influence on subject pronouns, we extend our investigation to the visual modality of language, i.e. co-speech gestures. Studies of multimodal narratives have shown that speakers' gestures are sensitive to the amount of information encoded in speech. When referents are maintained in discourse, speakers not only reduce content of the referring expression by using pronouns or null forms,

but they also reduce the frequency of gestures related to referents (Azar & Özyürek, 2015; Perniss & Özyürek, 2015). Additionally, referents that are uniquely identified in speech are more likely to be accompanied by gestures (So, Kita & Goldin-Meadow, 2009), suggesting gesture is tightly linked to speech. Whether this link extends to pragmatic marking of pronouns, that is whether languages that mark pronouns pragmatically in speech are more likely to mark them with gestures as well, has not been investigated so far. Furthermore, nothing is known about the multimodal nature of the cross-linguistic transfer in this domain.

As for gestures of bilingual speakers, in particular proficient L2 learners have been reported to show cross-linguistic influence in how frequently they gesture overall (So, 2010; see Cavicchio & Kita, 2013 who found no cross-linguistic influence) and in their motion verb expressions (Brown & Gullberg, 2008; Özçalışkan, 2016). Gestural transfer in the contexts of language contact and for differential pragmatic marking of pronouns on the other hand is an unexplored research topic. Thus, as a novel contribution to bilingualism research, we investigate whether heritage speakers who are highly proficient in their two languages maintain pragmatic constraints on the use of subject pronouns in speech and gesture or whether there is cross-linguistic influence in the two modalities.

An earlier study that looked at the use of subject pronouns by adult Turkish heritage speakers in the Netherlands (Doğruöz, 2007) found no cross-linguistic influence in the quantity of subject pronouns in informal interviews, though a few cases of the 1st person pronoun were attested where monolinguals would not use a pronoun, e.g. in the immediately preverbal positions. We contribute to the literature on the use pronouns by Turkish-Dutch bilingual adult speakers in the Netherlands with a more controlled study (with respect to the discourse content) and in the context of narratives eliciting third-person references. Furthermore, we study not only Turkish narratives but also Dutch narratives produced by the same set of speakers. Finally, we take the multimodal aspects of reference production into account and investigate the use of gestures to mark subject referents by Turkish-Dutch bilinguals for the first time.

Method

Participants

20 Dutch monolingual speakers studying in Nijmegen (14 females; age mean = 21.5), 20 Turkish monolingual speakers studying in Istanbul (17 females; age mean = 22.2) and 20 bilingual speakers (14 females; age mean = 23.3) studying in Nijmegen participated in our study in return for payment or course credits. Note that “monolingual” speakers in our study have some knowledge of English but they speak only one of the two languages that are of interest for this study.

Bilingual participants filled in a survey regarding their language history, current language use, and language proficiency in Turkish and Dutch. All bilingual speakers were born and raised in the Netherlands; their parents immigrated from Turkey to the Netherlands as young adults. Bilinguals were exposed primarily to Turkish at home until they started school at around the age of 4. They reported to mainly speak Dutch at school and mostly mix the two languages at home and among friends. Bilinguals rated their overall reading, speaking and comprehension proficiency higher in Dutch than in Turkish on a 5-point Likert scale (see Table 1). As a measure of oral fluency, we calculated articulation rate (number of syllables/ articulation time) (cf. De Jong, & Wempe, 2009 for the script) for each participant using samples of around 30 seconds from the narratives we collected (the stimuli and procedure explained below). Bilinguals did not differ significantly from monolinguals in Turkish $t(38) = 1.994, p = .053$ or in Dutch $t(38) = 0.934, p = .356$. Bilinguals’ articulation rate was not significantly different between their Turkish and Dutch, either, $t(19) = 2.047, p = .054$, suggesting they have similar levels of oral fluency in both languages (see Table 2).

Table 1
Self-rated Bilingual Proficiencies (1 = native; 5 = beginner), Mean (SD)

	Speaking	Comprehension	Overall
Turkish	2.50 (1.32)	2.25 (0.79)	2.40 (1.27)
Dutch	1.30 (0.47)	1.10 (0.31)	1.50 (0.76)

Table 2
Monolingual and Bilingual Speakers’ Articulation Rates, Mean (SD)

	Monolingual	Bilingual
Turkish	4.81 (0.55)	4.44 (0.63)
Dutch	4.62 (0.71)	4.42 (0.57)

Stimuli

We used two short silent videos (cf. Azar, Backus & Özyürek, 2016) to elicit narratives. Three characters were engaged in joint activities; cooking in one video and office work in the other. Figure 1 illustrates stills from each video.



Figure 1: Stills from the stimulus videos featuring kitchen (upper row) and office activities (bottom row)

Procedure

Participants were invited to a quiet room in pairs and were assigned the role of either speaker or addressee (the assignment was random in monolingual sessions). The speaker watched the stimulus videos one by one on a computer screen. Once each video ended, the computer screen turned white and the speaker told the addressee what they had watched. The addressees were instructed that after each narrative, they could ask clarification questions and that they would be given two short written questions about each narrative. The purpose of this was to ensure that the speakers included enough details in their narratives and that the addressees paid attention. Once the instructions were given, the experimenter left the room and came back after each narrative with the questions for the addressee. The bilingual participants repeated the task once in Turkish with a Turkish monolingual addressee and once in Dutch with a Dutch monolingual addressee. The addressees were not confederates and there was at least two weeks between the two sessions. The order of the two videos was counter-balanced across participants. For bilinguals, the order of language was counterbalanced as well. All sessions were videotaped.

Data Coding

We coded and analyzed speech from the speakers of each pair. We transcribed the video narratives using the standard orthography of each language and coded gestures with the frame-by-frame video annotation software ELAN (cf. Lausberg, & Sloetjes, 2009).

Speech Coding We divided the narratives into clauses, utterances with a single subject argument and a single predicate. We coded only clauses with an animate subject argument (referring to the human characters in the stimulus videos) and marked whether the subject argument was maintained from the previous clause or not. We analyzed only clauses with maintained subjects since pronouns as reduced forms are used most frequently in those contexts (cf. Azar et al., 2016 for Turkish and Dutch). We further coded each maintained subject argument for one of the three possible referring expression types: *noun phrase* (NP), *pronoun* (third person and demonstrative pronouns) and *null form*. (1b) in Dutch and (2d, 2e) in Turkish illustrates clauses with maintained subjects. Subject arguments are underlined and subscripts index coreferentiality. Following Paradis and Navarro (2003), we coded Turkish subjects for pragmatic marking: *contrast* (disambiguation between two possible referents) or *emphasis* (highlighting information). Additionally, we also coded whether pronouns referring to subjects that are marked for emphasis were accompanied by the emphatic marker *da* ‘also’ (as in 2e). This clitic has been suggested to be a focus marker in Turkish (Enç, 1986) and has been shown to accompany pronouns when used for maintained subject arguments by monolingual Turkish speakers (Azar et. al., 2016). We did not code pragmatic marking for Dutch subjects because we expect Dutch

speakers to maintain subjects with pronouns as default forms rather than using pronouns to mark pragmatic information due to Dutch being a non-pro-drop language.

- (1) a. Een meisje_i probeerde een pot open te maken.
A girl_i tried to open a jar.
 b. Die_i kreeg hem niet open. *pronoun*
That_i (the girl) did not open it.
- (2) c. Ondan sonra kız_k geliyor.
Then girl_k is coming.
 d. Ö_k çocuğa yardım ediyor. *null form*
(She)_k is helping the boy.
 e. O_k **da** kağıtları diziyo. *pronoun*
She_k too, is sorting paper.

Gesture Coding We coded gestures temporally aligning with maintained subjects in speech, specifically with subject pronouns. We analyze gestures that anchored subjects in gesture space (i.e. index-finger and whole hand points). In Figure 2, the subject in (b) is maintained from (a) and marked with a pronoun in speech in Turkish and with an index-finger pointing gesture. The pronoun in speech is given in bold and the gesture and the character the pronoun refers to are highlighted in pictures.



- a. Yan tarafta anne_k var. *There is mum_k at the side.*
 b. **O**_k da bir şeyler doğuruyor. ***She**_k too is chopping something.*

Figure 2: Index-finger pointing gesture referring to the character in the video (highlighted) and temporally aligning with maintained subject pronoun in speech (in bold)

Predictions

With regard to monolinguals, we expect speech and gesture to parallel each other in terms of the information they encode and therefore we expect cross-linguistic differences in the frequency of pronouns in speech and frequency of gestures marking pronominalized referents. In speech, we expect to find few pronouns in Turkish and in contexts where subject arguments are pragmatically marked for contrast or emphasis. Considering pronouns are marked forms in Turkish but not in Dutch, we predict that Turkish monolingual speakers will mark subject pronouns with gestures more than Dutch speakers. In terms of bilinguals we can anticipate the following scenarios for speech.

Influence of Dutch on bilingual Turkish: Based on studies that found cross-linguistic influence from non-pro drop English on pro-drop Spanish in subject pronouns of Spanish

heritage speakers in the States (e.g., Silva-Corvalan 1994), we expect bilinguals to have loosened the pragmatic constraints on the use of pronouns. Bilinguals in Turkish might use pronouns also when the subjects are not pragmatically marked and might accompany subjects that are marked for emphasis with the emphatic marker *dA* less frequently than monolinguals.

No cross-linguistic influence: Taking into account the literature which did not find cross-linguistic influence on subject pronouns for bilinguals with high proficiency in both languages (e.g. Cerrón-Palomino, 2016; Keating, Jegerski & van Patten, 2016), we predict that bilinguals will maintain pragmatic constraints on the use of pronouns.

As for gestures, based on theories suggesting that speech and gesture parallel each other in production (Kita & Özyürek, 2003; So et al., 2009), we expect the cross-linguistic influence on gestures to align with patterns of influence in speech. Alternatively, considering some L2 studies have found cross-linguistic transfer on gesture but not on speech (Özçalışkan, 2016), we may observe cross-linguistic influence on gesture modality only. Speakers may extend the pragmatic marking of pronouns with gestures from Turkish to Dutch and gesture with Dutch pronouns more frequently than Dutch monolinguals. Alternatively, bilinguals might loosen the pragmatic marking of gestures in Turkish as an influence from Dutch and gesture with pronouns less than monolinguals in Turkish.

Analyses and Results

We performed arcsine transformation on ratio values for analyses though we report untransformed values. We analyzed the data using Linear Fixed Effects Models in IBM SPSS statistics 20. We started with the simplest model with fixed effects only, and built more complex models by adding random intercepts. We compared each ‘more complex’ model to the previous simpler one in each step and in case of a significant difference we picked the model with the lower log-likelihood value. Bonferroni correction for multiple comparisons was applied for each model.

Pronouns in Speech

We calculated the ratio of subject arguments referred to with a pronoun (*subject pronouns*) out of all maintained subject arguments in narratives per participant. We performed linear mixed model on *subject pronouns* with the following fixed effects: *language type* (Turkish vs. Dutch), *language status* (monolingual vs. bilingual) and the interaction between *language type* and *language status*. We started with the fixed effects only, and built more complex models by adding random intercepts and slopes for *participants*, *language type* and *language status*. The model that best described the variance of the data had random intercepts for *participants* and random intercepts for *language type* (Turkish or Dutch) varying by *participants* random slopes.

We found a significant effect for *language type* $F(1, 66.657) = 316.119, p < .001$ and for *language status* $F(1, 45.204) = 4.600, p = .037$ and a significant interaction

between the two $F(1, 66.657) = 4.174, p = 0.045$. We further broke down the interaction and performed mixed linear models for Turkish and Dutch with *language status* (monolingual vs. bilingual) as fixed effect, following the same procedure as before. The model that best explained the variance for both Turkish and Dutch data was the simplest model with fixed effect *language status*. We did not find a main effect for language status $F(1,40) = 0.852, p = .362$ for Turkish but for Dutch $F(1,40) = 4.721, p = .036$. Bilingual speakers used more pronouns in Dutch than monolinguals. Figure 3 illustrates the mean proportions of pronouns referring to subject arguments in monolingual and bilingual narratives by language.

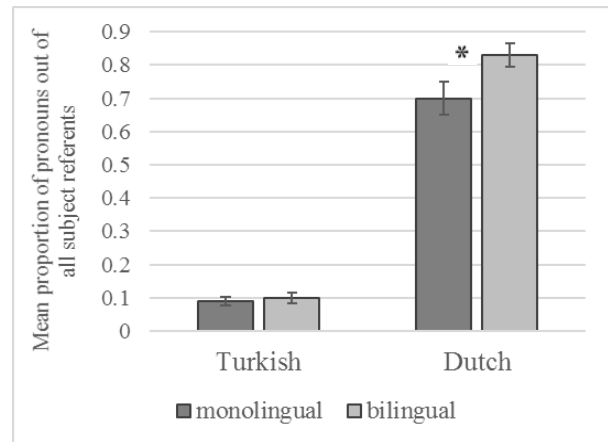


Figure 3: Mean proportions of maintained subject pronouns in monolingual and bilingual narratives across Turkish and Dutch. The error bars represent standard errors of the mean.

Since we did not predict the findings in bilingual Dutch, we compared the use of the other two referring expressions we coded in speech, *noun phrase* (NP) and *null form*, across monolingual and bilingual Dutch to understand whether the higher use of pronouns by bilinguals could be driven by the lower use of one of the other two forms. We found that the bilinguals used null forms less frequently (although marginally) than monolinguals in Dutch $t(30.790) = -2.047, p = .049$ ($M = 0.132; 0.246$ respectively).

Next, we looked at whether monolingual and bilingual speakers differed in the pragmatic marking of pronouns in Turkish. Out of all subjects that were encoded as pronouns, 82% in monolingual and 78% in bilingual narratives was marked for either emphasis or contrast. In total, there were 49 subject referents in monolingual Turkish and 44 subject referents in bilingual Turkish that were marked for emphasis and referred to with pronouns in speech. 88% of those pronouns in monolingual Turkish and 84% in bilingual Turkish was accompanied by the emphatic marker *dA*. Thus, bilinguals were similar to monolinguals in Turkish in terms of the pragmatic constraints on the use of pronouns in speech.

Pronouns Marked with Gestures

We calculated the ratio of gesturally marked subject pronouns out of all subject pronouns in speech per participant. We performed linear mixed model on gesturally marked subject pronouns with fixed effects *language type*, *language status* and the interaction of the two, following the same procedure as in our speech analyses. The model that best described the variance of the data had random intercepts for *participants* and *language type* (Turkish or Dutch) varying by *participants* random slopes. We found a significant effect for *language type* $F(1, 69.358) = 10.062$, $p = .002$, showing Turkish speakers were more likely to mark pronouns with gestures than Dutch speakers. We did not find a significant effect for *language status* $F(1, 92.697) = 0.078$, $p = .781$ and no significant interaction between the fixed effects (*language type* and *language status*) $F(1, 64.913) = .001$, $p = .979$, suggesting bilinguals did not differ from monolinguals in terms of marking pronouns with gestures in either language. See Figure 4 for the mean values of gesturally marked pronouns.

Even though we found pronouns were more likely to be gesturally marked in Turkish than in Dutch, both in monolingual and bilingual speech, this could be due to an overall higher frequency of gestures in Turkish than in Dutch rather than an effect modulated by pragmatics. As a control, we looked at whether speakers per language group differed in how likely they are to gesturally mark a noun phrase (NP), the other overt referring expression type that we coded for speech. We performed mixed linear models on the ratio of gesturally marked NPs, following the same procedure as in our pronoun analyses. We did not find a main effect for *language* $F(1, 56) = 0.410$, $p = .525$, suggesting Turkish and Dutch speakers did not differ in how likely they were to mark NPs with gestures, contrary to what we found for pronouns. Turkish monolingual speakers gestured with NPs ($M = 0.33$, $SE = .083$) as often as Dutch monolinguals ($M = 0.28$, $SE = .126$), suggesting the cross-linguistic difference we found for pronouns can be explained by the difference in the pragmatic status of pronouns across Turkish and Dutch and this effect is sensitive to the referring expression type used in speech. We did not find a main effect for *language status* $F(1, 56) = 2.551$, $p = .116$ or an interaction of *language* and *language status* $F(1, 56) = 1.144$, $p = .289$. Bilinguals did not differ from monolinguals in Turkish ($M = 0.42$, $SE = .120$) or in Dutch ($M = 0.31$, $SE = .135$) in terms of how frequently they marked NPs with gestures.

Discussion

In this study, we investigated whether there is cross-linguistic influence on the use of pronouns in narratives by heritage speakers who have high proficiency in both languages they speak. We specifically focused on the pragmatic constraints on the use of pronouns and we studied both speech and gestures for the first time in this domain looking at narratives

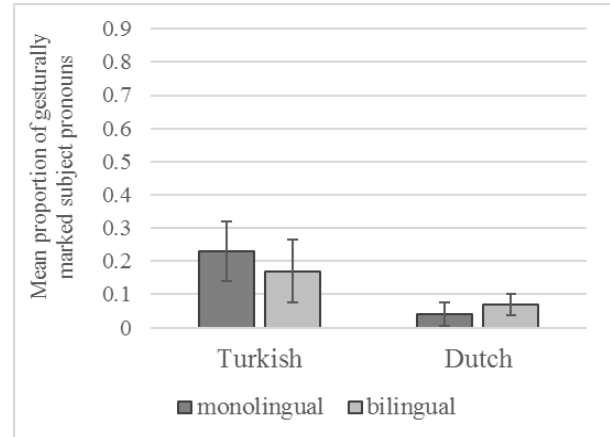


Figure 4: Mean proportions of gesturally marked maintained subject pronouns in monolingual and bilingual narratives across Turkish and Dutch. The error bars represent standard errors of the mean.

of Turkish heritage speakers in the Netherlands. We compared bilingual speech and gesture productions to those of monolinguals in Turkish and Dutch.

We showed that monolingual Turkish speakers used pronouns infrequently to maintain subject referents in narratives and mostly when the referents were pragmatic marked. Additionally, in line with our predictions, Turkish monolingual speakers were more likely to gesturally mark pronouns than Dutch monolingual speakers, suggesting linguistic forms that are pragmatically marked in speech (i.e. pronouns in pro-drop Turkish) are more likely to be marked with gestures as well.

Bilingual speakers did not differ from monolinguals in their pro-drop language, Turkish, in terms of how likely they were to use pronouns to maintain subject referents. Furthermore, we did not find any differences between monolingual and bilingual speakers in Turkish in terms of pragmatic constraints on the use of pronouns. Bilinguals used pronouns in Turkish to maintain referents that were marked for pragmatics, either for emphasis or contrast and they used the emphatic marker *dA* in similar ways to monolinguals. Our findings suggest that heritage speakers who were raised bilingually and who have high proficiency in both languages as well as using them daily, seem to have mastered the pragmatic constraints on the use of pronouns and to maintain them.

Although we did not expect any differences between monolingual and bilingual Dutch speech, we found that bilingual speakers used more pronouns and fewer null forms in Dutch than monolingual speakers. We suggest that bilingual speakers might have used coordinated clauses which allows null forms in Dutch less often than monolinguals and therefore dropped referents less often. However, since the use of null forms is not the main focus of our paper, we will not investigate this possibility further.

As for the visual modality, bilinguals maintained pronouns as marked forms in Turkish similar to monolingual speakers.

Bilinguals did not extend Turkish gestural marking to their Dutch narrative productions, either. Our findings are in line with those of Cavicchio & Kita (2013) who looked at the overall gesture rate in L2 narratives, but differ from others which found cross-linguistic transfer of gesture with regard to the overall gesture rate (So, 2010) or motion verb expressions (Brown & Gullberg, 2008; Özçalışkan, 2016).

To conclude, we show that speech and gesture parallel each other at the discourse-pragmatic level: Forms that are pragmatically marked in speech are more likely to be marked with gestures as well, extending the literature on cross-linguistic gestural differences in monolingual narratives.

Furthermore, we provide the first evidence that the parallel relation between speech and gesture (cf. So et al., 2009) extends to the domain of crosslinguistic influence in contact situations: When the influence is not evident in speech, it is not observable in gesture as well, at least with regard to pronoun use in the narratives of heritage speakers. Heritage speakers with high proficiency in both languages maintain pragmatic constraints on the use of subject pronouns, both in speech and gesture. Our findings therefore align with the studies that did not find cross-linguistic influence on the speech of highly proficient heritage speakers (e.g. Cerrón-Palomino, 2016; Keating, Jegerski & van Patten, 2016). This suggests that proficiency in the heritage language may be an important determinant of the cross-linguistic influence on the use of pronouns in narratives in both modalities of language.

We suggest that studying bilingual gestures in addition to speech, especially in domains that show cross-linguistic influence in speech, will contribute to more complete theories of bilingualism. A better understanding of whether spoken and visual modalities undergo the same processes will provide valuable insight into the scope of cross-linguistic influence and language change beyond what we can learn from studies of speech alone.

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