Do bilinguals avoid ambiguity? An experimental study of lexical ambiguity in spoken Mandarin

Yajun Liu (yajun.liu@ed.ac.uk), Antonella Sorace, Kenny Smith
School of Philosophy, Psychology and Language Sciences, University of Edinburgh

Abstract

Previous research has proposed that bilinguals would rather be redundant than ambiguous. To test this hypothesis, we conducted an experiment examining lexical ambiguity in spoken Mandarin at the tonal, segmental, and orthographical levels. Using a picture naming task, we explored how L1 Mandarin L2 English speakers in the UK and more-monolingual speakers in China resolve ambiguity by analysing their verbal responses when naming pictures, manipulating whether the context in which a picture is named makes the preferred label ambiguous (e.g. do speakers avoid saying "fen3 si1" when describing a picture of glass noodles when it appears alongside a picture of fans which shares the same label?; do bilinguals avoid this ambiguity more than more monolingual peers as claimed?). Our results do not support this hypothesis, as no reliable differences between groups were found. Despite the null results, we observed several interesting patterns worthy of further investigation.

Keywords: bilingualism, ambiguity avoidance, lexical ambiguity, spoken Mandarin

Introduction

Ambiguity occurs when a referring expression (e.g., noun or a pronoun) can refer to more than one potential referent. Controlling ambiguity so that we can still be understood by our interlocutors demands careful attention to both linguistic and contextual cues which will allow the intended referent to be recovered, or not. For speakers, the choice of a referring expression involves balancing production cost with the need to avoid ambiguity. For instance, reduced forms (e.g., null and overt pronouns) are less effortful to produce but heavily rely on discourse cues for interpretation, whereas more explicit forms (e.g., overt pronouns and noun phrases) incur greater production cost but reduce ambiguity. The Pragmatic Principles Violation Hypothesis (Lozano, 2016) suggests that bilingual speakers may prioritize clarity over economy, often using more explicit forms (e.g., overt over null pronouns) to avoid ambiguity in referential contexts. This suggestion leads to an important question: Does this bilingual preference for clarity represent a general strategy of ambiguity avoidance? Specifically, do they also tend to avoid ambiguity in other linguistic domains, such as lexical ambiguity, more than their more-monolingual peers? Here we investigate this possibility, exploring how L1 Mandarin L2 English (i.e. first language Mandarin, second language English) speakers in the UK, compared to their more-monolingual peers in China, handle ambiguity in spoken Mandarin, a language that is rich in lexical ambiguity at the tonal, segmental, and orthographical levels.

Bilingualism And Referential Ambiguity

The impact of bilingualism on anaphoric reference, the process of linking a referring expression (e.g., a pronoun or a noun phrase) to a previously mentioned referent, has been extensively studied. Of particular interest are contexts where two animate referents compete for attention, as illustrated in example (1) in Mandarin. If a speaker here wishes to refer to Li Gang, the subject of the preceding clause, should they choose the null pronoun (given as ∅) or the overt pronoun *ta*? What if they want to refer to Wang Qiang?

1. Li Gang$_i$ gei Wang Qiang$_j$ da dianhua deshihou, ∅$_i$ / **ta**$_{i/j}$ haizai bangongshi**.**
   'When Li Gang called Wang Qiang, (he) was in the office.'

Previous research has reported a consistent tendency for bilinguals to over-use overt pronouns in these contexts, including first language attriters (L1 attrriters, individuals who undergo changes in their L1 due to continuous immersion in an L2 environment) whose native language allows subject drop (for Mandarin: Liu, Sorace, & Smith, under review; for Italian: Tsimpli et al., 2004; for Spanish: Fernando, 2023).

To explain bilinguals' tendency towards more explicit referential forms, Lozano (2016) proposed the Pragmatic Principles Violation Hypothesis, approaching it from the perspective of communicative needs. Speakers need to balance competing communicative principles. On the one hand, the Informativeness Principle (Blackwell, 1998) and the Economy Principle (Geluykens, 2013) encourage minimal linguistic effort. On the other hand, the Clarity principle (Geluykens, 2013) emphasizes avoiding ambiguity through more explicit or detailed language. According to this hypothesis, bilinguals tend to prioritize clarity over informativeness or economy and would rather be redundant than risk ambiguity.

Why would bilinguals exhibit different preferences when trading off clarity and effort? One possible explanation comes from the cognitive demands of pronoun usage. While dropping subjects requires minimal production effort, it imposes greater cognitive demands because null pronouns rely entirely on contextual information, such as syntactic structure and pragmatics, to map to their referents. This requires speakers or listeners to continuously track and integrate discourse information to resolve ambiguity. For bilinguals, this task may be especially challenging because managing two language systems with differing pragmatic rules for pronouns places additional strain on their cognitive resources. In contrast, overt pronouns impose slightly higher production costs, but they can serve as explicit linguistic signals that draw attention to the continuation of a referent, helping to reduce cognitive load and enhance referential clarity.

Lexical Ambiguity

However, this explanation is not unique to pronoun use: other referring expressions (e.g. nouns) differ in their accessibility and in-context ambiguity. By examining how bilinguals handle ambiguity in other linguistic domains, we can test this hypothesis and explore whether the putative bilingual preference for clarity in pronoun use reflects a broader, general strategy for ambiguity avoidance.

In human language, a finite set of words is used to convey an infinite range of meanings. This reuse of linguistic forms inherently introduces ambiguity into the lexicon, as seen in phenomena such as homophones, homonyms, and heteronyms. Homophones are words that share the same pronunciation but differ in meaning (e.g., in English, *pair*, a set of two things, and *pear*, the fruit) (Trott & Bergen, 2020). A special type of homophones is homonyms, which are words with unrelated meanings which share the same pronunciation and spelling (e.g., *bat*, referring to both the animal and the baseball bat; Liang et al., 2024). Heteronyms are words that share the same spelling but differ in pronunciation and meaning (e.g., *wind*, meaning a strong breeze, or to move along a twisted path; Solomyak & Marantz, 2009).

Mandarin is rich in lexical ambiguity across three levels: tones, segments (the consonants and vowels of a syllable), and orthography (i.e., characters). Research has extensively studied how these linguistic features contribute to lexical processing. It has been shown that tones and segments are processed differently. For example, Sereno and Lee (2015) examined four types of prime-target phonological pairs in Mandarin in an auditory decision task: (1) tone-and-segment overlap[1] (*ru4-ru4*), (2) segment-only overlap (*ru3-ru4*), (3) tone-only overlap (*sha4-ru4*), and (4) unrelated (*qin1-ru4*). Their results revealed the strongest priming effects when both tones and segments overlapped, weaker priming when only segments overlapped, and no priming when only tones overlapped. Their findings suggest that segments act as the primary cue for determining perceived similarity, and therefore strength of priming, while tones play a secondary role.

In Mandarin, orthography (i.e., written characters) does not directly associate with phonology (Li, et al., 2022). Ambiguity stemming from orthographic features is processed differently than that from phonological cues. Qu, Li and Wei (2024) explored phonological and orthographic prediction during reading using EEG. Participants were presented with two types of sentence pairs, containing either homophonic words (as shown in example 2a & 2b) or orthographically related words (as shown in example 3a & 3b). Neural activity was measured to see whether they could predict the target word in the second sentence after reading the first one. They found that participants predicted the orthographically related target word before it appeared, whereas similarity of neural activation for homophonic words occurred only after the target word had appeared. These findings suggest that orthographic ambiguity is processed or detected more proactively than phonological ambiguity in Mandarin.

2. (a) 我们 要 **树木**
wo-men yao ***shu4-mu4***
'We want **trees**'
(b) 绑匪 出价 ***数目***
bang-fei chu-jia ***shu4-mu4***
'Kidnappers demanded a ransom ***amount***.'

3. (a) 单位 管理 ***会计***
dan-wei guan-li ***kuai4 ji4***
'Unit management ***accounting***'
(b) 上个月 ***会议***
Shang-ge-yue ***hui4 yi4***
'Last month ***meeting***'

Despite extensive research on the comprehension of lexical ambiguity in Mandarin, relatively little is known about how native Mandarin speakers manage these ambiguities during *production*. To address this gap, the current study investigates lexical ambiguity in spoken Mandarin using a picture naming task adapted from Ferreira, Slevc, and Rogers (2005) and Rabagliati and Robertson (2017).

Ferreira, Slevc, and Rogers (2005) explore how native English speakers detect and resolve lexical ambiguity in referential communication. In Ferreira et al.'s experiment 1, speakers were asked to describe target objects (e.g., an animal *bat*) in the presence of foil objects that created linguistic ambiguity (e.g., a baseball *bat*). Results show that speakers did not often notice and avoid such ambiguities, often producing bare homophonic expressions for ambiguous scenes (i.e. just saying "bat"). In their experiment 2, speakers were asked to describe the target (e.g., baseball bat) followed by a foil (e.g., an animal bat), or vice versa. In this case, speakers often produce an unambiguous expression for the second picture (e.g. saying "baseball bat"). This finding suggests that while speakers may fail to proactively notice or avoid linguistic ambiguities, they are capable of detecting

[1] We use numbers to indicate the four tones in Mandarin.

ambiguity in retrospect and monitoring their utterances to resolve it afterwards.

Expanding on this work, Rabagliati and Robertson (2017) examined how adults (and children) manage lexical ambiguity in referential communication, using eye-tracking. Consistent with Ferreira et al. (2005)'s experiment 1, adult speakers were less likely to use unambiguous descriptions for linguistically ambiguous scenes (e.g. just saying "bat" when describing an animal bat in the context of a baseball bat). Their eye-tracking data focuses on the critical saccades (i.e. participants' gaze shifts) between the target picture (e.g., the animal bat) and the foil picture (e.g., the baseball bat) during three key phases of the task: (1) the preview phase, where participants were presented with a target picture, a foil picture and a filler picture for 4125 milliseconds; (2) the pre-naming phase, which lasted from the offset of the preview phase to the onset of participants' description of the target picture; and (3) the post-naming phase, where the three pictures were shown again for another 750 milliseconds. The eye-tracking findings with adult participants aligned with Ferreira et al (2005)'s experiment 2: adults only made more saccades for ambiguous scenes (e.g., between an animal bat and a baseball bat) than for unambiguous scenes at the post-naming phase, suggesting that they are more likely to notice linguistic ambiguity retrospectively, after providing verbal responses.

Motivated by these findings, we conducted a production experiment (1) to explore how native Mandarin speakers manage lexical ambiguity specifically in linguistic ambiguity conditions and (2) to examine whether L1 Mandarin L2 English bilingual speakers are more inclined to avoid ambiguity to a greater extent, compared to their more-monolingual counterparts.

The Current Study

Method

Participants completed a picture naming task in spoken Mandarin, adapted from Rabagliati & Robertson (2017), then completed a questionnaire assessing their use of and exposure to Mandarin and English.

Participants Twenty-four Mandarin-English bilinguals in the UK and 23 more-monolingual speakers in China took part in the experiment. All of them were university students. The bilingual participants had stayed in the UK for 12-84 months (Mean: 35.54 months, SD: 18.27) at the time of participation and were aged 19-29 years old (Mean: 24.21 years, SD: 3.11). The monolingual participants, who had never been abroad, were aged 23-33 years old (Mean: 26.57 years, SD: 2.71).

Stimuli We selected pictures whose descriptions in spoken Mandarin will result in potential lexical ambiguity at the tonal, segmental, and orthographical levels. We tested four categories of lexical ambiguity: homonymy (complete overlap of segments and orthography between members of the pair), tone-segment overlap (complete overlap of spoken form but different orthography), segment-only overlap, (spoken form overlaps in segments but not tones, different orthography), first-character-only overlap (no overlap in spoken form, first written characters share the same form). Table 1 presents examples of word pairs in these categories. Each word pair is illustrated with two distinct pictures corresponding to the two distinct meanings.

Table 1: Examples of word pairs in four categories.

Category	Sound	Form	Meaning
Homonymy	*fen3 si1*	粉丝	fans
	fen3 si1	粉丝	glass noodles
Tone-Segment Overlap	*shou3 shi4*	首饰	jewelry
	shou3 shi4	手势	hand gestures
Segment-Only Overlap	*hua1 ban4*	花瓣	petals
	hua2 ban3	滑板	skateboard
First-Character-Only Overlap	*bo4 he2*	薄荷	mint
	bao2 bing3	薄饼	thin wrap

On all trials participants are shown 3 pictures and asked to name one of them, the target. On *ambiguous* trials, the picture array consists of the target, a competitor, and a filler (see Figure 1), where two members of a word pair are used as the target and competitor, creating potential referential ambiguity (e.g., in a homonymy pair, the target image might be of fans, the competitor image of glass noodles, and the filler an unrelated image, e.g. glasses). In *unambiguous* trials, one picture from a word pair is selected as the target picture, shown alongside two unrelated filler pictures. Each participant is tested on 32 sets of pictures, randomly selected from an inventory of 160 sets of pictures (8 sets for each of the four ambiguity types in total, 4 in ambiguous trials, 4 in unambiguous trials). If a target picture is selected for an ambiguous trial, it will not be shown in an unambiguous trial. This ensures that participants are less likely to detect the underlying design of the experiment or be primed on the potential ambiguity of target images that recur across trials.

Procedure The experiment was designed with jsPsych (De Leeuw et al., 2023) and conducted online via Teams or Tencent. During the task, participants were asked to share their screens with the researcher to ensure that they understood the instructions and performed the task correctly. Afterwards, they were asked to complete the questionnaire.

The procedure of the picture naming task followed the production experiment in Rabagliati and Robertson (2017) (see Figure 1). Participants first saw three pictures for 4125 milliseconds (preview stage). The positions of pictures were randomized. This was followed by the naming stage, where a Mickey Mouse icon appeared next to the target picture. Participants clicked a microphone button located below the pictures to start and stop recording their description for Mickey Mouse using one Mandarin word. Then, they proceeded to the post-naming stage, during which the three pictures were displayed once more for 4125 milliseconds. The main modification in our design was the inclusion of the microphone icon, allowing participants to control the recording at their own pace so that they did not feel rushed to speak immediately after the preview stage.

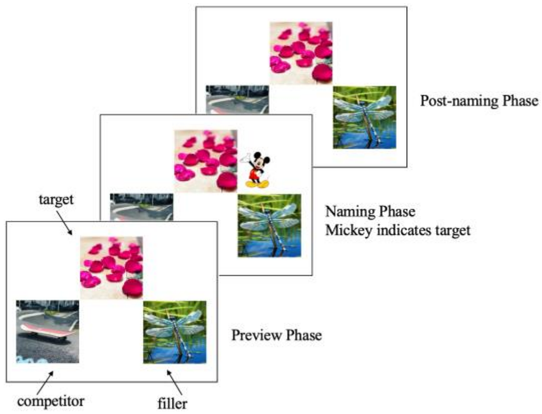

Figure 1: Example of the Segment-Only Overlap category: target is *hua1 ban4* (*花瓣*), petals, competitor is *hua2 ban3 (滑板), skateboard.*

Predictions

Our experimental design allows us to examine whether speakers tend to avoid ambiguity in their verbal responses and to evaluate their sensitivity to ambiguity in real-time processing at different phases of the experiment (as indexed by reaction times). We predict that if speakers tend to avoid ambiguity, they will have more responses that exactly match our expected target word in the unambiguous condition than in the ambiguous condition (e.g. they will say "fen3 si1" to describe the picture of fans in the unambiguous condition; in the ambiguous condition, they may produce more elaborated or self-corrected expressions, i.e. "ming2 xing1 fen3 si1" [fans of a celebrity] instead). We expected fine-grained differences among the four categories of lexical ambiguity. Homonymy pairs represent the most ambiguous scenes as they overlap in all three levels, whereas the First-Character-Only Overlap pairs might be the least ambiguous as the two words partially share orthographic form but are pronounced completely differently, making the "ambiguity" even more subtle in spoken language. We expected speakers to avoid ambiguity more for homonymy pairs. If bilingual speakers tend to avoid ambiguity to a greater degree than their more-monolingual peers, we expect them to have a stronger tendency towards avoiding ambiguous expressions in the ambiguous condition.

Inspired by Rabagliati & Robertson's (2017) eye-tracking findings, we also look at reaction times at different points of the task. First, mic-clicking reaction time (ms), defined as the time it takes participants to click the mic button to activate the recording. This represents the initial planning phase, where participants identify the target picture and prepare their response at their own pace. Longer reaction time might indicate greater difficulty in formulating a response, whereas shorter reaction time might suggest greater ease in planning and decision-making. Second, silence before speech, which is the time interval (ms) between participants clicking the mic button to start recording and the onset of speech. This captures the level of speakers' hesitation at the linguistic encoding phase, as they internally formulate a response. Longer delay at this phase may suggest their uncertainty in attempting to manage ambiguity, whereas shorter delay may reflect greater confidence. Lastly, the duration of silence after speech, which is the time interval (ms) between the end of participants' speech and their clicking of the mic button to finish the current trial. This represents participants' self-evaluation phase, where they might review their response and consider possible corrections or clarifications. Longer pause at this stage may indicate greater uncertainty about their response, whereas shorter pause may indicate confidence and decisiveness. Based on Rabagliati & Robertson's (2017) findings that speakers noticed linguistic ambiguity only after providing their response, we expect longer silence after than before speech in ambiguous scenes. If bilinguals are more aware of potential ambiguity than monolinguals, we expect them to show longer reaction times in ambiguous trials when producing target words, potentially at all three stages.

Data Analysis[2]

We focused on the following data: (1) word production; (2) reaction time (ms); (3) silence before vs after speech. In terms of word production, if the produced word matched the target word, it was coded as "1"; otherwise, it was coded as "0". When analysing the data for silence before and after speech, we manually identified speech and segment boundaries based on acoustic features such as amplitude and pitch using Praat version 6.4.23 (Boersma & Weenink, 2024).

Six trials were excluded from data analysis, including three empty responses and three responses that were either unintelligible or unrelated to the picture being described. As a result, 748 trials in the ambiguous condition and 750 trials in the unambiguous condition were analysed. Bayesian mixed-effects logistic regression was used to examine word production, whereas Bayesian lognormal regression was used to analyse reaction time. These models included fixed effects of condition (ambiguous or unambiguous trial), group (bilingual and monolingual), and their interaction. We also examined speakers' word responses across the four ambiguity types by fitting a separate logistic regression model that included an additional fixed effect of category, along with the three-way interaction of condition, group, and category. To analyse silence before and after speech, we built a separate Bayesian lognormal regression model, which included an additional fixed effect of silence phase (before and after) and the three-way interaction of condition, group, and silence phase.

[2] We also analysed whether speakers used an elaborated expression containing the target word to describe the picture. However, these responses account for less than 10% of the trials; as a result, we do not discuss them here.

In all models, we used the default treatment coding of fixed effects, with the ambiguous condition, bilingual group, homonym category, and before-speech silence as reference levels, respectively. We included by-participant random intercepts and slopes for condition as well as by-item random intercepts and slopes for condition, group and their interaction. Relevant pairwise comparisons were obtained using emmeans function from the emmeans package (Lenth et al., 2024). All analyses were conducted using the brms package (Bürkner, 2017) in R (R Core Team, 2024).

Results

Word production Figure 2 illustrates the use of participants' target word responses across conditions. Participants produced the target words our image stimuli were designed to elicit around half the time, with the remaining responses being other descriptions which were compatible with the target image but revealing a different conceptualization of the object (e.g., saying "xing1 kong1" (star sky) for the image of stars). Our first analysis of word production primarily focuses on target-word responses (coded as "1") and non-target word responses (coded as "0"). The analysis shows that bilinguals did not reliably use more target words for unambiguous trials, compared to ambiguous trials; in fact, there was a tendency of using *fewer* target words for unambiguous trials, although the wide credible intervals encompassing 0 (b = -0.13, CrI = [-0.51, 0.25], pd = 74%). Monolinguals did not differ from bilinguals in the ambiguous condition (b = -0.30, CrI = [-0.86, 0.26], pd = 86%), and there was no interaction effect between group and condition either (b = 0.19, CrI = [-0.37, 0.75], pd = 75%).

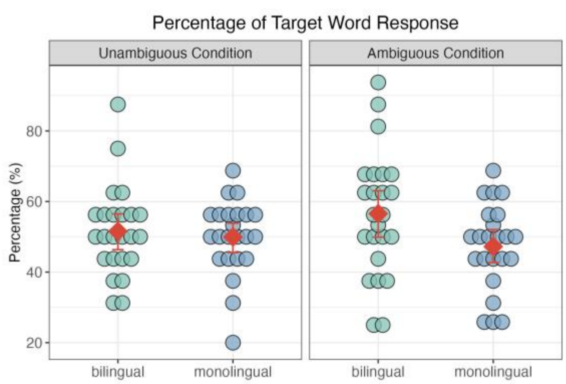

Figure 2: The use of target words in the unambiguous and ambiguous conditions. Each dot represents the % of target words produced by one speaker; the red diamond indicates the mean of by-participant percentage, with error bars showing bootstrapped 95% confidence intervals of the mean.

Figure 3 shows the use of target words across four ambiguity types. The analysis including ambiguity type shows no reliable difference between the two conditions in bilingual group for homonym pairs (b = -0.21, CrI = [-0.86, 0.45], pd = 73%). In the ambiguous condition, compared to homonymy pairs, bilinguals reliably used more target words for tone-and-segment overlap (b = 1.33, CrI = [0.04, 2.56], pd = 98%) and segment-only overlap (b = 1.42, CrI = [0.24, 2.58], pd = 99%) pairs, but this was less evident in first-character-only overlap pairs (b = 1.10, CrI = [-0.15, 2.34], pd = 96%). No interaction effects were observed, suggesting that these patterns broadly held for unambiguous trials and for monolingual speakers.

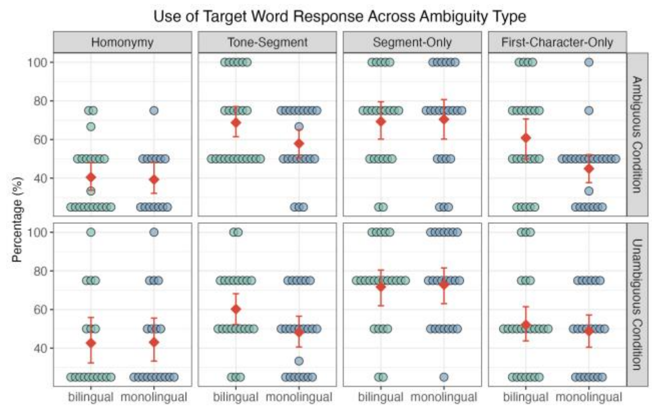

Figure 3: The use of target words across ambiguity types. Plotting conventions follow those in Figure 2.

Reaction time Figure 4 illustrates participants' reaction times when clicking the recording button to start the picture description across conditions. Our statistical analysis focused on investigating whether reaction times differ between groups across conditions for target word responses. Reaction time was log-transformed in the model, and estimates and 95% credible intervals of the main effects are presented on the log scale: positive values indicate an increase in reaction time (i.e. slower response), negative values indicate a decrease (i.e. faster response), and zero values indicate no change. The analysis indicates no differences between the two conditions for bilinguals (b = 0.01, CrI = [-0.03, 0.05], pd = 66%). Monolinguals had longer reaction times than bilinguals in ambiguous trials, but the direction and magnitude of this effect are slightly uncertain as the credible intervals narrowly include 0 (b = 0.12, CrI = [-0.01, 0.25], pd = 97%). There was no reliable interaction effect between condition and group (b = -0.05, CrI = [-0.11, 0.02], pd = 93%).

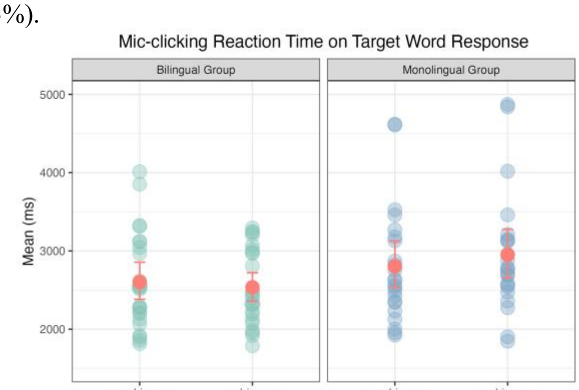

Figure 4: The mean reaction time of speakers clicking microphone for target-word responses. Each dot represents a speaker's mean reaction time. The orange dot represents the grand mean across speakers. Error bars indicate bootstrapped 95% confidence intervals of the grand mean.

Silence before and after speech Figures 5 illustrates the duration of silence before and after participants' target-word responses. The analysis shows no difference in before speech silence on the log scale between the two conditions for bilinguals (b = -0.00, CrI = [-0.08, 0.08], CrI = 53%). There was no reliable difference between the two groups in before-speech delay in ambiguous trials (b = 0.14, CrI = [-0.05, 0.32], pd = 93%). However, bilinguals had longer after-speech than before-speech silence in the ambiguous condition (b = 0.14, CrI = [0.06, 0.22], pd = 100%). No interaction effects among condition, group, and silence phase were observed. Despite that, in pairwise comparisons, monolinguals tended to have shorter before-speech than after-speech pause in ambiguous trials; however, the credible intervals included 0 at the boundary, making the direction and magnitude slightly uncertain (b = -0.09, CrI = [-0.17, 0.00], pd = 98%). No difference was not observed between the two silence types in unambiguous trials for monolinguals (b = -0.02, CrI = [-0.11, 0.06], pd = 71%).

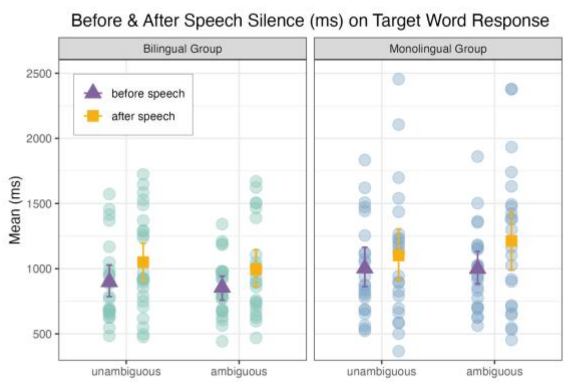

Figure 5: The mean silence duration before and after speech on target-word responses. The purple triangle and yellow square represent the grand means for the two silence types, respectively. Plotting conventions follow those in Figure 4.

Discussion

We investigated four types of lexical ambiguity in spoken Mandarin among L1 Mandarin L2 English bilinguals and their more-monolingual peers using a picture naming task. We analyzed speakers' verbal responses and their reaction times at different phases of the task. Our results indicate that neither group consistently avoided ambiguity by producing more unambiguous expressions in the ambiguous condition (overall or across ambiguity types) and no reliable group differences were observed. Regarding reaction times at different phases, the results do not reveal any robust differences between groups or conditions for target-word responses, either. Therefore, our results replicate prior findings (from Ferreira, Slevc, and Rogers, 2005, and Rabagliati and Robertson, 2017) that speakers are quite insensitive to these types of ambiguity, at least in their verbal productions.

Our findings do not support the hypothesis that bilinguals have a stronger preference for ambiguity avoidance. If anything, bilinguals numerically used a higher percentage of target-word responses in the ambiguous condition, compared to the unambiguous condition and to monolinguals. It may be that bilinguals are more sensitive to the ambiguity associated with pronouns, but this sensitivity does not extend to other types of referring expressions; alternatively, bilinguals' overexplicitness in pronominal reference might be driven by other factors.

Despite the null effects, the results still offer valuable insights and reveal patterns worth further exploration. If the tendency for bilinguals to produce more target words in the ambiguous condition were to prove robust, other mechanisms could be considered: it could be that some speakers are more aware of the similarity or ambiguity between the target and competitor images before speaking, possibly due to a priming or facilitation effect from the competitor image, whose label shared tonal, segmental, and/or orthographic features with the target. Moreover, bilinguals appeared to consistently monitor their utterances after providing a response, as indicated by longer pauses following speech in both ambiguous and unambiguous conditions, whereas monolinguals only show longer after-speech pauses in the ambiguous condition (albeit a weak difference). This seems to suggest that bilinguals may be less sensitive to ambiguity that gives the monolinguals pause after speaking.

To better understand speakers' sensitivity to ambiguity and how they resolve ambiguity, we plan to incorporate online eye-tracking to investigate speakers' gaze shifts between the target and competitor images, following Rabagliati & Robertson (2017). For instance, in cases where responses do not match target words, it remains unclear whether speakers deliberately avoided ambiguity by producing non-target words or simply failed to notice the potential ambiguity.

Conclusion

We conducted an experiment to investigate how native Mandarin speakers resolve lexical ambiguity in spoken Mandarin and whether bilingual speakers exhibit a stronger tendency to avoid ambiguity compared to their more-monolingual peers. No statistically reliable differences between groups were observed. Thus, our findings do not support the hypothesis that bilinguals prefer redundancy over risking ambiguity in communication.

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