

A desire to avoid ambiguity or ease processing? Insights from an experimental study of lexical ambiguity in spoken Mandarin using online eye-tracking



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Lexical Ambiguity in Mandarin

Category	Spoken Form	Orthographic Form	Meaning
Homonymy	fen3 si1	粉丝	fans
	fen3 si1	粉丝	glass noodles
Tone-and-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

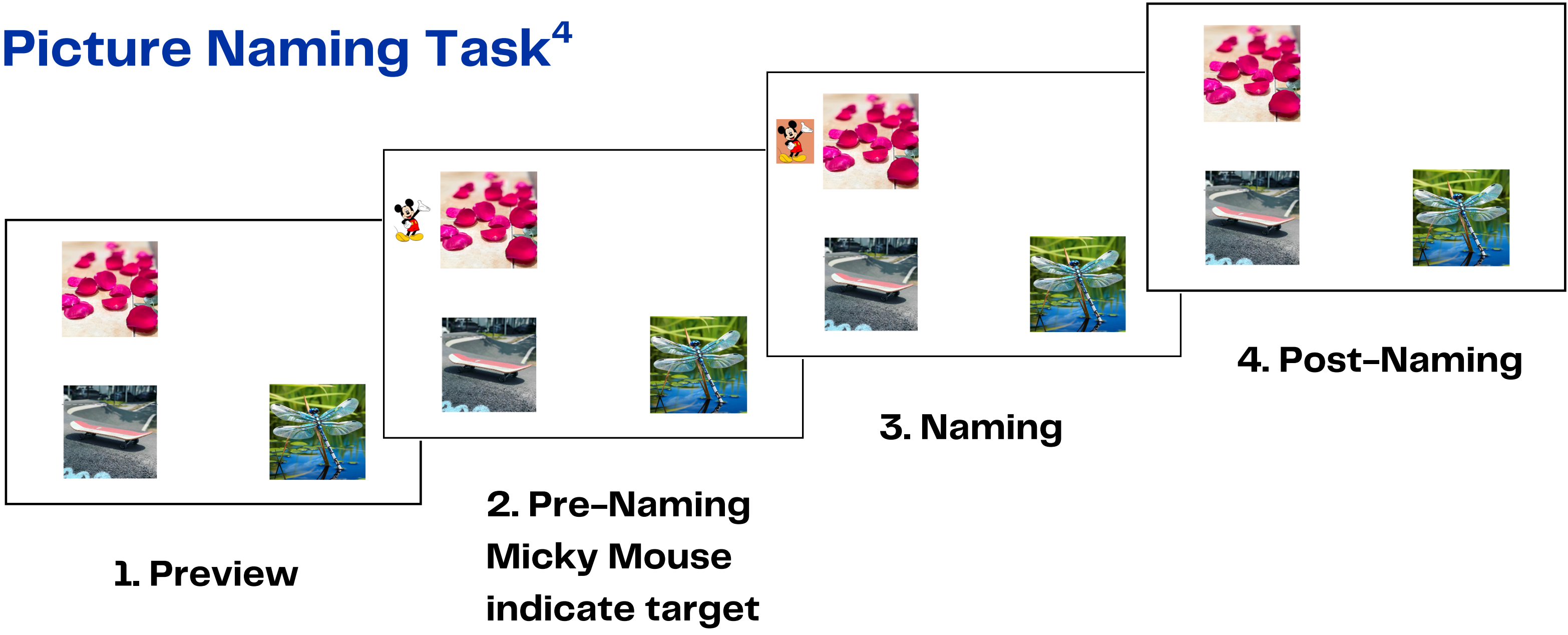
Introduction

Late bilinguals whose L1 allows subject omission tend to be more explicit in reference: they use more overt pronouns and full NPs than null pronouns¹. Why is that?

Hypothesis 1: bilinguals would rather be redundant than ambiguous in general².

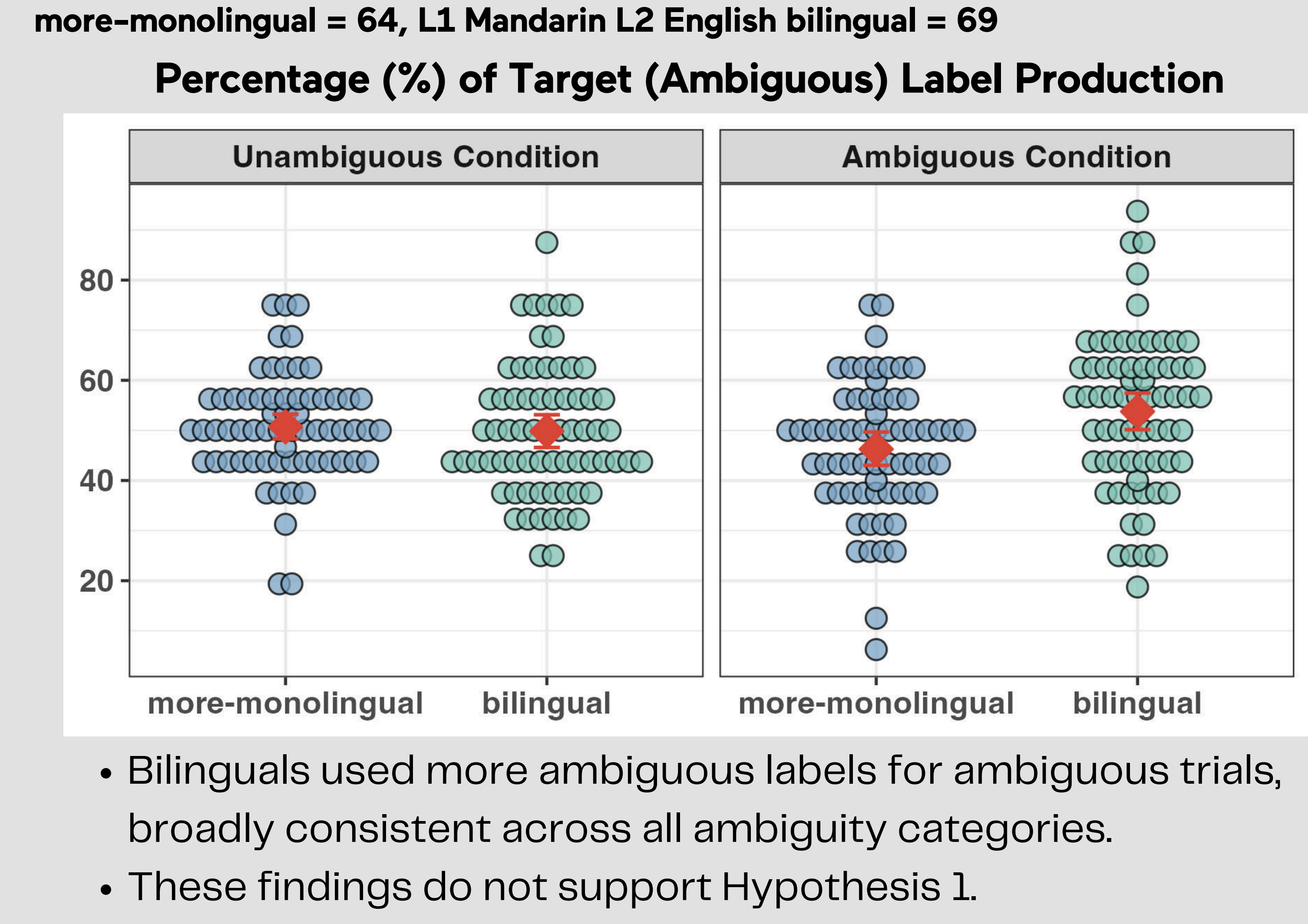
Hypothesis 2: bilinguals avoid ambiguity when doing so helps reduce cognitive load³.

Picture Naming Task⁴



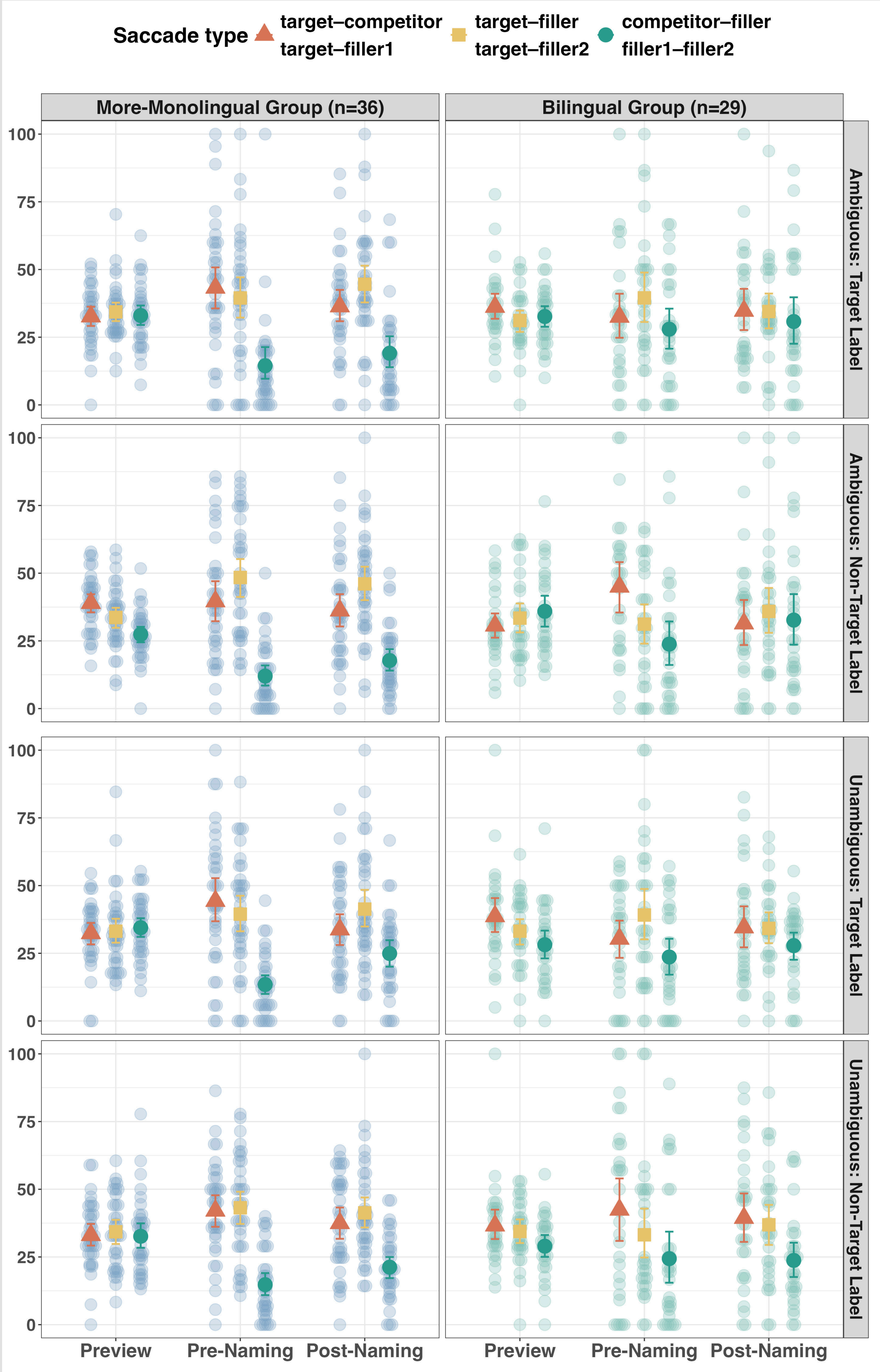
An example of the Segment-Only Overlap Category in the Ambiguous Condition: target is hua1 ban4 (花瓣), petals; competitor is hua2 ban3 (滑板), skateboard; filler is qing1 ting2 (蜻蜓), dragonfly. In the Unambiguous Condition, the competitor is replaced by a new filler image.

Results: Verbal Responses from Exp 1 & 2

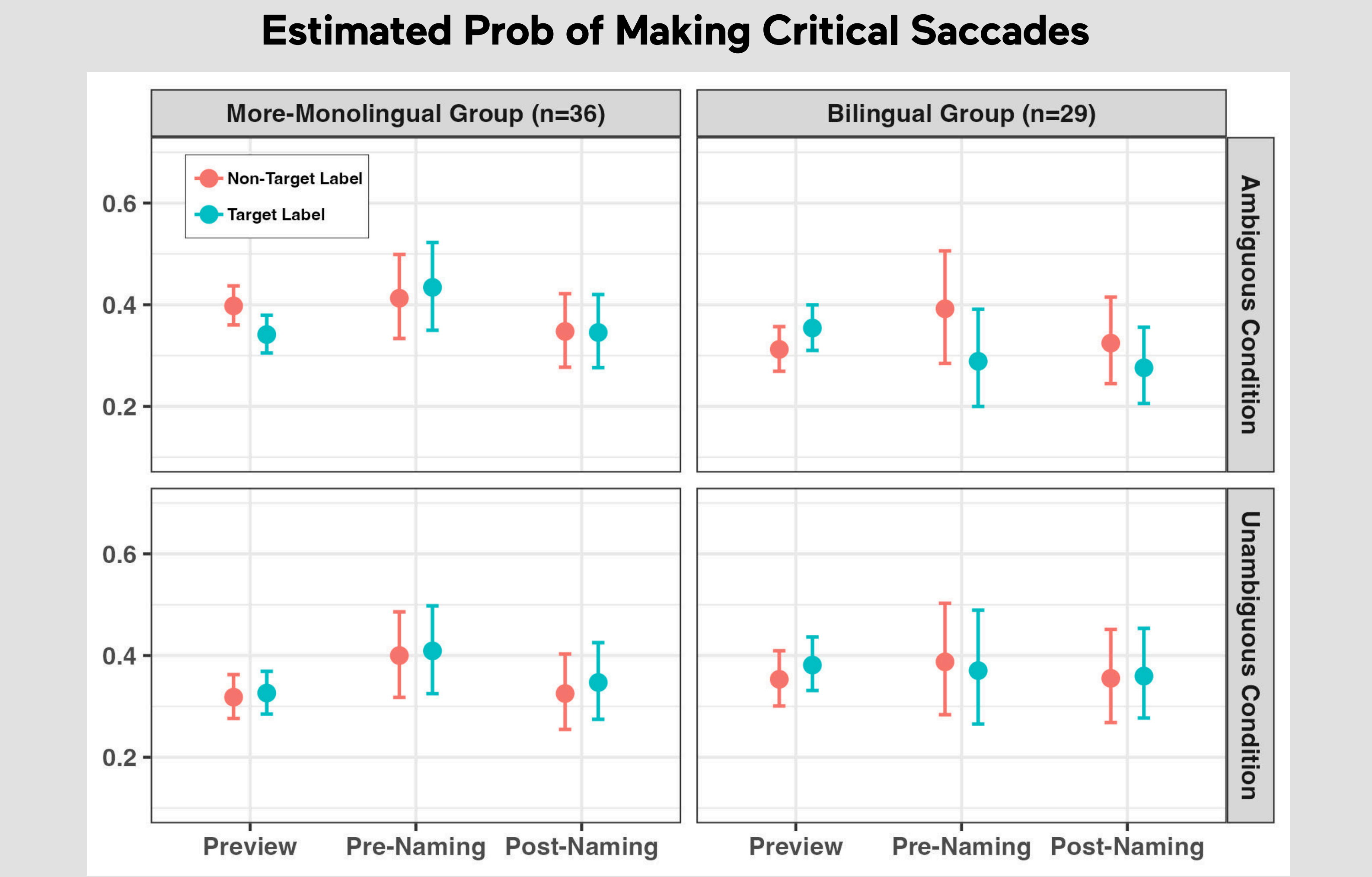


Results: Eye-tracking from Exp 2 (WebGazer)

Proportion (%) of Saccades between Images in Two Conditions



Model Estimation of Eye-tracking Saccades



- Bilinguals tended to direct early attention to image pairs with more accessible labels; more-monolinguals showed proactive monitoring of ambiguity depending on response types.
- These findings support Hypothesis 2.

Reference: [1] Liu, Y., Sorace, A., & Smith, K. (under review). Mandarin speakers undergoing attrition produce more explicit referring expressions. [2] Lozano, C. (2018). The Development of Anaphora Resolution at the Syntax-Discourse Interface: Pronominal Subjects in Greek Learners of Spanish. Journal of Psycholinguistic Research 47, 411–430. [3] Sorace, A. (2019). L1 attrition in a wider perspective. Second Language Research, 36(2), pp. 203–206. [4] Rabagliati, H., & Robertson, A. (2017). How do children learn to avoid referential ambiguity? Insights from eye-tracking. Journal of Memory and Language, 94, 15–27.