

## When Switching Gets Harder: Morphosyntactic Category, Constituent Size, and Acceptability in English–Mandarin Code-Switching

**[Introduction]** Code-switching, the use of two languages within one utterance—offers a window into bilingual grammar. Prior work argues that acceptability decreases as the switched constituent grows, reflecting rising integration costs (Poplack 1980; Muysken 2000; Myers-Scotton 2002), but most evidence comes from typologically similar language pairs. Focusing on English–Mandarin, this study investigates how morphosyntactic category (noun/verb/adjective/adverb) and constituent size (word/phrase/clause) interact to shape code-switching.

**[Data Collection]** We conducted an acceptability judgment experiment on Prolific. Participants were asked to make binary acceptability judgments for each sentence: *Natural* and *Unnatural*, encoded as 1 and 0 respectively for data analysis (Figure 1). Thirty-two target sentences were presented in both character-based and pinyin-based formats to examine modality effects (Table 1, 2). Each section also included eight filler items (four fully English and four fully Mandarin sentences) as attention and proficiency checks. Filler items are either clearly ungrammatical (e.g., \*我把瓶子里的水了) or grammatical (e.g., “I’m feeling a bit under the weather today.”) and proficient bilinguals were expected to judge them consistently. An accuracy threshold of 87.5% was applied across the 16 filler judgments, i.e., responses with more than two incorrect filler judgments were excluded. After applying this criterion, a final sample of 20 participants was retained for analysis.

**[Results and Discussion]** Acceptability was compared across four matrix language and word order conditions: English matrix / English word order (E-E), Mandarin matrix / Mandarin word order (M-M), English matrix / Mandarin word order (E-M), and Mandarin matrix / English word order (M-E). In the matched conditions (E-E, M-M, Figure 2), code-switches involving nouns, verbs, and adjectives (adj) were rated relatively high in acceptability (word-level: 0.65-0.75, higher than phrase-level: 0.4-0.8), echoing previous studies that larger constituents often incur greater integration costs. However, we also found that code-switches involving adverbs (adv), adverb phrases (AdvP) were judged relatively less acceptable, even lower than clause-level switches in E-E (see (7), (17) in Table 1). This pattern indicates that code-switching acceptability is not determined solely by constituent size. Despite being word-level elements, adverbs are selectionally and scope-dependent, requiring specific hosts (e.g., VP) and positions tied to word order (e.g., pre-verbal); therefore, adverb switches can behave like larger structural interventions. In the crossed conditions (E-M and M-E, Figure 3), acceptability is consistently higher in the Mandarin matrix–English word order (M-E) condition than in the English matrix–Mandarin word order (E-M) condition, with PP switches rated lowest and clause switches highest across both configurations. This pattern suggests again that code-switching acceptability is not solely determined by constituent size alone.

**[Summary]** This study shows that code-switching acceptability in English–Mandarin bilinguals is jointly shaped by morphosyntactic category, matrix language, and word order, rather than by constituent size alone. In a language pair with substantial structural divergence, even relatively small constituents, including word-level adverbs and certain phrase-level categories, can incur high structural integration costs due to scope, attachment, and ordering requirements. (*word counts: 486 words*)

## Supplemental materials

Switch type	English matrix / English word order (E-E)	Mandarin matrix / Mandarin word order (M-M)
Single word – Verb	(1) Can you 下载 this file? (“ <i>Can you download this file?</i> ”)	(2) 你可以 check 一下我们的 bill 吗? (“ <i>Can you check our bill?</i> ”)
Single word – Noun	(3) I left my 钥匙 at home. (“ <i>I left my keys at home.</i> ”)	(4) 我们需要买一下 groceries. (“ <i>We need to buy some groceries.</i> ”)
Single word – Adjective	(5) This new app is really 方便. (“ <i>This new app is really convenient.</i> ”)	(6) 这部剧真的很 funny. (“ <i>This drama is really funny.</i> ”)
Single word – Adverb	(7) She left 马上; it starts to rain. (“ <i>She left; immediately it started to rain.</i> ”)	(8) 这家店的冰淇淋真的 very 好吃. (“ <i>This shop’s ice cream is really very tasty.</i> ”)
Phrase – PP	(9) We met 在公园. (“ <i>We met in the park.</i> ”)	(10) 我们 at the park 见面. (“ <i>We met at the park.</i> ”)
Phrase – NP	(11) They brought us 一些食物 last week. (“ <i>They brought us some food last week.</i> ”)	(12) 他们上周带了 some food. (“ <i>They brought some food last week.</i> ”)
Phrase – VP	(13) My sister wants to 看动画. (“ <i>My sister wants to watch cartoons.</i> ”)	(14) 你能 check the schedule 吗? (“ <i>Can you check the schedule?</i> ”)
Phrase – AdjP	(15) This design 非常漂亮. (“ <i>This design is very beautiful.</i> ”)	(16) 这家店的冰淇淋真的 very good. (“ <i>This shop’s ice cream is really very good.</i> ”)
Phrase – AdvP	(17) He finished the task 很快地. (“ <i>He finished the task very quickly.</i> ”)	(18) 他 so quickly 完成了任务. (“ <i>He finished the task so quickly.</i> ”)
Relative clause	(19) The person who 昨天吃火锅 is my friend. (“ <i>The person who ate hotpot yesterday is my friend.</i> ”)	(20) Eating hotpot yesterday 的长头发小姑娘是我的朋友. (“ <i>The long-haired girl who ate hotpot yesterday is my friend.</i> ”)

Table 1. Sample target items of the English matrix–English word order (E-E) and Mandarin matrix–Mandarin word order (M-M) conditions<sup>1</sup>

Switch type	English matrix / Mandarin word order (E-M)	Mandarin matrix / English word order (M-E)
Phrase – PP	(1) We 在公园 met. (“ <i>We met at the park</i> ”)	(2) 我们见面at the park. (“ <i>We meet at the park.</i> ”)
Phrase -AdvP	(3) He 很快地 finished the tasks. (“ <i>He finished the tasks very quickly.</i> ”)	(4) 他完成了任务so quickly. (“ <i>He finished the tasks very quickly.</i> ”)
	(5) 昨天吃火锅的girl with long hair who sat	(6) 那个人who ate hotpot yesterday is my

<sup>1</sup> English translations of each target item were given in the parathesis.

Relative clause	next to me is my friend. ( <i>“The girl who ate hotpot yesterday with long hair who sat next to me is my friend.”</i> )	friend. ( <i>“That person who ate hotpot yesterday is my friend.”</i> ) <sup>2</sup>
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Table 2. Sample target items of the English matrix–Mandarin word order (E-M) and Mandarin matrix–English word order (M-E) conditions

Please respond whether those sound natural or not

	Natural	Unnatural
Can you 下载 this file?	<input type="radio"/>	<input type="radio"/>
I left my 钥匙 at home.	<input type="radio"/>	<input type="radio"/>
This new app is really 方便	<input type="radio"/>	<input type="radio"/>
She left 马上 it starts to rain.	<input type="radio"/>	<input type="radio"/>
We met 在公园	<input type="radio"/>	<input type="radio"/>

Figure 1. A screenshot of the survey presented to participants

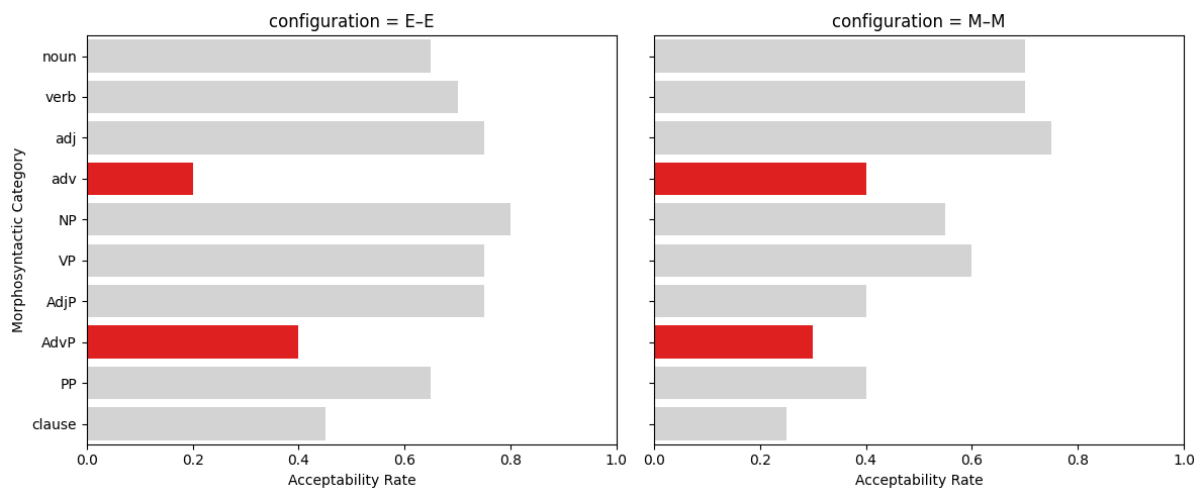


Figure 2. Acceptability ratings by morphosyntactic category in the English matrix–English word order (E-E) and Mandarin matrix–Mandarin word order (M-M) conditions

<sup>2</sup> Item (6) was not as intended to be a Mandarin-matrix sentence, due to human error when preparing the survey. We will fix it in the following studies. The intended sentence should be “那个人 who ate hotpot 是我的朋友”。

### Category Acceptability in E-M and M-E Configurations

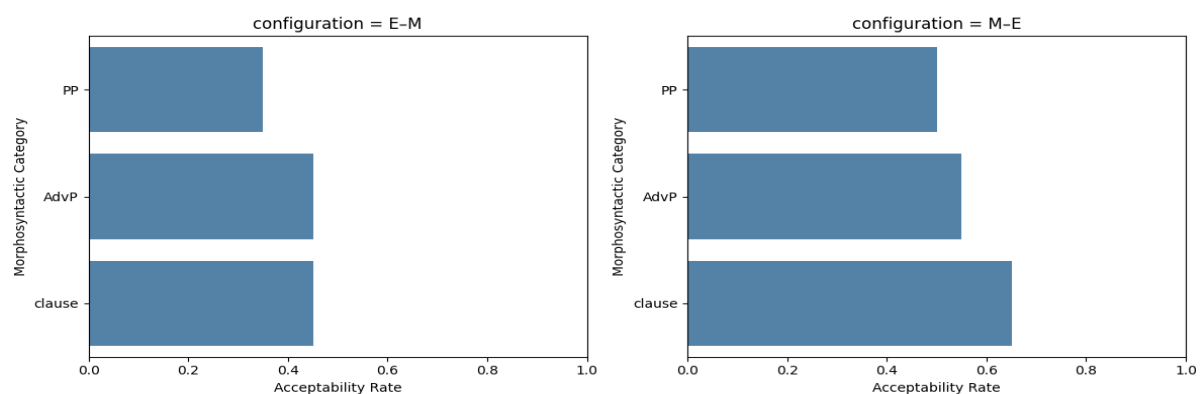


Figure 3. Acceptability ratings by morphosyntactic category in the English matrix–Mandarin word order (E-M) and Mandarin matrix–English word order (M-E) conditions

#### [References]

- [1] Poplack, Shana. 1980. *Sometimes I'll start a sentence in Spanish y termino en español: Toward a typology of code-switching*. *Linguistics* **18**(7–8). 581–618.
- [2] Muysken, Pieter. 2000. *Bilingual Speech: A Typology of Code-Mixing*. Cambridge: Cambridge University Press.
- [3] Myers-Scotton, Carol. 2002. *Contact Linguistics: Bilingual Encounters and Grammatical Outcomes*. Oxford: Oxford University Press.