

Dialect use, agency belief and lexical alignment in interactions with computerized partners

Lexical alignment, or speakers repetitive use of names that their conversational partner has used previously (e.g. to use *glove* rather than *mitten* after hearing the partner use *glove*), is essential to the success of communication. In this paper, we focus on the lexical alignment in people's interaction with computerized partners. The purpose of the current study is twofold: 1) to examine whether dialectal accented speech may encourage/discourage lexical alignment when interacting with a computerized partner, and 2) whether dialectal accented speech functions to the same extent when people perceived the computerized partner as 'computer' or as 'human'.

We present a 2*2 between-subject experiment in which participants played a picture-naming and –matching task with a computerized interlocutor that spoke in either Henan dialectal (a regional dialect in north China) or standard Mandarin accent (Accent variable) in Chinese dialogue context and that they perceived the partner as a human or a computer (Agency belief variable). Henan dialectal or standard Mandarin accent share the same *pinyin* but differ in tones (see Table 1). The participants were 132 native speakers of Mandarin and Henan dialect, aged 18-22 years (Mean = 18.73, SD = 0.78, 90 female). All the participants are bilingual speakers of Mandarin and Henan dialect.

In the task, participants name and select pictures with the computerized confederate in turn. The confederate always initiated the critical trials by generating a strongly favored name or a strongly disfavored but acceptable name for the object on the prime picture, e.g. *glove* vs. *mitten*. After a few filler trials, an identical picture was to appear for participants to name. We observed whether participants repeat the name the confederate used previously. In *Computer partner condition*, they were told to play the game with the dialogue system that would automatically generate names for pictures vocally and select pictures in response to the names they gave. In *Human partner condition*, they were instructed to play the game with another participant via internet. Participants were also informed that their partner would spoke in Mandarin accent in *Mandarin condition* and in Henan dialectal accent in *Dialect condition*. In reality, both the computer confederate and the human confederate were a program with pre-recorded voices.

Mixed effects model results showed that 1) there was a significant increase of the likelihood to align with the perceived Computer partner compared with aligning with the perceived Human partner in Mandarin accent condition ($z = 3.318, p = 0.001$). This finding is consistent with the findings in previous research, supporting a communicative design component to alignment. That is, people perceived the computer partner having limited communicative capability and aligned more to achieve communicative success. 2) There is a significant interaction between the levels of Agency belief and Accent ($z = -2.189, p = 0.029$) (see Figure 1). When participants believed their dialogue partner was a computer, there was a stronger alignment in the Mandarin condition than in the Dialect condition ($z = -3.805, p < 0.001$). However, when participants believed they were interacting with a human, there was no significant difference in the strength of alignment in Mandarin and Dialect conditions ($z = -0.886, p = 0.376$). This finding suggests that social factor (i.e. dialect use) is more salient in modulating lexical alignment when interacting with a computer than when interacting with a human.

The findings support the claim that social factors, e.g. dialect use and belief of conversational partner can influence language processing, and should be taken into consideration for psycholinguistics theoretical accounts of linguistic priming.

Table 1 Four tones change from Mandarin to Henan dialect

Mandarin		Henan dialect	Examples	
1	→	2	tiān	tián
2	→	4	hé nán rén	hè nán rèn
3	→	1	nǐ hǎo	nī hǎo
4	→	3	dì	dǐ

Table 2 Proportions of Disfavored name response in each condition

Group	Favored prime	Disfavored prime	Alignment effect
Computer-Mandarin	0.034	0.872	0.838
Computer -Dialect	0.103	0.782	0.679
Human-Mandarin	0.073	0.685	0.612
Human-Dialect	0.085	0.651	0.566

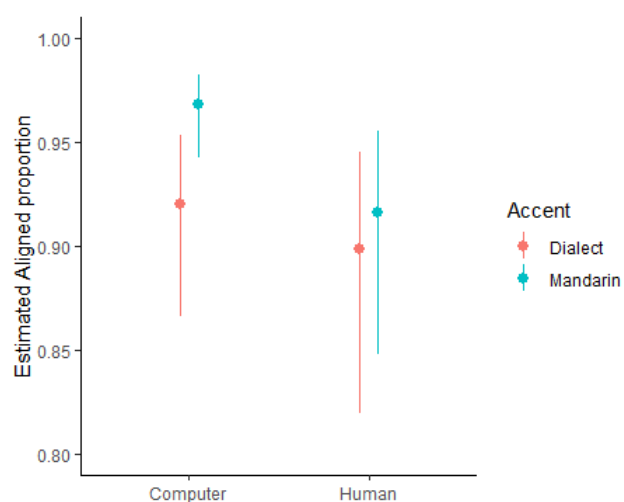


Figure 1 Model-estimated means of aligned proportion in each condition