Structural convergence in spoken English discourse

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Abstract

This study extends the logic of prior studies showing phonetic convergence between interlocutors to the structural domain. We ask whether listeners' adaptation of the syntactic forms they produce depends on how they perceive their interlocutor on measures of interpersonal similarity. Structural priming was used to assess the extent in which interlocutor characteristics influence structural convergence in dialogues between native speakers of different varieties of British English (Lancashire and South-East). Our findings suggest that structural priming is mediated by a speaker's perception of their similarity to their interlocutor, as assessed based on sociolinguistic cues.

Keywords: structural priming, dialogue, native English speakers, sentence production

Introduction

Multiple lines of research show that interlocutors readily adapt to each other in dialogue. For example, phonetic convergence is observed in interactive conversation and word-shadowing (Goldinger 1997). Such adaptation can be modulated by listeners' perceptions of interlocutor characteristics, like voice, gender, nativeness (Babel & McGuire 2015; Kim et al. 2011). Similarly, lexical alignment reflects speakers' perception of interlocutors' in-/out-community status (Tobar-Henriquez et al. 2021). Structural priming – the tendency of a speaker to produce a syntactic alternant that they have used previously – can also be socially mediated by, for example, social desirability or accent typicality (Fraundorf & Jaeger 2016; Hwang & Chun 2017; Kim & Chamorro 2021). This study extends this research by asking whether any structural priming observed between native British English speakers depends on how one interlocutor perceives the other on interpersonal similarity measures.

Methodology

We created a computer-based picture-matching game to elicit descriptions of ditransitive events. The task was a dialogue version of the picture-description task used in classical structural priming studies (Bock, 1986). Participants (n=29) saw a series of pictures on a screen. They were told to determine whether pictures matched those of the other "player", who was a confederate, used only double object (DO) forms, and conversed with the participant over headsets from another room.

A verbal-guise task (Cooper 1975; Zahn & Hopper 1985) assessed participant's impressions about the two confederates before the experiment. Participants first heard a recording of a speaker from South-East England and provided judgments about the speaker's attributes (e.g. attractive, trustworthy) on a 1-7 scale. The process was repeated for a Lancashire speaker. This yielded 15 scores (one per attribute) for each speaker, for each participant, creating a vector of scores for each attribute. We used principle components analysis to reduce original attributes to nine (PC1-9), which explained 95% of the score variance. Participants also marked their hometown and where they thought the confederates were from on a map (Map distance). Participants were assigned randomly to one of the confederates to play the game with.

A logistic mixed-effects regression model predicting DO responses was used to analyse the responses; predictors included: lexical bias (verb's bias toward the prepositional dative (PD) form, from a norming study), trial, verb distribution (whether only alternating verbs were used, or included non-alternating verbs), PCs 1-9, map distance, lexical overlap (whether the verb in the current trial matched the verb on the previous trial), and two-way and three-way interactions. Model comparison was used to remove terms that did not contribute to model fit; the maximal random effects structure supported by the data was used.

Results

There was a strong main effect of lexical bias (β=-5.22, SE=0.80, $p<0.0001$), with DO forms less likely to be produced the more strongly PD-biased the verb was. The lexical bias effect weakened over trials (β=0.046, SE 0.018, $p<0.001$), suggesting that with sufficient exposure, even strongly PD-biased verbs became more likely to be used in a DO sentence (for Trial=μ_{Trial}-1SD: β=-6.14, SE=0.88, $p<0.0001$; for Trial=μ_{Trial}+1SD: β=-4.21, SE=0.86, $p<0.0001$). There was also a PD-bias:Verb distribution interaction (β=-1.39, SE=0.56, $p<0.05$), with alternating-only lists showing a greater negative effect of strong PD-bias relative to full distribution lists (for full distribution: β=-3.84, SE=0.62, $p<0.0001$; for alternating only: β=-6.61, SE=1.23, $p<0.0001$). This suggests that prior lexical knowledge can be relied on more heavily for alternating-only lists, where it is never violated; by contrast, for full-distribution lists, half of the confederate's sentences would go against the participant's prior lexical knowledge. This dependence of PD-bias on Verb distribution weakened over the course of the experiment (β=0.038, SE=0.018, $p<0.05$).

The effect of perceived similarity with the speaker was shown most directly by the main effect of Map distance (β=-0.085, SE=0.034, $p<0.05$), with participants producing fewer DO structures as their estimate of the map distance between their hometown and the speaker's increased. In addition, PCs 2 (β=0.19, SE=0.12, $p<0.05$), 5 (β=0.29, SE=0.13, $p<0.05$), 8 (β=-0.65,

SE=0.16, p<0.0001) and 9 (β=0.71, SE=0.25, p<0.001), which encoded participants' perceptions of speaker-specific attributes, influenced how likely participants were to produce DO sentences.

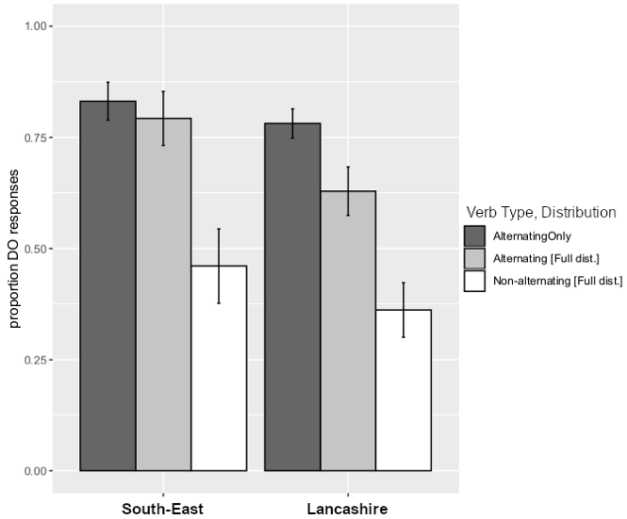

Figure 1. Mean proportions of DO productions by Speaker type.

Finally, there was a strong negative main effect of Lexical overlap (β=-0.18, SE=0.032, p<0.0001), with fewer DO forms associated with lexical repetition trials overall. This is in the opposite direction of the general lexical boost pattern reported in prior studies. However, the marginal interaction of Lexical overlap, Map distance, and Trial (β=0.00088, SE=0.00052, p<0.1) points at a possible explanation: while no-overlap trials show a Map distance effect that remains relatively stable throughout the trials, overlap trials show a marked decrease in the Map distance effect over trials. In other words, participants started out being reluctant to use the same form for adjacent trials with the same verb (some of which would have required producing an anomalous sentence), and this reluctance was more pronounced when the interlocutor was perceived to be from further away from the participant. This dependence of Lexical overlap on Map distance weakens as trials progress.

Discussion

This study was aimed at investigating whether speakers' perceptions of their proximity with their interlocutor influenced structural convergence. The main effects of principle components 2, 5, 8 and 9 suggest that judgments made by the participants of individual personality attributes based on the speaker's voice influenced how likely they were to produce DO sentences.

A main effect of Map distance was also revealed. This effect was found across the board, with participants producing fewer DO structures when their perceived distance between their hometown and the speaker's increased. This does not necessarily suggest that speakers "trusted" the competence of their interlocutors more when they perceived them to be similar (small Map distance) to them, and less when they perceived them to be dissimilar (larger Map distance); that is, instead of a trade-off (i.e. relying on own prior knowledge v. interlocutor's competence, which would have appeared as a PD-bias:Map distance interaction), participants just showed less convergence overall with more distant interlocutors. Similarly, Map distance did not interact with Verb distribution. Such an interaction might have been observed, for instance, if participants were seeking an explanation for the atypical distribution of sentence forms in the full-distribution lists (i.e. those containing alternating and non-alternating verbs), and attributed the grammatical anomalies to the speaker's distance (and therefore dissimilarity) from themselves. However, in our data, the Map distance effect was no stronger for full distribution than alternating-only lists.

With regards to the interactions involving Verb distribution, the stronger PD-bias effect for alternating-only compared to full-distribution lists suggests that prior lexical knowledge is used more when it is more reliable in context (as it is for alternating-only lists). In addition, a reliable lexical boost was observed for lists with only alternating verbs, but not for lists featuring the full distribution, suggesting that the lexical boost relies to some extent on the output form being well-formed.

Overall, the findings reveal that speakers' reliance on prior lexical knowledge shifts with a number of contextual factors, including the overall distribution of well-formedness in the discourse context, the perception of similarity/distance with the interlocutor, and perceived non-linguistic attributes of the interlocutor. We suggest that structural convergence can be modulated by interlocutor-specific sociolinguistic and social information.

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