Semantic effects in bivarietal picture naming

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Picture-word interference (PWI) is a common paradigm for studying lexical retrieval in word production, which has been used in both mono- and bilingual studies. Language variation, however, has rarely been addressed in lexical-access research. Previous results with two German varieties found no cross-varietal facilitation from meaning-identical distractors, and from first to second variety even interference, but were inconclusive for semantic distractors [1,2]. In German-speaking Switzerland, the majority of people are bivarietal in that they are fluent in both a Swiss dialect and Standard German (SG) - two German varieties that are functionally and linguistically clearly distinct. This diglossic situation lends itself perfectly for conducting psycholinguistic experiments with different language varieties. We conducted two PWI experiments in Bernese German (BG, first variety) and SG to examine the semantic effects within and between varieties as a function of response variety. Semantic effects can be interference or facilitation [3].

Native BG-speaking students named 16 pictures in either BG (Exp.1, n=28) or SG (Exp. 2, n=28) (RESPONSE VARIETY). Written distractors were superimposed simultaneously. Distractors were either semantically related or unrelated to the target name (DISTRACTOR TYPE) and either BG or SG (DISTRACTOR VARIETY). Each picture appeared in every condition. Responses and distractors were matched for word length between conditions. Three items and the data of three participants were excluded from the analysis, as they elicited or produced too many unexpected responses or RT outliers, respectively.

To analyze the overall effects of distractor type and distractor variety and their interaction with the response variety, we pooled the data from both experiments together. A 2x2x2 ANOVA with repeated measures (RESPONSE VARIETY as a between-subjects factor) revealed no significant main effects of DISTRACTOR TYPE or DISTRACTOR VARIETY (Fs<1). The interaction between DISTRACTOR TYPE and DISTRACTOR VARIETY was significant by participants ($F1(1,51)=5.49,p=.023$; $F2(1,24)=4.10,p=.054$), indicating an opposite effect of BG and SG distractors: semantic interference for BG distractors and semantic facilitation for SG distractors. The interaction between DISTRACTOR VARIETY and RESPONSE VARIETY was significant in both analyses ($F1(1,51)=5.51,p=.023$; $F2(1,24)=4.84,p=.038$), with participants being faster in naming pictures with distractors in the response variety. No other interaction was significant (Fs<1).

To analyze the specific effects within each response variety further, we performed separate 2x2 ANOVAs with repeated measures for each experiment. For BG as response variety (Experiment 1), the DISTRACTOR TYPE by DISTRACTOR VARIETY interaction was again significant for participants ($F1(1,26)=5.15,p=.032,\eta^2=.05$; $F2(1,12)=3.69,p=.079,\eta^2=.07$), revealing semantic interference within BG (+19ms), but semantic facilitation from SG distractors (-16ms). For SG as response variety (Experiment 2), there was a main effect of DISTRACTOR VARIETY, significant again for both participants and items ($F1(1,25)=4.36,p=.047,\eta^2=.05$; $F2(1,12)=6.75,p=.023,\eta^2=.13$), indicating a general interference from BG distractors compared to SG distractors (+16ms).

The differential semantic effects of Bernese-German and Standard-German distractors, with opposite directions, suggest that lexical activation spreads across items from both German varieties, but that only BG lexical items enter into lexical competition. According to the "response relevance" hypothesis [4], semantically related distractors that are no context-appropriate responses facilitate naming. Following this line of thought, the semantic facilitation from SG distractors when naming pictures in Bernese can be assumed to reflect activation spreading without response competition. The fact that both semantically related and unrelated Bernese-German distractors interfere with Standard-German object naming indicates that the BG variety needs to be inhibited for SG language production.

References

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