Native-like semantic priming for second language homonyms in bilinguals

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INTRODUCTION

Vocabulary acquisition is a key part of second language (L2) learning. Homonyms, words with two distinct meanings (e.g., ruler), are often difficult to learn (e.g., Degani & Tokowicz, 2010). Homonym processing can be studied using priming. If a given meaning of a homonym prime word is activated, processing of a subsequent target word related to that meaning is facilitated (through a process of spreading activation). In proficient, but not intermediate, bilinguals, L2 homonyms prime targets related to both their dominant (e.g., inch) and subordinate (e.g., king) meanings, as shown by faster and more accurate responses, similar to monolingual controls (Frenck-Mestre & Prince, 1997). In monolinguals, this homonym priming effect has also been indexed by reduced amplitude of the N400 component of the ERP waveform to related, as compared to unrelated, targets (Klepousniotou et al., 2012). Here, we compared the homonym priming effects in proficient bilinguals (reading in their L2) and monolingual controls (reading in their L1) using both behavioral and ERP measures.

METHODS

Participants: College students: 18 English monolinguals; 18 proficient Spanish-English bilinguals, exposed to English at average age of 5.1 years

Design:
• Primes: 39 biased homonym primes (e.g., ruler)
• Targets: dominant associate (e.g., INCH), subordinate associate (e.g., KING), unrelated word (e.g., CLAW), or nonword (e.g., SMLOLE)
• 250 ms SOA (time between prime and target)
• Lexical decision (i.e., word or nonword) for targets

ERP recording: 32 channels, bandpass .01-100 Hz, sampling rate 4 ms

Data analysis: ANOVAs on RTs, accuracy, N400 amplitude (300-500 ms); pair-wise dominant vs. unrelated and subordinate vs. unrelated follow-up comparisons

RESULTS

Reaction times
• Faster for both dominant (p < .001) and subordinate (p < .01) associates compared to unrelated targets
• Similar priming for both groups and meanings (ps ns)

Accuracy
• More accurate for dominant (p < .05) associates, but not subordinate associates (ns), compared to unrelated targets
• Similar overall accuracy and priming effects for both groups (ps ns)

N400: Dominant vs. Unrelated
• Smaller amplitude N400 for dominant associates compared to unrelated targets, especially over posterior right hemisphere sites (p < .01)
• Similar dominant priming for both groups (all ps ns)

N400: Subordinate vs. Unrelated
• Smaller amplitude N400 for subordinate associates compared to unrelated targets, especially over posterior, lateral, left hemisphere sites (p < .05)
• Similar subordinate priming for both groups (all ps ns)

CONCLUSIONS

• Both behavioral and ERP measures indicate that both meanings of biased homonyms are primed in monolinguals reading in their L1 and proficient bilinguals reading in their L2
• Similar priming effects between groups suggest native-like automatic spreading of activation to both meanings of biased L2 homonyms in proficient bilinguals
• Bilinguals can attain native-like proficiency in homonym processing

REFERENCES


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