Cross-linguistic Interference in L2 Sentence Production.

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In bilingual language production research little attention has been paid to sentence processing, in particular how bilinguals conceptualise a message and its impact on L2 sentence formulation. Thus, we (1) investigate whether bilinguals can select and encode information that is strongly preferred in their L2 but not in their L1 (exp.1), and 2) examine the locus of cross-linguistic interference in L2 sentence production (exp.2 and 3). We make use of the well-studied cross-linguistic variation concerning motion events (Talmy, 2000) that indicates speakers across languages show different preferences about what information to include and its location in their sentences. For example, to describe the event (A) 'a penguin skiing into an igloo', languages like English typically encode manner information in the main verb (e.g., *A penguin is skiing into an igloo*), while languages like Spanish typically encode path information (e.g., *Un pingüino está entrando en un iglú*, 'A penguin is entering an igloo').

In Exp. 1, monolingual L1 English speakers (N=24; *L1 English*) and late fluent L1 Spanish-L2 English bilinguals (N=24; *L2 English*) freely described animations depicting boundary-crossing motion events like (A) (see Fig.1) in English and their utterances were compared to Spanish descriptions by L1 Spanish speakers (N=24; *L1 Spanish*). All participants were recruited online through Prolific. L1 English speakers were resident in the UK, while native Spanish speakers were living in Spain at the time of the experiment. Results show L1 English speakers included manner information more often than L1 Spanish speakers (95% vs. 87%; $p<.05$), however L2 English speakers did not differ from L1 Spanish in this comparison (76% vs. 87%; $p>.05$). Importantly, however, L1 English speakers and L2 English speakers were more likely to use a manner verb in their descriptions compared to L1 Spanish speakers (92% vs. 33%; $p<.001$ and 56% vs. 33%; $p<.05$) (Exp. 1b replicated this pattern in a lab setting with N=24/group). Therefore, the latter result indicates that bilinguals select and distribute relevant information of motion events in their L2 in ways that do not reflect their L1 preferences.

In Exp. 2, L1 English speakers (N=32) and Spanish-English bilinguals (N=32) from the same population of participants as Exp.1 described the same set of animations in English after reading aloud a prime sentence that contained a conceptual overlap with the target event with respect to either manner or path (e.g., *The girl is crawling happily* vs. *The boy is circling senselessly,* see Table 1*)*. Crucially, the verb was not repeated across prime/target. If L1 abstract representations affect L2 production, bilinguals should be less likely to mention manner information and use manner verbs less frequently, after path than manner primes, but L1 English should not show this sensitivity. We replicated Exp. 1's results for manner mention and use of manner verbs across groups. Importantly, neither L1 English nor bilinguals were less likely to mention manner information or use manner verbs after path primes (see Figure 2) (Exp. 2b replicated this pattern in a lab setting with N=48/group). These results suggest that bilinguals did not access their L1 representations of the target events (i.e., encoding path) during L2 production by evoking the abstract representation of path before speech production.

Experiment 3 was a version of Exp. 2 with the critical difference that sentence primes included both conceptual and lexical overlap with the target event for manner and path conditions (e.g., *The man is skiing skilfully* vs. *The nurse is entering quietly*). Bilinguals were less likely to mention manner information after primes indicating path compared with primes containing manner information (73% vs. 84%; $p<.05$). In contrast, L1 English did not show any differences across primes for manner mention (98% vs. 98%; $p>.05$). Additionally, L2 speakers were less likely to use a manner verb after path primes than after manner primes (51% vs. 70%; $p<.001$), whereas L1 speakers did not show this priming effect (94% vs. 87%; $p>.05$). However, in both analyses the interaction term did not reach significance indicating that bilinguals were not affected by prime type differently from L1 English. We suggest cross-linguistic interference in bilinguals was lexically mediated with consequences at the conceptual level. Bilinguals' production of L2 sentences was based on their experience of L2 patterns for motion events, and any difference in the frequency of manner verbs compared with L1 English is due to a bilingual disadvantage for lexical retrieval.

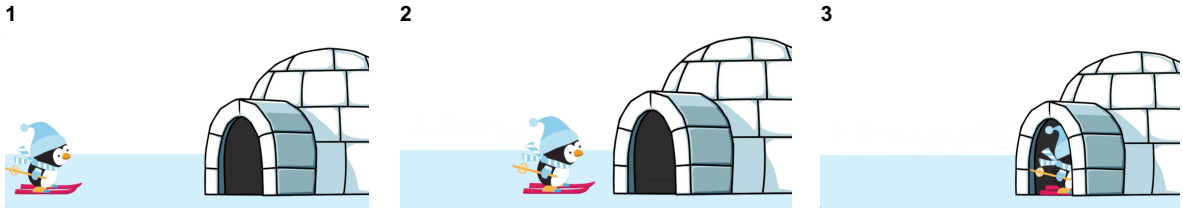

Figure 1. Example of a target motion animation representing the event *A penguin skiing into an igloo* used in all experiments: (1) start, (2) middle , and (3) end of the video.

Target Event: A penguin skiing into an igloo.	**Manner Prime**	**Path Prime**
Experiment 2: Conceptual overlap only	The girl is **crawling** happily.	The boy is **circling** senselessly.
Experiment 3: Conceptual and lexical overlap	The man is **skiing** skillfully.	The nurse is **entering** quietly.

Table 1. Examples of sentence primes used in Experiments 2 and 3.

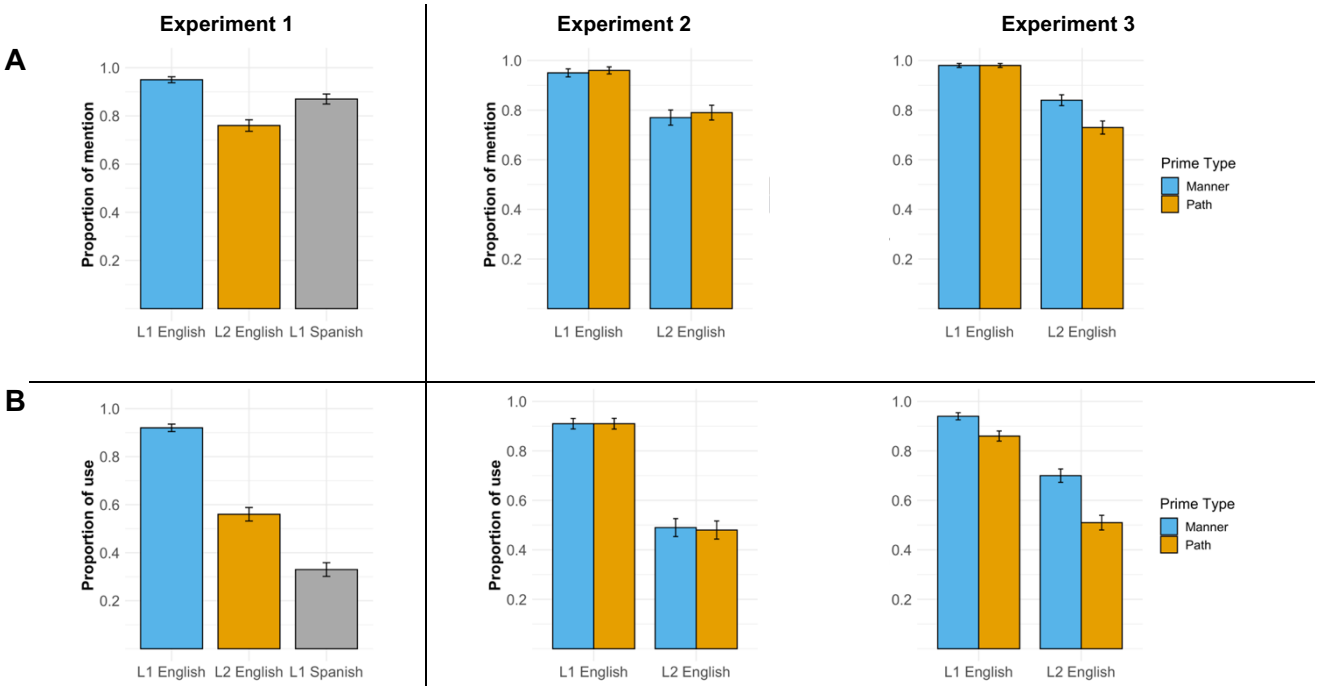

Figure 2. Mean proportion of manner mention (panel A) and use of manner verbs (panel B) in motion descriptions in experiment 1 (baseline), experiment 2 (conceptual priming), and experiment 3 (lexico-conceptual priming).

References.

Talmy, L. (2000). Toward a cognitive semantics: Volume II Typology and process in concept structuring. Cambridge, Mass.: MIT Press.