Report on Joanna Durlik's doctoral thesis "How do language proficiency and immersion experience

modulate interference between languages?"

By Susan C. Bobb

Summary of the Study: The present dissertation addressed two broad areas of interest in the field of

bilingualism. The first is the impact of immersion on how bilinguals navigate cross-language

competition/interference between their languages. The second is the role that individual differences

play in mediating effects of interference and mechanisms of cognitive control. To investigate these

questions, Durlik's doctoral thesis tested two groups of bilinguals of comparative L2 proficiency as

measured by the LexTALE English lexical decision task. The first group was an immersed group of L1

Polish speakers immersed in their L2 English. The second group was a group of L1 Polish speakers living

in Poland who were L2 speakers of English. Participants completed a verbal fluency task in Polish,

English LexTALE task, an English homograph semantic relatedness judgment task to measure cross-

linguistic interference, English verbal fluency tasks, and an English picture naming task. English tasks

were followed by a nonlinguistic AX-Continuous Performance Task to measure cognitive control

strategies being used. Participants then completed L1 Polish versions of the homograph task, picture

naming task, LexTALE, and self-assessment questionnaires of language proficiency and use.

Results replicated some previous findings with lower proficiency immersed L2 learners where immersed

participants demonstrated weaker L1 performance (i.e., slower and less accurate performance) on

production tasks than non-immersed bilinguals but stronger (i.e., faster and more accurate) L2 performance. Results from the homograph task looking at Pair 1 revealed that for the immersed group but not the non-immersed group, participants demonstrated greater slowdowns for the homograph condition in Polish (L2 to L1 interference) than in English. For the immersed but not the non-immersed group, having a stronger L1 dominance (based on performance on the semantic verbal fluency task) predicted experiencing increased interference from the L1 to the L2. Different patterns of interference were observed for response times and accuracy indices. Looking at Pair 2, both immersed and non-immersed groups responded more slowly to Pair 2 when it was preceded by a homograph in Pair 1. For both groups, the effect was larger in the L1 Polish than the L2 English. But there were no significant interactions between Pair 1 and different conditions in Pair 2 for either group. Results from the AX-CPT demonstrated that both groups relied on proactive control.

Specific Comments on the novelty/originality: Durlik's research design improves on other studies in several ways. First, Durlik includes a measure of cognitive control, the AX-CPT. The AX-CPT is non-linguistic in nature and therefore well suited to investigate the link between general cognitive control abilities and bilingual cross-language interaction. There is wide recognition that an immersive environment changes a language user's access to both languages, and cognitive control strategies may be one variable impacting language performance. The field has increasingly investigated the link between cognitive control and bilingual language processing (Beatty-Martínez et al., 2020; Grundy, 2020; Zirnstein et al., 2018). Previous research on highly proficient bilinguals has demonstrated the

importance of language contexts (Beatty-Martínez et al., 2020), uncertain environments (Gullifer & Titone, 2021), and even overt training in how to switch languages (Zhang et al., 2015). Together, these findings suggest that a variety of linguistic experiences impact cognitive control, and that cognitive control itself may influence language use. Recent findings by Luque and Morgan-Short (2021) demonstrate relationships between reactive control as measured by the AX-CPT, and overall L2 proficiency as measured by DELE, verbal fluency, and EIT tasks. Thus Durlik's approach is comprehensive and in keeping with current trends in the field.

Another significant contribution of Durlik's dissertation is the language group comparison in which two more typologically distant languages are compared. The field of bilingualism has increasingly recognized the importance of replicating effects across different language pairings. Durlik's contribution to the field is important in the respect that several researchers have suggested languages with less typological overlap may have an easier time managing cross-language interference. Studies with languages that have different scripts (Hoshino & Kroll, 2008) or even modalities (Morford et al., 2011) and gesture systems (Brown & Gullberg, 2008) have similarly found that cross-language activation cannot be attenuated on these differences alone. Immersed and non-immersed groups were also carefully matched, allowing for direct analytical comparisons across the groups.

Further, Durlik replicates previous findings with a more proficient bilingual sample. In the literature, some studies with lower proficiency immersed L2 learners have found that immersed learners seem to

take a temporary "hit" to their L1 compared to non-immersed L2 learners, inhibiting access to their dominant language while in the immersed L2 environment (Linck et al., 2006). Other research with more proficient bilinguals has not found this same pattern (e.g., Casado et al., 2023). Durlik's study replicates the pattern of lower proficiency immersed L2 learners rather than of high proficiency bilinguals, despite the relative balance between languages in her sample as indicated by the calculated production indices. Durlik suggests future analyses evaluating word frequency, and this step would seem a logical continuation of the current study, while also considering the difference in age of arrival in the L2 environment across various studies. These findings provide further support for an account that moves beyond proficiency alone and forces us to consider other underlying mechanisms that may explain why the hit to the L1 appears in some contexts but not in others.

Specific comments on findings: Perhaps one of the most challenging aspects of the findings to explain is the participant insensitivity in both groups to the Pair 2 manipulations of the semantic judgment task. Especially because piloting suggested an effect could be found, it is puzzling why neither group appeared sensitive to this manipulation. Durlik puts forward two possibilities: first, that the words included in the translation condition were too difficult. The fact that less proficient bilinguals in a previous study also did not show the anticipated effect (Durlik et al, 2017) supports this possible interpretation. More intriguing is the possibility that participants in both groups were experiencing broader category interference, inhibiting an entire semantic category from Pair 1 to Pair 2. I agree with this possibility because previous work in bilingual picture naming has shown that naming pictures is sensitive to list

composition, with slower naming latencies for pictures organized according to semantic categories (Kroll & Stewart, 1994). A similar effect could be at play in the present experiments. It is interesting to note that looking at overall latencies for Pair 2 in the Polish homograph task, immersed bilinguals are overall slower to respond compared to non-immersed bilinguals. Perhaps cross-language interference is operating at a more global level for immersed bilinguals, and this data pattern may be worth considering further.

Bilingual studies have increasingly focused on various cognitive control measures as potential contributions to language control abilities. The AX-CPT has been of central interest with promising results coming from some sectors. And yet the AX-CPT findings of the current experiments are also not straightforward. In my own lab, recent findings in a translation-recognition task with less proficient bilinguals showed that participants who rely more on proactive rather than reactive goal maintenance experienced more interference (Bobb et al., 2023). We strongly suspect our findings are task dependent, and this may be the case in other studies as well, which could explain why in this task, Durlik did not find the anticipated relationship.

Specific Comments on future directions: Durlik's point that the degree of assimilation may help explain some of the data patterns is an intriguing one. According to this account, individuals who are more immersed in the L2 language and culture will experience less interference from their L1 than someone who maintains more contact to their L1 through codeswitching or continued contact to L1 groups. Some

studies have considered a switching index based on language switching frequency (Barbu et al., 2020; Prior & Gollan, 2011). Momentary language switches do impact cross-language activation (e.g., Gullifer & Titone, 2019). It stands to reason that this would also be the case with longer immersion. I agree with Durlik that evaluating the degree of participant cultural assimilation would be an important avenue for future research. The potential for an ordering effect is also plausible. Choosing a fixed order made sense in the context of the experiment makes sense, but in hindsight may have been problematic. I also wonder if Durlik achieved the power she needed to find the effects she was investigating. No mention is made of a power analysis, and finding additional participants with such a highly specific background would prove challenging, but perhaps a larger sample size would be helpful in clarifying the present findings.

Overall Evaluation: I very much enjoyed reading these studies. Durlik provided a comprehensive literature review that expertly situated the relevance of the question in the current understanding of bilingual language control. Seminal studies were carefully summarized, and their comparability assessed. The comprehensive literature review in itself makes a substantial contribution to the field by weighing potential connections between studies. The choice in tasks and their design was expertly reasoned. The analyses carefully executed. While several findings did not turn out as anticipated, Durlik's experiments push the field forward by asking us to reconsider some of the extant explanations of variables influencing cross-language interference and language control. There is increasing recognition that bilingualism is complex rather than unidimensional, dynamically shifting according to the language

user's context. Durlik captures this shift in the field by thoughtfully considering the bilingual's language context as well as participant's general cognitive mechanisms.

Concluding Statement: In conclusion, it is my opinion that Ms. Durlik has clearly demonstrated general theoretical knowledge in the discipline and the ability to conduct research independently. Further, I concur that the subject matter of the doctoral dissertation is an original solution to a scientific problem.

Sincerely,

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