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Is translation semantically mediated? Evidence from Welsh-English bilingual aphasia

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Background: The involvement of the semantic system in picture naming is undisputed. However, it has been proposed that translation could take place via direct lexical links between L1 and L2 word forms in addition to or instead of via semantics (i.e., with translation going from a spoken word in L1 accessing its meaning and this meaning then leading to the retrieval of the translation equivalent in L2). There is conflicting evidence in the psycholinguistic literature as to the extent of semantic mediation in translation vs. picture naming tasks (Potter et al, 1984; Kroll and Stewart, 1994). More recently, Hernandez et al (2010) investigated this question in a case study of JFF, a proficient bilingual Spanish-Catalan speaker with Alzheimer's disease and naming difficulties due to a semantic deficit. As JFF's semantic deficit did not only affect picture naming but also translation tasks, the authors concluded against the existence of functional direct lexical links to support translation. The goal of our study was to explore this issue further in a larger sample of proficient bilingual patients with aphasia and word finding difficulties in both languages. More specifically, we compare the rate of semantic errors produced in naming vs. translation tasks.

Hypotheses: If there is equal involvement of the semantic system in naming and in translation tasks, then there should be no difference in the rate of semantic errors produced in the two tasks. However, if there are at least partly functional direct lexical links between translation equivalents, then we should observe fewer semantic errors in translation than in naming.

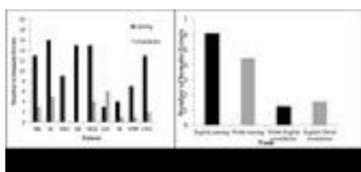
Participants. Nine Welsh-English early proficient bilingual aphasic participants were selected for participation. Each patient scored significantly lower ($p < .05$) than age-matched controls ($N=37$) on at least one task using the modified t-tests for single cases (Crawford & Howell, 1998), and made semantic errors on naming tasks in both languages. Although several of the patients demonstrated semantic impairment, the main difficulty was with word retrieval.

Methods: Picture naming and translation tasks were administered in each language. Each task included 80 items, matched across languages for frequency, word length and number of cognates; naming and translation probed the same words.

Results: Wilcoxon Signed Ranks Tests showed significantly fewer semantic errors overall in translation tasks compared to naming tasks within each language, English: $Z = -2.53$, $p = .004$; Welsh: $Z = -2.03$, $p = .020$. At the individual level, this effect was significant for 8 out of the 9 patients when semantic errors were compared to both overall errors and to overall number of test items (Fisher's exact test, $p < .01$).

Discussion: Eight out of 9 patients made significantly more semantic errors in a picture naming task compared to a translation task with the same target items. This is at odds with the findings of Hernandez et al (2010) and is consistent with the hypothesis that translation takes place, at least in part, via direct lexical connections between languages with reduced semantic mediation.

Figure 1



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