

# A Usage-Based Study of Preposition Pied-piping and Stranding: Effects of Phrasal Frequency and Collocational Strength

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In English *wh*-relative clauses, the placement of prepositions includes two options: preposition pied-piping (e.g., *Sam lost the credit card on which he relied*) and preposition stranding (e.g., *Sam lost the credit card which he relied on*) (Bardovi-Harlig, 1987). Pullum and Huddleston (2002, p. 629) proposed that the placement of prepositions in verb complement *wh*-relative clauses does not follow any simple rules, and “much depends on individual verb + preposition combinations”. However, there has not been any empirical study that has investigated what properties of verb prepositions affect preposition placement.

From a usage-based perspective, the current study is the first empirical study that investigates how frequency and collocational strength of verb-preposition phrases influence adult first language (L1) and second language (L2) speakers’ preference of preposition placement in English *wh*-relative clauses. Native speakers of Australian English (n = 20), Chinese-L1 learners at the intermediate level (n = 20, IELTS mean score = 5.8) and advanced level (n = 30, IELTS mean score = 7.3) of English proficiencies completed a sentence completion task (e.g., *Zoe learned a lot from the newspaper \_\_\_\_\_*. (Items: *she, which, to, subscribed*)) and an acceptability judgment task. Both tasks adopted a 2 verb-preposition string frequency (high vs. low) × 2 verb-preposition collocational strength (high vs. low) Latin-square factorial design. Sample task stimuli are in Table 1.

The results showed that L1 and L2 speakers had an overall preference for preposition stranding in sentence production and acceptability judgment. Native speakers had a stronger acceptance of preposition pied-piping than non-native speakers; advanced learners had a stronger acceptance of pied-piping than intermediate learners. Such results align with the usage-based prediction of speakers’ sensitivity to input distribution (Ellis et al., 2008). Stranding occurs much more frequently than pied-piping across all clause contexts (Hoffmann, 2011). Therefore, stranding is more entrenched in adult L1 and L2 speakers’ linguistic repertoire than pied-piping. Furthermore, L1 speakers had a stronger sensitivity to the conditional relative frequency (Jach, 2018) of preposition placement specific to *wh*-relative clauses compared to non-native speakers, and the more advanced learners stronger than the less proficient learners.

The collocational strength of verb-prepositions had a significant effect on the productive use and acceptability of preposition placement for both L1 speakers and advanced L2 learners. Intermediate learners’ preposition placement was more affected by phrasal frequency. The findings show that English speakers’ placement tendency can be well predicted by their sensitivity to the very localised lexical dependency of the verb and the preposition. The higher collocational strength a prepositional verb has, the more entrenched it is in the mental lexicon as a single unit (Wray, 2002), and the more likely stranding is preferred. The finding on proficiency aligns with previous research on formulaic processing which shows how native speakers and advanced learners rely on implicitly extracted distributional information of form-function and form-form associations, while less proficient L2 learners rely more on raw frequency in formulaic processing (Ellis et al, 2008). The current findings provide strong support to the usage-based account of grammar analysis and grammar acquisition.

<b>Stimuli condition</b>	<b>List A</b>	<b>List B</b>
High frequency, high collocation strength	Sam lost the credit card which he relied on.	Sam lost the credit card on which he relied.
High frequency, low collocation strength	Jenny got the job for which she applied.	Jenny got the job which she applied for.
Low frequency, high collocation strength	Josh can hardly recognise the car with which he collided.	Josh can hardly recognise the car which he collided with.
Low frequency, low collocation strength	Addison likes to go to the football matches which she bets on.	Addison likes to go to the football matches on which she bets.

*Tab. 1: Sample test stimuli*

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