

Cracking L2 Morphological Processing: The Impact of Prime Duration and L1 Morphological Richness

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Masked priming studies examining the temporal dynamics of morphological processing in suffix-derived words among second-language (L2) speakers are scarce [1, 2]. Typically, these studies manipulate the prime-target relationship across three conditions: transparent (e.g., farmer-FARM); pseudo-derived (e.g., corner-CORN); and orthographic (e.g., cashew-CASH). Research on native speakers generally shows significant priming in the transparent and pseudo-derived conditions, but not in the orthographic condition, indicating morphological decomposition. However, findings in L2 studies are mixed: some replicate these patterns [2], while others observe significant priming even in the orthographic condition, suggesting reliance on form rather than morphological processing [1].

In a study examining the impact of prime duration on morphological processing, Zhang et al. [2] observed significant transparent and pseudo-derived priming effects at prime durations of 40 and 80 ms, respectively. However, they could not dissociate these effects from prime-target orthographic overlap because their experiment lacked an orthographic condition. Heyer and Clahsen [1] included an orthographic control condition, but the prime durations of 33 vs. 67 ms may have been too short to trigger morphological processing in L2 speakers, as indicated by a recent masked priming study using a 200 ms prime duration [3]. Moreover, few studies have examined how the morphological richness of a speaker's L1—for example, the highly productive derivational system of German versus the relatively less rich derivational system of European Portuguese (EP) [4]—affects these temporal dynamics [5–7].

The present study aimed to clarify how EP-English and German-English bilinguals process English suffix-derived words in a lexical decision task with varying prime durations (50 and 150 ms), while keeping the stimulus onset asynchrony constant (200 ms). Building on previous findings, we predicted that, with longer prime durations, L2 speakers' morphological priming effects (i.e., priming effects for transparent and pseudo-derived conditions) would increase and orthographic priming effects would decrease, especially among German–English bilinguals, whose L1 is morphologically richer than EP and whose pattern may therefore more closely resemble that of native English speakers [4–7].

To ensure comparability across experimental conditions (i.e., transparent, pseudo-derived, and orthographic) and prime durations, a within-subjects design was employed. Factors known to influence morphological processing, such as L2 proficiency and suffix properties, were controlled for in this study [8–11]. L2 English speakers and a control group of native English speakers completed two lexical decision tasks, each with a different prime duration. The order of these tasks was counterbalanced across participants. The two sessions were separated by at least three weeks to avoid repetition effects, as the same stimuli were used in both tasks.

Results showed morphological priming effects (i.e., priming in transparent and pseudo-derived conditions) in native English speakers and German-English bilinguals. However, in EP-English bilinguals, significant priming effects were observed across all conditions (transparent, pseudo-derived, and orthographic). These priming patterns were not modulated by prime duration in any group. These findings suggest that while a morphologically productive L1 (German) facilitates native-like morphological decomposition in L2, speakers with a less morphologically productive L1 (EP) rely on orthographic form. Importantly, the absence of prime duration effects indicates that these processing strategies are stable across early and later stages of lexical access. We will discuss these results further in relation to L1

transfer and theoretical accounts of L2 morphological processing.

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