

Persian compounds in the mental lexicon

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Compound words have a structure somewhere between that of a single word and a phrase. This raises the question of the extent to which compounds are processed as single units or computed as phrases would be. While evidence suggests that compound words in English and Dutch are decomposed, this is influenced by their transparency (Gagné & Spalding, 2016; Libben et al., 2014). For example, in a semantic priming study, Sandra (1990) found that ‘*death*’ primed the semantically transparent compound ‘*birthday*’ but ‘*moon*’ did not prime the more opaque compound ‘*Sunday*’. However, these studies involved languages (e.g., English, Dutch) in which the head constituent always comes second, with the modifier first, possibly restricting the interpretation of results. To address this issue and to examine compound decomposition in another language, we presented Persian stimuli auditorily in a non-priming paradigm involving typing out the stimuli. We varied transparency by including transparency combinations (Libben, 1998) which allow individual constituents of a compound to be classified as either semantically transparent (T) or opaque (O). Accordingly, our bi-constituent Persian compounds were classified as TT (e.g. “*book-house*”, کتابخانه, *library*), OT (e.g., “*blood-warm*”, خونگرم, *social*), TO (e.g., “*ice-hole*”, یخچال, *refrigerator*), and OO (e.g., “*chest-cut*”, سینه‌چاک, *dedicated*). In addition, we took advantage of the fact that Persian compounding permits both modifier-head and head-modifier ordering and that the Persian writing system permits both spaced and attached compounds. Thus, the fact that Persian offers various combinations with respect to the multiple factors of transparency, headedness, and spacing allowed us to examine how such variables influence decomposition in typed written production.

We recorded the inter-keystroke-interval (IKI) times, permitting us to examine letter-by-letter production of 157 compound structures produced by each of 31 native speakers of Persian. Our results from a linear mixed model analysis indicate that compounds of all types elicit decomposition, indicated by a significant increase in IKI for the first letter of the second constituent (i.e., after the morphological boundary) compared with the last letter of the first constituent ($p < .001$). With respect to spacing, we found that both spaced and attached compounds showed decomposition ($ps < .0001$). Both OO and TT final-head compounds demonstrated strong decomposition (all $ps < .0001$). However, OOs did less so less than TTs ($p < .05$), and this did not differ for the attached and spaced compounds. Among spaced compounds, headedness and transparency interact significantly with their decomposition ($p < .0001$). Such evidence of interaction could not be captured from English or Dutch because head-initial compounds are not permitted in these languages. Among head-final compounds, those that are attached in the written form unexpectedly produced greater decomposition than spaced ones ($p < .0001$).

Our findings are in line with some of the observations of Libben et al. (2014) of significant decomposition at morphological boundaries in English compounds, but with differences specific to Persian.

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