

Gray matters: Age-related differences in context-dependent idiom processing

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Neurolinguistic research has demonstrated that, compared to literal language processing, the processing of idioms requires additional cognitive effort (e.g., Lauro, Tettamanti, Cappa, & Papagno, 2008). For example, in the case of the Dutch expression *in de soep lopen* (fig. *to fail*), the idiom's literal meaning (*to walk in the soup*) must be actively suppressed to support activation and processing of the idiom's figurative meaning. Furthermore, contextual information that we retain in working memory can help to predict an upcoming idiom and to facilitate the activation of its intended, non-literal meaning. However, the cognitive resources needed for these actions have been shown to decline with age: compared to younger adults, elderly adults have impaired inhibition skills (e.g., Hasher, Stolzhus, Zacks, & Rypma, 1991), and reduced working memory capacity (e.g., Van der Linden et al., 1999). Whether elderly readers are still able to use context information to facilitate idiom processing is therefore an open question.

In the present EEG study, which was a partial replication of Rommers, Dijkstra, and Bastiaansen's (2013) study on idiom processing, brain activation of 25 younger adults (aged 18-28) and 25 elderly adults (aged 61-74) was measured while they read literal or idiomatic sentences, preceded by either a strongly constraining or a neutral context sentence. Elderly adults showed the same N400 reduction as younger adults for idioms preceded by a strongly constraining context sentence, reflecting facilitated retrieval of the idiom's non-literal meaning. However, a strongly constraining compared to a neutral context sentence increased elderly adults' amplitude of the P600 in response to idioms, indicating increased effort to integrate the idiom's non-literal meaning into the sentence. The results of the present study are consistent with previous findings of an effect of age-related cognitive decline on higher order language processing (Federmeier, Van Petten, Schwartz, & Kutas, 2003). Furthermore, given the importance of idioms in our everyday language (e.g., Jackendoff, 1995; Sprenger, 2003), the results indicate that elderly adults' communication skills may be seriously hampered by their diminishing abilities to handle figurative language.

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