

Two Sides of Healthy Aging: Semantic Preservation versus Syntactic Decline

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Across the lifespan, successful language comprehension is crucial for continued participation in everyday life. The success of language comprehension relies on the intact functioning of both language-specific processes and domain-general cognitive processes that support language comprehension. While language experience increases with age, most domain-general cognitive functions, like verbal working memory (vWM), decline in healthy aging. As vWM declines with age, sentence comprehension difficulties have been found in older adults when sentence processing taxes vWM. However, such vWM demands may be attenuated by the use of language-specific constraints. That is, semantic and syntactic information can be used to establish relations between words which reduces the vWM load from individual word information to information about word group. Hence, older adults' sentence comprehension difficulties may be related to age differences in the use of syntactic and/or semantic information to reduce the vWM load. Here, the extent to which older and younger adults differ in their use of syntactic and semantic information was examined. To this end, the availability of syntactic structure (sentences vs. lists) and semantic content (real words vs. pseudowords) was varied. After reading each sequence word-by-word, participants were asked to judge the serial order of two words compared to their previous occurrence. Two experiments were conducted to vary the potential benefit of language-specific constraints. As to that, the degree of vWM load was increased by raising the number of words from 8 words in experiment 1 to 11 words in experiment 2. The results showed a simultaneous combination of selective preservation and decline. That is, when vWM demands were increased (experiment 2), the use of syntactic information was compromised in older adults, while the benefit of semantic information was comparable across age groups. This may suggest that older adults focus more on what is said (i.e., the semantics) than how it is said (i.e., the syntax), possibly indicating a shift in focus from syntactic to semantic information during sentence processing in healthy aging.