

Syntactic Priming in Older Adults

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ABSTRACT

Syntactic priming refers to a phenomenon in which speakers tend to repeat a sentence structure that they have used in an initial sentence in successive sentences. Young adults (YA) have shown robust tendencies to repeat prepositional datives (e.g., Mary gave the ball to Billy.) after a prepositional dative prime, as well as a tendency to produce passive sentences (e.g., The ball was given to Billy) following a passive prime. This phenomenon has been attributed to learning: the threshold activation levels of sentence structures are increased by use (i.e., repeating prime sentences), making them more accessible to speakers (Chang, Dell, Bock, & Griffin, 2000).

Older adults (OA) might be expected to show reduced syntactic priming as they typically are slower to learn than young adults. Alternatively, older adults tend to rely more on contextual support than young adults in cognitive tasks and, thus, might be expected to show stronger syntactic priming compared to young adults. The current study used the syntactic priming paradigm and materials of Bock & Loebell (1990) in which speakers repeat sentences then describe pictures. In contrast to the young adults in Bock & Loebell, older adults used prepositional datives most often in all conditions, and the small increase in prepositional dative production across priming conditions was not significant. In contrast, while older adults produced very few passives when describing transitive pictures overall, they showed a significant increase in passive sentence production following passive primes. These results suggest that syntactic priming occurs in older adults as well as young adults, but that it is much more robust for infrequent sentence structures.

METHODS

PARTICIPANTS

24 healthy older adults aged 66 – 85 (mean 75.7, sd 5.6)

PROCEDURE

Pictures from Bock & Loebell (1990) were scanned into a computer and interspersed with screens showing the sentence, "Listen and repeat." In each trial, participants either heard and repeated a sentence or described a picture using a single sentence. Auditory stimuli were read aloud by the experimenter when cued by the computer. Immediately after repeating a priming sentence, participants described a target picture. 10 filler trials intervened between critical trials of each type.

MATERIALS

Passives. Included 30 sets of priming sentences paired with 30 pictures of transitive events (*kissing, hitting, destroying*).

Priming sentences comprised 3 types:

- Active Sentences: *The worker drove the bulldozer.*
- Passive Sentences: *The bulldozer was driven by the worker.*
- Locative Sentences: *The worker was digging by the bulldozer.*

Dependent variable: Proportion of full passives produced (must include form of *be* + agentive 'by'-phrase)

Datives. Included 30 sets of priming sentences paired with 30 pictures of dative events (e.g., *giving, selling, showing*).

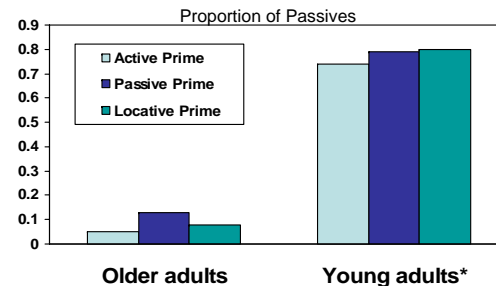
Priming sentences were of 3 types:

- Double Object Datives: *Susan brought the student a book.*
- Prepositional Datives: *Susan brought a book to the student.*
- Infinitive Constructions: *Susan brought a book to read.*

Dependent variable: Proportion of prepositional datives produced

RESULTS

PRIMING PASSIVES



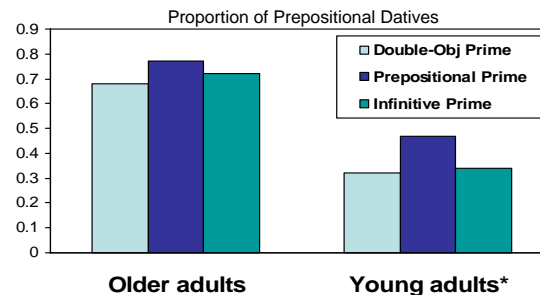
YA (from Bock & Loebell, 1990, with permission, N = 96):

- >70% passives in all conditions
- 6% more passives after passive and locative primes than after active primes.

OA:

- Very few passives overall
- 8% more passives after passive primes than after actives, $t(23) = 2.01, p = .05$.
- 3% (n.s.) increase in passive production after locative primes, $t(23) = 1.10, p > .2$.

PRIMING DATIVES



YA (from Bock & Loebell, 1990, with permission, N = 96)

- 32-47% prepositional datives across conditions
- 15% ($p < .05$) more prepositional datives after prepositional dative primes than after double-object primes.

OA:

- 68-77% prepositional datives overall
- 9% (n.s.) more prepositional datives after prepositional dative primes than after double object primes, but this was not significant, $t(23) = 1.127, p > .25$.
- 4% (n.s.) increase in prepositional dative production in response to infinitive primes, $t(23) = .78, p > .40$.

DISCUSSION

Older adults' use of passives is in line with the low proportions of passives found in spoken conversation, (~1%, Bates & Devescovi, 1989). These older adults show similar levels of passive priming as the young adults from Bock & Loebell did (OA 8%, YA 6%). However, unlike the young adults, the older adults show little increase in passive production after locative primes. We suspect that the extraordinarily high proportion of passives produced by young adults in Bock & Loebell (1990) was due to increased exposure to passives in academic texts.

The results from the Dative priming experiment are just the reverse. The older adults produced a much higher proportion of prepositional datives in all conditions than did the young adults in Bock & Loebell (1990). While the older adults did produce 9% more prepositional datives after prepositional dative primes, this increase was not significant, likely because of low power.

These findings show that older adults do show syntactic priming at rates similar to that of young adults, even when the baseline production rates of these constructions may differ significantly between the groups. These results are consistent with the theory that syntactic priming is the result of implicit learning in which the resting levels of syntactic structures are affected by the frequency and recency of use of these structures (Chang, Dell, Bock, & Griffin, 2000). Furthermore, these results are consistent with the cognitive aging literature that shows preserved implicit learning in older adults (Zacks, Hasher & Li, 2000).

The finding of baseline differences for dative use is more difficult to explain. A quick examination of dative proportions in 2 U.S. News & World Reports from 1948 and 2 from 2004 found a small change in prepositional dative use: 50% in 1948 datives, 41% in 2004. This hints that the overall usage of double object datives may be increasing across generations.

Acknowledgments

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References

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