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№ 6452

# TelePriming Sentence Production in Aphasia: A Feasibility Study

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August 28, 2021

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## Introduction

There is considerable evidence that structural priming—the tendency to repeat a recently encountered sentence structure—reflects processes of implicit syntactic learning (Chang et al., 2000; 2006). In particular, structural priming becomes stronger between interlocutors in a dialogue setting, due to increased social attention and joint activities between listening and speaking (Pickering & Garrod, 2004). Structural priming effects also become larger when lexical information is shared between a prime and a target, i.e., lexical boost (Branigan et al., 2000). Rapidly growing evidence suggests that structural priming can implicitly facilitate sentence production in persons with aphasia (PWA), supporting its potential as a clinical tool for aphasia rehabilitation (Cho-Reyes et al., 2016; Lee & Man, 2017). Specifically, in dialogue-like tasks, PWA demonstrate improved production of complex sentences, such as passives and datives (Man et al., 2019; Man et al., 2021).

Recently, more focus has been dedicated to improving accessibility to therapy for PWA using telepractice, which has been shown to be as effective as in-person therapy in PWA (Hall, Boisvert, & Steele, 2013). The present study investigated the feasibility of applying tele-testing to structural priming (TelePriming) with PWA when in-person testing is not possible (e.g., during the pandemic). Specifically, we asked if a dialogue-based priming task can be effective as has been seen in traditional in-person sessions, when delivered remotely using videoconferencing.

## Methods

Ten PWA, 12 older adults (OA), and 12 younger adults (YA) participated in a dialogue-priming task, wherein participants took turns with the experimenter describing transitive pictures via videoconferencing. We measured if participants produced more passive sentences after hearing the experimenter produce passive sentences (primes) compared to active sentences. Additionally, the same verb was repeated for a half of the prime-target pairs to assess lexical boost effect. Logistic mixed-effects models were used, with the significance level set at .05.

## Results

All three groups showed significant priming effects, as indicated by increased production of passive sentences after hearing the experimenter produce passive versus active prime sentences (Figure 1). In addition, the priming effects were greater when the verb was repeated between prime and target sentences in all three groups, although this lexical boost effect did not reach statistical significance in PWA. All three groups showed medium to large effect sizes of priming effects using Cohen's *d* (Cohen, 1992), with greater

magnitude of priming for the same verb versus different verb prime condition (same vs. different verb priming for YA: *d*'s = 1.7 and 1.3; OA: *d*'s = 5.6 and 3.2; PWA: *d*'s = 2 and 0.7).

**Conclusions**

The results are consistent with previous findings where PWA and healthy adults showed significant structural priming and lexical boost in a dialogue-like task in aging and aphasia (Man et al., 2019; Man et al., 2021). This study also suggests that structural priming is effective in PWA when delivered remotely using web-based videoconferencing. Therefore, implicit syntactic learning in a dialogue context remains preserved in PWA, and TelePriming provides a valid alternative to in-person testing.

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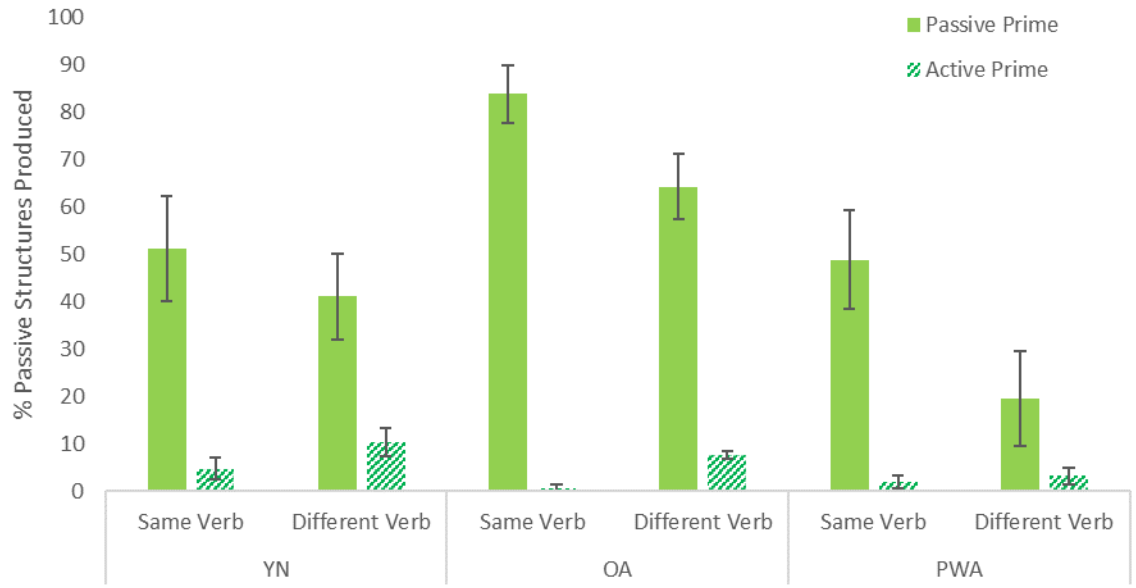


*Figure 1.* Priming results for responses to target pictures for young adults (YA), older adults (OA), and persons with aphasia (PWA).