Structural priming and the lexical boost - Head verb and matrix verb repetition (#99805)

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1) Have any data been collected for this study already?
No, no data have been collected for this study yet.

2) What’s the main question being asked or hypothesis being tested in this study?
In this experiment, we will investigate whether structural priming is enhanced by the repetition of verbs in the sentence. We will use prepositional object (PO) prime sentences (1a, 1c, 1e) and double object primes (1b, 1d, 1f) followed by target fragments such as (2). The target fragments will be accompanied by pictures of the subject noun and a possible theme (e.g., wheelbarrow) and recipient (e.g., boy scout). Participants will read the prime sentence aloud and then complete the target fragment by using words for the pictures.

1. The painter hesitated to lend {a. the ladder to the apprentice, b. the apprentice the ladder}.
1. The painter hesitated to show {c. the ladder to the apprentice, d. the apprentice the ladder}.
1. The painter proceeded to lend {e. the ladder to the apprentice, f. the apprentice the ladder}.
1. The farmer proceeded to show ...

The main question is whether structural priming is enhanced (i.e. there is a lexical boost) when the verb that is the head of the PO/DO (lend, show) or the matrix verb (hesitated, proceeded), which is not the head of the PO/DO, is repeated between the prime and target. One hypothesis is that structural priming is enhanced by the repetition of either verb. Another possibility is that it is only enhanced by the repetition of its syntactic head verb, but not by the matrix verb. Finally, neither verb may cause a lexical boost because the sentence structures in (1, 2) are more complex than in previous studies investigating PO/DO priming.

3) Describe the key dependent variable(s) specifying how they will be measured.
The dependent variable will be the proportion of PO target completions out of all PO and DO completions. DO responses are completions where a recipient or beneficiary noun phrase precedes a theme noun phrase. PO responses are completions where a theme noun phrase precedes a recipient or beneficiary prepositional phrase.

4) How many and which conditions will participants be assigned to?
We will test six conditions, exemplified in (1-2). The prime structure will be either a PO (1a, 1c, 1e) or a DO (1b, 1d, 1f). Either no verb will be repeated (1a, 1b), the PO/DO head verb will be repeated (1c, 1d) or the matrix verb will be repeated (1e, 1f).

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
We will carry out logit mixed effect analyses using the glmer function from the lme Package in R. The fixed variable prime structure (PO vs. DO prime) will be centred and verb repetition (no verb repetition, head verb repeated, matrix verb repeated) will be treatment coded with no verb repetition as the baseline level. We will include by-participants and by-items random intercepts and random slopes for all fixed variables, enforcing zero correlations between random effects in order to avoid overparameterization or false convergence. The random effect structure will be simplified if the model does not converge.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.
We will exclude any target completions that are not a DO or PO from the analyses, because they are not informative of syntactic priming. We will also exclude completions where the DO is not reversible to a PO or vice versa.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.
We will test 72 participants and 48 experimental items such as (1-2). Mahowald et al.'s (2016) simulations suggested that in order to achieve a power of 93% for a lexical boost effect, 48 participants and 48 items are required. This was based on a design with 4 conditions (2 x 2 design), whereas we have a 6 conditions (2 x 3 design). In order to have the same number of trials per condition, we will need 72 participants. Participants with more than 15% of experimental trials without recordings, inaudible recordings or trials where they did not follow the instructions (e.g., did not refer to all pictures in the targets or did not correctly read either the prime or target) will be replaced by other participants.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)
Nothing else to pre-register.