**Preregistration Template from AsPredicted.org**

Data collection

Have any data been collected for this study already? Note: 'Yes' is a discouraged answer for this preregistration form.

No, no data have been collected for this study yet.

Hypothesis

The verbal cumulative semantic interference (CSI) effect describes an increase of naming latencies in continuous picture naming tasks (overt naming) with each additional member of a semantic category being named. The effect is a robust finding in speech production research, and reaction times have been found to increase linearly across the position of items in the category (e.g., Howard et al., 2006, Schnur, 2014). Our goal is to replicate the CSI effect in a typed picture naming online experiment run in participants' web browsers. Previous studies on typed picture naming found name retrieval effects similar to verbal naming: Reaction times were sensitive to linguistic variables such as lexical frequency (e.g., Torrance et al., 2018) and showed semantic priming effects (Pinet et al., 2016; see also Scaltritti et al., 2017). Another study showed that keystroke response times can be assessed reliably online, at least for within-participant comparisons (Pinet et al., 2017). Thus, we hypothesize that, within categories, the latency of the first keystroke of a typed word (the reaction/typing onset time) will increase linearly with each additional category member.

Dependent variable

In the continuous picture naming task, latencies of each keystroke will be recorded relative to the picture onset. The latency of the first keystroke, the typing onset time, will be the key dependent variable. Typing errors will be recorded as well.

Conditions

How many and which conditions will participants be assigned to?

Ordinal position of an item (positions 1-5, within subjects): Position of the item in its semantic category within the naming task (the first item of each category is position 1, …, and the fifth and last item of each category is position 5) The presentation order of the 160 items (24 categories à 5 exemplars plus 40 filler items) will be pseudo-randomized: Categories are split into blocks of three categories and 20 trials (3x5 items plus 5 filler items), and 5 different block orders are created. Within each block, the 20 trials will be presented randomly with the constraint that two members of the same category are separated by at least 2 and not more than 8 trials.

Analyses

The reaction time data will be analyzed using (generalized) linear mixed models ((G)LMM) with the fixed effect "ordinal position" and a fully crossed random effects structure to account for by-item and by-participant non-randomness in the data (Baayen et al., 2008). We expect that reaction time data will not be normally distributed. If this is the case, depending on the distribution, we will fit a gamma or inverse distribution in a generalized linear mixed model (Lo & Andrews, 2015). Initially, a maximal random effects structure will be adopted, including all random effects allowed by the design (Barr et al., 2013). If the model fails to converge, we will increase the number of optimizer iterations (Brauer and Curtin, 2018) and, if necessary, reduce the maximal structure by constraining the correlation parameters to zero and dropping random effects whose variance is indistinguishable from zero.

Outliers and Exclusions

Participants with trial loss greater than 20% will be excluded. Additionally, we will exclude participants that showed non-compliance with the experimental procedures (e.g., failing control questions and attention checks) and whose data, thus, is considered of poor quality. Trials will be excluded if participants failed to type the picture name within the maximal trial duration or if they typed a wrong object name. If the first keystroke is correct and the typed word is recognizable or if a synonym/abbreviation of the intended picture name is typed, typing errors are ignored for typing onset latencies.

Sample Size

The study aims at replicating our first online verbal CSI experiment. A power analysis based on parameters of that study and using Monte Carlo simulations suggests that 30 participants lead to a power of >85 % for detecting a cumulative semantic interference effect of similar magnitude. Therefore, and to keep both studies as similar as possible, data of 30 valid participants will be included in the analyses.

Other

In contrast to laboratory-based settings, previous online speech production experiments prove necessary to screen for outliers due to increased noisiness in the data (Vogt et al., 2021). We do not yet have an estimate about noisiness in typewritten picture naming in online settings. However, if data are very noisy, in a secondary analysis, we may reanalyze the data performing an outlier correction by removing data points with absolute standardized residuals exceeding 2.5 standard deviations after fitting the (generalized) linear mixed model (Baayen & Milin, 2010) and/or by excluding participants whose typing speed was particularly slow, i.e., whose average typing speed in a typing test was 2.5 standard deviations below the average typing speed of the sample. Interkeystroke intervals may be analyzed exploratorily.

Name

Typed continuous picture naming in an online setting The study serves as a proof of principle demonstration (a) that language production experiments can be run online and (b) that a cumulative semantic interference (CSI) effect can be elicited in typed picture naming. In a first study, we replicated an effect that is well-established in the laboratory, the verbal CSI effect in a continuous picture naming paradigm, in an online setting on participants' web browsers (https://osf.io/w6ptm/registrations). In this study, we aim at replicating the verbal CSI effect in typed picture naming. If the effect can be replicated using keystroke latencies, data collection and preprocessing will be much easier because participants' microphones do not need to be accessed. The study will be coded in SoSci Survey and run in participants’ web browser. Participants will be recruited via prolific.

Finally

Experiment

Other

*No response*