



words_special_replication

Public registration

Updates



Metadata



Study Information

Hypotheses

From original paper - "In Experiments 1A–1B we test the hypothesis that compared to labels, environmental sounds activate category exemplars corresponding to a likely sound source even when participants are tasked with treating environmental sounds as category-level cues." More specifically, incongruent environmental sounds will elicit longer response times in comparison to congruent environmental sounds. Verbal labels will elicit the shortest response time.

Design Plan

Study type

Experiment - A researcher randomly assigns treatments to study subjects, this includes field or lab experiments. This is also known as an intervention experiment and includes randomized controlled trials.

Blinding

No blinding is involved in this study.

Is there any additional blinding in this study?

No response

Study design

Within-subjects design with 2 factors: Auditory Cue (Environmental Sound vs. Label) and Match to Basic Category (Match vs. No Match). Congruency is further manipulated within the Matching Environmental Sound condition.

No files selected

Randomization

This is a 2X2 design; matching vs. non-matching and label vs. sound cue.

Within the matching sound cue trials, we are randomizing congruency (50% are congruent sounds, 50% are incongruent sounds). Trial order is also randomized. Male and female voice labels are randomized within the label condition, but they are not differentiated in the analysis.

Sampling Plan

Existing Data

Registration prior to creation of data

Explanation of existing data

NA

Data collection procedures

Participants are recruited via Prolific (<https://www.prolific.com/>). Inclusion criteria is that participants must speak English and be adults 18 years or older and not have any hearing difficulties. Participants will receive payment for their participation.

No files selected

Sample size

Our intended sample size in n = 50.

Sample size rationale

Based on guidance from course instructional staff: The sample size was determined with an a priori power analysis with the package simr, and is adequate to achieve at least 80% power for detecting the effect reported in the original study at a significance criterion of $\alpha = .05$ (any random effects not present in the original paper were taken from a small pilot study).

Stopping rule

We will stop when we get to 50 responses.

Variables

Manipulated variables

This is a 2x2 design. For all trials we manipulate whether image-auditory cue pairs are matching or non-matching, and whether participants hear a verbal label or environmental sound cue. Within the environment sound cue conditions, we also manipulated whether the sound is congruent or incongruent to the paired image.

No files selected

Measured variables

The single outcome variable will be the reaction time in milliseconds of each participants' response after viewing the image.

No files selected

Indices

NA

No files selected

Analysis Plan

Statistical models

We plan to run a linear mixed regression model on responses times as was performed in the original study as well as a chi-squared test to assess significance. In our analysis, we only consider matching trials.

- [writeup_jenna_brooks.qmd](#)
- [writeup_jenna_brooks.qmd](#)

Transformations

Trial conditions are coded into 3 categories - verbal label, incongruent sound and congruent sound.

Inference criteria

We will use the standard $p < .05$ criteria for determining if the linear mixed regression model suggest that the results of our data are significantly different from those expected if the reaction time is not affected by cue type and congruency. We will also run an ANOVA to compare the chi-squared values of our model with and without the factor of interest (which is the condition of any particular trial). The post-hoc Bonferroni test will also be used to adjust for multiple group comparisons.

Data exclusion

For our replication, we will also remove trials where response times are shorter than 250 ms or longer than 1500ms from the analysis, as was done in the original study.

Missing data

It will be excluded from the analysis.

Exploratory analysis

We do not plan to conduct exploratory analysis. We plan to replicate the exact protocol of the experiment.

Other

Other

Original Paper can be found here: Edmiston P, Lupyan G. What makes words special? Words as unmotivated cues. Cognition. 2015 Oct;143:93-100. doi: 10.1016/j.cognition.2015.06.008. Epub 2015 Jun 24. PMID: 26117488.
<https://pubmed.ncbi.nlm.nih.gov/26117488/>

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