Replication of What makes words special? Words as unmotivated cues (2015, Cognition)

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2024-10-09

Introduction

This study aimed to explore why verbal labels, such as the words "dog" or "guitar," activate conceptual knowledge more effectively than environmental sounds associated with these objects, like the bark of a dog or the strum of a guitar. I chose this topic because it intersects with my interests in language learning and auditory perception. As an English language teacher, I often attempted to bridge the language barrier by using universal auditory cues to represent specific English words, which I found to be effective with foreign language learners. However, the results of this study revealed that verbal labels are more effective than sounds in forming mental representations, contrary to my hypothesis that sounds provide a universal, cross-cultural foundation for conceptual knowledge, independent of language. Future replications of this study could investigate whether the findings hold true across cross-cultural and multilingual groups.

In this experiment, participants will be presented with either a verbal representation or environmental sound for the following categories: bird, dog, drum, guitar, motorcycle, and phone. Pariticpants are presented with an auditory cue (either a word or sound) and a picture presented 1 second after the auditory input is made. Pariticpants are tested on how quickly and accurately they can determine if the picture presented matches the auditory cue they received. They will use a yes or no button on the computer screen. Potential challenges of this study could be sound quality of the environmental sounds to ensure they are clearly recognizable. Additionally, finding a diverse group of participants for this study could be a challenge.

Methods

Power Analysis

Original effect size, power analysis for samples to achieve 80%, 90%, 95% power to detect that effect size. Considerations of feasibility for selecting planned sample size.

Planned Sample

Planned sample size and/or termination rule, sampling frame, known demographics if any, preselection rules if any.

Materials

All materials - can quote directly from original article - just put the text in quotations and note that this was followed precisely. Or, quote directly and just point out exceptions to what was described in the original article.

Procedure

Can quote directly from original article - just put the text in quotations and note that this was followed precisely. Or, quote directly and just point out exceptions to what was described in the original article.

Analysis Plan

Can also quote directly, though it is less often spelled out effectively for an analysis strategy section. The key is to report an analysis strategy that is as close to the original - data cleaning rules, data exclusion rules, covariates, etc. - as possible.

Clarify key analysis of interest here You can also pre-specify additional analyses you plan to do.

Differences from Original Study

Explicitly describe known differences in sample, setting, procedure, and analysis plan from original study. The goal, of course, is to minimize those differences, but differences will inevitably occur. Also, note whether such differences are anticipated to make a difference based on claims in the original article or subsequent published research on the conditions for obtaining the effect.

Methods Addendum (Post Data Collection)

You can comment this section out prior to final report with data collection.

Actual Sample

Sample size, demographics, data exclusions based on rules spelled out in analysis plan

Differences from pre-data collection methods plan

Any differences from what was described as the original plan, or "none".

Results

Data preparation

Data preparation following the analysis plan.

Confirmatory analysis

The analyses as specified in the analysis plan.

Side-by-side graph with original graph is ideal here

Exploratory analyses

Any follow-up analyses desired (not required).

Discussion

Summary of Replication Attempt

Open the discussion section with a paragraph summarizing the primary result from the confirmatory analysis and the assessment of whether it replicated, partially replicated, or failed to replicate the original result.

Commentary

Add open-ended commentary (if any) reflecting (a) insights from follow-up exploratory analysis, (b) assessment of the meaning of the replication (or not) - e.g., for a failure to replicate, are the differences between original and present study ones that definitely, plausibly, or are unlikely to have been moderators of the result, and (c) discussion of any objections or challenges raised by the current and original authors about the replication attempt. None of these need to be long.