

Reproduction of The influence of linguistic form and causal explanations on the development of social essentialism by Benitez, Leshin, and Rhodes (2022, Cognition)

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Introduction

Project Proposal Assignment: -In the writeup folder, complete the introduction part of the report template; this should contain -A short justification for your choice of experiment in terms of your research interests or research program (1 paragraph). This justification should tell us why you chose this particular paper. (2 points) -A description of the analyses and techniques that will be required to reproduce these findings, and what the challenges will be (1-2 paragraphs). (2 points) -A link to the repository and to the original paper (as hosted in your repo). The goal is that we should be able to click on these links and review that your repo is formatted right and look at the original paper. (1 point)

The paper I have chosen is "The influence of linguistic form and causal explanations on the development of social essentialism" by Josie Benitez, Rachel Leshin, and Marjorie Rhodes. As my first-year project is investigating how the way we talk to kids about social differences may influence the prevalence of essentialist thinking, this developmental psychology paper is incredibly relevant to my interests and one I quite enjoy.

This study includes a child sample and an adult sample in which participants were presented with a storybook where they learned about a novel group called the Zarpies. There were four between-subjects conditions, each following one of four combinations of language form and causal origin information. They then completed four tasks assessing different aspects of essentialism. 3/4 were binary-choice tasks in which a score of 1=essentialist response; these were then combined into an "Essentialism Composite" score out of 4. The 4th task used a 5-point Likert scale in which higher numbers indicated greater endorsement of essentialism.

In the original paper, the adult and child samples were analyzed independently given the vast age-related differences in results. A mean was generated for the composite and scores for each binary test to indicate the probability of endorsing essentialist response in a given task with a 95% confidence interval. The data for the composite and binary measures were analyzed using generalized linear mixed models (GLMM) - the authors included that they used the glmer function in R's lme4 package, specified for a binomial distribution. They then conducted Wald chi-squared tests from these results to assess significance. Effect sizes were calculated as coefficients and translated odd ratios (i.e. adults are x times more likely to endorse essentialism than children). For the Likert scale measure, means were also calculated, and the authors used mixed ordinal logistic regression models for further analysis. Significance was calculated using likelihood ratio tests. Mixed effects models tested for language form and causal origin (remember, the four conditions each used a unique combination of language form and causal origin). Participant mean-centered age was used as a predictor in analysis, and simple slopes follow-up tests looked at these interactions.

A main challenge here will be my complete inexperience with R and analysis more generally. I currently know next to nothing about what the above paragraph really means and writing it felt like adapting French, a language I do not speak. Thus, there will be quite the learning curve as I undertake this project. I will attempt to reproduce all of the above measures while doing additional visualization; I would like to chart out results from both the child and adult samples in ways not included in the original paper. I will also collaborate with the course instructors to brainstorm and complete additional exploratory analysis, looking at any potential patterns based on factors such as gender.

I would now like to link you to the [Repo](#) I have created for this project and [Original Paper](#).

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.