GroupReasoning

Embargoed registration

Metadata

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

Two dimensions (among others) may incline an agent to accept a proposed belief: (A) the proportion of respondents independently supporting it, or (B) the manner in which respondents arrived at their decision. When these dimensions produce conflicting intuitions, agents must decide whose testimony is most reliable on other grounds. One way to do this is to consider the kind of question being asked. Discussion may be particularly beneficial in complex problem solving and rational inference, despite the fact that discussion sacrifices independence of testimony, an important criterion in determining the value of majority support.

In this study, we examine the robustness of children's ability to distinguish between the efficacy of answering questions through group discussion versus independent response. We test this by increasing the size of the independent "crowd" response (CrowdSize=50) in comparison to the group discussion (GroupSize=5).

H1: Adults will prefer group discussion answers for questions that require reasoning or problem solving, and independent "crowd poll" answers for questions of popularity.

H2: Children understand the difference between question domains and recognize the value of discussion for complex problem solving. If this is the case, then children's responses will be qualitatively similar to adults. If children are misled by a "more is better" bias, there may still be domain differences, but "reasoning" questions could fail to differ from chance.

There may be developmental differences. We expect older children to show an adult-like pattern. Younger children in particular may be misled by a "more is better" bias, or may show the adult pattern.

Dependent variable

In a within-subjects design, each participant will be told that "Jack" (depicted as a silhouette) has some questions, and that there are many people (depicted as a large crowd) available to help him. They will be told that Jack can ask for help in two ways — through "Talking Together" (5 person group discussion), or by "Answering Alone" (independent crowd poll of 50 people). Each participant will see Jack's 8 questions: 4 questions that require reasoning or problem solving, 4 questions about the popularity of items.

For each of Jack's questions, each participant will be asked to decide whether a group discussion of 5 people or a crowd poll of 50 people will be more helpful for Jack to answer the question.

Responses will recorded on a 4-point scale: definitely no discussion, probably no discussion, probably discussion, definitely discussion.

Adults will use the scale directly. Children's answers will be staggered (binary preference followed by definitely/probably degree of preference).

The DV will be the mean of the ratings for the 4 reasoning questions and the 4 popularity questions.

Conditions
How many and which conditions will participants be assigned to?

We will use a within-subjects design: each subject will see all 8 questions, 4 of each type (reasoning, popularity).

Children ages 7-8 (40)
Children age 9-10 (40)
Adults (40)

Analyses

The mean rating by domain will be computed for each participant.

We will conduct a repeated measures ANOVA, using AgeGroup and QuestionDomain as predictors of the mean rating for each kind of question. One sample t-tests will be conducted to compare mean ratings for each domain to chance for each age group. Post-hoc comparisons will be conducted to test the difference in

mean ratings by domain for each age group.

Outliers and Exclusions

Responses to each question will also be analyzed separately for item-level differences, but only as an exploratory measure and if necessary.
For converging evidence, we will also compare responses in this study to responses in our previous study.

Sample Size

A post-hoc power analysis of our previous study using the WebPower package for R showed an observed power of .952 for the AgeGroup*Domain interaction (partialEta= .118) and 1.0 for the main effect of Domain (partialEta= .532).

The design and analysis of this study are identical to our previous, merely providing a stronger test by increasing CrowdSize from 5 to 50. Thus, we planned an identical sample size of n=40 per age group.

```
library(WebPower)
cohens_f = sqrt(partialEta/(1-partialEta)
####Observed power, interaction:
wp.rmanova(n = 120 , ng = 3, nm = 2, f = cohens_f, nscor = 1, alpha = .05, power = , type = 2)
#power=0.9525329
####Observed power, main effect
wp.rmanova(n = 120 , ng = 3, nm = 2, f = cohens_f, nscor = 1, alpha = .05, power = , type = 1)#power=1.0
```

Other

Child participants will be excluded and replaced in case of connectivity issues with the platform, such as extreme lag, poor audio-connection, etc. Children will also be excluded and replaced if parents interfere.

Adult participants will be required to pass an attention check after reading the initial instructions, consisting of basic comprehension questions about the instructions. Participants who fail the attention check twice will be screened out of the study.

Name

CrowdSize_50

Finally

Experiment

Other

No response