



# Stereotype Stratification and Math Gender Stereotypes in Elementary Age Girls

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## INTRODUCTION

- The *math gender stereotype* is the belief that men are better at mathematics than women.
- The math gender stereotype develops in elementary school children as young as six<sup>1</sup> and can affect performance on math-related tasks when gender identity is made salient<sup>2</sup>.
- *Stereotype stratification* is a process in which a subgroup of a negatively stereotyped in-group feels as if that negative stereotype is not applicable to them<sup>3</sup>.
- Previous work has shown elementary age girls engage in stereotype stratification.
  - Girls were more likely to draw girls when asked to draw a child mathematician<sup>3</sup>.
  - Girls were more likely to draw adult men when asked to draw an adult mathematician<sup>3</sup>.

## RESEARCH QUESTION

- The current research explores the impact of identity and action-based language used to describe the act of doing math on gender selection in response to forced-choice and open-ended questions.

The 3 main research questions include

  - Will girls select more girls than boys during the math forced-choice questioning regardless of the language condition they are in?
  - Are girls more likely to mention adults or children in the open-ended questions?
  - Are girls more likely to mention more adult men than adult women during the mathematician condition?

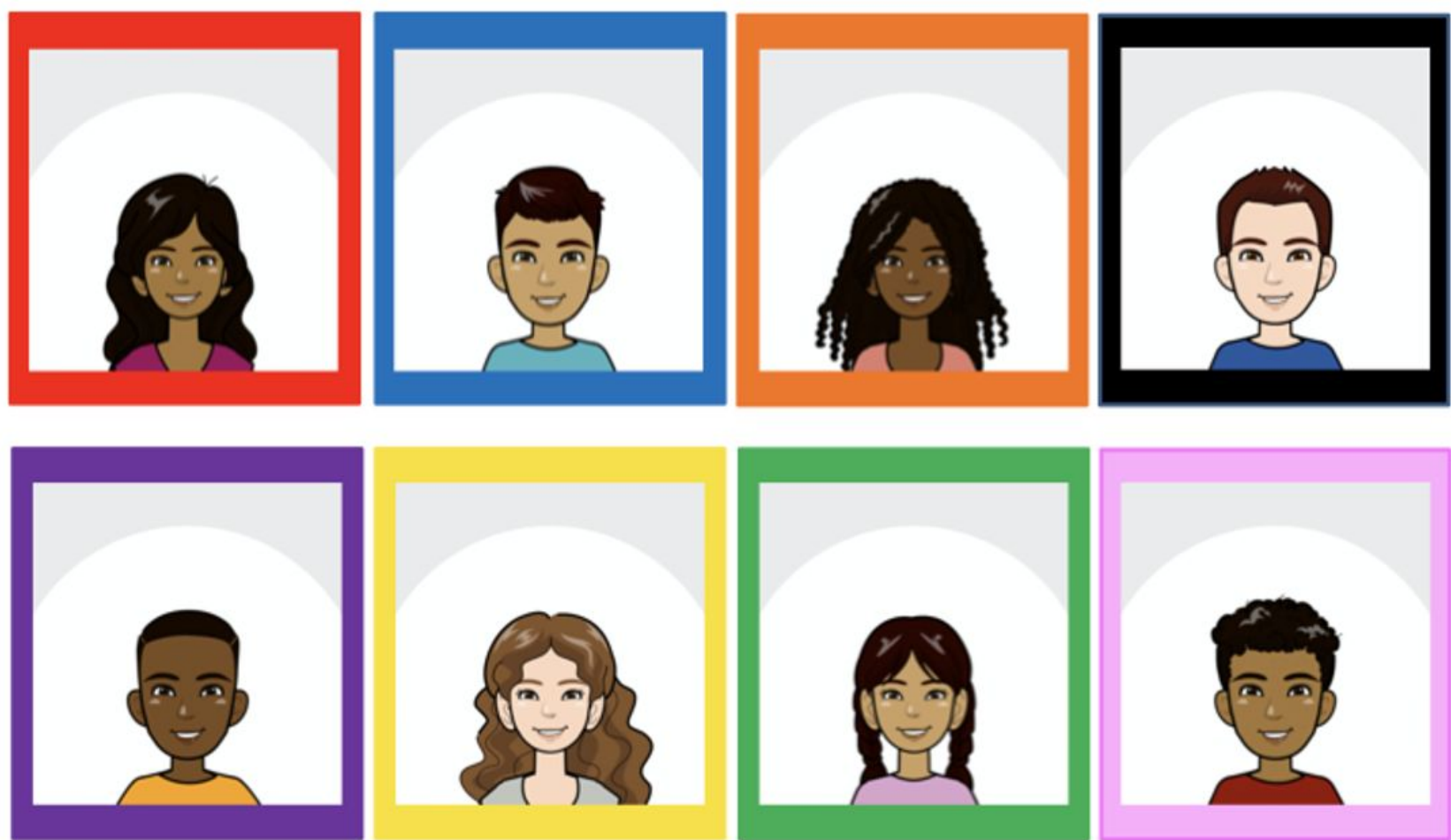
## CURRENT RESEARCH

### Participants

160 children between the ages of four and seven (Mean age = 6.2 years; 80 girls, 80 boys)

### Methods

- Participants were assigned to one of two conditions: action-based (do math) or identity-based language (mathematician).
- Children completed a series of forced choice and open-ended questions.
  - **Forced choice questions.**
    - Children answered 4 questions in which they were prompted to select students from a fictional classroom of four boys and four girls.
    - Questions matched their assigned condition (e.g., “who looks like they do math?” in the action condition or “who looks like a mathematician?” in the identity condition).
    - Participants were asked about math, science, art, and writing.



- **Open-ended questions**
  - Children were asked “can you tell me about someone you know who\_\_\_” and “can you tell me about someone in your class who\_\_\_?”.
  - Questions matched assigned condition (e.g. “who is a mathematician” or “who does math”).
  - Additional prompting was provided (eg. “Can you tell me a little about them?”).

## TRANSCRIPTION AND CODING

### Transcription

Participant’s responses to the open-ended questions were transcribed by five undergraduate research assistants.

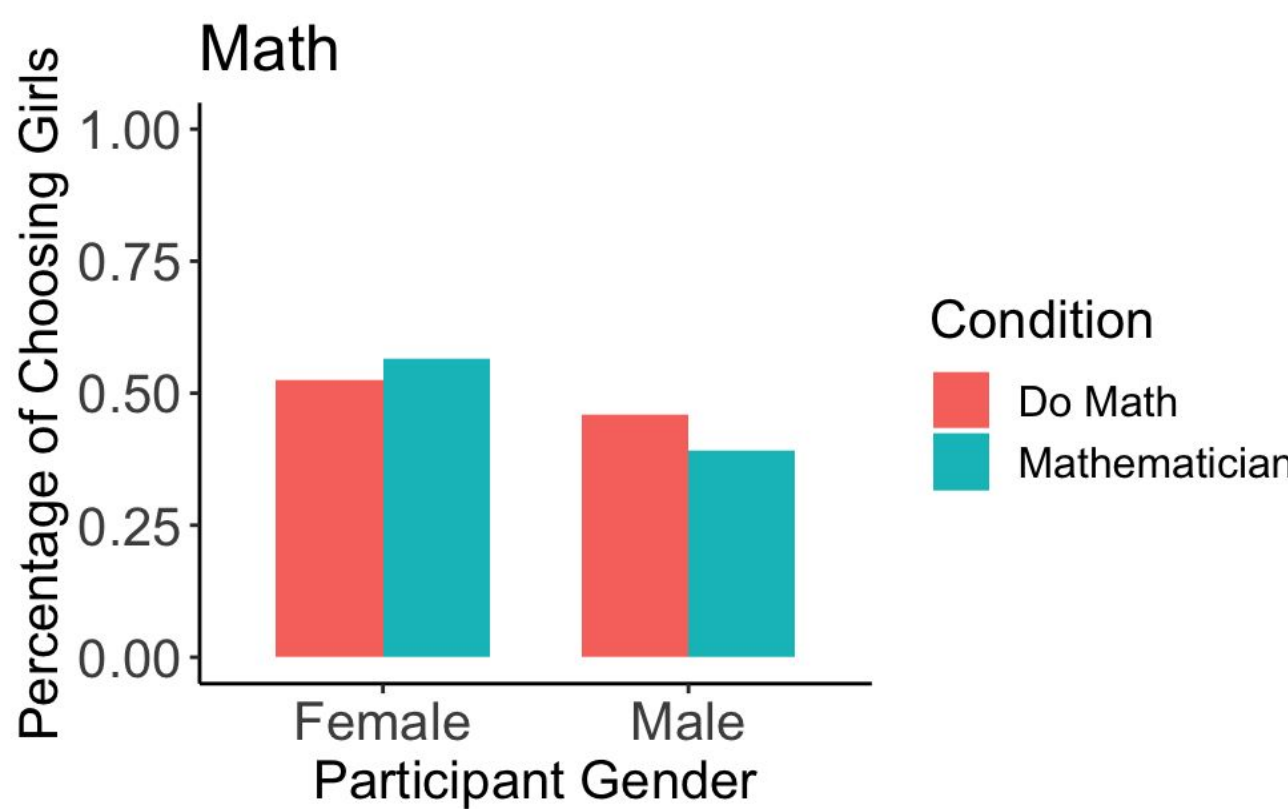
### Coding

- Age (child versus adult): transcriptions were coded based on the assumed age of the subject of the participants response (e.g., “my mom is a mathematician” would be coded as adult while “my brother does math” would be coded as child).
- Gender: transcriptions were coded based on the assumed gender of the subject of the participants response which was determined through pronoun usage.

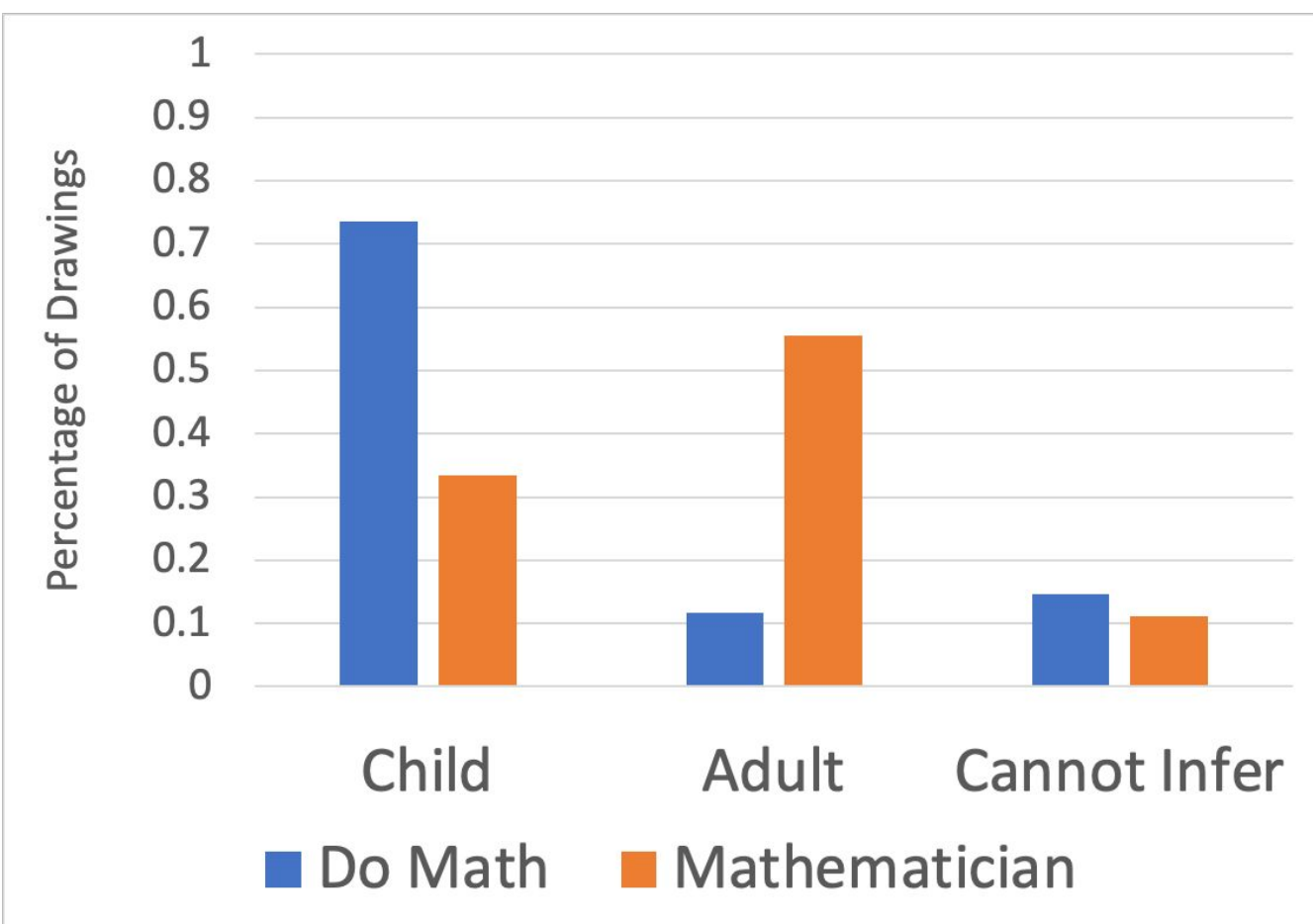
## RESULTS

### Differences in gender selection in response to math forced-choice question:

A logistic regression was run to test girls’ gender selection in response to the math forced-choice question. Results were non significant indicating that girls did not select more girls than boys in response to the math forced-choice question. (Across Conditions for Girls M = .54, SD = .5).



### Girls’ Response to Q1: “can you tell me about someone you know who...”



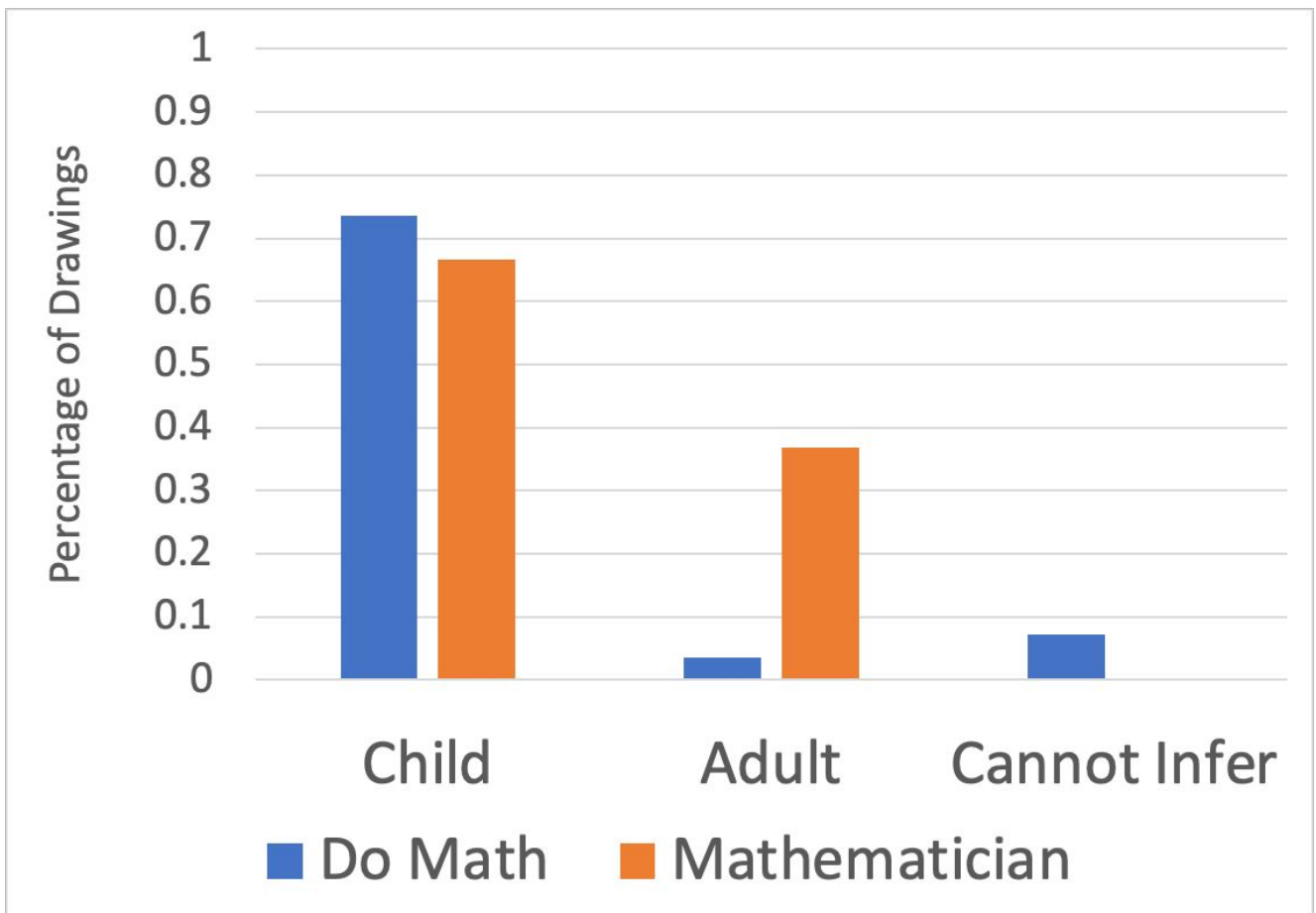
N= 52  
Overall, participants selected more children in the action-based language condition and more adults in the identity-based language condition.

Condition	No Response
Do Math	6
Mathematician	22

### Analysis Looking at Adults and Gender (Q1)

Condition	Adult Male	Adult Female	Cannot Infer	Total
Do Math	2	2	0	4
Mathematician	4	4	2	10

### Girls’ Response to Q2: “can you tell me about someone in your class who...”



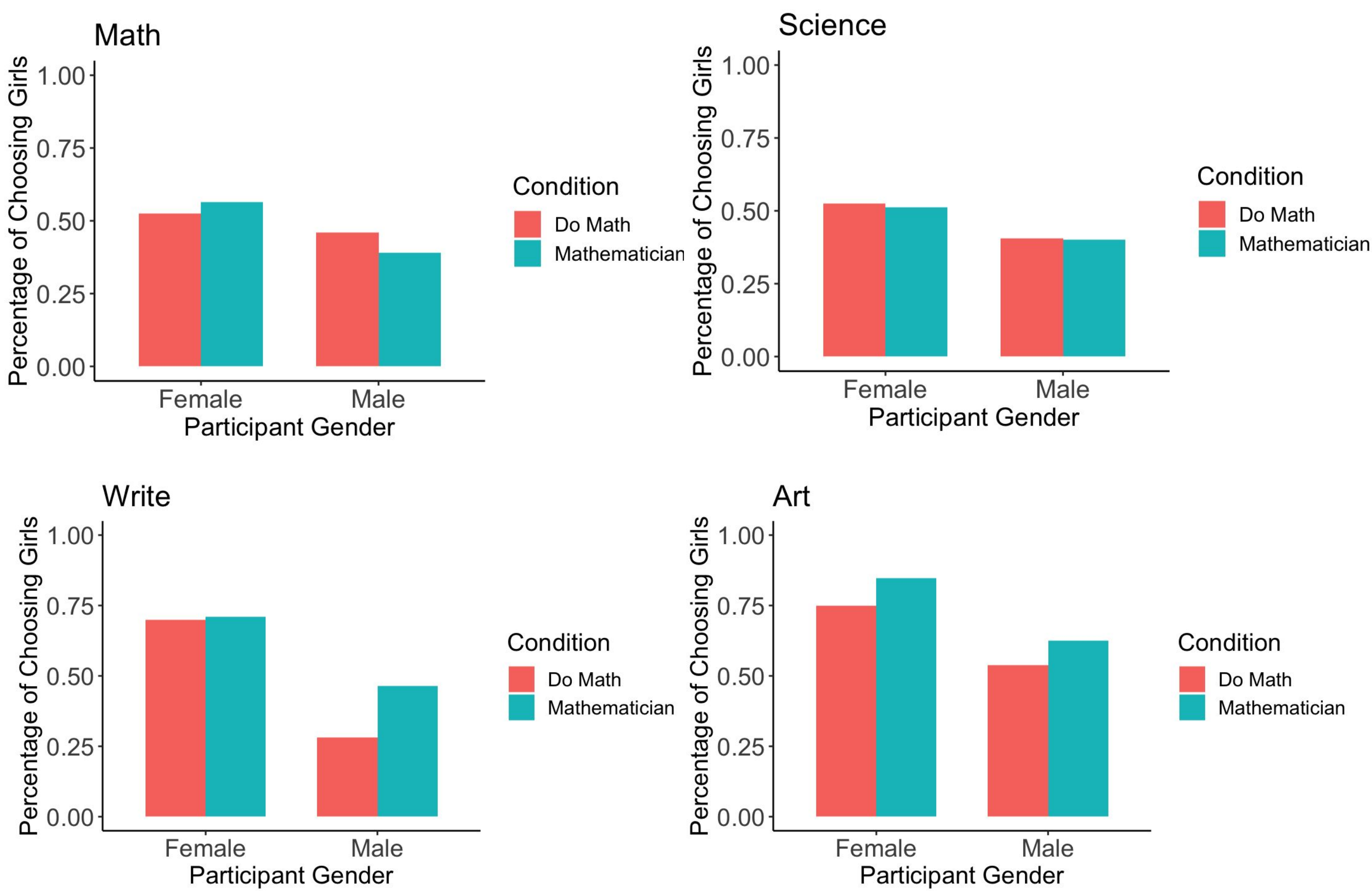
N= 47  
Participants selected more children overall regardless of condition.

Q2:Condition	No Response
Do Math	12
Mathematician	21

### Analysis Looking at Adults and Gender (Q2)

Condition	Adult Male	Adult Female	Cannot Infer	Total
Do Math	0	0	1	1
Mathematician	0	4	3	7

## EXPLORATORY RESULTS



Gender selection in response to forced-choice questions related to math, science, art, and writing.

## DISCUSSION

- Elementary age girls did not choose girls over boys significantly more in response to the math forced-choice question.
  - Condition did not affect responses.
- Across both open-ended questions, participants selected more children than adults within the action-based language condition.
- Identity-based and action-based language can affect whether participants envision a child or adult in response to open-ended questioning.
- Based on our current sample size we can not make any conclusions about the interaction between gender and age in the open-ended questions
- Ongoing analyses are being conducted to understand the differences in gender choices in other domains such as writing, science, and art.

### Future Directions:

- Determine level of understanding within elementary school age participants regarding what a mathematician is (identity language).
- Replication with larger sample size to account for the disparity in response rate between conditions.
- Explore stereotyping with cross-sectional/longitudinal design over ages 4-7.

### Acknowledgements:

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References:

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