

# **An intervention to Promote Positive Peer Relationships and Reduce Prejudice and Bias in Childhood**

Analysis Plan

16 July 2025

## **1. Hypotheses**

- 1.1. We expected that compared to the control condition, participants in the treatment condition would:
  - 1.1.1. report higher **school belonging, peer support, and teacher support** at posttest.
  - 1.1.2. report lower levels of **personal experiences with exclusion** at posttest.
  - 1.1.3. report higher **contact with diverse peers** at posttest.
  - 1.1.4. report higher **desire to play with diverse peers** at posttest.
  - 1.1.5. more negatively **evaluate exclusion** at posttest.
  - 1.1.6. have higher **high-status occupation expectations** about marginalized groups (girls, Black peers, Latine peers) at posttest.
  - 1.1.7. make more positive **trait attributions** of diverse peers at posttest.
  - 1.1.8. have higher **expectations of inclusivity** of different peer groups at posttest.
  - 1.1.9. have more positive **math and science competency beliefs** about marginalized groups (girls, Black peers, Latine peers) at posttest.
- 1.2. We expected treatment effects to vary by participant race/ethnicity for school belonging, peer support, teacher support, personal experiences with exclusion, contact with peers of different race/ethnic groups, desire to play with peers of different race/ethnic groups, evaluations of exclusion of different race/ethnic groups, high status occupation expectations about marginalized racial groups, beliefs about the inclusivity of different race/ethnic groups, math and science competency beliefs about different race/ethnic groups, and trait attributions of different race/ethnic groups.
- 1.3. We expected treatment effects on the above listed outcome measures to vary by grade. Older children may exhibit greater change on these measures due to more awareness of group dynamics. However, a previous iteration of this program (conducted with a more racially homogeneous sample) found that compared to 5th graders, 3rd graders showed more change from pre to posttest.
- 1.4. Exploratory hypotheses: We tested for school effects due to differences in their racial composition. We also examined 2-way treatment interactions with school, race, and gender to determine whether the program was more effective for certain child demographic groups.

## **2. Measured variables**

1. School belonging\*
2. Peer support\*
3. Teacher support\*
4. Personal experiences with exclusion\*
5. Reported contact
6. Desire to play
7. Evaluations of exclusion
8. High status occupation expectations
9. Positive trait attributions\*
10. Expectations of inclusivity
11. Math and science competency beliefs

*\*Indicates mean composite variable*

Measures also included in analyses, depending on model selection:

- Participant race/ethnicity (parent report)
- Gender (parent report)
- Grade level (3, 4, 5)
- Pretest measure for the respective outcome model was included as a control in each model
- School

## **Analysis Procedure**

We first examined ICCs for classroom level and school level to determine if multilevel modeling was needed and conducted model comparisons to determine if classroom, school, and sex should be included as fixed effects. We selected models for each outcome variable based on lowest AIC and BIC.

We also conducted exploratory factor analyses on reported contact measures, desire to play measures, and evaluations of exclusion to determine if creating composite measures was most appropriate for analysis.

For all models, we included school, classroom, and gender if model comparisons indicate, using the model with lowest AIC and BIC for a given outcome variable.

We conducted multiple regression linear regression for all **composite variables**, using the base model:

$\text{lm}(\text{posttest DV} \sim \text{pretest DV} + \text{treatment} * \text{grade} + \text{race-ethnicity})$

For all individual items for **reported contact, desire to play, evaluations of exclusion, expectations of inclusivity**, and **math/science competency beliefs**, we conducted ordinal logistic regression using the base model:

$\text{polr}(\text{posttest DV} \sim \text{pretest DV} + \text{treatment} * \text{grade} + \text{race-ethnicity})$

For **high status occupation expectations**, we examined outcome distributions to determine if it is appropriate to collapse response options by stimuli gender and/or race. We conducted multinomial logistic regression using the base model:

$\text{multinom}(\text{posttest DV} \sim \text{pretest DV} + \text{treatment} * \text{grade} + \text{race-ethnicity})$

### **Exploratory Analyses**

For the above models, we tested the model removing the grade\*treatment interaction, if it is not significant, to isolate the treatment effect. We also tested interactions of treatment\*grade and treatment\*gender to determine if the treatment was more effective for certain demographic groups.

#### **Inference criteria**

We considered predictors significant at a *p*-value of .05. We used Bonferroni adjustment for multiple groups pairwise comparisons.

#### **Data exclusion**

Children who could not independently complete the survey and had no trained adult available to assist them complete the pre-test and/or post-test were excluded from the sample and the subsequent analyses.

#### **Missing data (optional)**

We conducted imputations using predictive mean matching to address missing values. We imputed 30 datasets using the “mice” package in R. Demographic variables (grade, classroom, condition, gender, and school) were included as predictors, while pretest scores, posttest scores, and race were included as both predictors and imputed values. All analyses were conducted on the 30 imputed datasets individually and the pooled results were reported.