

STEM Identity Growth in Girls - Roberts

Appendix B: Analysis and Missing Data Procedures

MISSING DATA PROCEDURES

We utilized a two phase procedure for dealing with missing data for our analyses. First, any student that did not complete either the pre- or post-program survey was deleted from the dataset. For students who skipped individual questions, we used multiple imputation to fill in missing data. No student demographic information was missing, only isolated questions from the surveys. Missing value analysis showed no patterns of missingness. Once all missing data procedures were complete, we had 145 students in the STEM GIRLS sample and 147 students in the STEM STARS sample.

ANALYSIS

Our analyses were driven by our research question: What impact does participation in a single-sex or co-educational STEM summer camp have on girls' STEM Identity and STEM Self-Efficacy? To answer these research questions, we tested the following hypotheses:

Phase 1:

H₁: STEM Self-Efficacy is positively correlated with STEM Identity.

H₂: Girls with different demographic characteristics (including race, ethnicity, age, and enrollment in honors or advanced classes) will have differing levels of STEM Self-Efficacy and STEM Identity.

Phase 2:

H₃: Participation in either a co-educational or single-sex STEM summer camp yields growth in STEM Identity and STEM Self-Efficacy.

H₄: Participation in the single-sex STEM summer camp yields higher average growth in STEM Identity and STEM Self-Efficacy for girls than in a co-educational camp.

Phase one of our analyses was a linear regression to allow us to examine the impacts of demographic characteristics on both pre- and post-camp STEM Self-Efficacy and STEM Identity. These linear regression results provided a snapshot of the students' STEM Self-Efficacy and Identity scores before and after the camp. Linear regression only allows us to see the pre- and post-results at individual points in time. For phase two we conducted hierarchical linear modeling (HLM) which would allow us to analyze individual growth over the two weeks of the camp. These combined analyses allow us to answer all elements of the research questions