



What Is a Correlational Study?

Correlational studies seek to determine if a relationship (or association) exists between two or more variables.

The goal of a correlational study is to examine the relationship between level of solution participation (or dosage) and relevant outcomes.

Defining Dosage

- **Dosage** was defined as time spent participating in a solution and/or the number of solution activities completed.
- Dosage was calculated at either the teacher or student level.
- In some cases, we gave more weight to specific solution activities after consultation with the grantee regarding activity importance.



Scales of Outcomes Examined



Student outcomes are on different scales.

- **Survey outcomes** related to math class experience and math identity are on a scale of 1 (Completely Disagree) to 6 (Completely Agree).
- **Math proficiency outcomes** are on the following scales:
 - State and formative math assessment outcomes are on a population-standardized metric (mean = 0, standard deviation = 1).
 - The math course grade outcome is on a scale of 0 (F-) to 4 (A+).

Interpreting Results

Results are expressed as the **amount of change in an outcome** associated with a 1-unit increase in dosage.

The **estimated value at average dosage** is the value of the outcome you would expect for someone receiving the average dosage in the study, assuming everything else—like background information and baseline scores—stays the same.



Example

In this example, dosage is defined as the number of activities students completed. The estimates tell us that, on average, for participating students:

- **enjoyment in math class** decreased by 0.15 points on a 6-point survey scale for each additional activity completed, but the estimate was not statistically significant;
- **state assessment scores** increased statistically significantly by 0.20 standard deviations for each additional activity completed; and
- **math course grades** increased by 0.10 points on a 5-point grading scale for each additional activity completed, but the estimate was not statistically significant.

Student Outcome	Estimated Value at Average Dosage (20 Activities)	Estimate (Slope)
Enjoyment in math class (N = 100)	4.05	-0.15
State assessment score (N = 120)	0.00	0.20*
Course grade (N = 125)	2.20	0.10

N = sample size. * Indicates statistical significance at $p < 0.05$.