How do I know that the survey is reliable?

The Colorado Education Initiative (CEI) developed Colorado's Student Perception Survey (SPS) in 2012 to provide teachers with actionable student feedback. One of the most common questions from educators is: How do I know that the survey is reliable?

CEI wanted to ensure that the SPS produced reliable results. One important component of reliability is the internal consistency of the questions, or the extent to which questions measure a similar concept. Reliability is evaluated for the survey overall and also for each of the four SPS elements: student learning, student-centered environment, classroom community, and classroom management.

Cronbach's alpha

A well-established measure of reliability used in psychology and education is Cronbach's alpha (α). The higher the α, the more internal consistency among survey questions and the more reliable the results.

Reliability at the student and teacher levels

To test the reliability of the SPS, CEI used results from the spring 2013 validation pilot, which collected over 40,000 student surveys.

There are two approaches to examining the reliability of the SPS. One approach is to examine the internal consistency of individual student responses across questions (student level). Another approach is to aggregate student responses to the teacher level and examine the internal consistency of the SPS based on the average response of a teacher's cohort of students.

Using both approaches provides a way to cross-check the evaluation and evaluate the survey's reliability. Generally, for high-stakes assessments such as the TCAP, researchers recommend $\alpha > 0.9$; for other purposes, $\alpha > 0.7$ is considered defensible. The following table represents α at both the student and teacher levels.

Survey Reliability

The reliability of a survey is a function of how well it produces the same results when administered repeatedly.

If you asked 10 people with identical weights to weigh themselves on a scale and the scale gave 10 different weights, you would buy a more reliable scale. Similarly, if you administer a survey to 200 students, you would want to know that each student has a similar understanding of what the survey questions are asking. Otherwise responses would have little consistency and high levels of error.

By examining the internal consistency of the SPS — the degree to which survey questions measure a similar construct — we can assess the survey's reliability.

Student and Teacher Reliability Estimates

	Student-Level Reliability (α)		Teacher-Level Reliability (α)	
	Grades 3-5	Grades 6-12	Grades 3-5	Grades 6-12
Overall Reliability (All Items)	0.94	0.96	0.97	0.98
Student Learning	0.90	0.94	0.95	0.97
Student-Centered Environment	0.86	0.90	0.94	0.96
Classroom Community	0.80	0.86	0.90	0.94
Classroom Management	0.75	0.80	0.90	0.91

At the student level, strong evidence suggests a high level of internal consistency among the questions included in the SPS ($\alpha > 0.9$). Similarly, a high level of internal consistency for each of the four elements at the student level ($\alpha > 0.8$) indicates that each of the questions associated with the four elements is measuring a similar construct. When we examine results aggregated to the teacher level, α is even higher for the overall SPS ($\alpha > 0.95$) and for each of the four elements ($\alpha > 0.90$), providing further evidence of strong internal consistency at levels consistent with high-stakes assessments.

We encourage you to review the answers to other common questions about the SPS and explore other resources associated with student perception surveys. Visit the Student Perception Survey Toolkit for more information.

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