

Data triangulation for measuring Social-Emotional Learning (SEL)

Guidelines and best practices for new directions in SEL measurement



THE ISSUE: Partners are predominately measuring social-emotional learning (SEL) mainly using self-reports. This form of measurement has a lot of challenges and limitations regarding accuracy, bias, and ceiling effects.

- This document presents alternative ways to measure social and emotional learning (SEL) skills and a theory-based approach to triangulating different data sources.
- The document summarizes the possible sources of bias of relying solely on one source of SEL data – in particular student self-reported data – to monitor and measure student leadership over time.
- We are only considering program-level measurement of SEL for the purposes of monitoring and evaluation. Other purposes, such as classroom level formative use or more in-depth individual diagnostics require different factors to consider.

What is data triangulation?

Formally, triangulation in educational research is defined as the process of explaining the complexity of human behavior by studying it from more than one standpoint (Cohen et al., 2018¹). Data triangulation is therefore the process of collecting data on the *same outcome* using *different sources* or *different measurement approaches* that complement each other. These diverse but interrelated data are then analyzed holistically to provide a more comprehensive picture of the target outcome.

Possible sources of SEL data

- Likert-type instruments (e.g., rating scales)
- Direct assessments
- Classroom observations
- Qualitative data

Benefits

Data triangulation can strengthen SEL measurement by improving accuracy, reducing bias, and lessening the likelihood of ceiling effects². Data triangulation also enables a more holistic picture to

¹ Cohen, L., Manion, L. & Morrison, K. (2018). *Research Methods in Education* (8th ed.). Routledge.

² Ceiling effect is a type of scale reduction that happens when the upper end of the scale is likely to be selected by the great majority of sampled respondents. The opposite is called the floor effect, where the lower end of the scale is more likely to be selected. There are many causes of these effects, including response bias and design factors.

emerge from the measurement of complex outcomes such as SEL. This is because SEL instruments can often only capture narrow aspects of SEL and having several diverse sources of data allows multiple aspects of SEL to be captured.

Challenges

The main challenge when it comes to data triangulation is the logistics. With the need to collect more than one source of data, the logistics requirement is multiplied by the number of sources. Additionally, there are data sources that are more challenging to collect especially at large scales (e.g., qualitative data), requiring more time, effort, and costs. Another commonly cited challenge is balancing the need for data with the burden of collecting this data, in particular from fellows and students who are often already asked to complete several measurements. These are important factors to consider when selecting a triangulation strategy and from whom to collect this data.

Why is using self-reported student social and emotional data subject to bias?

Subjectivity can be an issue in rating scales. This subjectivity becomes even more problematic when individuals rate themselves in self-reports. Self reports are especially prone to the following main *biases*:

- **Social desirability:** This is the tendency for people to answer in a way that they are shown to be more desirable or to conform to social norms
- **Acquiescence:** This is the tendency to agree when unsure, especially among respondents who are eager to please or are likely to be obedient (such as children). This bias also leads to ceiling effects, where most of the responses are clustered at the positive end of the scale.
- **Central tendency:** This is the tendency to avoid extreme responses (e.g., Strongly agree/disagree). Related to the *social desirability* bias, this often results in underestimating the actual prevalence of strong views.
- **Reference group effect:** This occurs when respondents from different groups (e.g., based on culture, socioeconomic status, etc) answer differently because they situate or reference themselves based on the standards (or norms) of their group. For example, a self-report statement, “I do my homework diligently”, may be answered differently depending on whether the respondent’s culture puts strong emphasis on school work outside of the classroom as well as how respondents see themselves relative to their peer group.

Likert-type instruments

Sources of response data

Student – The most common format for measures of SEL is self-report. This means that the source of information are the respondents themselves. Normally, this would be the student who is completing the measurement tool. If using measurement tools that are designed for other populations (e.g., older or English-speaking) adapting the language of the tool – such as translating and/or simplifying the language level to better suit the target respondents – needs to be done.

Student (but indirectly) – Although self-reports are common, there are times when this is not appropriate or even possible. For example, if your students are:

- in early childhood education, or
- early primary, or grade level equivalents Kindergarten through Grade 2, or
- have limited literacy skills, or

- have some form of learning disability,

The above category of students might not be able to complete a self-report. An alternative way to gather the information is through someone who interacts closely with the student and can *interview* the students. Normally, this would be their teacher or their parents.

In terms of adaptation, this means that the self-report questions from an existing instrument are modified so that they can be *asked by the teachers/parents to the student*. Note that in this type of indirect self-report, the parent or teacher are only asking the questions in such a way that accommodates the student's needs and then simply recording the student's responses. They are not responding to the questions on behalf of the students or providing supplementary data to the student responses.



Converting a self-report format into something that a teacher or parent can administer requires converting the statements or questions in the measurement tool so that instead of relating to **self**, they relate to **others** and are made consistent with the response options.

For example, adapting the [EPOCH tool](#) so that it can be administered by a teacher or parent can be done as follows:

“I finish whatever I begin” [almost never, sometimes, often, very often, almost always] can be converted into: **“How often do you [the student] finish what you begin?” [almost never, sometimes, often, very often, almost always]**, with the parent or teacher having the flexibility to simplify the language even further.

Teacher/Parent – A supplementary source of information are other people who know the students very well and who can provide accurate information about their social-emotional learning and development. Normally³, these would be their parents or teachers who have known the students for a considerable amount of time. Given that parents might have different behavioral expectations⁴ than teachers, it is ideal to get data from both sources whenever possible so that the discrepancies between parent and teacher ratings can be balanced out. Aligning two or more data sources through moderation (see diagram below) is also an important process to make sure discrepancies are mitigated.

There are existing measurement tools that are designed specifically for parents and teachers, but self-reports can also be converted in a similar manner as in the above example of indirect self-reports. For example, **“I feel happy”** can be converted into **“How often does your student/child feel happy?”**

It is also possible to use **peers** or **classmates**, but there is an increased chance of unreliability and bias. It is possible to mitigate these issues by having multiple peer raters, but doing so increases the logistical challenges.

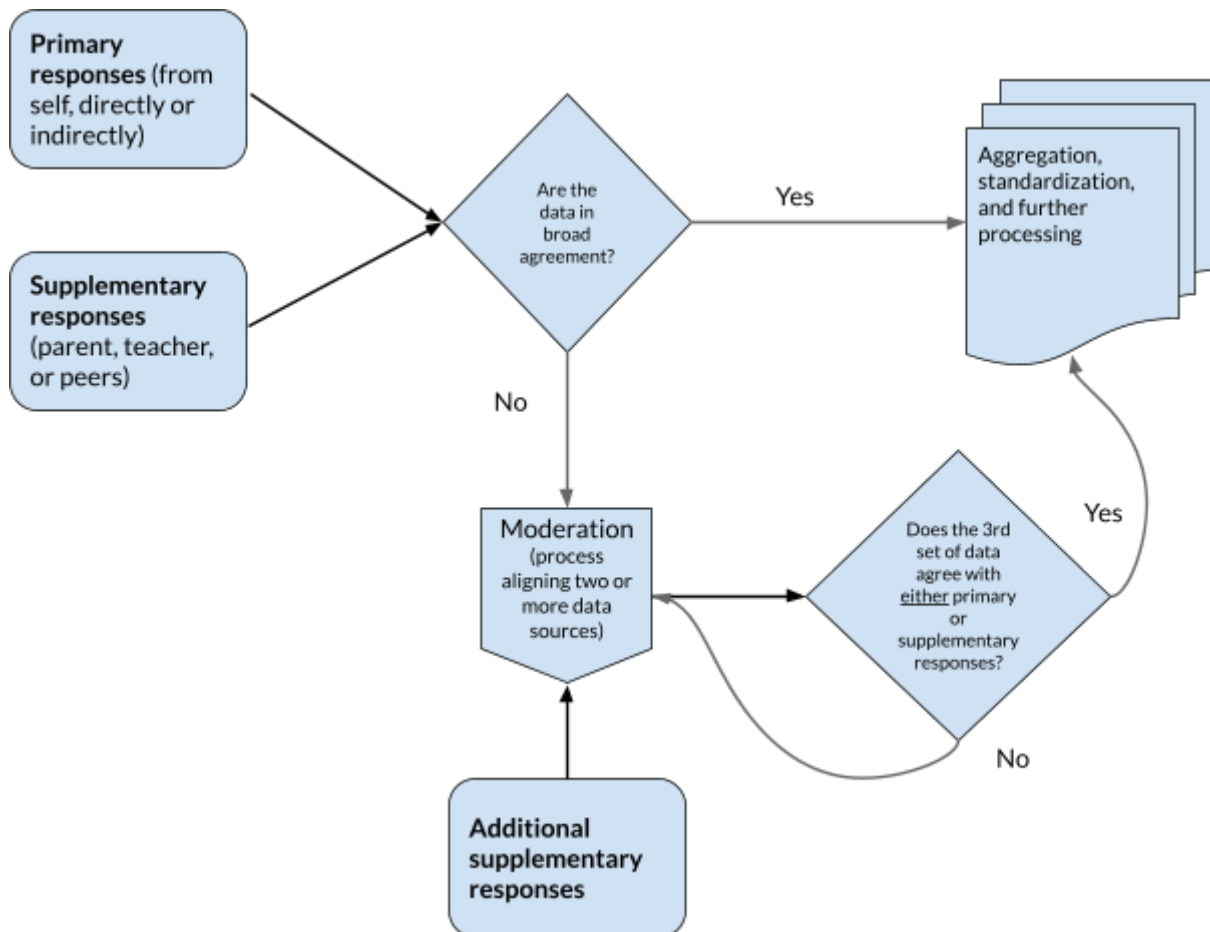
In using supplementary data from parent, teacher, or peer, it is ideal to use questions that focus on observable behaviors so that the respondents can be more objective. For example, a Growth Mindset question such as **“My child/student thinks that their intelligence cannot be changed”**, is less observable

³ Depending on context, partners should carefully consider which supplementary source of data they should approach first. Choosing between teachers or parents as data sources will involve different factors to consider, including logistics, reliability, and ethics.

⁴ Kuhfeld, M., Soland, J., & Lewis, K. (2022). Investigating differences in how parents and teachers rate students' self-control. *Psychological Assessment*.

and relies more on subjective perception than “My child/student has expressed verbally or behaviorally that they can improve their intelligence” or “My child/student has acted in such a way that shows they are constantly trying to improve their intelligence”.

General process for Likert-type data



Direct assessments

The subjective nature of self-reports can be supplemented by more objective direct assessments. Direct assessments are cognitive in nature and are often scored (i.e., there is a correct answer). In the context of measuring SEL skills, these often take the form of **situational questions** where a real-life situation is presented and the respondent is asked on what is the *best course of action* or the *most appropriate interpretation of the situation*. The answer can be captured and scored through two main formats:

- **Multiple choice question (MCQ)**, where the best answer is scored 1 and incorrect answers scored 0. See example below.
- **Short answer or constructed response (CR)** type, where the answer is scored using a rubric. Partial scores can be assigned in this format. For example, the rubric might assign 5 marks for a fully correct answer and 1-4 for various levels of partial correctness.

Multiple choice

Mark's godmother bought chocolates and candies for Mark's birthday next weekend. She bought many thinking of sharing them with all the people invited to the party. Mark has discovered the place where the sweets are kept.

What should Mark do with the chocolates and candies he has found?

A: Take them all and eat them with his friends today.

C: Eat only a few, so he can enjoy them immediately and no one will notice that he ate some of them.

B: Leave them where they are and wait to enjoy them on his birthday party with friends.

D: Take them all, eat some and hide the rest so he does not have to share them during the party.



Constructed response

Students from poor communities in our city often perform worse academically than other students in richer communities. How much do you think each of the following issues are contributors to that problem?

Rank the issues below by importance. Write the rank beside each issue, where 1 is most important and 5 is least important.

- Poor students have low motivation or will to learn
- Poor families do not value education as much as richer families
- Teachers have low expectations of poor students
- Good quality schools are often private schools that are expensive
- Poverty affects students' learning in many ways and over time

Grading rubric

Correct rankings:

(flexibility allowed, either is considered correct)

- 4 or 5 Poor students have low motivation or will to learn
- 4 or 5 Poor families do not value education as much as richer families
- 3 or 4 Teachers have low expectations of poor students
- 2 or 3 Good quality schools are often private schools that are expensive
- 1 or 2 Poverty affects students' learning in many ways and over time

Scores:

- 3 = all ranks were correct
- 2 = at least 3 ranks were correct
- 1 = only one rank was correct
- 0 = no rank was correct

Partner example: Teach For Armenia triangulates student SEL data between student self-observation and assessment using a defined rubric, and also encourages their fellows to conduct teacher observations, where the teacher assesses the leadership skills of each of their students.

Classroom observations

In the context of measuring SEL, classroom observation can involve qualitative approaches (e.g., anecdotal observations of students) or quantitative (e.g., observational checklists, such as the [Social Skills Checklist](#)⁵). Anecdotal records are detailed notes taken by the teacher about a student regarding specific behaviors. This can be done purposefully, for example after scheduled interactions or activities, or done spontaneously when relevant behaviors are observed. Observation checklists are similar to rating scales except they are much simpler in structure (often with just two categories: *observed*, *not observed*) and focus only on behaviors that can be observed directly.

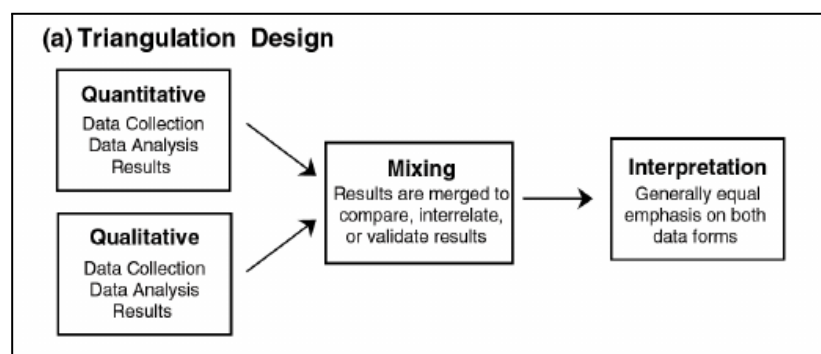
⁵ University of Washington. (2007). Project DATA.

Observational checklists are less thorough than rating scales because they can only capture observable behaviors, but they are more objective because they capture observations by an independent observer. To increase the reliability of the data, observations can be done multiple times and, if possible, by multiple observers.

Qualitative data from interviews of key stakeholders (students, parents, teachers, school directors)

Qualitative data sourced from interviews, focus group discussions, and other sources of data including stories, etc is often used in triangulation⁶. Partners who have intentional learning and research questions related to social and emotional learning and development may be able to structure internal mixed methods research which aims to collect information from perceptions of students, parents, teachers, or school directors⁷. Below is a resource that explains how different mixed methods approaches can be used to approach your research/learning question using a mix of quantitative and qualitative data.

Partner example: Triangulation was employed in a study that Teach For Nigeria conducted on the impact of TFN fellows on whole child development and social and emotional skills (see design diagram⁸ below). The quantitative student self-report surveys did not find evidence that student social and emotional learning improved more for students of TFN teachers as compared to students of non-TFN teachers; however, the qualitative insights clearly indicate parent and peer teachers' perceptions of progress in terms of student behavior and socio-emotional development. This research brief explains the overall findings from the project and how the qualitative interviews from teachers, parents, and school leaders was used to help explain the overall impact on social and emotional development of students.



⁶ Triangulation using qualitative data and mixed approaches can be done at a respondent level (i.e., with 1-1 matching to supplement quantitative data) or at the aggregate level (e.g., to inform and supplement the interpretation of quantitative results and generate more holistic inferences).

⁷ Teach For All is still learning about the feasibility, validity, and ethics of conducting focus groups and interviews with students who may be subject to social desirability bias, in particular on their own social and emotional learning skills.

⁸ Plano Clark, V. L., Huddleston-Casas, C. A., Churchill, S. L., O'Neil Green, D., & Garrett, A. L. (2008). Mixed methods approaches in family science research. *Journal of Family Issues*, 29(11), 1543-1566.



This resource is part of a broader set of resources aimed towards more effective measurement of SEL and other student leadership outcomes. You can contact [Alvin Vista \(Knowledge Lead, Student Outcomes\)](#) and [Robbie Dean \(Director of Research\)](#) if interested to learn more or for specific questions.
