National Center on
INTENSIVE INTERVENTION
at American Institutes for Research ■

Tools Charts
User's Guide

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About the National Center on Intensive Intervention

The National Center on Intensive Intervention (NCII) is housed at American Institutes for Research and works in conjunction with many of our nation's most distinguished experts on intensive intervention. It is funded by the U.S. Department of Education's Office of Special Education Programs (OSEP) and is part of OSEP's Technical Assistance and Dissemination Network (TA&D).

National Center on Intensive Intervention
http://www.intensiveintervention.org

The Basics of the Chart

What Are the Tools Charts?

The tools charts are lists of academic and behavioral intervention programs and assessments. The tools on each chart have been reviewed by one of the National Center on Intensive Intervention (NCII) Technical Review Committees (TRCs).

INTERVENTION TOOLS CHARTS

The academic and behavioral intervention charts include intervention programs and corresponding research studies documenting each program's effectiveness. The charts include intervention programs designed for use in an intensive intervention context. These programs, which function as additional or alternative intervention programs to the core curriculum, are conducted in small groups or individually and purport to improve academic or behavioral outcomes for students whose performance is unsatisfactory in the core program. The charts offer information on the quality of the research studies, results of the studies, implementation requirements of the programs, and descriptions of additional research conducted on the programs.

The academic intervention tools chart is available online at: http://www.intensiveintervention.org/chart/instructional-intervention-tools.

The behavioral intervention tools chart is available online at: http://www.intensiveintervention.org/chart/behavioral-intervention-chart.

PROGRESS MONITORING TOOLS CHARTS

The academic and behavioral progress monitoring charts contain reviews of progress monitoring assessments. The charts include progress monitoring tools that can be used to assess a student's performance, quantify his or her rate of improvement or responsiveness to intervention, adjust the intervention program to make it more effective and suited to the student's needs, and evaluate the effectiveness of the intervention. The charts offer information about the technical rigor, cost, and implementation requirements of the tools.

The academic progress monitoring tools chart is available online at: http://www.intensiveintervention.org/chart/progress-monitoring.

The behavioral progress monitoring tools chart is available online at: http://www.intensiveintervention.org/chart/behavioral-progress-monitoring-tools.

What Is the Purpose of the Tools Charts?

The charts are published to assist educators and families in becoming informed consumers who can select academic and behavioral progress monitoring tools and interventions that best meet their individual needs. The charts are not intended to endorse any program or tool, or to compare programs or tools to one another. Evidence was rated against a standard set of criteria regarding the technical quality of the evidence.

Who Rated the Tools on the Chart?

NCII's four TRCs review tools and provide the ratings. The TRCs comprise national experts in academic or behavioral intensive intervention. Selection criteria for the academic and behavior intervention TRCs included the following: (a) member has strong methodological skills and (b) member has a background and expertise in the evaluation of Grades K–12 interventions. Selection criteria for the academic and behavioral progress monitoring TRCs included the following: (a) member has a background in measurement and strong methodological skills and (b) member has strong expertise related to progress monitoring. Special attention was paid to having members with expertise in single-subject study design, as well as with culturally and linguistically diverse populations. A list of TRC members is available online at: http://www.intensiveintervention.org/content/centers-technical-review-committees.

Tips for Using the Charts

The tools charts present large amounts of information designed to assist you in selecting an intervention program or progress monitoring assessment that is most appropriate for use in your classroom, school, or district. The "best" program is not going to be the same for every user and is not determined by any single element on the chart. Users of the chart should review all of the elements of the chart when making a decision.

We recommend a six-step process for using the chart:

1. Gather a team.

2. Determine your needs.

3. Determine your priorities.

4. Familiarize yourself with the content and language of the chart.

5. Review the data.

6. Ask for more information.

1. Gather a Team

Often, decisions about appropriate intervention programs and assessments will involve the input of multiple administrators, teachers, and staff. When using a tools chart, it will be important to gather a team of key constituents in your school and district to review the information together.

Before you begin, ask yourself:
- Who should be involved in selecting the program or tool?
- What types of expertise and what perspectives will be needed among those involved in selecting the program or tool?

2. Determine Your Needs

The most appropriate program or progress monitoring assessment for you will depend on your specific needs.

Questions to think about, as a team, include:
- For what skills do we need an intervention program or progress monitoring tool?
- Is there a specific academic outcome/target behavior or measure we are focused on?
- For what grades do we need an intervention program or progress monitoring tool?
- Will this tool be used with all students who are not progressing in the core curriculum or with only a specific subgroup(s) of students? Which subgroup(s)?

3. Determine Your Priorities

In addition to determining your needs for an intervention program or progress monitoring assessment, your team should consider its priorities.

What is the most important thing to look for in an intervention program or progress monitoring assessment?
- Is it a program or tool that can be purchased for a reasonable cost?
- Does the program or tool take long to administer? Does the time it takes to administer the program or tool fit within your schedule?
- Does the program or tool require specialized expertise or training to administer?
- Does the program or tool offer ready access to training and technical support for staff?
- Is it a program or tool that has documented evidence of efficacy through the most rigorous research?
- Is it a program or tool whose effectiveness has been studied and demonstrated in our district or state? With a similar population?

Although you may ideally want a program or tool that meets all of these criteria, there may not be one that does so. You will need to weigh your priorities carefully when making your selection.
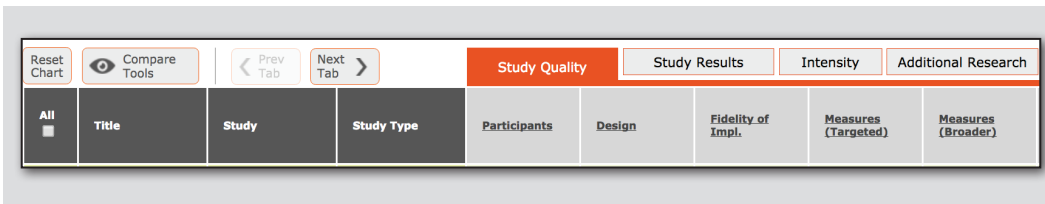
4. Familiarize Yourself With the Content and Language of the Chart

The tools charts are interactive and offer a wealth of information and data.

CHART STRUCTURE AND NAVIGATION

Tabs

The charts are organized into three or four "tabs." Ratings related to the dimensions that the TRC reviews are grouped in columns under the tabs. The tab that is displayed is highlighted in orange. You can navigate from one tab to another by clicking on tab title or by clicking the Previous Tab/Next Tab buttons.

Reset Chart	Compare Tools	Prev Tab	Next Tab		Study Quality	Study Results	Intensity	Additional Research
All ☐	Title	Study	Study Type		Participants	Design	Fidelity of Impl.	Measures (Targeted)	Measures (Broader)

Ratings

For each of these dimensions, the TRC reviewed data from the studies submitted by developers of the programs and tools, and gave a rating of *convincing, partially convincing, unconvincing*, or *data unavailable*.

Legend

- ⬤ Convincing evidence
- ⊖ Partially convincing evidence
- ◯ Unconvincing evidence
- ▬ Data unavailable

View Chart Resources

For more detailed definitions of the ratings associated with each dimension, click the title of the dimension listed in the column header.

Filtering and Comparing

Many tools are available on the chart, particularly the academic intervention and academic progress monitoring charts. You can choose to narrow your selection on those charts by filtering by grade level or subject matter (reading, mathematics, and writing).

To compare a subset of tools that you are interested in reviewing, check the box next to the name of the tools and select Compare Tools. This action will limit the tools you are viewing to only those that you have selected. To revert back to the full chart, select Reset Chart.

Implementation Requirements

By clicking on the tool title (accessed through any of the tabs on the chart), you will access an "implementation table" for the program, which includes the following:

- Cost of the intervention/assessment
- Training required to implement the intervention/assessment
- Level of staff expertise required to administer the intervention/assessment
- Where to obtain training and technical support

Although similar in layout, the intervention and progress monitoring tools charts differ with respect to the content and dimensions reviewed. The following sections describe the content available for the intervention and progress monitoring tools charts.

INTERVENTION TOOLS CHARTS

The intervention tools chart includes information on four aspects of a program, each accessible through one of four tabs at the top of the chart: (1) Study Quality, (2) Study Results, (3) Intensity or Program Information, and (4) Additional Research. Additional information is available by clicking on features within the chart.

The first tab, *Study Quality*, includes ratings from our TRC members on the technical rigor of the study design. The second tab, *Study Results*, presents information about the results of the studies. The third tab, *Intensity or Program Information*, provides information related to the implementation of the program as an intensive intervention. The fourth tab, *Additional Research*, gives information about other studies and reviews that have been conducted on the intervention.
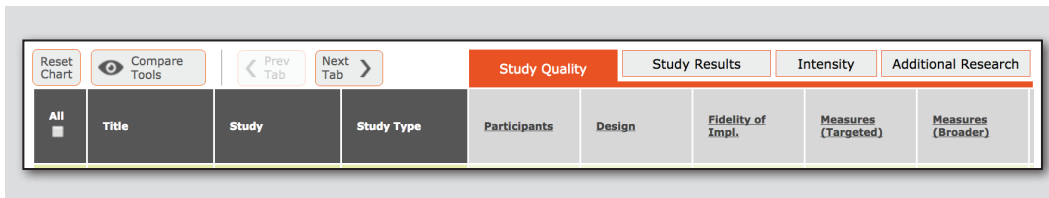
Note, the tools chart provides ratings on individual studies of programs, not holistic ratings of the programs themselves. Furthermore, the studies that were reviewed do not represent an exhaustive list of all studies conducted on a program. Users are encouraged to use this chart as a starting point and one source of information for learning about the quality of an academic or behavioral intervention program.

Study Quality
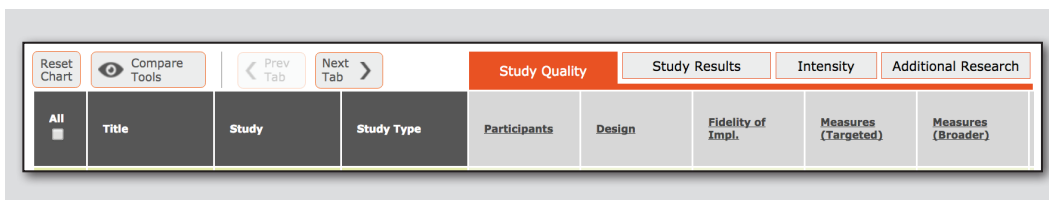
The TRC has established four dimensions of study quality for intervention programs:

- **Participants:** Are the students in the study at risk?
- **Design:**
  - **(Group design)** Does the study design allow us to conclude that the intervention program, rather than extraneous variables, was responsible for the results?
  - **(Single-subject design)** Does the study design allow us to evaluate experimental control?
- **Fidelity of implementation:** Was it clear that the intervention program was implemented as it is designed to be used?
- **Measures:** Were the study measures (targeted measures and broader measures) accurate and important?

The study quality ratings reflect an assessment of the quality and technical rigor of a research study. They do not say anything about the results of the study; they do not present any assessment of whether the study provided evidence of program effectiveness. Further detail on program effectiveness can be found in the *Study Results* tab of the chart.

Study Results

The second tab on the chart offers information about the results found in each study, which is a measure of the magnitude of the relationship between two variables. Specifically, on this chart, the effect size (ES on the chart) represents the magnitude of the relationship between participating in a particular intervention and an outcome of interest. The larger the effect size, the greater the impact that participating in the intervention had on the outcome. According to guidelines from the What Works Clearinghouse, an effect size of 0.25 or greater is considered to be "substantively important." In addition, we note on this tools chart the effect sizes that are statistically significant. Effect sizes that are statistically significant can be considered more trustworthy than effect sizes of the same magnitude that are not statistically significant. Furthermore, a positive effect size indicates that participating in the intervention led to improvement in performance on the outcome measure, while a negative effect size denotes that participating in the intervention led to a decline in performance on the outcome measure.

When reviewing effect size data, you should pay particular attention to effect sizes for outcomes in which you are interested. By clicking on a program's specific effect size on the chart, you can see a breakdown of the effect sizes for each of the outcomes tested. Most studies have multiple outcome measures, and it is not uncommon to see large effect sizes for some outcomes and smaller effect sizes for others. On the tools chart, effect sizes are reported separately for *targeted* and *broader* measures. Targeted measures assess aspects of competence the program was directly targeted to improve, whereas broader measures assess aspects of competence that are related to the skills targeted by the program but not directly taught in the program. Because of the more direct relationship between targeted measures and an intervention's content, effect sizes for targeted measures are often higher than effect sizes for broader measures. It is important to keep this distinction in mind when reviewing and comparing effect size data across measures and studies.

There are many different methods for calculating effect size. To ensure comparability of effect size across studies on this chart, NCII follows guidance from the What Works Clearinghouse[1] and uses a standard formula to calculate effect size across all studies and outcome measures.

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[1] NCII follows guidance from the What Works Clearinghouse (WWC) in determining effect size. The WWC formula for calculating effect size can be found in this document: http://ies.ed.gov/ncee/wwc/pdf/reference_resources/wwc_procedures_v2_1_standards_handbook.pdf

Ratings that fall under the Visual Analysis column are featured in the study results tab. Visual analysis is the process of looking at a graph of data points to assess whether a subject's performance has noticeably and authentically changed from the preintervention (baseline) to the postintervention phase. This type of result is only accepted for single-subject designs and is reviewed in lieu of reporting the effect size data that are typical for group design studies. For more information on the methodology used to calculate effect sizes and the guiding questions that impact a study's visual analysis rating, please click on the title in the Effect Size column headers, or see the Academic Intervention Technical Standards Rating Rubric (http://www.intensiveintervention.org/sites/default/files/NCIIAcadIntervention RatingRubric2016.pdf) or Behavioral Intervention Technical Standards Rating Rubric (http://www.intensiveintervention.org/sites/default/files/2014-15Behavioral InterventionRubric.pdf).

On the chart, the study results columns include the following information:

- **Number of outcome measures (academic intervention chart only):** The number and type (e.g., reading or mathematics) of outcomes that were gathered from students before and after the program was implemented.

- **Mean effect size (for both targeted and broader measures):** The average effect size, reported separately for targeted outcome measures and for broader outcome measures.

- **Visual analysis:** For single-case design studies, determination of whether analysis demonstrates clear, consistent, and meaningful change in the pattern of data as a result of intervention (level, trend, variability, immediacy).

- **Disaggregated data available for demographic subgroups:** The availability of any outcome data disaggregated for one or more subgroups (students with disabilities, English language learners, students of different race or ethnicities, etc.).

- **Disaggregated data available for <20th percentile (academic intervention chart only):** The availability of any outcome data disaggregated for students in the bottom 20th percentile based on academic performance

Information on study results and study quality should be reviewed and evaluated together. You should feel more confident in the validity of study results for studies of the highest technical quality and rigor. Any flaws in study design could potentially over- or underestimate study results.

Intensity or Program Information

All ☐	Title	Study	Study Type	Administration Group Size	Duration of Intervention	Minimum Interventionist Requirements

The third tab on the academic intervention tools chart is labeled Intensity. The third tab on the behavioral intervention tools chart is labeled Program Information. Both provide basic information on program delivery and intensity of the intervention programs, but the areas targeted are different. The columns on the academic intervention chart include the following information:

- **Administration group size:** The number of students who receive instruction through the intervention program simultaneously (*n* signifies the number of students in a small-group format).
- **Duration of intervention:** Includes time per intervention session, the number of sessions per week, and the duration of the intervention period.
- **Minimum interventionist requirements:** Minimum standards set by the program regarding the qualifications of the individual implementing the program and time required for the training

The columns on the behavior intervention chart include the following information:

- **Target behavior(s):** Specifies what type of behavior the program is intended to address (e.g., internalizing, externalizing).
- **Delivery:** The recommended configuration for administering the intervention (e.g., whole classroom, small groups, individuals). *n* signifies the number of students in a small-group format.
- **Fidelity of implementation check list available:** Indicates whether a fidelity of implementation checklist is available to help interventionists execute the program.
- **Minimum interventionist requirements:** Minimum standards set by the program regarding the qualifications of the individual implementing the program and time required for the training.

Additional Research

The final tab on the tools chart presents information about additional research studies that exist about the programs and that have not yet been reviewed by the NCII, including those that are potentially eligible for review and those that are ineligible for review. It also includes a simple indication of whether the study has been reviewed by the What Works Clearinghouse, an initiative of the U.S. Department of Education's Institute of Education Sciences.

PROGRESS MONITORING TOOLS CHARTS

Academic Progress Monitoring Tools Chart

There are two tools charts that include information on academic progress monitoring tools, each focusing on a different approach to progress monitoring:

- **General outcome measures** reflect overall competence in the annual curriculum.
- **Mastery measures** index a student's successive mastery of a hierarchy of objectives.

To view tools by each type, click on the link to switch between the two charts:

Both of the tools charts are subdivided into three sets of technical standards against which each tool was rated: (1) Psychometric Standards, (2) Progress Monitoring Standards, and (3) Data-based Individualization Standards. Additional information is available by clicking on features within the chart.

The first tab, *Psychometrics*, includes ratings from our TRC on the reliability and validity of the tools. The second tab, *Progress Monitoring*, provides ratings related to how well the assessment functions as a progress monitoring tool that can accurately detect small changes in student performance over time. The third tab, *Data-based Individualization*, includes ratings related to the extent to which *use* of the tool is associated with positive student or teacher outcomes.

For each of these standards and at relevant grade levels, the TRC reviewed data submitted by developers of the tools and gave a rating of *convincing, partially convincing, unconvincing*, or *data unavailable*. You may notice that the ratings differ by grade level, which may indicate differences in technical adequacy based on the grade reviewed.

Psychometric Standards

For progress monitoring tools using the general outcome measures approach, the TRC has established five psychometric standards:

- **Reliability of performance-level score:** The extent to which the score (or average/median of two to three scores) is accurate and consistent.
- **Reliability of slope:** The extent to which the slope of improvement accurately represents the rate of improvement.
- **Validity of performance level score**: The extent to which the score (or average/median of two to three scores) represents the underlying construct.
- **Predictive validity of slope of improvement**: The extent to which the slope of improvement corresponds to end-level performance on highly valued outcomes.
- **Disaggregated reliability and validity data:** Whether or not scores are calculated and reported separately for specific subgroups (e.g., race, economic status, special education status).
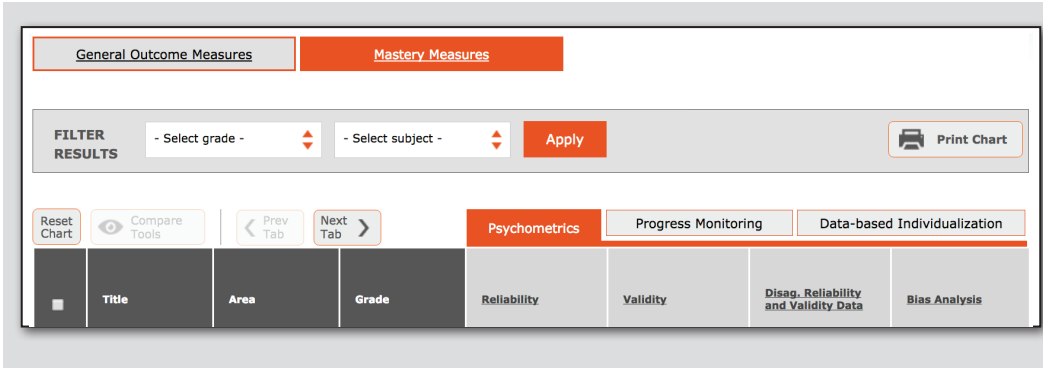
For progress monitoring tools using the mastery measures approach, the TRC has established three psychometric standards:

- **Reliability:** The extent to which scores are accurate and consistent.
- **Validity:** The extent to which scores represent the underlying construct.
- **Disaggregated reliability and validity data:** Whether or not scores are calculated and reported separately for specific subgroups (e.g., race, economic status, special education status).
- **Bias analysis:** Identifies whether or not publisher has conducted an analysis of bias against subgroups (e.g., race/ethnicity, gender, socioeconomic status, students with disabilities, English language learners).

Progress Monitoring Standards
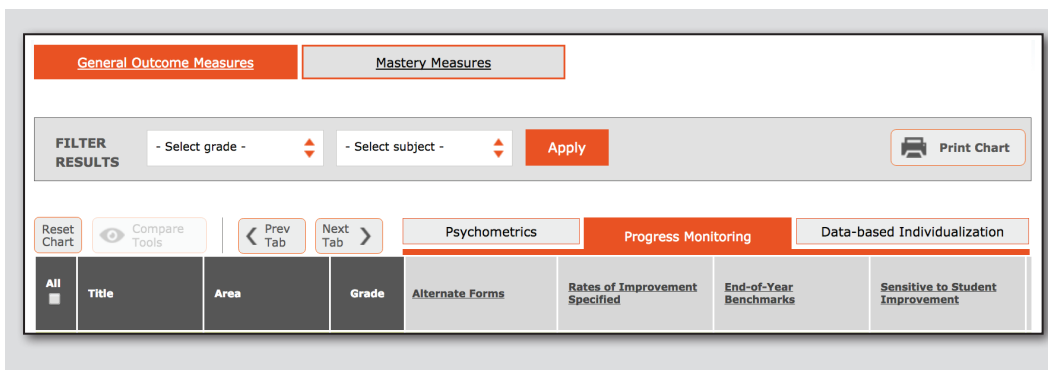
For general outcomes measures, the progress monitoring standards include the following:

- **Alternate forms:** Parallel versions of the measure within a grade level, of comparable difficulty (or with Item Response Theory–based, item, or ability invariance).
- **Rates of improvement:** Specify the slopes of improvement or average weekly increases, based on a line of best fit through the student's scores.

- **End-of-year benchmarks:** Specify the level of performance expected at the end of the grade, by grade level.
- **Sensitive to student improvement:** The extent to which a measure reveals improvement over time, when improvement actually occurs.

For mastery measures, the progress monitoring standards include the following:

- **Skills sequence:** The series of objectives that correspond to the instructional hierarchy through which mastery is assessed.
- **Sensitive to student improvement:** The extent to which a measure reveals improvement over time, when improvement actually occurs.
- **Pass/fail decision:** The metric in which mastery measurement scores are reported.

Data-based Individualization Standards

For both general outcome measures and mastery measures, the TRC has established four standards related to how the use of the progress monitoring tool relates to positive teacher and student outcomes:

- **Decision rules for changing instruction:** Provide guidance that indicates when a teacher should make a change to instruction.
- **Decision rules for increasing goals:** Offer guidance that indicates when a teacher should increase the goal.
- **Improved student achievement:** The relationship between the use of the tool and increases in student performance on external measures of achievement.
- **Improved teacher planning:** The tool's ability to help teachers in planning for and adjusting their instruction to meet student needs.

Behavioral Progress Monitoring Tools Chart

The behavioral progress monitoring tools chart includes information on three aspects of a tool, each accessible through one of three tabs at the top of the chart: (1) Progress Monitoring Standards, (2) Psychometric Standards, and (3) Usability. Additional information is available by clicking on features within the chart.

The first tab, *Progress Monitoring*, presents ratings related to how well the assessment functions as a progress monitoring tool that can accurately detect small changes in student behavior over time and the extent to which use of the tool is associated with data to determine intervention change and identification of interventions. The second tab, *Psychometrics*, includes ratings from our TRC members on the reliability and validity of the tools. The third tab, *Usability*, provides information related to the implementation of the tool.

Progress Monitoring Standards
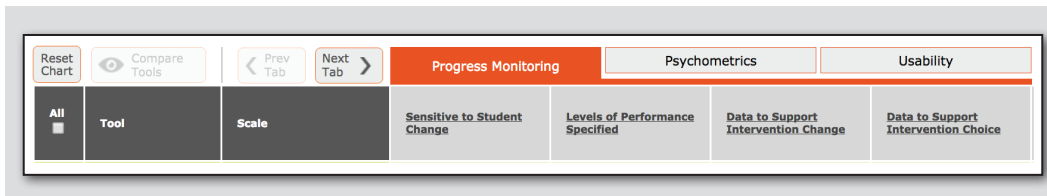
The progress monitoring standards include the following:

- **Sensitive to student change:** The extent to which a measure reveals improvement over time, when improvement actually occurs.
- **Levels of performance specified:** The extent to which appropriate levels of performance have been specified and empirically validated.
- **Data to support intervention change:** Provide guidance that indicates when a teacher should alter an intervention (e.g., in the case of an ineffective intervention).
- **Data to support intervention choice:** Offer guidance indicating to a teacher which specific intervention or type of intervention should be used (in the case of an ineffective intervention).

Psychometric Standards

The TRC has established three psychometric standards:

- **Reliability:** The extent to which scores are accurate and consistent.
- **Validity:** The extent to which scores represent the underlying construct.
- **Disaggregated reliability and validity data:** Scores that are calculated and reported separately for specific subgroups (e.g., race, economic status, special education status).

Usability

The Usability tab presents basic information on the implementation of the behavioral progress monitoring tools. The columns on the chart include the following information:

- **Assessment format:** Describes the assessment mechanism of the tool, such as a rating scale, direct observation, or checklist.
- **Rater/scorer**: Role of the person whom the program recommends administer the test.
- **Usability study conducted:** Indicates whether a study was conducted on the usability of the tool.

5. Review the Data

In addition to the technical ratings and effect size summary data, the tools chart includes details about the actual data for each study and tool that was submitted to the TRC for review. Clicking on bubble ratings and text in the cells on the chart will bring you to data, where available. A dash (-) on the chart means data were unavailable. As such, clicking on a dash will not display data. In the case of the academic progress monitoring chart, a dash may mean that data disaggregated by grade level were unavailable (see later for additional information).

Examining these data can be useful for a number of reasons. You may see two or more programs with studies that received the same rating for a particular dimension; in these cases, how do you know which one really best meets your needs? By clicking on the rating and viewing the actual data, you have more information available to help determine which program is most appropriate.

For example, on the Study Quality tab on the academic or behavioral intervention chart, you will see information on the participants sampled in the study. You may want to look for programs with studies conducted with samples similar in characteristics to your population of students. By clicking on the bubble in the participant column for one of the programs, you will be presented with this type of information:

Alternatively, you may want to look for programs that used outcome measures similar to those you are interested in improving. Following is a chart that includes specific outcomes measured by one of the programs:
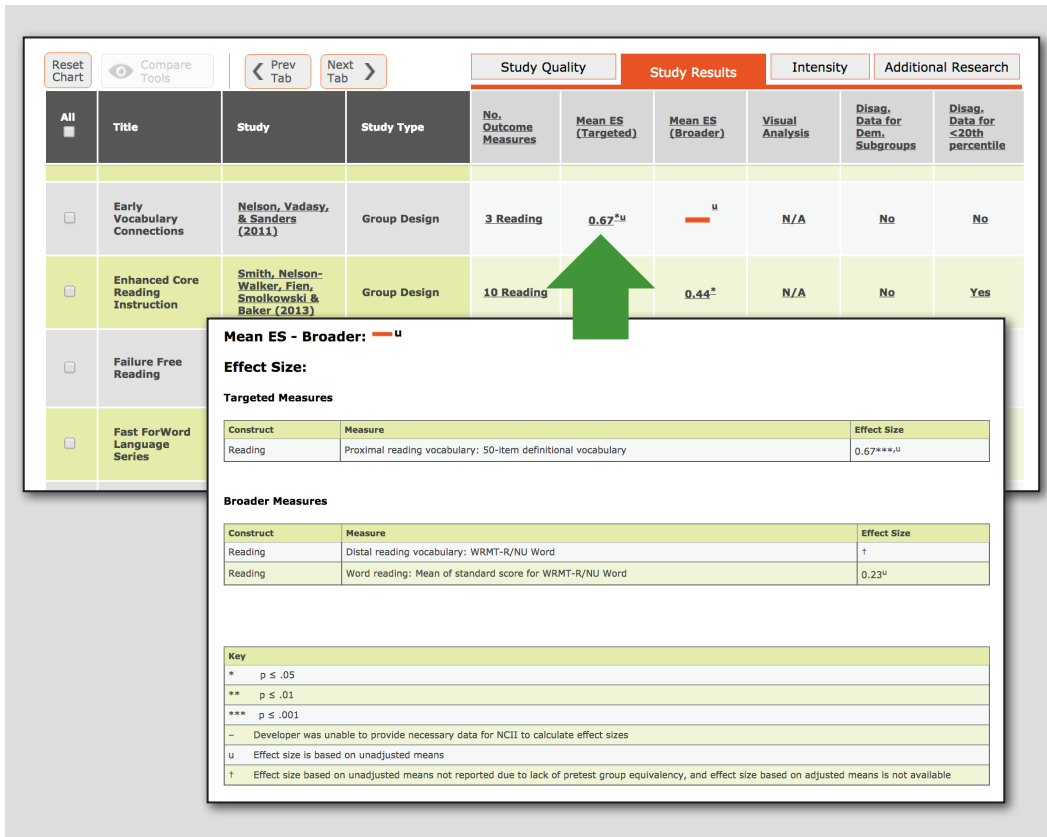
The academic progress monitoring tools chart gives ratings separately for each grade level targeted by the tool. Each row represents a single grade level, and tools targeting more than one grade have multiple rows. Technical data often vary by grade level, and this chart allows you to see clearly these variations, which may help you make more informed decisions. This chart also allows you to compare multiple tools that target a grade level of interest.

Following is a chart that includes specific ratings for each grade level reported for one of the tools:

Reliability of the Performance Level Score

Grade	1	2	3	4	5	6	7	8
Rating	●	—	○	—	●	—	—	●

Type of Reliability	Age or Grade	n (range)	Coefficient		SEM	Information (including normative data)/Subjects
			range	median		
Alternate Form-PRF	Grade 1	48 & 52	0.95 - .97	0.96	7.71 & 8.17	n and SEM values are from two sessions
Test retest reliability with Alternate Forms	Grade 1	48 & 52	0.96 & .97	0.97		
Alternate Form-PRF	Grade 3	48	0.94 - .95	0.94	9.73 & 10.28	n and SEM values are from two sessions
Test retest reliability with Alternate Forms	Grade 3	48	0.93 & .94	0.94		
Alternate Form-PRF	Grade 5	54 & 49	0.87 - 0.96	0.92	12.11 & 11.36	n and SEM values are from two sessions
Test retest reliability with Alternate Forms	Grade 5	54 & 49	0.92 & 0.94	0.93		
Alternate Form-PRF	Grade 8	59 & 58	0.87 - 0.92	0.92	11.14 & 10.60	n and SEM values are from two sessions
Test retest reliability with Alternate Forms	Grade 8	59 & 58	0.91 & 0.91	0.91		

6. Ask for More Information

You may find that the tools chart does not provide you with all the information you need. For example, what if a program that you are interested in does not have disaggregated data available for a particular subgroup that is important to you? Ask the vendor! Developers who have chosen to submit their programs for review and publish them on the chart are interested in meeting the needs of their customers and doing more research to provide needed data.

Similarly, if a program that you currently use or are interested in learning about is not on the chart, call the developer of that program. Tell the vendor about the TRC review process and the tools chart, and ask the vendor to consider submitting for review.

> Finally, if you are unsure about what any technical terms on the chart mean, or how to interpret any of the information on the chart, contact the National Center on Intensive Intervention at NCII@air.org.

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