Challenges and Directions in Establishing Contemporary Behavior Assessments: Development and Evaluation of Direct Behavior Rating

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Presentation for 2012 CT ABA Conference
Purpose:

• To set the rationale for DBR through description of historical through contemporary needs in behavior assessment
• To review work to date in the development and evaluation of DBR scales, with emphasis on DBR-Single Item Scales
• To provide demonstrations of DBR-SIS application across assessment purposes, tiers of problem-solving, and in combination with other methods to result in comprehensive assessment
My Background

• Current Position at UCONN
  ▫ Professor of School Psychology
  ▫ Research Scientist with the Center for Behavioral Education and Research

• Training
  ▫ School psychology and administration

• Urban and rural school-based practitioner
  ▫ Pre-referral intervention teams, augmentative communication, district crisis team, parent educator, alternative settings for behavior

• Research to get my degree
  ▫ Early literacy assessment

• Current research
  ▫ Behavior assessment research
What is “response to intervention”?

**BASIC QUESTION:** How do we know if X is working?

- Foundations within *data-based decision making*
- Roots of data-based decision making come from *the problem-solving model*
- Model became clearly articulated within psychology and then education through applied behavior analysis --- behavioral consultation or pre-referral teams
- Initial focus on the individual “case” but now applied to multi-tiered frameworks (“all cases”)

(Bergan, 1977, Bergan & Kratochwill, 1990; Tilly, 2009; Reschly & Bergstrom, 2009)
How to purposes of assessment fit into “response to intervention”?

- **Screening**
  - Who needs help?
- **Diagnosis**
  - Why is the problem occurring?
- **Progress Monitoring**
  - Is intervention working?
- **Evaluation**
  - How well are we doing overall?

Emphasized by the National Center on Response to Intervention
How does this work for behavioral domains of student functioning?

Behavioral Methods:
- Traditional rating scales
- Direct observation
- Extant data (e.g. office discipline referrals)
- ???
For behavior... it’s not that simple

• Absence of a gold standard criterion
• One measure can’t do it all
  ▫ Multiple measures are needed to evaluate different facets
• Co-morbidity of “problems”
  ▫ What are the most relevant problem features?
• Multiple perspectives are valuable yet agreement may (will) be low!
• Moderators matter...

(Adapted from Kazdin, 2005)
School-based behavior assessments?

Universally-accepted GOM for social behavior does not exist

Direct observations are resource intensive

Decision rules for judging “responsiveness” not established

Permanent products lack defensibility/sensitivity

Traditional behavior rating scales not sensitive to change, not contextually relevant

There are no social behavior “benchmarks”
School-based behavior assessment: THE PROBLEM FOR RESEARCH

- Current methods of behavior assessment were not built for utility in problem-solving assessments

- There is need to develop and evaluate new options that possess desirable characteristics for screening and progress monitoring...

(Chafouleas, Volpe, Gresham, & Cook, 2010)

Desirable Characteristics

- **Defensible**
  - established through psychometric research to provide evidence of reliability and validity for interpretation and use

- **Flexible**
  - established by methods useful in guiding a variety of assessment questions and situations

- **Efficient**
  - established by methods that require relatively few resources (feasible and reasonable)

- **Repeatable**
  - established by methods that yield necessary time series to evaluate intervention effectiveness

Source: Chafouleas, Riley-Tillman, & Christ, 2009; Chafouleas, Riley-Tillman, & Sugai, 2007; Christ, Riley-Tillman, & Chafouleas, 2009)
School-based behavior assessment and RTI: THE PROBLEM FOR YOU

Solution?

- Quickly design interventions at all tiers
- Collect relevant formative data in a highly feasible manner
- Include a consistent way to analyze data that is quick and easy for anyone to do

RTI means service accountability for all = MORE cases with same resources

The traditional assessment and intervention orientation is not feasible or flexible for a multi-tiered framework
Finding a Balance...

Usable

Defensible

Feasible

Valid

Acceptable

Reliable

Accurate
What is Direct Behavior Rating?
DIRECT BEHAVIOR RATING:
What is DBR?

An emerging alternative to systematic direct observation and behavior rating scales which involves *brief rating* of target behavior following a specified observation period.

Chafouleas, Riley-Tillman, & Christ (2009); Chafouleas, Riley-Tillman, & Sugai (2007); Chafouleas, Riley-Tillman, & McDougal (2002); Christ, Riley-Tillman, & Chafouleas (2009)
Example Scale Formats for DBR

**Single Item Scale**

Interpretation: The student displayed academically engaged behavior during 80% of the observation period.

**Multi-Item Scale**

Interpretation: The student earned 84% (5/6) of possible points during the observation period.

Source: Chafouleas, Riley-Tillman, & Christ (2009)
A little background...

Other Names for DBR-like Tools:
- Home-School Note
- Behavior Report Card
- Daily Progress Report
- Good Behavior Note
- Check-In Check-Out Card
- Performance-based behavioral recording

Contemporary Defining Features:

SDO

Used repeatedly to represent behavior that occurs over a specified period of time (e.g., 4 weeks) and under specific and similar conditions (e.g., 45 min. morning seat work)
Project VIABLE (2006-2011)

Develop instrumentation and procedures, then evaluate defensibility of DBR in decision-making

Rating Procedures
Behavior Targets
Scale Design
Method Comparisons
Rater Training

Defensibility

Funding provided by the Institute for Education Sciences, U.S. Department of Education
Project VIABLE-II (2011-2015)
Evaluate defensibility and usability of DBR in decision-making at larger scale

- Large student/teacher samples assessed at year 1
- Smaller student samples followed annually over 4 years across grades/teachers
- A handful of behavior intervention cases involving DBR use
- Teacher input regarding usability and perceptions

Funding provided by the Institute for Education Sciences, U.S. Department of Education
**DBR-SIS Targets: “The Big 3” General Outcomes**

**Academic Engagement:**
Actively or passively participating in the classroom activity.

**Respectful:**
Compliant and polite behavior in response to adult direction and/or interactions with peers and adults.

**Disruptive Behavior:**
A student action that interrupts regular school or classroom activity.
Example DBR-SIS scales

**Academically Engaged**
Place a mark along the line that best reflects the percentage of total time the student was Academically Engaged during math today.

Interpretation: The student displayed *academically engaged* behavior during 80% of large group math instruction today.

**Academically Engaged**
Circle the number that best represents the student’s attention during circle time.

Interpretation: The student received a 6 for *attention* during group circle time activities today.
How do I use the DBR-SIS scale?

• Ratings should correspond to the extent to which the student was observed displaying the target behavior.
  ▫ Percentage of time is one way to anchor yourself when thinking about your rating.
    • *For example:* When rating at the end of a 40-minute Independent Reading Block, if the student was engaged about half of the time, then the student receives a rating of 5 on the DBR.
How do I use the DBR-SIS scale?

- Ratings should correspond to the extent to which the student was observed displaying the target behavior.
- Another way to anchor your rating is to think in terms of Low, Medium, and High.

<table>
<thead>
<tr>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 2 3 4 5</td>
<td>6 7 8 9 10</td>
</tr>
<tr>
<td>Never</td>
<td>Occasionally</td>
<td>Sometimes</td>
</tr>
<tr>
<td></td>
<td>A little less</td>
<td>A little more</td>
</tr>
<tr>
<td></td>
<td>than half the</td>
<td>than half the</td>
</tr>
<tr>
<td></td>
<td>time</td>
<td>time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very frequently</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Always</td>
</tr>
</tbody>
</table>
Reminder: Each behavior is to be rated independently of other targets.

- Total ratings across behaviors do not have to equal 100%.
  - Example: A student may be *academically engaged* 50% of the time and *disruptive* 20%.
Possible Applications for DBR-SIS

Examples across tiers

Tier 1 (80%)
Extant Data and Direct Behavior Ratings

Tier 2 (15%)
Direct Behavior Ratings and Extant Data

Tier 3 (5%)
Multi Method using SDO, DBRs and/or Rating Scales
Tier 1
Case Study: Method Comparison in Classwide Assessment

Riley-Tillman, Methe, & Weegar (2009)

- **Sample**: First grade classroom with 14 students
- **Design**: B-A-B-A
- **Intervention**: modeling and prompting of silent reading
- **Measures**: researcher-completed SDO, teacher-completed DBR-SIS
- **Conclusion**: DBR data can be sensitive to classroom-level intervention effects, maps closely to resource-intensive SDO

<table>
<thead>
<tr>
<th>Phase Mean</th>
<th>B1</th>
<th>A1</th>
<th>B2</th>
<th>A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBR</td>
<td>72</td>
<td>45</td>
<td>63</td>
<td>42</td>
</tr>
<tr>
<td>SDO</td>
<td>68</td>
<td>49</td>
<td>61</td>
<td>50</td>
</tr>
</tbody>
</table>
Kindergarten Students at Pine Grove

• While reviewing discipline referral data over the past three months, the principal at Pine Grove School notices that Bus #7 has a disproportionate number relating to compliance with adult request. The principal speaks with the driver, who reports difficulty maintaining an acceptable level of noise on the bus. Because “all” the students on his bus are much too loud and do not listen to him when asked to lower their voices, he has been handling the problem by writing office referrals for disrespectful behavior. Both the principal and the bus driver agree this problem should be addressed through a plan targeting all students on bus #7.
Initial evaluation of DBR-SIS in screening assessment

Chafouleas, Kilgus, Jaffery, Riley-Tillman & Welsh (under review)

**Sample**: 66 teachers, over 1000 students in grades K-8

**Measures**: DBR-SIS completed 2x/day over 5 days, 2 standardized behavior screening measures

**Analyses**: Receiver operating characteristics (ROC) and correlations

**Conclusion**: Initial work suggests greater accuracy at lower grades, but strengths of various targets change by grade

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Grade Grouping</th>
<th>Cut Score (0-10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disruptive</td>
<td>Early elem.</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Late elem.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>1</td>
</tr>
<tr>
<td>Academic Engagement</td>
<td>Early elem.</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Late elem.</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>9</td>
</tr>
<tr>
<td>Respectful</td>
<td>Early elem.</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Late elem.</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>9</td>
</tr>
</tbody>
</table>

As students get older...

Disruptive:

Academic Engagement
Tier II
DBR-SIS in Behavior Consultation Cases

Chafouleas, Sanetti, Kilgus, & Maggin (in press, *Exceptional Children*)

Sample: 20 teacher-student dyads in elementary grades

Design and Intervention: A-B intervention involving behavioral consultation and DRCP-based intervention. Five options for “change metrics” were calculated.

Measures: researcher-completed SDO, teacher-completed DBR-SIS

Conclusion: Change (in expected directions) in student behavior across phases and sources. High correspondence between DBR-SIS and BOSS absolute change metrics suggests that students were ranked similarly across the two measures with regard to intervention responsiveness. Provides preliminary support for the use of DBR-SIS to differentiate between those who have or have not responded to intervention.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DBR-SIS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disruptive Behavior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>4.26</td>
<td>1.97</td>
</tr>
<tr>
<td>Intervention</td>
<td>2.58</td>
<td>1.41</td>
</tr>
<tr>
<td>Academic Engagement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>4.97</td>
<td>2.28</td>
</tr>
<tr>
<td>Intervention</td>
<td>6.82</td>
<td>1.50</td>
</tr>
<tr>
<td>Compliance</td>
<td></td>
<td></td>
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<tr>
<td>Baseline</td>
<td>5.74</td>
<td>1.93</td>
</tr>
<tr>
<td>Intervention</td>
<td>7.34</td>
<td>1.31</td>
</tr>
<tr>
<td><strong>BOSS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-task</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>69.98</td>
<td>19.76</td>
</tr>
<tr>
<td>Intervention</td>
<td>81.94</td>
<td>14.22</td>
</tr>
<tr>
<td>Off-task</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>44.82</td>
<td>21.01</td>
</tr>
<tr>
<td>Intervention</td>
<td>28.69</td>
<td>18.54</td>
</tr>
</tbody>
</table>
**DBR-SIS in Classwide Self-Management**

**Chafouleas, Sanetti, Jaffery & Fallon (2012, )**

- **Sample:** 8th grade, 2 teachers and 3 classrooms (17-24 students)
- **Design:** Multiple baseline across classrooms
- **Intervention:** Self-monitoring and a group contingency package, implemented over about 2 months
- **Measures:** student-completed DBR (teacher-checked), researcher-completed SDO
- **Conclusion:** Classwide intervention overall effective, think about target identification and need for supports based on baseline

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**DBR-SM and SDO Data Across Classes**

<table>
<thead>
<tr>
<th></th>
<th>Baseline M (SD)</th>
<th>Phase 1 M (SD)</th>
<th>Phase 2 M (SD)</th>
</tr>
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<tbody>
<tr>
<td><strong>Ms. S – Period 5</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBR-SM Prepared.</td>
<td>7.9 (2.03)</td>
<td>7.6 (1.95)</td>
<td>8.8 (1.33)</td>
</tr>
<tr>
<td>Engagement</td>
<td>6.4 (2.80)</td>
<td>6.8 (2.31)</td>
<td>8.0 (1.71)</td>
</tr>
<tr>
<td>SDO Engagement Off-Task</td>
<td>36.2 (12.51)</td>
<td>79.0 (5.08)</td>
<td>83.1 (.34)</td>
</tr>
<tr>
<td></td>
<td>70.4 (7.60)</td>
<td>30.7 (6.30)</td>
<td>21.7 (8.16)</td>
</tr>
<tr>
<td><strong>Ms. B – Period 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBR-SM Prepared.</td>
<td>9.6 (1.05)</td>
<td>9.9 (0.48)</td>
<td>9.9 (0.24)</td>
</tr>
<tr>
<td>Engagement</td>
<td>8.6 (1.36)</td>
<td>9.3 (0.99)</td>
<td>9.6 (0.76)</td>
</tr>
<tr>
<td>SDO Engagement Off-Task</td>
<td>75.9 (5.68)</td>
<td>86.7 (2.36)</td>
<td>86.7 (5.87)</td>
</tr>
<tr>
<td></td>
<td>34.7 (4.58)</td>
<td>19.2 (5.53)</td>
<td>16.7 (6.41)</td>
</tr>
<tr>
<td><strong>Ms. S – Period 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBR-SM Prepared.</td>
<td>8.1 (1.90)</td>
<td>8.3 (1.35)</td>
<td>8.9 (0.92)</td>
</tr>
<tr>
<td>Engagement</td>
<td>7.4 (2.02)</td>
<td>7.8 (1.59)</td>
<td>8.1 (1.35)</td>
</tr>
<tr>
<td>SDO Engagement Off-Task</td>
<td>57.9 (7.75)</td>
<td>71.0 (13.86)</td>
<td>80.6 (14.94)</td>
</tr>
<tr>
<td></td>
<td>47.5 (5.00)</td>
<td>34.6 (20.78)</td>
<td>28.9 (14.18)</td>
</tr>
</tbody>
</table>
Susie, Sally, and Sandy

- Susie, Sally, and Sandy have been exhibiting significant amounts of in-class verbal aggression (e.g., name-calling, teasing) in Mr. Simon’s class, and each student has been sent to the principal’s office on numerous occasions. After consulting with the student services team, an assessment and intervention plan is discussed, with emphasis on collecting data for progress monitoring.
TIER III
DBR-SIS in Targeted Intervention for Students with ADHD

Vujnovic, Fabiano, Chafouleas, & Sen (under review)

- **Sample**: 13 boys with diagnosis of attention-deficit hyperactivity disorder
- **Intervention**: DRC-based intervention
- **Design**: Point, level, slope comparisons over 20 data collection days with both measures
- **Measures**: teacher-completed DBR-SIS (once at end of day) and DBR-MIS (completed multiple times each day)
- **Conclusion**: DBR instrumentation and procedures can be flexibly determined to match assessment situation

<table>
<thead>
<tr>
<th></th>
<th>DBR-MIS</th>
<th>DBR-SIS: Academic Engagement</th>
<th>DBR-SIS: Non-Disruptive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Point</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (SD)</td>
<td></td>
<td></td>
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<tr>
<td><strong>DBR-MIS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>point</td>
<td>71.67(31.68)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>level</td>
<td>79.18(18.52)</td>
<td></td>
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</tr>
<tr>
<td>slope</td>
<td>-0.19 (0.61)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DBR-SIS: AE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>point</td>
<td>7.13(2.19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>level</td>
<td>7.57(1.36)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>slope</td>
<td>-0.04 (0.05)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DBR-SIS: DB</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>point</td>
<td>8.05(2.54)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>level</td>
<td>7.66(2.30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>slope</td>
<td>-0.06(0.08)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DBR-SIS**

<table>
<thead>
<tr>
<th></th>
<th>AE</th>
<th>Non-DB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Point</strong></td>
<td>.854**</td>
<td>.830**</td>
</tr>
<tr>
<td><strong>DBR-MIS</strong></td>
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<td></td>
</tr>
<tr>
<td>Level</td>
<td>.715**</td>
<td>.741**</td>
</tr>
<tr>
<td><strong>Slope</strong></td>
<td>.415</td>
<td>.758**</td>
</tr>
</tbody>
</table>
DBR-SIS for Monitoring Students At-Risk

Chafouleas, Kilgus, & Hernandez (2009)

- **Sample**: full day K inclusive classroom, 2 teachers and 22 students
- **Measures**: teacher-completed DBR-SIS following am and pm over Nov-March for ALL students
- **Conclusion**: “Local” cut-score comparisons can be useful in examining individual student performance. Periodic re-assessment of all may be needed to re-confirm appropriate comparison

<table>
<thead>
<tr>
<th>Target Behavior</th>
<th>Rating Time</th>
<th>FALL M (SD)</th>
<th>SPRING M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>AM</td>
<td>8.72 (1.31)</td>
<td>9.40 (0.63)</td>
</tr>
<tr>
<td>Engagement</td>
<td>PM</td>
<td>8.25 (2.03)</td>
<td>9.37 (0.88)</td>
</tr>
<tr>
<td>Disruptive</td>
<td>AM</td>
<td>1.30 (1.47)</td>
<td>0.60 (0.62)</td>
</tr>
<tr>
<td>Behavior</td>
<td>PM</td>
<td>1.61 (2.08)</td>
<td>0.42 (0.52)</td>
</tr>
</tbody>
</table>

- \[ 11/13/07 \rightarrow 3/22/08 \]
- \[ 11/13/07 \rightarrow 3/22/08 \]
Recently, Chris has been exhibiting high levels of off-task behavior in Ms. Wilson’s 7th grade English class. Although Ms. Wilson does not describe this behavior as highly problematic, she wants to address it preventively. After consultation with the 7th grade team of teachers working with Chris, a tentative intervention plan is discussed and data collection tools are considered. Ms. Wilson makes it clear that she is not interested in highly invasive, resource intensive data collection strategies. Additionally, the 7th grade team decides it would like information about how his behavior compares to other students across settings.
Summary: How might DBR within multi-tiered assessment?

Similar to Curriculum-based Measurement (e.g., DIBELS)...

- DBR-SIS offers an **efficient** option for assessment.
- DBR-SIS allows for **defensible** decision making about student risk and progress through **repeated** measurement.
- DBR-SIS allows for standard general outcome measures that are relevant to student success. Unlike CBM, DBR-SIS affords additional **flexibility** in individualized target selection.
• DBR assessment training
• DBR in linking assessment and intervention
• DBR free materials on the web
DBR in Assessment: On-Line Training Module

Direct Behavior Rating:
Use in Assessment of Student Behavior

Project Director:
Sandra M. Chafouleas
Project Co-PIs: Chris Riley-Tillman, Greg Fabiano, Megan Welsh, and Hariharan Swaminathan
Design & Development:
Rose Jaffery, Rishi Saripalle, & Austin Johnson

Disruptive:
Disruptive behavior is defined as a student action that interrupts regular school or classroom activity.
Examples: out of seat, fidgeting, playing with objects, acting aggressively, talking/yelling about things that are unrelated to classroom instruction.

Following the video, rate Ricky’s Academically Engaged, Respectful, and Disruptive behaviors
I was surprised at how easy it was to complete the Direct Behavior Rating forms. This information is really valuable in helping me understand what's happening in my classroom." Sue, Kindergarten teacher

What is Direct Behavior Rating (DBR)?

DBR involves rating of behavior following a specified observation period, and then sharing of that information to inform decisions. As an example, a teacher might use DBR to rate how well Johnny paid attention in math class. Then, that teacher might share that rating with Johnny and, as part of an intervention, link a consequence (e.g., sticker) to that rating. DBR tools have a long history of use as a component of a behavior support plan (e.g., self-management, behavior contract), as well as the method for collecting information about behavior change over time (e.g., monitoring effects of medication for ADHD). Other common terms for DBR tools have included home-school note, good behavior note, behavior report card, etc....

Why use Direct Behavior Rating?

DBR can facilitate communication among students, parents, and teachers because ratings can provide a simple, inexpensive, and flexible way to provide frequent feedback about behavior. DBR is also appealing given a connection between data collection and intervention. DBR may serve both purposes! For example, DBR can be used to monitor behavior in response to
Questions, comments, and thanks....

Website: www.directbehaviorratings.org
Contact: Sandra.chafouleas@uconn.edu