

Using Treatment Integrity in the Classroom to Bring Research and Practice Together

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Legislation such as No Child Left Behind (NCLB), the Individuals with Disabilities Education Act, and its reauthorization, the Individuals with Disabilities Education Improvement Act, mandate that evidence-based practices be used in schools. In fact, NCLB requires that "scientifically-based research" be the basis for classroom practices (Smith, Daunic, & Taylor, 2007, p. 121). In addition, with the introduction of response to intervention, schools are required to provide students with effective educational interventions. However, even evidence-based interventions can work only when implemented correctly. The extent to which an intervention is implemented as it is designed is called *treatment integrity*, and researchers and practitioners are increasingly called upon to measure treatment integrity when evaluating the effects of their interventions. The purpose of this article is (a) to define treatment integrity and describe its relationship to student outcomes, (b) to describe how treatment integrity data can be collected, and (c) to discuss the important ways that treatment integrity data should be used for decision making.

What Is Treatment Integrity?

Treatment integrity is the extent to which a program, intervention, or strategy is used in the manner in which it is intended (Coddling, Livanis, Pace, & Vaca, 2008; Gresham, 2005; Perepletchikova & Kazdin, 2005). Note that the word *intervention* is used here to refer to both academic strategies and behavior plans. Treatment integrity is sometimes

called procedural reliability or treatment fidelity (Gresham, 2005). Regardless of the name, the idea is the same: Are educators providing and implementing interventions accurately? Treatment integrity can be measured for both academic and behavioral interventions in applied settings (e.g., school, home, community) using checklists of the steps of an intervention to monitor implementation.

How Does Treatment Integrity Affect Students' Academic and Behavioral Performance?

Treatment integrity has been shown to be related to students' academic (Greenwood, Terry, Arreaga-Mayer, & Finney, 1992; Grow et al., 2009; Holcombe, Wolery, & Snyder, 1994) and behavioral (Arkoosh et al., 2007; McEvoy, Shores, Wehby, Johnson, & Fox, 1990; Wood, Umbreit, Liaupsin, & Gresham, 2007) outcomes. Effective treatment integrity ensures that treatment and instruction are implemented consistently and accurately (Lane, Bocian, MacMillan, & Gresham, 2004). Failure to implement interventions as designed and in a consistent manner can greatly affect student achievement. In fact, without treatment integrity, it would be difficult to evaluate the intervention at all; that is, it would be difficult to attribute any observed student outcomes (whether positive, negative, or neutral) to a specific intervention if we did not have confidence that the intervention was implemented correctly, consistently, and as designed. This is a particular concern given that researchers find evidence-based interventions are not

consistently implemented in special education classrooms (Duchnowski, Kutash, Sheffield, & Vaughn, 2006; Greenwood & Abott, 2001; Landrum, Tankersley, & Kauffman, 2003). For students receiving special education services, time is of the essence as these students are already behind their typical peers (Lane, 2007; Palmar & Cawley, 1998), so the use of our best interventions with a high degree of treatment integrity would seem to be especially critical.

What Level of Treatment Integrity Is Necessary?

There is no set percentage of acceptable treatment integrity (Noell, Gresham, & Gansle, 2002; Smith et al., 2007); the level of treatment integrity should be linked to the level of change needed for the student to be successful (Gresham, 2005). Wilder, Atwell, and Wine (2006) found that for a three-step prompting procedure, 100% integrity lead to 80% to 100% student compliance, whereas 50% integrity lead to 40% to 50% student compliance. Interventions should be implemented with the level of integrity that creates meaningful change for a student. For example, crossing the street safely is a behavior that must take place with 100% accuracy; however, writing spelling words with 80% accuracy may be acceptable. In other words, although teachers should monitor treatment integrity, it is just as important that they monitor treatment effects (i.e., student outcomes) to determine whether an intervention is working as desired. As we discuss later, when an

intervention does not result in the desired outcomes, it may be that the intervention was not implemented correctly (with fidelity) or it may simply be that a different, or modified, intervention is needed.

How Do I Collect Treatment Integrity Data?

Collecting data on treatment integrity is one way to combat the negative effects of interventions not being implemented as intended.

There are many methods for collecting treatment integrity data. Three of the most common are (a) self-report, (b) permanent product, and (c) direct observation with performance feedback.

Self-report data monitoring is often used because it is easy to implement, does not require a second person to record data, and is cost-effective. Self-report treatment integrity typically consists of asking teachers to use surveys or rating scales to evaluate their own performance (Gresham, MacMillan, Beebe-Frankenber, & Bocian, 2000). However, self-report may result in inflated estimates of treatment integrity (Gresham et al., 2000; Wickstrom, Jones, LaFleur, & Witt, 1998) and is not generally recommended as the sole means of assessing treatment integrity.

An alternative to self-report is permanent product review, which is more accurate (Wilkinson, 2007). This type of integrity assessment consists of reviewing student work samples or point cards to evaluate the implementation of interventions. For example, teachers can review students' point sheets at the end of the day or week to assess whether the adults responsible for implementing a given intervention in fact recorded points at the appropriate times throughout the school day. One of the benefits of permanent product data collection is that it does not require significant additional work for teachers or even a second person to observe, collect, or review data (Lane,

Bocian, MacMillan, & Gresham, 2004). Permanent product treatment integrity is appropriate for behavior plans that have tokens or point sheets that can be examined at the end of the instructional period but not for plans that require intangible reinforcement such as praise or multistep procedures such as three-step prompting. In addition, permanent product treatment integrity can be used with academic interventions that leave a record of each step of instruction.

A third method of monitoring treatment integrity is direct observation with performance feedback (Coddling, Feinberg, Dunn, & Pace, 2005; Coddling et al., 2008), often used by consultants or researchers in schools. This type of treatment integrity data is collected by having an observer who is trained in the academic or behavioral intervention observe the teacher and collect real-time data about the accuracy with which the teacher performs each step. This method has been shown to be effective for raising treatment integrity from very low levels (9%–37%) to acceptable or nearly acceptable levels (60%–83%; Jones, Wickstrom, & Friman, 1997). An additional benefit of this method is that the teacher is provided with specific information about which components of an intervention are being implemented correctly and which components may require additional work or training. Interestingly, providing feedback about how well the teacher is implementing the intervention is actually more powerful than telling the teacher how the student is responding to the intervention (DiGennaro, Martens, & Kleinmann, 2007).

Using trained peers to monitor each others' treatment integrity may be a way to keep costs low and integrity levels high. In addition, trained peers may be beneficial as teachers may be more open to information that comes from their

peers than from other sources (Landrum, Cook, Tankersley, & Fitzgerald, 2007). Also, peers are typically in the same building with each other, eliminating the problem of the monitor (typically a researcher) leaving the school and taking the measures of integrity out the door with her.

How Do I Take Direct Observation Treatment Integrity Data?

Collecting treatment integrity data via direct observation is a simple process that requires just a few minutes of planning. For academic and behavioral interventions, a teacher would meet with his or her peer monitor to review the teaching procedure to be used. The peers would simply make a list of the most important components of the intervention and come to a consensus about what those components are. *Figure 1* provides examples of treatment integrity for the interventions of choice making and response cards from articles in this issue. Using the treatment integrity form for these two interventions, a peer may observe another teacher delivering the intervention and then debrief as to the total number of steps implemented versus steps missed or added. Peers should meet to discuss their performance and provide feedback to each other.

It is important to have a set schedule with a peer monitor and for them to meet at least every 2 weeks. There are a number of potential issues to be considered when having teachers give each other performance feedback. It is necessary for the person providing the feedback to be well versed in the instruction or intervention being observed. A simple way to do this is to have a teacher using a new intervention be observed by a more experienced teacher. If there is a new intervention that all teachers will be trained on at one time (e.g., a new reading program, a schoolwide behavior support system), teachers may still be

Figure 1 EXAMPLE OF TREATMENT INTEGRITY SHEETS FOR CHOICE MAKING AND RESPONSE CARDS

Choice-Making Intervention

Component	Data	%
1. Teacher provides documentation to peer monitor regarding times of day/activities that are difficult for the student	✓	1/1 = 100%
2. The type of choices are appropriate for the student and circumstances	✓	1/1 = 100%
3. Teacher asks the child to make a choice	✓ ✓ ✓ ✓	3/4 = 75%
4. Appropriate wait time given	✓ ✓ ✓	2/3 = 67%
5. Child's option is provided within 30 seconds	✓ ✓ ✓	3/3 = 100%
6. If child does not respond, use least to most prompting	✓ ✓	2/2 = 100%
Average % of overall integrity		90%

In this case, the overall integrity is good and the teacher implemented all components with good accuracy.

Response Card Intervention

Treatment	Data	%
Each student has a response card available to him or her	✓ ✓ ✓	3/3 = 100%
Teacher uses planned cues to alert students about using card ("1-2-3, show your answer," or "Write. Then put your marker down and look at me.")	✓ ✓ ✓	1/3 = 33%
Teacher waits 3-5 seconds after asking question	✓ ✓ ✓	3/3 = 100%
Correct responses are praised immediately and specifically. ("Great solving! 6 x 7 is 42!")	✓ ✓ ✓	2/3 = 67%
Corrective feedback for incorrect responses occurs immediately and positively.	✓ ✓ ✓	3/3 = 100%
Average % of overall integrity		80%

In this case, the overall integrity is good; however, the teacher learned that she needed to remember to use the planned cues more accurately.

Make a check mark every time the teacher has the opportunity to provide the component in the left hand column. Put a slash through the check every time the teacher actually provides the component

Table 1 TREATMENT INTEGRITY DECISION RULES

If treatment integrity is high and student progress is good	• continue with instruction!
If treatment integrity is high and student progress is inadequate	• examine the data and modify instruction • continue taking data on student progress as well as integrity data on new instruction
If treatment integrity is low and student progress is good	• look for additional instruction that may help the student achieve even more
If treatment integrity is low and student progress is inadequate	• examine the data to determine which components of the intervention need to be implemented with greater accuracy • continue taking data to ensure that treatment integrity increases

able to support each other. A checklist or summary of the needed components may be included in training materials teachers receive during professional development. If not, teachers may need to spend a planning period creating a checklist from training materials and discussing what they learned. This may be especially important with new curricula or interventions to prevent teachers from getting into the habit of teaching the material incorrectly. Finally, they should make sure to compile the data after each session and debrief about what went well and what areas need improvement.

How Can I Use Treatment Integrity Data in My School?

Making sure that academic and behavioral interventions are being implemented as written is clearly important because it is directly linked to student outcomes. In the field of behavior analysis, interventions are evaluated for effectiveness based on student performance data. In addition to avoiding inappropriate decisions regarding behavior and academic intervention planning, treatment integrity data may demonstrate the usability and utility of interventions as well as the specific components necessary for improved performance. This information is used to determine whether an intervention should be continued, modified, intensified, or eliminated (Gresham, 2004). *Table 1* presents some basic decision rules about how

to use treatment integrity data. For example, if treatment integrity is high and student progress is inadequate, teachers should examine the data and make appropriate instructional changes as needed. On the other hand, if treatment integrity is low and student progress is inadequate, teachers should examine the integrity data to determine which components of the intervention need to be implemented with greater accuracy.

Summary

All teachers enter the profession with a desire to do one thing: teach. When students are not demonstrating progress, teachers must first ensure that they are providing the instruction that is intended. Implementing scientifically based interventions consistently and with treatment integrity effectively provides teachers a way to be certain that it is the interventions that are working. Using just a few minutes every 2 weeks or so to reflect with a peer upon the actual teaching practices in a classroom may have a profound effect on the quality of instruction delivered. Collecting treatment integrity data is one way to ensure instructional time is used efficiently and effectively and that student progress is maximized.

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