Intensive Intervention Practice Guide: Self-Monitoring Systems to Improve Behavior Outcomes for Students With Comorbid Academic and Behavior Difficulties

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What Is It?

The purpose of self-monitoring systems is to develop students’ self-determination skills by improving the awareness of their own behavior. Crucial components of a self-monitoring system include students observing, evaluating, and recording their own behavior that is explicitly defined; students striving for independence and maintaining positive outcomes; and generalization of these skills beyond the initial training setting (Bruhn et al., 2015).

Self-monitoring is a strategy that teaches students to self-assess their behavior and record the results. Though it does not create new skills or knowledge, self-monitoring does increase or decrease the frequency, intensity, or duration of existing behavior. (IRIS Center, 2022).

Among the two most common self-monitoring approaches include, (a) a student monitors and records the presence of a behavior and (b) a student rates their own behavior according to a set of pre-specified criteria. In the following sections, we describe the benefits of self-monitoring and these two common approaches.

Self-monitoring is a useful system that allows a student to track their own behavior, receive feedback, and access contingent reinforcement. Nelson et al. (2019) explains the benefit of using self-monitoring systems is improved use of executive functioning which can be evident in a students’ improved independence and academic outcomes. Executive functioning is defined as the “sum product of a collection of higher level skills that converge to enable an individual to adapt and thrive in complex psychosocial environments” (Goldstein, 2014, p. 5). Some of those higher level skills can include goal selection, planning, initiation of activity, self-regulation, mental flexibility, deployment of attention, and utilization of feedback (Goldstein, 2014). Self-monitoring techniques can be implemented in the classroom while teachers are teaching whole group instruction without having to count or rate a student’s behavior simultaneously (Webber et al., 1993). It can be increasingly beneficial for general education teachers who have large groups of students and/or multiple students who need behavior support. A crucial component of behavior management for students with disabilities is to promote self-determination skills to improve independence. An additional positive outcome associated with self-monitoring systems includes the benefit of improved executive functioning skills. Self-monitoring is a lifelong skill that when taught can develop and create improved outcomes for individuals with disabilities including increased learning, motivation, and metacognitive skills (Nelson, 2019). Teaching students with disabilities how to manage their own behavior can carry over to developing additional behaviors that will improve their lifelong success (Webber et al., 1993). When used appropriately and with fidelity as an intervention, classroom teachers can expect to experience a significant decrease in student off-task behaviors that allow for more uninterrupted instructional time. The initial time it takes to engage the student
in the intervention and successfully teach self-monitoring procedures is significantly less than the
time that teacher would have spent engaging in student redirection. After initial implementation, a
teacher will only have to provide occasional prompts and reminders at a rate far less than before
intervention implementation (Vanderbilt, 2005). Studies that have included self-monitoring as a
part of the intervention treatment package, were able to show a decrease in problem behaviors
from an average of 22% to an average of 4%. While there was a simultaneous increase in aca-
demic engagement from an average of 37% to an average of 86% (Pinkelman & Horner, 2017).

Many schools are implementing and requiring teachers to execute multi-tiered systems of support
(MTSS) within their classrooms and school-wide. In fact, MTSS has been shown as an effective
framework for improving both academic and behavioral outcomes. Furthermore, there is evidence
to suggest that schools implementing MTSS show improvement in classroom management
(Grasley-Boy et al., 2019). Self-monitoring systems are a great way to increase behaviors that
are compatible with learning or for teachers to teach students who have severe or challenging
behavior appropriate replacement behaviors (Sayeski & Brown, 2011).

For Whom Is It Intended?

The individualized and flexible nature of self-monitoring interventions allow these strategies to be
used with various age groups of students with or without disabilities. Self-monitoring systems are
highly adaptable to meet a wide range of student needs including those students with the most
severe and persistent behavioral and learning needs (Kuchle & Riley-Tillman, 2019). Additionally,
students at risk for a disability should learn self-determination skills to improve their quality of
life with more independence. Additionally, self-monitoring interventions can be used to target the
reduction of challenging behavior or to increase academic skills; therefore, this strategy may be
appropriate for students with comorbid academic and behavioral needs to embed in academic
instruction. It might be important to start teaching students these skills early in their development
rather than waiting until later. Self-monitoring systems can be embedded within any tier of MTSS
by individualizing and customizing the system to meet a student’s unique educational, social,
and emotional goals (Sayeski & Brown, 2011). The target behavior chosen for the self-monitoring
system should be directly tied to the school-wide behavior expectations. More specifically, the
self-monitoring system should increase the student’s access to the school-wide acknowledgement
system. In practice, this might be a different teacher acknowledging the students on-task behavior
in other locations. Due to the complex nature of comorbid academic and behavioral needs, it is
critical for practitioners to use data-based individualization (DBI) to create, implement, adapt,
and progress monitor the students’ response to the intervention. This is an ongoing process that
will ensure the self-monitoring system continues to support students with complex academic and
behavioral difficulties that are always changing (Lemons et al., 2019).
How Does It Work?

Planning and implementing self-monitoring interventions can be broken into three general steps: 1) developing the self-monitoring system, 2) teaching the student the system, and 3) implementing the plan.

Step 1: Developing the self-monitoring system

**Identify the target behavior**
To begin planning and developing a self-monitoring intervention, select a target behavior for the student to self-monitor. Importantly, teachers should ensure that the behavior to be addressed is not in conflict with the student’s cultural norms or values. For example, often students are expected to demonstrate engagement by looking directly at the speaker; however, in some cultures children are taught that behavior is disrespectful. The behavior should be stated in a positive manner (Menzies et al., 2009). If the student is engaging in challenging behavior, select an appropriate replacement behavior that the student could increase rather than focusing on the negative behavior. For example, if the student is frequently off-task or disruptive, the target behavior could be on-task behavior or asking for help. Additionally, it is important that the student can already perform the expected behavior because self-monitoring systems do not teach students new skills. Rather, they allow students to set goals, self-observe, and self-record their performance of known behaviors (Rafferty, 2010).

**Define the target behavior**
After the student and teacher select a target behavior, it is important to define the behavior with specific, observable, and measurable terms (Wehmeyer, 2009). This creates a detailed, clear picture of what the behavior looks like. It may also be helpful to include examples and non-examples to allow the student to discriminate when the behavior is or is not occurring (Bell et al., 2013). An example of an operational definition of the above behavior, on-task behavior, is “looking at the current activity, following along with teacher instruction and directions, and working with materials appropriately.” Examples of on-task behavior include writing numbers or words on the assigned task and looking at the board and teachers while the teacher is talking. Non-examples of on-task behavior include talking to a friend while the teacher is talking or participating in a different task than the one assigned.

**When and where**
Next, determine when the student will use the self-monitoring system. This should be decided based on when and where the target behavior is occurring (to decrease) or is not occurring (to increase). Each self-monitoring system can be individualized to support students during specific
times of day based on when and where the student is demonstrating challenging behavior. If a student only needs additional support during one challenging class per day, then they could implement the self-monitoring system during only that class. In contrast, if the student could benefit from self-monitoring throughout the entire school day, it is helpful to break the day into small chunks of time (e.g., each class period, morning, and afternoon). This allows the student to be rewarded if they are successful during at least one of the times (Menzies, et al., 2009). Additionally, by breaking the school day into small chunks of time, the teacher can see where the behavior is occurring most often to allow you to provide more support or prompts during those times.

**Create and/or locate materials**
Create or use a previously created self-monitoring form/data collection sheet that is age and developmentally appropriate, simple, and divided into specific time windows (Rafferty, 2010). Specific time windows can be decided by considering class periods, individual activities, morning and afternoon classes. When students are first learning to self-monitor it is best to start with smaller time windows to allow them to practice multiple times per day. The following should be included on the form: target behavior definition, time windows or settings listed, and space for the student to self-record the occurrence of the target behavior. Additionally visual supports (e.g., smiley faces, thumbs up thumbs down) that are helpful for the student to independently self-record can also be added (Menzies et al., 2009). Previously created behavior rating forms can be found here: https://dbr.education.uconn.edu/library/information-for-parents-and-professionals/. Additionally, see below for two example data forms.

**Figure 1. An example of a self-monitoring datasheet for a student to monitor their work completion and effort.**

<table>
<thead>
<tr>
<th>Name: ______________________________</th>
<th>Date: __________</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal:</strong> (example) I will do all my work in at least 3 classes, and I will try my best in at least 3 classes.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Class/Subject</th>
<th>Did I do all of my work?</th>
<th>Did I try my best?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Reading</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Writing</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Science</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Daily Totals</td>
<td>I did all my work in ____ classes.</td>
<td>I tried my best in ____ classes</td>
</tr>
</tbody>
</table>

*Note: The student would use this form to mark yes or no for both questions at the end of each class period. This form would be used across one school day.*
Figure 2. An example of a self-monitoring datasheet for a student to monitor their on task behavior during one class period/activity.

<table>
<thead>
<tr>
<th>Am I on-task?</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 minutes</td>
</tr>
<tr>
<td>10 minutes</td>
</tr>
<tr>
<td>15 minutes</td>
</tr>
<tr>
<td>20 minutes</td>
</tr>
</tbody>
</table>

Note: The student would use this form to mark yes or no at every 5 minute interval. This form would be used for one class period or for one activity.

Collecting data

For practitioners to effectively create and use the self-monitoring plan for their students, it is critical to thoroughly understand the data-based individualization (DBI) process. Below are the steps for using DBI within self-monitoring interventions. Educators should prepare systems and procedures for these steps prior to implementing a self-monitoring intervention.

1. Select an evidence-based intervention program (i.e., self-monitoring)
2. Select a progress monitoring system that is ongoing and frequently used to assess the students’
   • A simple example of this could be a paper-pencil graph used to display the frequency or rate of the students’ behavior.
3. Set a goal for the student to strive towards
4. Collect frequent (e.g., daily, weekly) data and graph those data
5. Analyze the data on a consistent basis (e.g., weekly) to determine how the student is responding to the self-monitoring intervention
   • No improvements (stagnant data) - consider adapting components of the self-monitoring systems and/or consider the need for further behavioral assessment
   • Improvements (decrease in challenging behavior or increase in prosocial behavior) - continue implementing self-monitoring system until student may be ready to begin the fading process
Step 2: Teaching the student the self-monitoring system

After designing the procedures and materials, teach the student how to use the self-monitoring system. This includes sharing the target behavior definition, in positive, student-friendly language and explicitly teaching the steps for self-monitoring (Rafferty, 2010). When discussing the target behavior, it is critical to share why the target behavior is important in order to increase the student’s buy-in. When explaining the definition of the target behavior, students often benefit from the discussion of examples and non-examples, but also may need images, video models that can be reviewed as needed, and peer models to differentiate between engaging and not-engaging behavior. When explicitly teaching the steps for self-monitoring, the teacher should model the steps and then allow the student opportunities for guided and independent practice while providing feedback to the student. Modeling and practice can be applied to how to monitor the behavior, how to record the behavior on the self-monitoring form, how to determine if the student met their goal and/or rewards, and how to self-graph.

Step 3: Implementing the plan

Provide initial support

When the student first starts using the self-monitoring system, adults should monitor the student’s ability to accurately identify and record the target behavior. If the student is unable to do so initially, provide reminders and prompts in the moment. Continue to monitor their ability to accurately self-monitor and systematically fade your support over time.

Monitor student’s progress

Based on progress monitoring data (e.g., baseline data, self-monitoring data), teachers can determine how students are progressing and if self-monitoring is helping to improve the student’s behavior. Baseline data, data recorded to reflect the current frequency, rate, duration, or intensity of the student’s behavior, should be data collected prior to the implementation of the self-monitoring system. Collecting baseline data helps you answer the question, “What does the student’s behavior look like before this support goes into place?” These baseline data will later help you determine if the student is benefitting from the self-monitoring intervention by comparing data between baseline and when the self-monitoring intervention is in place. Visual representations (e.g., graphs) of the data allow teachers to assess students’ progress. Teachers can then make decisions about adapting or modifying the self-monitoring system to better meet the needs of students. As mentioned before, it is critical for teachers to continue to monitor a student’s performance through a systematic data collection process.
Self-graphing
Self-graphing has been proven to be helpful in increasing positive, desirable behaviors during self-monitoring interventions because of the visual stimulus it provides (Bruhn et al., 2012). A graph can be used to create a visual of how the student is doing across the times they are using a self-monitoring system. This typically includes transferring the total number of target behaviors across the class (if a student is only using a self-monitoring system in one class) or across the day (if a student is using a self-monitoring system across the school day).

Incorporating reinforcement/rewards
Reinforcement is often included within self-monitoring interventions (Bruhn et al., 2012). Students can receive some types of reward such as points, tickets, praise, or a tangible reward as a part of their self-monitoring intervention. Rewards can be provided when students meet a predetermined goal or for accurately self-monitoring (Bruhn et al., 2012). An example of a predetermined goal for on-task behavior may be, “I will be on-task 8 out of 10 times each class period.” In order to determine if a student is accurately self-monitoring, a teacher could take data at the same time the student is self-recording and a comparison between the student and teacher data can determine the students’ accuracy of self-recording.

Fading
Once the student is successful and showing improved rates of the target behavior, the use of self-monitoring materials (e.g., recording data sheet, graph, cueing mechanisms) should be faded over time. Fading can and should be individualized based on the student’s strengths and needs. Fading can consist of increasing the time intervals (e.g., each class period to half days, each activity to class periods) or increasing the goal the student is striving for (e.g., they were previously working to have less than 5 disruptions per day, now they can work to have 1 or fewer disruptions per day). The ultimate goal is for the student to internally monitor their own behavior without the use of the self-monitoring system (Rafferty, 2010). Additionally, fading can be done by having the student gradually self-record the target behavior less and less frequently. While the system is being faded, the teacher should continue to monitor the frequency and/or rate of the students’ target behavior to ensure the student is remaining successful.
How Can Families Support Implementation?

A collaborative partnership between schools and families is an important way to promote positive academic, behavioral, and social outcomes, especially for students who have disruptive or challenging behaviors. Families can play a critical role in teaching children about the value of school and the behaviors that lead to success. In fact, research suggests that high levels of parent involvement are correlated with positive social, emotional, and behavioral outcomes across diverse cultural, ethnic, linguistic, and socio-economic backgrounds (Davis, 2014; Milner et al., 2019; NASP, 2005; Robinson & Fine, 2010). A true school-home partnership is built on a foundation of shared understandings, goals, and responsibilities (Bellinger et al., 2016; Harvey et al., 2003). Learning about a student through the lens of their family will give invaluable information about the student’s prior knowledge and experience with school and behavior which may then be used to create appropriate, meaningful, and relevant interventions (Milner et al., 2019). With this shared understanding about a student’s background, teachers and families can work in concert to select culturally appropriate target behaviors and create materials specifically tailored to the individual. Therefore, it is essential that schools create an environment and culture that encourages all families to become knowledgeable and confident partners.

The same behaviors teachers seek to address through self-monitoring systems at school are likely also encountered by families at home (Harvey et al., 2003). Students with social, emotional, and behavior difficulties respond well to consistent and predictable routines and interventions; therefore, consistent messaging about behavior and use of interventions across settings will prove most beneficial (Bellinger et al., 2016; Davis, 2014; Harvey et al., 2003). Research has shown that approaches such as Conjoint Behavioral Consultation which provides collaborative opportunities between families and teachers on ways to consistently address behavior across settings can decrease problem behaviors and increase positive social behaviors (Sheridan et al., 2017). Self-monitoring systems translate well across settings (Bruhn et al., 2015; Crutchfield et al., 2015; Ennis et al., 2018) which makes them ideal interventions to use both at school and home. For example, a student may self-monitor the same behavior at both school and home and compare data with the teacher or family member respectively. Alternately, the teacher and family may choose to use a self-monitoring intervention which incorporates contingent rewards received at home. When schools and families collaboratively develop and implement behavior interventions, behavior can significantly improve across settings (Bellinger et al., 2016).
How Practical Is It?

Although universal behavior supports focused on prevention are adequate for the majority of students (Sayeski & Brown, 2011), some students need a more intensive and individualized approach (Maggin et al., 2016). Self-monitoring is a relatively unobtrusive, quick, and easy to implement strategy (Bruhn et al., 2015; Carr & Punzo, 1993; Rafferty, 2010). Also of benefit, self-monitoring systems translate well across settings and content areas (Crutchfield, et al., 2015; Ennis et al., 2018; Menzies et al., 2006) and are flexible enough to address a wide variety of behaviors.

The time required to set up and manage self-monitoring systems is reasonable, making them a practical strategy for the majority of classrooms. In most cases, self-monitoring systems require more time upfront during the initial planning and implementation phases (Harlacher et al., 2006; Maggin et al., 2016; Peterson et al., 2006). However, teachers may expect that as the student gains competence that adult support may be systematically faded (Bruhn et al., 2015; Crutchfield et al., 2015; Menzies et al., 2006). Progress monitoring should be used throughout to make data-driven decisions about whether to intensify or fade aspects of the system such as reinforcers or rewards. Additionally, technology may be a time-saving tool to collect and analyze progress monitoring data. According to Crutchfield (2015), the same educational applications used to automatically prompt students to monitor their behavior and record a response (e.g. I-Connect) may also be helpful to teachers to store and analyze the data collected. Self-monitoring is a realistic and effective behavior intervention with broad appeal for teachers (Ennis et al., 2018).

How Adequate Is the Research Knowledge Base?

Several studies using both single-case design and group methodology have been completed to assess the effectiveness of self-monitoring systems. A variety of literature reviews have been completed over the past decades, building upon previous reviews, and assessing the effectiveness of interventions that utilize self-monitoring systems with different target groups of students including looking broadly at its effects on students with disabilities (Briesch et al. 2009) or looking specifically at outcomes for students with autism (Carr et al., 2014). Behavioral research on self-management interventions dates as far back as the 1970s when it was first assessed as an intervention to increase positive behavior or decrease negative behaviors. Since then, various studies have researched the effectiveness of self-monitoring interventions on specific skills such as increasing independence and on-task behavior, reducing disruptive or stereotypic behaviors. Research has also evaluated the effects of self-monitoring interventions on academic outcomes across a variety of academic domains (Mooney et al., 2005).
How Effective Is It?

A literature review by Bruhn et al. (2015) reviewed the outcomes of 41 studies that utilized self-monitoring interventions to target behavior-related dependent variables such as time on task or completion of assignment in students with documented behavioral problems. The systematic review found that each of the 41 studies demonstrated improvements in behavior because of the implementation of self-monitoring systems. These improvements included decreases in off-task behavior, disruptions, or negative social interactions or increases in behaviors such as on-task behavior, work completion, or positive social interactions. The review specifically looked at studies that targeted reinforcement and found that contingent reinforcement, which refers to reinforcement that is delivered only after the target behavior has occurred (Cooper et al. 2019), led to increased positive behavior outcomes as opposed to non-contingent reinforcement. Other meta-analyses have found similarly positive effects specifically for students with autism, and for all students, including those without disabilities (Briesch & Chafouleas, 2009). In terms of academic outcomes, studies also support the use of self-monitoring to increase positive academic outcomes across domains with lasting generalization of the self-monitoring skills in a non-training setting and maintenance effects lasting beyond the completion of the initial training. (Mooney et al., 2005).

What Questions Remain?

While various studies have looked at the effects of self-monitoring on both increasing and decreasing certain behaviors across various populations, there are a number of questions regarding specifics about self-monitoring that remain. Many studies have found that teachers typically play a large role in the implementation of self-monitoring systems (Briesch & Chafouleas, 2009), and clarification about actual levels of student independence as well as generalization and maintenance outcomes (Bruhn et al., 2015) should be studied. Literature reviews have also found varied outcomes related to the effects of teacher feedback on self-monitoring systems especially when the function of student behavior is escape-maintained (Bruhn et al., 2015), and this is an area that would benefit from further exploration. Other questions of interest include the creation of guidelines for fading and/or removing support, the role of function in development of the intervention, and the use of technology as a tool to support self-monitoring systems.
Where Can I Learn More?

- A website which outlines the basic steps of self-monitoring and includes links to additional resources: https://www.pbisworld.com/tier-2/self-monitoring/

- A website with links to examples of rating scales and checklists: https://www.interventioncentral.org/node/961544

- A website with resources on self-monitoring: https://iris.peabody.vanderbilt.edu/module/sr/cresource/q2/p04/

- A website with practical recommendations for self-monitoring system setup and implementation: https://www.theottoolbox.com/self-monitoring-strategies-for-kids/

- An article which explains self-monitoring and includes examples of forms and graphs as well as additional tips:

- An article that describes the steps to teach students how to self-monitor:

- An article which includes the steps of self-monitoring attentional issues using technology:
References


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