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Selecting the Right Tool for the Job: A Review of Behavior Monitoring Tools Used to Assess Student Response-to-Intervention

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The educational accountability movement has demanded that educators implement and also monitor students' responses to positive behavioral accommodations in schools as well as communicate this information to others. This new responsibility has left many educators struggling with ways to monitor students effectively. This article provides a brief overview of how to choose a behavioral monitor strategy effectively. Four options for behavioral monitoring are reviewed: (a) permanent products; (b) behavior rating scales; (c) systematic direct observation; and (d) behavior report cards. In addition, the strengths and weaknesses of each method are discussed along six areas of consideration: (a) goodness of fit; (b) directness; (c) generalization; (d) feasibility; (e) training; and (f) intrusiveness. Finally, the methods are considered in relation to each stage of the intervention process. This article provides a brief guide for school-based professionals focusing on behavior problems – one that provides multiple options for assessment and monitoring procedures and outlines considerations for selecting among these options.

Key Words: RTI, Behavior Monitoring, Assessment, Implementation

The push for educational accountability stemming from societal and political issues such as school safety and changing regulations governing education (e.g., Individuals with Disabilities Education Improvement Act [IDEIA] and No Child Left Behind Act [NCLB]) has resulted in increased need for outcomes-based behavior assessment and intervention planning. Educational accountability requires that educators implement and also monitor students' responses to positive behavioral accommodations in schools, while routinely communicating this information to others. This push for educational accountability has left many educators struggling with ways to monitor students effectively. In fact, Fuchs and Fuchs (2003) discussed the problem with the current mastery measurement framework used in special education monitoring activities, suggesting that, at best, current practice promotes procedural compliance rather than documenting effectiveness. In addition, although comprehensive yet practical resources regarding the monitoring of academic outcomes have become readily available (e.g., Curriculum Based Measurement [CBM] and the Dynamic Indicators of Basic Early Literacy Skills [DIBELS]), behavior monitoring techniques have not received similar attention. To this end, the purpose of this article is to provide a concrete overview of how to choose a behavior monitor strategy effectively.

Four options for behavior monitoring are reviewed: (a) permanent products (any behavioral data already existing in schools); (b) behavior rating scales; (c) systematic direct observation; and (d) behavior report cards. These methods were selected to represent a continuum of options commonly avail-

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able and familiar to school-based professionals, although each is not necessarily appropriate for use in all situations. Thus, the following aims to help school-based professionals make decisions about the selection and use of appropriate techniques for a given situation. This article provides a brief guide for school-based professionals focusing on behavioral problems, discusses multiple options for assessment and monitoring procedures, and outlines considerations for selecting among these options.

THE METHODS

In this section the above-mentioned methods for behavior monitoring are reviewed. For each of the methods a brief overview is provided with a specific focus on the strengths and weaknesses in relation to intervention monitoring. It is important to note that this is not an exhaustive list of behavior monitoring methods. For example, methods such as Goal Attainment Scaling and PDA assisted observation are not reviewed in this article.

Permanent Products

Permanent products are defined as any behavioral data that already exist in the system. Data may include information such as attendance (Mattison, 2004), discipline/suspension rates (Irvin, Tobin, Sprague, Sugai, & Vincent, 2004), homework completion, and existing behavior plan data (e.g., token economy). Permanent products are considered first due to the importance of looking at existing data before exerting substantial effort to "reinvent the wheel" (Riley-Tillman & Chafouleas, 2003).

There are many attractive characteristics of permanent products data. Data obtained using this method are readily accessible, do not require additional data-collecting procedures, and are likely to be considered highly relevant within a school system. For example, given that attendance records are tied directly to a district's ability to receive external funding, it is understandable that district personnel would consider these records highly important. In addition, much of these data will continue to be produced without the direct involvement of a school psychologist.

Although permanent-product data produce readily accessible information, it generally does not specify the duration, frequency, and intensity of a particular problem behavior or the environment in which it typically occurs. Although it can provide measurable and useful information, permanent-product data may present a somewhat superficial glimpse with regard to the monitoring of some interventions. For example, in the case of a student who needs to develop more positive peer interactions, attendance and discipline records might easily be used to monitor the overall progress of an intervention. However, such records do not provide specific information regarding change to his or her peer interactions. In other cases, permanent-product data could prove to be very useful. For a student who is identified as having poor attendance and who is also a frequent discipline referral, for example, the number of absences and discipline referrals is useful (Irvin et al., 2004; Nelson, Benner, Reid, Epstein, & Currin, 2002). First, the information allows school staff to monitor the progress of an existing intervention connected to these variables. In addition, these data alert school staff and faculty to the existence of a potential behavioral problem. Although some students may respond to disciplinary action aimed at reducing chronic absenteeism, some may not. Therefore, in some cases, other sources of information may be needed to supplement permanent records in order to monitor intervention effectiveness more accurately.

Another example of permanent-product data is homework completion, which provides a useful snapshot of a student's productivity habits by identifying his or her patterns in production and types of assignments missed. For example, a student's record may show that he or she is missing 30% of total homework assignments, all of which are vocabulary assignments. This type of data can be used as an

outcome measure and may help school staff monitor an intervention targeted at increasing a student's rate of homework completion. However, it may lack the sensitivity needed to assess the variables preventing the homework from being completed.

Despite some limitations there are some attractive aspects of the use of permanent products as an outcome variable. Specifically, permanent-product data does not require additional data collection procedures and there is no minimal training required for use. Progress monitoring through use of permanent products may be useful when resources (e.g., time and money) are limited and/or the information is sufficient to make sound judgments about interventions. It is also useful in alerting school personnel to existing behavior problems, particularly when used as a screening tool to identify those students in need of a more intensive intervention and behavior monitoring technique.

Behavior Rating Scales

Behavior rating scales are questionnaires that ask an individual (typically a student's teacher or parent) to rate a student based on his or her recent experience with said student (Kratochwill, Sheridan, Carlson, & Lasecki, 1999). Behavior rating scales can provide more global estimates of student behavior along various dimensions. These dimensions can be specific, such as attention (Brown, 1996; Conners, 1997) or adaptive behavior (Harrison & Oakland, 2000; Oakland & Houchins, 1985; Sparrow, Balla, & Cicchetti, 1984), or may include multiple dimensions to provide a picture of overall behavior (Achenbach, 1991; Reynolds & Kamphaus, 2005). For example, scales such as the Behavior Assessment System for Children (BASC-II; Reynolds & Kamphaus, 2005), Child Behavior Checklist (CBCL; Achenbach, 1991), and Conners' Rating Scales-Revised (CRS-R; Conners, 1997), assess a range of behaviors including externalizing and internalizing problems, attention/hyperactivity problems, and adaptive behaviors (Ramsey, Reynolds, & Kamphaus, 2002). Each of these scales has versions that can be used by parents, teachers, and the student, depending on his or her age.

On the positive side, many behavior rating scales provide good reliability and validity and require very little training for the rater. These scales can provide school personnel with valuable instruments for identifying the prevalence of clusters of behavior. In addition, they are relatively inexpensive and time-efficient (Ramsey et al., 2002). Finally, the information obtained from behavior rating scales can provide global information about an individual's behavior (Gladman & Lancaster, 2003; Ramsey et al., 2002).

Unfortunately, a number of difficulties exist with regard to using behavior rating scales in continuous progress monitoring. To monitor the progress of an intervention, multiple snapshots of a student's behavior are needed in order to gauge whether a particular intervention is effective. Most behavior rating scales are not designed to provide this level of analysis because they are not considered sensitive to change over time. In this case, the hypothetical student is rated by his or her teacher at the beginning of the school year, an intervention is implemented, and the student is then re-assessed at the end of the school year. The difference in scores could yield some information about intervention effectiveness; however, as with permanent-product data, factors contributing to the behavior change are not accounted for within the method. In this example of using the scale in a pre/post manner, the intervention was not monitored directly. In addition, the pre/post nature of the measurement negates any ability to alter the intervention in a timely manner if it is found not to be effective at altering the target behavior.

In sum, behavior rating scales can provide defensible estimates of a student's behavior across multiple dimensions. Such information can be somewhat useful in the development of behavioral interventions (Nelson, Benner, Reid, Epstein, & Currin, 2002). Although behavior rating scales can be important tools for use during initial assessment, these scales are generally not well-suited for use in progress monitoring. Rather, these scales are more useful for pre-intervention exploration of a student's behavior (Sandoval & Echandia, 1994).

Systematic Direct Observation

Systematic direct observation is a method of behavioral assessment that requires a trained observer to identify and operationally define a behavior of interest, use a system of observation in a specific time and place, and then score and summarize the data in a consistent manner (Salvia & Ysseldyke, 2004). While systematic direct observation can take a number of forms, it is first important to distinguish it from naturalistic observation. Unlike the consistent and focused nature of systematic direct observation, naturalistic observation simply requires an individual to observe and take anecdotal notes of what happened in the environment (Hintz & Matthews, 2004; Hintze, Volpe, & Shapiro, 2002). An example of a well-studied systematic direct observation measure that uses momentary time sampling and frequency count procedures is the State-Event Classroom Observation System (SECOS; Saudargas & Lentz, 1986). This system provides a reliable and valid observational method for obtaining data regarding both teacher and student behavior in the classroom. Examples of some of the questions about behavior that can be answered when using SECOS include how often the student is out of his or her seat, whether he or she is engaging in disruptive motor behavior, whether he or she is playing with objects, and whether he or she is interacting appropriately with his or her peers and/or teacher. It is important to note that there are a number of other systematic direct observation systems available to school psychologists such as the Behavior Observation of Students in Schools (BOSS; Shapiro, 2003).

There are a number of reasons systematic direct observation has historically been considered the "gold standard" for behavioral assessment measures. Direct observation lends itself to precise (i.e., reliable and accurate) measurement because the information is collected as the behavior actually occurs. Given this access to information regarding the actual behavior of a child in the classroom, it is not surprising that direct observation tools have been touted as highly useful across a number of tasks (e.g., behavioral assessment, intervention monitoring, and diagnosis). When direct observation is conducted with high fidelity, it can provide a reliable snapshot of multiple behaviors that occur within a discrete amount of time, which is useful in identifying and monitoring target behaviors during intervention. For example, knowing that a student is disruptive in class versus knowing that this disruption is associated with the student spending a significant amount of classtime out of his or her seat provides useful information when monitoring a behavioral intervention.

Direct observation tools can have several drawbacks that limit feasibility of use in schools. First, they can cause a significant drain on resources. For example, direct observation can be time-consuming. Although a standard 20-minute direct observation session may seem like a small time commitment, the procedures involved to actually collect the data easily extend those 20 minutes to 30 minutes or more. Furthermore, it is typically suggested that multiple observations be conducted in order to maximize the reliability of the measure. Consider the time demands of biweekly direct observation of a classroom with 10 special education students. In this case, it is not unlikely that the time demands would come close to 10 hours of data collection per week. In addition to using resources such as time, direct observation usually requires the presence of an independent observer (someone other than the classroom teacher). That is, it would be extremely difficult for a teacher to continue normal instruction and collect momentary time sampling data on a student's behavior without the assistance of an external observer. Related to this limitation, direct observation by an external person has the potential for reactivity. When a person such as the psychologist observes a classroom, the behavior of the target student, other students, and the teacher can be altered by the new presence. Past studies have indicated that when an observer is in the classroom teachers change their behavior in manners such as an increased rate of prompts and/or positive feedback to the target student (Hey, Nelson, & Hay, 1977, 1980). Thus, while there is clearly a place for the use of systematic direct observation in the school, critical limitations to direct observation suggest that at times other methods may be more useful.

In sum, systematic direct observation techniques (e.g., momentary time sampling and frequency counts) are good tools for reliably estimating the occurrence of specified behaviors and are highly adaptable to specific cases. Despite their obvious attraction, these methods can be limited due to the significant resources needed and to potential reactivity effects.

Daily Behavior Report Cards

Daily Behavior Report Cards (DBRCs) are observation tools that meet the following four guidelines: (a) a behavior(s) is(are) specified; (b) rating of the behavior(s) occurs at least daily; (c) obtained information is shared across individuals (e.g., parents, teachers, students); and (d) the card is used to monitor the effects of an intervention and/or as a component of an intervention. This broad definition of DBRCs allows flexibility to design the card (i.e., the assessment tool) based on the individual needs of a situation. This flexible nature also allows for multiple criteria to be manipulated in order to match the demands of a situation. The procedures for using a DBRC are similar regardless of their design and intended purpose. The procedural steps involve: (a) defining the target behavior (preferably in positive terms); (b) selecting the rating frequency (how often the behavior will be rated) and type of rating scale; (c) designing the card; (d) determining if consequences (positive and/or negative) will be used, and if so, defining the criteria; (e) generating a list of potential consequences; and (f) determining the responsibilities of all parties involved (Riley-Tillman, Chafouleas, & McGrath, 2004).

Although not currently widely used as a behavior monitoring tool, DBRCs may provide a resource-efficient method for estimating behavior change over time. For example, a DBRC can be designed to allow rating of appropriate group time behavior (e.g., hand/feet to self or listen quietly) in a group of preschoolers as well as to document homework completion of a high school student. In a review by Chafouleas, Riley-Tillman, and McDougal (2002), it was suggested that DBRCs may be feasible (e.g., Nolan & Gadow, 1994; Pelham, 1993), acceptable (e.g., Turco & Elliott, 1986), effective in promoting positive student behavior (e.g., Blechman, Taylor, & Schrader, 1981; Dougherty & Dougherty, 1977), and successful in increasing parent/teacher communication (e.g., McCain & Kelly, 1993). In a recent study that investigated current perspectives about and use of DBRCs among a sample of educators, information such as reported use, frequency of use, and reasons for use were collected (see Chafouleas, Riley-Tillman, & Sassu, 2005). In that study, over 60% of respondents indicated use of a tool like the DBRC to some degree. In addition, results suggested that use of the DBRC both as an intervention tool and as a way to measure behavior was highly acceptable. In summary, these results suggested that educators may find it highly feasible and acceptable to incorporate use of DBRC as a behavioral progress monitoring tool.

Despite the promising role for DBRCs in progress monitoring, available research documenting their technical characteristics is limited. Two recent published studies have begun to provide this information. First, in a study by Steege, Davin, and Hathaway (2001), the reliability and accuracy of a DBRC involving specific behaviors exhibited by persons with developmental disabilities was examined. The researchers found that the use of their performance-based behavioral recording procedure was reliable and accurate for recording the specified behaviors. For example, trends in ratings of the behaviors over time were similar between the DBRC and direct observation data. In addition, a recent study comparing information obtained from DBRCs and systematic direct observation across different raters found a significant positive correlation between systematic direct observation data collected by an outside observer and DBRC data collected by a classroom teacher (Chafouleas, McDougal, Riley-Tillman, Panahon, & Hilt, in press). Together, these studies provide initial support for the DBRC as a potentially feasible supplement or complement to direct observation when measuring behaviors typically found in the school setting (e.g., on-task/off-task). Regardless of these studies, it is critical for

practicing school psychologists and other educational professionals to understand that by their very nature, DBRCs will result in data that are composed of a rater's perception of the target student's behavior. The data by definition will be a less accurate estimate of the student's actual behavior during this observation period than data collected through the use of systematic direct observation. This should be considered a weakness in this outcome measure.

In summary, the flexible nature of DBRCs makes them appealing for use in educational settings. In addition, DBRCs may also be appealing for use in behavior monitoring given their relative low cost in terms of resources. For example, it only takes a brief amount of time to complete a DBRC rating in contrast to the time needed to conduct a systematic direct observation; however, the strengths and weaknesses of using DBRCs for behavior assessment purposes have yet to be fully explored. For example, it is clear that DBRCs do not provide data that are as accurate as data obtained from systematic direct observation. Thus, the relative strengths and limitations of this method should be carefully considered prior to selecting DBRCs as the behavior monitoring tool.

CHOOSING THE RIGHT METHOD

Although understanding of different methods for use in behavioral progress monitoring is a critical first step toward the effective selection of a monitoring strategy, additional issues must be considered to fully understand the strengths and weaknesses of each method. In this section, six considerations (goodness of fit, directness, generalization, feasibility, training, and intrusiveness) are outlined. In addition to this discussion, a summary of each method and corresponding consideration can be found in Table 1.

Table 1.
Criteria to be Considered When Choosing A Continuous Behavior Monitoring Strategy

	Permanent Products	Behavior Rating Scales	Systematic Direct Observation	Daily Behavior Report Cards
Goodness of Fit	Low	Low	High	High
Directness	Medium	Low	High	Medium
Generalization	Medium	High	Low	Medium
Feasibility	High	Medium	Low	High
Minimal Need for Training	High	Medium	Low	Medium
Minimal Intrusiveness	High	Medium	Low	Medium

Goodness of Fit

One consideration when selecting a technique is to match the monitoring needs with the behavioral monitoring measure, which is in this instance defined as goodness of fit. For example, if the goal of the intervention is to increase attendance, then a permanent products measure (attendance records) would be appropriate. In contrast, methods such as direct observation and DBRC may be more adaptable to meeting a variety of monitoring needs as they can be customized. In addition to goodness of fit in relation to the target behavior, adaptability of the method to the intervention monitoring needs in terms of the frequency of data collection should be considered. Although a behavior rating scale might sufficiently address the initial and/or final assessment of the target behavior, it is not appropriate to administer this measure on a daily basis in order to monitor incremental change in the behavior.

Directnesss

A second consideration is the directness of the method. Cone (1978) proposed that methods of assessment could be considered along a continuum of directness that was dependent on the extent to which the behavior was measured at the time and place of actual occurrence. Methods that fell closer to the "direct" end would be considered more objective. Thus, methods such as the DBRC and behavior rating scales could be more heavily influenced by the perceptions of the rater and therefore may not provide data that are as objective as data obtained from methods such as systematic direct observation and forms of permanent products (e.g., attendance records). If it is critical that the behavior is monitored with higher objectivity and with an accurate measure of the target behavior, then the use of the less direct methodologies would be inappropriate. For example, serious behaviors that suggest need for an alternative education setting (e.g., pose serious harm to self or others) would probably warrant monitoring through use of systematic direct observation. Doing so may increase certainty that the data represent actual behavior of the student, which in turn allows educational professionals to draw stronger conclusions about appropriate intervention choices.

Generalization

Although directness of observation is at times important, in other situations it may be more important to make a generalized statement about a child. Recent research has suggested that methods such as systematic direct observation may not be appropriate tools for such a form of generalization (Hintze & Matthews, 2004). That is, although systematic direct observation is an effective methodology for directly assessing behavior specific to one time, setting, and activity, that information may not be easily integrated into an overall statement about the child's behavior. Thus, in cases that call for a general statement of student behavior, methods such as behavior rating scales and DBRC may be more appropriate than the more direct methodologies.

Feasibility

In addition to the technical characteristics of each method, attention should be paid to the feasibility of the tool for the setting in which it is to be used. In the case of a typical classroom, feasibility would involve the impact on the teacher and support staff that would likely be responsible for implementing it (i.e., collecting the data). Highly feasible methods such as permanent products have almost no impact on the day-to-day work of the teacher or organization, given that the information is already collected as part of the daily routine. However, activities that require an outside observer to collect each data point, such as with systematic direct observation involving momentary time sampling, can have a significant cost in terms of organizational resources. This cost is compounded as research indicates that a considerable amount of observation needs to be conducted in order to make educational decisions (Hintz & Matthews, 2004). Thus, if an organization cannot allocate a trained outside observer to monitor the effectiveness of an intervention, then the methodology will not be feasible for use over time. In contrast, a method such as DBRCs is much more feasible than systematic direct observation. Although there is some cost in terms of creating forms for rating the student and actually completing the brief rating, they are more resource-efficient overall than systematic direct observation.

Training

Training refers to considering the amount of training needed to utilize a method appropriately. Permanent products require little additional training in that the organization already has the method in

place. DBRCs also may require minimal training given findings that many teachers are already familiar with and use some forms of a DBRC (Chafouleas et al., in press). While it is clear that some training would typically be required to make the utilized DBRC methodologies consistent, this training would be minimal when compared to other methods of behavior monitoring. In contrast to the low amounts of training needed to use these methods, a higher need for training is seen with systematic direct observation and the use of behavior monitoring scales. Both methods require training procedures that may not be feasible in a particular school environment. Consider for example all of the facets of systematic direct observation that must be addressed for the process to be conducted with integrity. A school psychologist must be able to identify a specific behavior, operationally define that behavior, use some standardized procedure in a carefully selected time and place, and finally score and summarize the data (Salvia & Ysseldyke, 2004). Unless the school psychologist and/or educational personnel conducting the systematic direct observation have been trained in each one of these steps, engaging in this process would likely have considerable training implications.

Intrusiveness

The final consideration, intrusiveness, refers to the amount of disruption that a monitoring methodology has on a teaching environment. In terms of intrusiveness, both permanent products and behavior rating scales seem to have little impact on the daily classroom environment. DBRCs would have some minimal impact in that a teacher must take the brief amount of time to fill out the card. Direct observation is clearly the method that is the most intrusive, in that an actual person must enter the environment. This high level of intrusiveness not only has the potential of producing a reactivity effect as discussed above, but also might lower the acceptability of the monitoring strategy to the teacher whose classroom is being intruded upon.

Problem Identification, Problem Analysis, and Progress Monitoring

It is important to consider that different behavioral monitoring tools might prove more effective at different stages of the intervention process. For example, at the stage of problem identification, it is likely that permanent-product data will be heavily considered in that such information is most likely to be present before the intervention process has begun. In addition, at this stage of intervention the discussion of the problem behavior is likely general in nature. As a result, the use of systematic direct observation or DBRCs could be difficult in that each requires that a specific target behavior has been identified. When considering the problem analysis stage, it is clear that each method has the potential to be beneficial to the discussion. If the target behavior is in line with existing permanent products or behavior rating scale data, then such information should be a part of the problem analysis discussion. In addition, given that at this stage a target behavior has been identified, both DBRCs and systematic direct observation become highly appropriate in informing hypotheses about why the problem behavior is occurring. Finally, in the progress monitoring stage, it becomes critical that the tool/s utilized can be given in a repeated fashion and that the system has the resources to utilize the method/s without compromising the educational environment. If the target behavior is measured by some permanent product (e.g., homework completion) then that source of data should be utilized to monitor the effectiveness of the intervention. In addition, if the educational system has the resources to utilize systematic direct observation repeatedly, this tool would be highly appropriate. If the environment does not have such resources, or the teacher perception is considered very important, then a tool like DBRCs should be considered.

CONSIDERING THE METHODS

There is no simple solution to the question "What is the right method for behavioral progress monitoring?" It is clear that each method presented has strengths and weaknesses, which makes the selection process itself quite important. Table 1 presents a brief rating of each of the four reviewed behavioral progress monitoring techniques using each of the six criteria presented above. This table was developed so that school psychologists and other educational professionals could consider each factor and select the best tool for the job. For example, in a situation in which there are significant resources available and it is critical to have highly accurate data, systematic direct observation would be the logical choice. In another situation in which the availability of an observer is limited, and yet it is important to have daily data collected, a daily behavior report card procedure would be appropriate.

In addition, it is likely that in many situations a combination of methods can be utilized so that the weaknesses of one behavioral monitoring technique are mitigated by the strengths of another. For example, in the case of a student whose intervention is focused on reducing aggressive behavior that results in being sent to the assistant principal's office, several methods might be used. First, if office referral data are available, it should be utilized as an initial source of information. Second, in order to obtain more accurate data on the behavior that leads up to the office referral, systematic direct observation could be conducted on a weekly basis. Finally, in order to obtain daily updates on the effectiveness of the intervention, teacher-collected daily behavior report cards could be used. In this example, two feasible methods (permanent products and DBRCs) were used in conjunction with one highly accurate method (systematic direct observation). In addition, the highly flexible nature of DBRCs and systematic direct observation minimizes the generally inflexible nature of permanent products data. Finally, the use of two minimally reactive methods allows the psychologist to consider the reactivity effect of the systematic direct observation. In the end, the use of the three carefully considered data sources results in an excellent system to gauge the effectiveness of intervention with this theoretical student.

CONCLUSION

It is clear that now more than ever a school psychologist has a range of technologies available in order to work with educational staff to develop and conduct interventions and monitor the effectiveness of those interventions. Problem-solving consultation methods and empirically supported interventions place the modern school psychologist in an advantageous position in comparison to school psychologists in the past. In addition, educational law is pushing the psychologist as well as the entire educational staff toward a response-to-intervention model of practice. Nevertheless, all of these advantages are mitigated if the modern technologies are not considered carefully. In the case of behavioral progress monitoring, it is critical for the psychologist to consider both the technical aspects of the method as well as the implications of use. It is only with this thoughtful selection that the monitoring methods will be effective and, as a result, the vast potential of the response to intervention model be fully realized.

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