Considerations of Baseline Classroom Conditions in Conducting Functional Behavior Assessments in School Settings

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Abstract

Research has shown that environmental classroom variables affect academic performance and student behavior, and appropriate behavior is often related to the presence of effective teaching practices and classroom management (Moore Partin, Robertson, Maggin, Oliver, & Wehby *Preventing School Failure*, 54, 172–178, 2010). For behavior analysts consulting in elementary education, some referrals for assessment and treatment of individual student behavior can be resolved by helping teachers establish effective class-wide practices. For this reason, some researchers suggest that behavior analysts should assess baseline classroom conditions as part of a functional behavior assessment (FBA; Anderson & St. Peter *Behavior Analysis in Practice*, 6(2), 62, 2013; Sutherland & Wehby *Journal of Emotional and Behavioral Disorders*, 11, 239–248, 2001). Through a literature review on effective classroom practices, we identified four specific classroom variables that have large effects on both learning outcomes and student behavior; we suggest consultants consider these four variables in baseline classroom assessments: (a) rates of active student responding (ASR), (b) appropriateness of the curriculum, (c) feedback and reinforcement, and (d) effective instructions and transitions. In this article, we will discuss each of these variables, describe how they can affect classroom behavior, and provide recommended targets from the research literature. We also provide a data-collection form for practitioners to use in their assessments of baseline classroom ecology, and for situations when these practices are not in place, we suggest potential resources for antecedent- and consequence-based interventions to decrease challenging classroom behavior.

Keywords Functional behavior assessment · Schools · Consultation · School-based consultation · Classroom management

Classroom management and teaching practices influence both academic performance and classroom behavior (Moore Partin, Robertson, Maggin, Oliver, & Wehby, 2010; Repp, 1994; Talbott & Coe, 1997). For behavior analysts consulting in elementary-education settings, helping teachers to establish effective classroom practices can improve learning outcomes and decrease undesired behavior. Class-wide interventions not

only are important for referrals requesting assistance with classroom management but also can be considered as frontline interventions when consultants receive referrals for individual students who engage in disruptive problem behavior (e.g., noncompliance, interrupting, distracting peers, negative peer interactions, off-task behavior, and minor to moderate levels of property destruction). Despite their importance, variables related to classroom ecology may be overlooked when consultants are called in to focus on a single student (e.g., when a student is referred for a functional behavior assessment [FBA]). Given that a lack of effective classroom practices can contribute to the occurrence of challenging behavior, it can be helpful to evaluate the “baseline classroom conditions” as part of the FBA process. In some cases, disruptive behavior can be reduced by making class-wide changes to the environment.

Classroom management and teaching practices impact academic performance and behavior (Moore Partin et al., 2010; Repp, 1994; Talbott & Coe, 1997) and, thus, should be evaluated. For example, how teachers allocate attention can have

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positive or negative effects on learning outcomes and student behavior. Low rates of teacher praise correlate with higher rates of inappropriate classroom behavior; as such, research also shows that increasing praise for appropriate behavior results in an increase in desired behavior (e.g., one of the earliest studies demonstrating this effect is Madsen, Becker, & Thomas, 1968). The number of opportunities to respond (OTRs; e.g., a teacher asking a question and creating the opportunity for an observable response from the students) and rate of active student responding (ASR) are two variables correlated with effective learning outcomes and appropriate behavior. Low rates of OTRs (and therefore low rates of ASR) result in less learning (Fisher & Berliner, 1985; Greenwood, Delquadri, & Hall, 1984; Heward, 2003) and increased problem behavior (Sutherland & Wehby, 2001). A third significant variable is the amount of time spent in transition. Students lose learning time during long periods of transition. Ineffective instructions and transitions can also produce problem behavior (Colvin, Sugai, Good, & Lee, 1997). Finally, a curriculum not matched to the current skill level of the students can result in problem behavior and poor academic outcomes (Anderson & St. Peter, 2013; Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991). When effective baseline practices in these areas are absent, the behavior analyst should consider the possibility of mitigating challenging behavior through classroom-level changes rather than individual-level interventions.

Classroom Ecology and Disruptive Behavior

There is a robust body of literature in behavior analysis supporting the assumption that both desired and undesired behavior is established through an individual's learning history and is maintained by environmental contingencies (Mace, 1994). In other words, the antecedents and consequences embedded in the natural environment of the classroom affect behavior, and where there is disruptive behavior, there are variables influencing its occurrence. Challenging behavior can be maintained by positive or negative reinforcement, and the consequences affecting challenging behavior can be socially mediated or automatic (i.e., reinforcement is a direct product of the behavior). Common social functions of challenging behavior include social attention, escape from demands or other aversive events, and access to tangible items or activities (Beavers, Iwata, & Lerman, 2013). When working with individuals who engage in disruptive behavior, behavior analysts will often conduct an individual FBA to determine the function the behavior, which they use in the intervention-planning process. Individual-level interventions generally involve components aimed to change specific antecedents and consequences for that individual (e.g., creating a token economy for the student to reinforce desired behavior).

If antecedents and consequences that support appropriate class-wide behavior are absent, then implementing individual interventions for one student may not be the most effective approach. Instead, consultants may want to recommend implementing class-wide practices that could be efficient and have more robust effects. The research-based class-wide practices we review in this article are similar to those implemented for individual interventions, just on a larger scale. Some of these interventions function as antecedents that tend to increase the likelihood of appropriate behavior and skill acquisition; other interventions function as consequences that are less likely to reinforce inappropriate behavior while reinforcing appropriate or incompatible behavior. For example, if a child engages in disruptive behavior maintained by teacher attention, the child's behavior might be effectively decreased by a class-wide intervention where the teacher increases attention and positive feedback contingent on students' appropriate behavior while minimizing reprimands and attention for inappropriate behavior.

In some cases, less intrusive interventions at the classroom level can effectively resolve a referral for disruptive behavior without needing to advance to a more intensive FBA technique and individually targeted behavior plan. Furthermore, if baseline classroom conditions are less than optimal, the naturalistic reinforcement conditions may not sufficiently maintain behavior when attempting to fade the reinforcement schedule associated with individualized interventions (e.g., differential reinforcement of alternative behavior). Increasing optimal classroom conditions may have positive results for all students, not just the target child. For these reasons, behavior analysts should assess baseline classroom conditions in the early stages when working on a new case (e.g., when asked to perform an FBA). When behavior analysts identify limitations while assessing classroom ecology, they should consider first-line interventions focused on class-wide practices. The rationale for this approach is to ensure that a therapeutic environment is in place before recommending more intensive or restrictive assessments and interventions (Van Houten et al., 1988). In classroom settings, a therapeutic environment employs practices that are reasonably expected to promote learning and appropriate behavior. When these conditions are lacking, the behavior analyst should work with the teaching team to put them in place.

Formal Assessment of Baseline Classroom Conditions

The extent to which behavior analysts in elementary education routinely conduct formal assessments of baseline classroom conditions is not clear; however, a lack of standard practice may be evidenced by the corresponding lack of specific recommendations to do so in popular textbooks on FBA (e.g.,

Chandler & Dahlquist, 2014; Cipani & Schock, 2010; O’Neil, Horner, Albin, Storey, & Sprague, 1997; Repp & Horner, 1999). Although we suggest that these assessments of classroom ecology are not yet part of standard practice, we are certainly not the first to recommend them. For example, Anderson and St. Peter (2013) wrote,

In the school districts in which we consult, functional assessments are sometimes requested when a simple behavior-modification program would be sufficient to improve behavior. At other times, teachers would benefit from broader assistance with classroom management or delivery of instruction. (p. 70)

In one study of 64 classrooms, researchers found a positive correlation between ratings of appropriate curricular activities and students’ appropriate behavior (Ferro, Foster-Johnson, & Dunlap, 1996). We believe one way to stimulate adoption of baseline classroom assessments is to provide behavior analysts with recommendations and resources for doing so. There exist few assessment protocols of baseline classroom conditions that are based on direct observations and empirical measures of teacher–student interactions (as opposed to interviews, rating scales, and checklists; e.g., Lewis, 2007a, b).

We suggest collecting objective observational data on four variables as part of assessments of classroom ecology; all have been shown to substantially impact behavioral and academic student performance (see cited research in each respective section). Many would view the recommendations in these areas as “best practices” in education. These variables are (a) OTRs and ASR, (b) appropriateness of the curriculum, (c) the use of feedback and reinforcement, and (d) the delivery of effective instructions and transitions. These variables are observable and measurable interactions between teacher and student behavior (see Table 1). Furthermore, there is research demonstrating that these variables are malleable—that is, deficiencies can be modified through intervention to improve behavior and learning (see Table 2). As such, we provide possible interventions to improve baseline classroom conditions when limitations in these practices are identified through classroom observations (see Table 2). We provide a data-collection form to assist clinicians in measuring variables related to the practices listed previously with the hope of providing a useable resource for school-based behavior analysts who do not already incorporate baseline classroom assessments in their practice.

Rates of ASR

ASR is an observable response to instruction (Barbetta, Heron, & Heward, 1993). Baseline classroom conditions should consist of frequent ASR, which necessitates frequent

Table 1 Indicator Recommendations for Each Strategy Area

Area	Recommendations
Pacing of Activities (ASR & OTR)	12 responses per minute (May be adjusted based on activity type and context)
Appropriateness of Curriculum	70%–80% accuracy for new material 90% accuracy for review material
Feedback & Reinforcement	5:1 ratio of positive to corrective feedback
Instructions	Should be specific Phrased as “do” requests Phrased as an instruction (not as a question)
Transitions	Should have a clear beginning and end Should be signaled Reinforcement for noncompliance should be avoided Reinforcement for compliance should be provided

OTRs. Measurement of ASR requires the observer to note the pace of instruction, as well as student responses to instruction. The pace of instruction is a key variable for both academic learning and behavior management; pacing should be brisk and appropriate for all individuals. Fast-paced lessons result in more responding and increased learning (Carnine, 1976; Heward, 2003). Research shows that the pace of instruction can have academic and social benefits. In addition to promoting effective learning (Gardner, Heward, & Grossi, 1994; Skinner, Belfiore, Mace, Williams-Wilson, & Johns, 1997; Skinner, Smith, & McLean, 1994), fast-paced instruction decreases off-task and disruptive behavior (Carnine, 1976; Gunter, Denny, Jack, Shores, & Nelson, 1993; West & Sloane, 1986). Effective, brisk-paced instruction often includes high rates of OTRs. Further, evaluating these responses can be a useful measure of the pace of instruction. Research reliably shows that increasing OTRs results in more correct responses and on-task behavior and less disruptive behavior (Sutherland, Alder, & Gunter, 2003; Sutherland & Wehby, 2001). One recommendation is four to six response opportunities per minute with 80% accuracy for new material (Council for Exceptional Children [CEC], 1987, as cited in Gunter, Reffel, Barnett, Lee, & Patrick, 2004). Other research suggests that a target of 12 responses per minute is more effective for promoting accurate responding (Engelmann & Becker, 1978). When conducting classroom assessments, behavior analysts may need to adjust targets based on contextual variables (e.g., students with physical or development disabilities may require different pacing for some activities than students without disabilities).

Despite the research showing positive outcomes with effective pacing, observational studies indicate that instruction often fails to meet the recommended criteria (Gunter et al.,

Table 2 Recommended Interventions to Improve Baseline Classroom Conditions

Strategy Area	Tools to Improve Effectiveness	References
Pacing of Activities (ASR & OTR)	Implement choral responding (oral). Implement written responding (response cards, response boards, student response systems [SRS]).	MacSuga-Gage and Simonsen (2015) Archer and Hughes (2011)
Curricular Revision	Conduct curriculum-based assessments (CBAs; e.g., DIBELS, Pearson aimsweb). Intersperse easy tasks with difficult tasks, keep difficult tasks brief and task content functional, and offer choices when possible.	Anderson and St. Peter (2013) Dunlap et al. (1991)
Feedback & Reinforcement	Use a MotivAider® to promote teacher praise. Provide performance feedback, coaching, goal setting, and video modeling to increase behavior-specific praise.	Rivera et al. (2015) Duchaine et al. (2011); Hawkins and Heflin (2011)
Effective Demands & Transitions (Response Error)	Use explicit instruction (i.e., “I do, we do, you do”). Use modeling (e.g., in vivo or video models).	Archer and Hughes (2011) Cihak et al. (2010); Flannery and Horner (1994)
Effective Demands & Transitions (Signal Error)	Select a clear, consistent signal that is perceptible to all students, and remind students to respond on signal, then repeat instruction and signal until all students respond.	Archer and Hughes (2011)

2004; Shores et al., 1993; Van Acker, Grant, & Henry, 1996; Wehby, Symons, & Shores, 1995). Rates of response opportunities range from as low as 1 per hour (Van Acker et al., 1996) to 4.1 per minute (Gunter et al., 2004).

To evaluate ASR, behavior analysts should measure both rate of OTRs and responses to instruction (see Appendix: *Questions/Commands; Student Responses*). Greenwood et al. (1984) defined an OTR as the interaction between (a) teacher-formulated instruction and (b) its success in establishing observable academic responding. Thus, both teacher questions or prompts (OTRs) and ASR must be measured. OTRs are often best captured as a rate measure. The behavior analyst can tally the number of teacher questions and prompts, such as “What is the capital of Michigan?” The number of OTRs can be divided by the total time observed to obtain the rate of OTRs. Furthermore, the number of observable student responses can be recorded. If OTRs and/or ASR are significantly below the recommended target of 4 to 12 per minute (depending on context), the baseline classroom conditions may not provide a therapeutic environment. In this case, the behavior analyst may want to work with the teacher on increasing ASR.

Increasing OTRs is an antecedent intervention for increasing the likelihood of appropriate behavior (e.g., increasing ASR) and promoting effective learning. When antecedent interventions set the occasion for appropriate behavior, they can subsequently lead to consequence-based changes by increasing reinforceable, appropriate responses, such as on-task behavior (Christle & Schuster, 2003). For students who engage in socially mediated disruptive behavior, this may function as differential reinforcement of responding that is incompatible with disruptive behavior.

If the teacher and behavior analyst agree to intervene on ASR and pacing, there are several technologies and methods

to consider. Many interventions have been shown to improve academic performance and to decrease off-task behavior. Arranging for choral and written responding are two easy ways for teachers to increase ASR (Archer & Hughes, 2011; MacSuga-Gage & Simonsen, 2015). Choral responding is when all students respond orally and simultaneously (in chorus) to a cue from the teacher (Wolery, Ault, Doyle, Gast, & Griffen, 1992). For example, if the teacher says, “What type of problem is 10 plus 4? Get ready” (with an added gestural cue of a finger snap), then the students should respond in unison following the finger snap by saying, “Addition.” Response cards can provide another method of choral responding. Instead of oral responses, students indicate their answers by holding up boards, cards, or other objects (Archer & Hughes, 2011). Preprinted response cards are a limited set of cards that may include options such as *A*, *B*, *C*, and *D* or *agree* and *disagree*. For example, suppose the teacher says, “The capital of the United States of America is New York City,” provides a few seconds of think time, and then says, “Get ready, cards up” (plus an added gestural cue). Following this cue, the class members should respond in unison by holding up their *disagree* cards. Prewritten response cards can also include multiple-choice options in which the teacher projects questions on a screen with corresponding multiple-choice options. Write-on response cards, such as small whiteboards, can be used similarly but allow the teacher to ask open-ended questions. For example, if the teacher says, “What is the answer to 10 plus 4? Get ready, boards up” (plus an added gestural cue), then the students should write “14” on their boards and hold them up as soon as the teacher gives the cue.

Class-wide oral and written responses are a great way to increase student responding because every student answers every question rather than only one student getting to say

the answer, as is traditionally done. When implemented at a brisk pace, it has the benefit of promoting on-task behavior (Christle & Schuster, 2003; Wood, Mabry, Kretlow, Lo, & Galloway, 2009). Choral responding has the added benefit of allowing the teacher to assess the performance of the entire class, provide feedback, and adjust instruction if necessary (Archer & Hughes, 2011). In addition, recent advances in technology have enabled the use of electronic response cards. Electronic clickers and web-based apps, such as Kahoot®, can be used in classrooms and have been shown to improve learning outcomes (Lantz & Stawiski, 2014; Yourstone, Kraye, & Albaum, 2008). Conceivably, teachers can modify instruction in real time based on student responses, as well as analyze recorded data at a later point. Further, information on the accuracy of student responding can inform decisions on whether reteaching or curricular revision may be needed.

Appropriateness of Curriculum

As noted previously, 80% accuracy is often recommended as a target for new material (CEC, 1987, as cited in Gunter et al., 2004). Assessing student performance is important, and high rates of responding allow the teacher to assess performance frequently during instruction. Ellis, Worthington, and Larkin (1994) identified 10 principles that should govern effective instruction. One of these principles is achieving moderate to high levels of accurate responding during instruction. High accuracy is positively correlated with student learning outcomes, whereas low levels of accuracy are negatively correlated with student learning outcomes. Thus, measuring student accuracy can be an important consideration during the assessment process. Instruction should be neither too easy nor too difficult. Students should have the necessary prerequisite skills to be successful in the lesson but should not yet have mastered the current content (Marchand-Martella, Slocum, & Martella, 2004). Lessons should be challenging, but they should also set up the students for success. There are varying opinions on the acceptable level of accuracy during instruction. Engelmann (1999) suggests that student responses should be correct at least 70% of the time when lesson content is first introduced, 90% if the lesson involves skills previously taught, and 100% when students have mastered the skill. Archer and Hughes (2011) suggest students should respond correctly 80% of the time when material is first introduced and 90% at mastery. As mentioned previously, the CEC (1987, as cited in Gunter et al., 2004) recommends that students be correct 80% of the time when learning new material. Taking all of these recommendations into consideration, we suggest a good rule of thumb is to aim for at least 80% correct student responding.

Correct and incorrect responses are observable responses that the behavior analyst can measure to determine whether the task is appropriate for students' instructional levels (see Appendix: *Correct Student Responses; Incorrect Student*

Responses). This can be done in conjunction with data collection on ASR. The number of correct responses can be divided by the total number of responses to determine the percentage correct. If the percentage of correct responses is significantly below the suggested levels, this may be an indication that instruction is not at the appropriate level (Archer & Hughes, 2011). Low levels of accuracy can indicate that the content is too difficult and may be too frustrating for the students. If the behavior analyst identifies this as a problem, he or she could work with the teaching team to conduct a formal assessment of the students' skills relative to the curriculum. Results of such an assessment can be used to make curricular adjustments as necessary.

Curriculum-based assessments (CBAs) are one way to measure whether instruction matches students' skill repertoires. CBAs can aid instructors in placing students at the appropriate level in the curriculum. They can also be used to identify supplemental instruction and monitor progress through the curriculum (Anderson & St. Peter, 2013). Some examples of currently available CBAs include the Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2002), the Scholastic Reading Inventory (SRI; Scholastic, 2007), and aimsweb (Pearson, 2012). These CBAs assess individual student skills in the core instruction areas of reading, writing, and math (Anderson & St. Peter, 2013; Johnson & Street, 2013).

Teachers can make modifications if CBAs show that the curriculum is out of line with student needs. Curricular revision is an antecedent intervention that can help decrease disruptive behavior and increase academic success. Presenting material that is at the appropriate level of difficulty can decrease the averseness of the task, thus decreasing the motivation to engage in disruptive behavior to escape the task. Like increasing ASR, presenting tasks that are within students' ability level (to which they are likely to respond effectively) can lead to increased social reinforcement (e.g., praise and attention). Several studies suggest that using assessment-based curricular revision can decrease problem behavior in both special and general education settings (Dunlap & Kern, 1996; Kern, Childs, Dunlap, Clarke, & Falk, 1994). As part of this process, it can be helpful for the teacher and behavior analyst to identify the components of the curriculum associated with problem behavior (Dunlap & Kern, 1996) and develop a plan to modify them. The behavior analyst can then measure whether the curricular changes sufficiently diminished the problem behavior. If not, further modifications or a different kind of intervention may be necessary. For example, additional variables, such as task length (short vs. long) and choice of task activities, may be incorporated to further improve classroom behavior. Dunlap et al. (1991) suggest that easy tasks should be interspersed with difficult tasks, choice should be offered when possible, and that difficult tasks should be short in duration and have functional relevance for the students.

Their findings suggest that problem behavior during instructional tasks could be reduced and learning increased by revising curriculum presentation in this manner.

Feedback and Reinforcement

One reason why higher levels of ASR promote appropriate behavior and learning is that ASR creates an opportunity for feedback (Van Acker et al., 1996). Reinforcement of correct responding is one form of feedback; correction of incorrect responding is another. Perhaps not surprisingly, rates of teacher praise are highly correlated with ASR and OTRs. The more opportunities teachers provide students to engage in reinforceable units of behavior, the more praise they tend to provide (Cantrell, Stenner, & Katzenmeyer, 1977; Sutherland, Wehby, & Yoder, 2002; Van Acker et al., 1996). Often, interventions to increase either teacher praise or OTRs also affect rates of praise (Lacy Rismiller, 2004).

Delquadri, Greenwood, Whorton, Carta, and Hall (1986) point out that in many educational settings, the requisite sources of reinforcement may be too impoverished to support appropriate behavior. Researchers recommend that teachers provide positive and corrective feedback in a ratio of at least 5:1 (Cook et al., 2017; Flora, 2000). The positive effects of praise have been shown across age groups and across a spectrum of social and academic behavior (Blaney, 1983; Broden, Bruce, Mitchell, Carter, & Hall, 1970; Connell, Carta, & Baer, 1993; Hall, Lund, & Jackson, 1968; Madsen et al., 1968; Martella, Marchand-Martella, Young, & MacFarlane, 1995; Poulson & Kymissis, 1988). Praise is most effective when it is behavior specific (Brophy, 1981; Smith & Rivera, 1993; Sutherland, Wehby, & Copeland, 2000). Increasing behavior-specific praise has a positive effect on academic performance and classroom behavior; for example, studies on increasing behavior-specific praise have demonstrated increases in on-task behavior (Sutherland et al., 2000), compliance (Marchant & Young, 2001; Matheson & Shriver, 2005) and academic engagement and achievement (Martens, Hiralall, & Bradley, 1997) and decreases in disruptive behavior (Reinke, Lewis-Palmer, & Merrell, 2008).

As with OTRs, naturalistic research has demonstrated infrequent use of praise in classrooms (Craft, Alber, & Heward, 1998). For example, White (1975) found that praise rates ranged from 0.39 to 1.3 per minute. After second grade, praise rates declined rapidly; praise occurred only every 5 to 10 min in high school (Thomas, Presland, Grant, & Glynn, 1978). Other observational studies have shown praise rates ranging from as low as 0.02 to 1.4 per hour (Shores et al., 1993; Van Acker et al., 1996).

Another important aspect of feedback in the classroom is error correction. Appropriate error corrections are immediate and direct (Marchand-Martella et al., 2004). Effective error correction provides information to promote correct

responding on subsequent attempts. Marchand-Martella et al. (2004) suggest that teachers first demonstrate the correct answer (otherwise known as providing a model), ask the student to respond again to the original cue (otherwise known as a test), and return to the item after providing OTRs on other items (otherwise known as a retest). Another form of error correction that can be useful in nonacademic tasks is a most-to-least or least-to-most prompting hierarchy. This should also be implemented immediately and directly. Context determines which kinds of error corrections are most appropriate at the given time.

To evaluate praise and feedback, the behavior analyst can track teacher behavior following each active student response (see Appendix: *Followed by Positive Feedback*; *Followed by Corrective Feedback*). As described previously, the behavior analyst can count the number of correct and incorrect student responses. Each correct response is an opportunity for the teacher to offer praise. Incorrect responses are opportunities for error correction. The behavior analyst can use event recording to measure the number of praise statements and error corrections. These can be totaled and divided by the number of correct and incorrect responses to obtain the percentages of correct and incorrect responses followed by praise and error correction, respectively. Alternatively, the behavior analyst can count praise statements and divide this by the total observation time to determine the rate of praise. If the teacher is to maintain the recommended 5:1 ratio of praise to error corrections, the percentage of appropriate responses that should receive reinforcement is not always clear. A good rule of thumb is to follow 80% of correct responses with praise. If a teacher is doing this, he or she will likely meet the 5:1 ratio, especially if correct responding is at 80% or better. To be maximally effective, the praise rate should be somewhat close to the rate of correct student responding. We suggest that teachers attempt to make at least four praise statements per minute during active instruction. Marchand-Martella et al. (2004) recommend that 100% of errors be followed by an error correction.

Negative interactions between teachers and students are correlated with problematic behavior. A reprimand is “a comment or gesture by the teacher indicating disapproval of student behavior” (Sprick, Knight, Reinke, McKale-Skyles, & Barnes, 2010, p. 195). We conceptualize “don’t” requests as reprimands (e.g., “Don’t run in the classroom!” and “Don’t throw your pencil.”). Reprimands are different from corrective feedback because they lack information about appropriate behavior. When assessing classroom variables, it can be helpful to examine the ratio of praise statements to reprimands.

If a teacher wants to maintain appropriate social behavior, it is helpful to praise social behavior in addition to academic responding (Sutherland et al., 2000). It is often recommended that teachers “catch students being good” to maintain good classroom behavior. The behavior analyst may want to collect data specific to this recommendation. This may not be

captured in data collected on praise following ASR, as described previously. Thus, we find it helpful to specifically count praise for social behavior. The ratio of praise for social versus academic behavior can be calculated by dividing the number of praise statements for social behavior by the total number of praise statements. If the teacher is rarely praising social behavior, it may be helpful to recommend increasing this.

Finally, because praise is most effective when it is behavior specific, the behavior analyst may want to count the number of praise statements that are behavior specific versus general (i.e., non-behavior specific). Behavior-specific praise is a positive statement including the behavior for which the statement is given. For example, “Great job! You’re right! The capital of Michigan is Lansing!” and “Awesome job, André! I love the way you got your book out right away!” are behavior-specific praise statements. “Great job!” and “Awesome job!” are general. When the number of behavior-specific and general praise statements has been counted, the percentage of behavior-specific praise statements can be calculated. If this percentage is low, the behavior analyst may want to work with the teaching team to increase the specificity of their praise.

Implementing effective praise and feedback is a consequence-based intervention that can influence both attention and escape-maintained disruptive behavior. For example, a teacher increasing her praise rates for appropriate behavior may decrease disruptive behavior by reinforcing alternative or incompatible behavior, especially if she simultaneously decreases social attention following disruptive behavior. Interventions to increase effective feedback can also influence escape-maintained behavior by affecting motivating operations, particularly when effective feedback decreases the relative difficulty or averseness of the task. Although feedback and praise are traditionally considered consequence-based intervention, feedback can also function as an antecedent intervention when it functions as a prompt for the next performance and thus increases contact with positive reinforcement (Aljadeff-Abergel, Peterson, Wiskirchen, Hagen, & Cole, 2017).

There are many ways to increase teacher praise rates, both general and behavior specific. Effective interventions include variations of performance feedback (visual and vocal), goal setting, coaching, and video modeling (Duchaine, Jolivet, & Fredrick, 2011; Hawkins & Heflin, 2011). For example, Duchaine et al. (2011) used coaching, goal setting, and performance feedback to increase behavior-specific praise in high school teachers in an inclusion classroom. All three teachers in the study increased behavior-specific praise, and two of the three met their target goals. The teachers not only reported seeing a positive change in their students but also maintained behavior-specific praise rates after the coaching and feedback were removed. Results from Duchaine et al. (2011) suggest that this could be a very effective and powerful package for

increasing and maintaining teacher praise rates, even in the absence of a long-term intervention.

Effective Demands and Transitions

The manner in which teachers deliver noninstructional demands can affect the probability that students will comply. Instructions should be specific, clear, phrased in a “do” format, and stated with precision. When teachers place demands, specific is better than nonspecific (Harding, Wacker, Cooper, Millard, & Jensen-Kovalan, 1994) and phrasing them as “do” requests is better than “don’t” requests (Neef, Shafer, Egel, Cataldo, & Parrish, 1983). Research has shown that formulating instructions as “precision requests,” where the instruction is clearly phrased as an instruction (not a question), produces less problem behavior and more compliance with task demands (e.g., Mackay, McLaughlin, Weber, & Derby, 2000; Yeager & McLaughlin, 2008). For example, the instruction “Please sit down” is preferable to “Would you please sit down?” or “Don’t run across the room.” Behavior analysts should evaluate task demands as part of the overall classroom context. As part of the assessment process, the number of appropriately phrased noninstructional demands can be divided by the total number of noninstructional demands to obtain a percentage of effective deliveries.

Transitions between activities often constitute complex demands for students. This is because students are required to complete several tasks in a row, often without discrete instructions before each task (Rosenkoetter & Fowler, 1986). Classroom transitions between activities and locations are opportunities for problematic behavior, including off-task and disruptive behavior. Observational studies suggest that students spend between 18% and 25% of their time in transition (Carta, Greenwood, & Robinson, 1987; Rosenkoetter & Fowler, 1986; Sainato, Strain, Lefebvre, & Rapp, 1987; Schmit, Alper, Raschke, & Ryndak, 2000). Teachers can provide both antecedent and consequence interventions to promote effective transitions.

Researchers recommend that transitions be predictable and have a clear beginning and end signaled by auditory or visual cues (Arlin, 1979; Embry & Biglan, 2008; Flannery & Horner, 1994; Schmit et al., 2000; Tustin, 1995). Some populations may perform well with an advanced warning stimulus (e.g., 2 min prior to the transition; Cote, Thompson, & McKerchar, 2005). On the other hand, some individuals may not respond well to early warnings (McCord, Thomson, & Iwata, 2001). Effective transitions also minimize potential reinforcement of noncompliance and reinforce compliance. For example, in the case of transitions that take students away from leisure activities, it is important to ensure that access to toys or other preferred items (potential reinforcement) is not maintained during periods of noncompliance. Teachers should avoid allowing escape from the transition demand by providing

additional prompting if off-task behavior is observed, and reinforcement should be delivered for appropriate transitions (e.g., praise or tokens; Cote et al., 2005).

Effective delivery of transitions can be directly observed (see Appendix: *Transitions*). For example, the behavior analyst can record each transition demand and tally whether it was phrased as a specific “do” request. When noting an ineffective request, the behavior analyst may want to record whether instructions were phrased in a general manner or as a “don’t” request. By tracking transition instructions in this way, the behavior analyst can pinpoint problems with how these requests are delivered, thereby clarifying what changes may be warranted. To do so, a task analysis of effective transition steps can be created, and the behavior analyst can observe transitions and count the number of effective transition strategies in place. The duration of transitions can also be tracked to determine whether they are too long. Depending on the transition activity (e.g., putting away a math book and taking out a reading book while sitting at a desk vs. getting up, taking a paper to the mailbox, finding a reading book on the shelf, and sitting back down), the transition time should vary. The teacher and the behavior analyst should discuss how long each transition should take and then measure the current duration of the transition. Interventions to improve transitions are primarily antecedent based in nature (see the following discussion on response errors vs. signal errors). Like many of the variables discussed thus far, an antecedent intervention that results in more effective student behavior may also derive the benefit of increasing reinforcement for behavior that is incompatible with problem behavior. Ideally, teachers should provide reinforcement for appropriate transitions and avoid reinforcing inappropriate behavior during these times.

If teacher demands and transitions are not effective, and students are displaying problem behavior during those times, the behavior analyst and teacher must determine whether the error is a response error (i.e., the student lacks the skill to follow the instruction) or a signal error (i.e., the student is not responding to a signal; Archer & Hughes, 2011). For response errors, direct instruction on “how to follow directions” or “how to transition” may be needed. Some research has shown the positive effects of modeling, both in vivo and using video models, on student compliance behavior while decreasing problem behavior (Cihak, Fahrenkrog, Ayres, & Smith, 2010; Flannery & Horner, 1994). In these studies, students are provided with instructions and a model of each action in the sequence. Following the model, students have the opportunity to practice the transition sequence. Although creating video models sometimes takes more time up front, teachers rated the intervention as preferable to other behavioral interventions because individual students can get direct instruction on transitions without removing the teacher from whole-class instruction (Cihak et al., 2010). Flannery and Horner (1994) also suggest that modeling provides predictability to students.

For signal errors, behavior analysts should work with teachers to develop a consistent and predictable schedule of tasks and consistent cues for when students should begin and end work. Predictable schedules can either follow the same routine every day or be posted in the classroom for the students and teacher to see (e.g., text or pictorial). Signals can be auditory (e.g., audible timers, bells, whistles), visual (e.g., a flashing timer or hand signal), tactile (e.g., a vibrating timer), or a combination (Archer & Hughes, 2011). Teachers should select a signal that they will readily be able to use in most environments and that all students can see, hear, or sense and should provide reinforcement for immediate responses to signals. Once a signal is selected, the teacher must ensure, following the signal, that she or he is reinforcing responding. This way, the signal will acquire discriminative stimulus (S^D) properties. If a clear signal is taught, consistently provided, and followed by praise or other reinforcement, and students are still not responding, there may be a motivational component to the response error. In other words, the transition difficulty may be what is commonly referred to as a “won’t do” rather than a “can’t do” issue. Further analysis of the function of problem behavior in these situations may be warranted. If transitions are taking students too long, there are several strategies in the literature that may prove useful, including modifications to the environment and using one-way rotations, clear signals, and reinforcement contingencies such as the Timely Transitions Game (Guardino & Fullerton, 2014; Yarbrough, Skinner, Lee, & Lemmons, 2004).

Conducting a Baseline Assessment of the Classroom

In the preceding sections, we discussed each of the variables we recommend consultants assess as part of baseline assessments of the classroom. Next, we will introduce a data-collection form for measuring these key variables through objective observation. We have been using a version of this form for years in making teacher observations and for giving teachers feedback on their instruction and classroom management. Parts of this form were adapted for general classroom use from the direct instruction observation instrument by Marchand-Martella, Martella, and Lignugaris Kraft (1997). Although we have found it to be helpful for guiding clinical decisions in our own cases, the validity of the data-collection form has not been previously assessed in the context of a controlled research study.

The data-collection form is included in the Appendix. This data form allows for the recording of multiple variables simultaneously. The behavior analyst records demographic information at the top of the form and includes the duration of the observation. This is important to include, as it will aid in calculating rate measures at the end of the observation. We

have labeled each of the cells in this data form for discussion purposes here. A blank copy of the data-collection form and operational definitions for all the targets can be downloaded for personal use in [supplemental materials](#) respectively. On the left side of the form is a column with the labels *Academic Behavior*, *Social Behavior*, and *Noninstructional Demands*. *Academic Behavior* is subdivided into *Group Questions & Commands* and *Individual Questions & Commands*. These represent teacher behavior. Across the top, there are columns for *Correct Student Responses* and *Incorrect Student Responses*. These represent student responses to the academic prompts (i.e., group and individual questions from the teacher). Below the student responses, columns are subdivided into *Followed by Positive Feedback*, *Followed by Corrective Feedback*, and *Not Followed by Corrective Feedback*. These represent the teacher's response to the students' correct and incorrect responses. *Followed by Positive Feedback* is subdivided into *Specific*, *General*, and *Behavior* to represent the different ways a teacher could respond to a correct student response (specific praise, general praise, or praising behavior rather than the academic response). There is also a column in this section labeled *Not*, which is used when there is no teacher response following the correct response. *Followed by Corrective Feedback* is also subdivided by *Model-Test-Retest* and *Other Corrective Feedback*; next to this is a column for *Not Followed by Corrective Feedback*. There is also a column in this section for *Followed by Positive Feedback*, which is used when incorrect responses are followed by positive feedback. These comprise cells A through P and provide the behavior analyst with the opportunity to count different types of feedback.

To score this top section, the behavior analyst must wait for an entire unit of instruction (e.g., teacher's question, students' response, teacher's response to the students' response) to occur before making a tally. For example, imagine this interaction:

1. Teacher to the entire class: "Everyone, what is the capital of Michigan?" (a question posed to the group).
2. Students in unison: "Lansing." (a group response that is correct).
3. Teacher to entire class: "Yes, Lansing, correct!" (specific praise for a correct academic response).

In this example, the behavior analyst would mark a tally in cell A. The unit of instruction consisted of a question posed to the entire group, followed by a correct response in unison, followed by specific praise. If the teacher had simply responded, "Correct!" (general praise for a correct academic response), then a tally would be marked in cell B. If the teacher had responded, "Great job answering together!" (specific praise but for social rather than academic behavior), a tally would be marked in cell C (and also in cell Q; see the

following section). If the teacher did not provide any positive feedback, then a tally would be marked in cell D to indicate that no feedback was provided. Across all of these scenarios, if the question had been posed to just one student (e.g., "Who can tell me what the capital of Michigan is? Randy?") rather than the group, then the tallies would have been marked in cells I through L, respectively.

Now, let us consider this teaching interaction:

1. Teacher to the entire class: "Everyone, what is the capital of Michigan?" (a question posed to the group).
2. Students in unison: "Ann Arbor." (a group response that is incorrect).
3. Teacher to the entire class: "The capital of Michigan is Lansing. Everyone, what is the capital of Michigan?" (an error correction consisting of a correct model and a "test"—an opportunity to respond correctly).

In this case, the behavior analyst would make a tally in cell E. The test response also constitutes another teacher question, and if the students now answer, "Lansing!" and the teacher provides specific praise for this response, another tally would also be made in cell A. *now* consider this scenario: The teacher does a few more questions and then comes back to, "Everyone, what is the capital of Michigan?" and the students respond, "Lansing!" The teacher then says, "Awesome! It is Lansing!" In this case, we would record a tally in cell A and put a tick mark across one of the tallies in cell E to indicate that the teacher completed the error correction by also implementing the retest component. If the teacher had used another method of corrective feedback, a tally would be marked in cell F.

In this scenario, if the teacher ignored the incorrect response and went on to the next question, a tally would be scored in cell G. On the other hand, if the teacher instead said, "Right!" when the students made an error (yes, we have seen it happen), a tally would be scored in cell H. Like for correct student responses, if any of this had happened when a question was asked of an individual student, these responses would have been scored in cells M through P, respectively.

Praise statements provided by the teacher for social behavior (e.g., "Thanks for taking your books out so quietly."), as opposed to academic responses, are recorded in cells Q and R, depending on whether the praise is specific (e.g., "Great job getting in your seats so fast!") or general (e.g., "Great job!" or "Wow!"). Reprimands, or corrections for problem behavior, are recorded in cell S. For example, if the teacher said, "Stop running!" or "I told you to stop poking Sheila!" a tally would be made in cell S.

Below *Social Behavior* is a section where *Noninstructional Demands* can be counted as *Specific/Do* requests (e.g., "Please take out your books.") or *Nonspecific* requests (both nonspecific "do" requests, e.g., "Get ready for our next

lesson,” and “don’t” requests, e.g., “Don’t sharpen your pencil again!”). Here, the behavior analyst can record any teacher demands not directly related to instruction. For example, if the teacher says, “It’s time to get ready for lunch. Please put your books away and stand by the door,” this would be recorded as a specific “do” request in cell T. If the teacher says, “It’s time to get ready for lunch,” this would be recorded as a nonspecific “do” request in cell U. If the teacher says, “Don’t forget to put your books away before lining up for lunch,” a tally would be recorded as a nonspecific “don’t” request in cell U. For all of these requests, we suggest that the behavior analyst mark the tally with a vertical line (i.e., “|”) and then cross the line with a horizontal line to create a plus (i.e., “+”) if the request is followed by compliance. In this way, the behavior analyst can collect data on requests that produced compliance and requests that did not result in compliance, which can then be used to determine the percentage of each.

Finally, a *Transitions* checklist is provided, where the behavior analyst can check whether each transition had a clear beginning signaled with an auditory or visual cue, whether the teacher provided reinforcement for compliance with the transition and avoided reinforcement for noncompliance with the transition (if any noncompliance occurred), and whether the transition had a clear end point. There is also space for the behavior analyst to record the duration of the transition, which begins when the teacher initiates the transition and ends when all of the students have completed the transition. These would be recorded below cells V, W, and X for each transition observed. There is space for observing three transitions.

The shaded boxes on the data-collection form indicate spaces for the behavior analyst to summarize data from the observation. The version of the data-collection form in the Appendix shows the formulas for calculating summary data. Another version including the recommended targets can be downloaded for personal use in [supplemental materials](#). The numbers in the cells represent targets for which the teacher should be aiming and against which the behavior analyst can give recommendations to the teacher. If no numbers are provided in the shaded cells, this indicates that there is not a recommended target, per se, but the observed data are of interest and should be considered.

As with any data-collection system, it takes time to learn and become familiar with this data-collection form. However, we have found this data-collection form very useful when making teaching observations. It allows for an objective sample of several classroom variables that can have a direct influence on both academic and social performance. Having this information may allow the behavior analyst to determine whether changes should be made to the baseline classroom context and to give the teacher direct, objective information about the specific behavior he or she is displaying that may be related to student behavior and learning in the classroom. This may help the teacher make adjustments at the classroom level

to decrease disruptive behavior, increase learning opportunities, and avoid the need for an FBA and individualized behavior support plan in some cases.

Discussion

Behavior analysts consulting in schools should be mindful to not overlook systems-level variables that can contribute to disruptive behavior in the classroom. In this article, we have recommended conducting observations of baseline classroom practices and assessing the following variables: (a) OTRs and ASR, (b) appropriateness of curriculum, (c) feedback and reinforcement, and (d) effective instructions and transitions. For each, we have provided guidelines on effective parameters and recommendations for measurement of these antecedent- and consequence-based practices. To assist with objective observation, we have provided a data-collection form and guidance for structuring the assessment itself. Behavior analysts may also seek out additional resources for capturing data during specific activities, such as the direct instruction observation form by Marchand-Martella et al. (1997).

We suggest that behavior analysts consider including an assessment of the variables described in this article even when a referral singles out an individual student who engages in disruptive behavior. Such an assessment can be incorporated into an FBA, and if these systems-level variables show that effective baseline classroom conditions are not in place, classroom-level intervention may be warranted before considering an individualized intervention for problem behavior. These interventions can help teachers provide antecedent and consequence interventions designed to prompt appropriate classroom behavior and effective learning. Toward this end, we included a summary of interventions behavior analysts and teachers could use to improve performance and positively affect student outcomes at a “baseline” level.

The approach of assessing baseline classroom practices presents several potential advantages. First, in some cases, more intensive assessments and interventions may be avoided. Establishing new classroom practices may effectively decrease problem behavior and increase appropriate behavior. School resources are conserved when behavior change can be achieved with minimal time spent on assessment and intervention. Second, this strategy is consistent with the approach of serving students in the least restrictive environment. Interventions at the group level are often considered less restrictive than those at the individual level. Third, effective use of the suggested classroom practices addresses academic performance. In addition to decreasing target behavior, students may gain access to effective learning practices. Finally, other students in the class may experience academic and behavioral benefits when new practices are implemented. Individual interventions for target behavior often do not provide a direct

benefit to peers. When implementing effective class-wide practices, all students in the class can reap the educational and prosocial benefits.

Although we believe this approach is generally appropriate, some cases may warrant other tactics, particularly for referrals for individuals who engage in significant problem behavior. At times, it is clinically appropriate to conduct an in-depth FBA, or specifically a functional analysis, before targeting broader classroom variables. One example may be when a student exhibits high-rate high-risk behavior. If target behavior poses an immediate risk to self or others (e.g., self-injury or aggression), it may be necessary to quickly identify the function and intervene to eliminate the behavior. For each referral, behavior analysts should exercise clinical judgment and assess for factors that would require prioritizing other procedures. Likewise, behavior analysts should consider the context when assessing the recommended variables and planning interventions. Although the recommended parameters for each classroom variable are based on research, adjustments may be warranted in some situations. For example, the general recommendation for the ratio of praise to reprimands is 5:1. It is conceivable, however, that some students may require a higher ratio (e.g., 10:1) to see the same benefit. We provide these parameters as general recommendations, but behavior analysts should consider their appropriateness for particular contexts and individuals.

Hanley (2012) proposes that there is a humanistic rationale for conducting individualized behavior assessments. He argues that it “dignifies” the problem behavior and involves the client in the treatment development. For many students, there is a similar humanistic value for including an assessment of—and potential intervention on—classroom variables. This practice ensures that teachers are providing a supportive environment that reasonably sets the occasion for appropriate behavior and high academic performance. If students are still struggling despite having best-practice first-line interventions in place, then a functional-based intervention package is a reasonable next step. Sometimes when best practices are not in place, it may not make sense to create an individualized intervention for a “target” student.

We have recommended four variables for assessment, but there are other variables that contribute to desired classroom behavior and academic success. It is possible that other variables should be included for analysis. Some possibilities include effective prompting strategies and visually displaying positively stated classroom expectations. Likewise, there may be student skills that should be targeted as preventive measures. Some possibilities include functional communication, play and leisure skills, compliance, tolerating delay, and tolerating restricted access to activities and items (Hanley, Heal, Tiger, & Ingvarsson, 2007). It is currently unclear which variables are the most critical for a baseline classroom assessment. Future research should further refine these

recommendations by empirically evaluating the validity of the proposed data-collection form and the variables it is meant to assess.

Assessing and intervening on baseline classroom variables is not a new idea. There is evidence, however, that best-practice classroom methods are often not in place (Wehby, Symons, Canale, & Go, 1998). It is important that behavior analysts consider these variables when assessing undesired student behavior. Explicit consideration of student–teacher interactions and classroom ecology can lead the behavior analyst to prescribe interventions that positively impact both classroom behavior and academic performance. The recommended method constitutes a comprehensive approach to school-based behavior consultation. Most importantly, it ensures that students have access to effective and therapeutic learning environments.

Compliance with Ethical Standards

Conflict of Interest All authors declare that they have no conflicts of interest.

Human Subjects This article does not contain any studies with human participants or animals performed by any of the authors.

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