Functional Analysis With Typically Developing Children: Best Practice or Too Early to Tell?: In Response to Hanley (2012)

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Hanley (2012) provided a guide to practitioners and researchers in the conduct of functional assessment for problem behavior, citing a body of empirical work to support his view. Much of the work Hanley drew upon was conducted with individuals with developmental delay in hospitals or outpatient clinic settings. In this paper, we argue that the guidelines he put forth are not necessarily applicable to work in schools or with typically developing individuals. We examine the evidence supporting use of functional analysis with typically developing children, emphasizing school-based consultation, and conclude by recommending a tiered assessment approach from least to most intensive based on the needs of the individual child.

In a recent *Perspectives* article published in this journal, Hanley (2012) presented a series of recommendations to guide practitioners in the conduct of a functional assessment. Hanley took issue with a frequently given recommendation to begin with indirect assessments and progress through descriptive assessments to experimental analyses if and only if prior assessments have not yielded a likely hypothesis about events evoking and maintaining problem behavior. He argued instead that a functional assessment should include three components: an interview, a brief observation, and a functional analysis. Hanley went on to describe strategies for overcoming obstacles that may be perceived as preventing completion of a functional analysis and concludes with a discussion of when a functional analysis might be necessary.

Hanley (2012) did not restrict his recommendations to practitioners working in hospitals or outpatient clinics or exclusively with individuals with autism spectrum disorder, intellectual delay, or other developmental disabilities. Unfortunately, and as we illustrate in this paper, his recommendations are not necessarily supported by research in functional assessment conducted in school settings and with typically developing individuals. As such, strict adherence to those guidelines may be, at times, unfeasible or unlikely to result in positive outcomes when working with typically developing individuals. In this response paper, we examine the evidence for the use of functional analysis in intervention development for typically developing children, with

an emphasis on school-based consultation. We conclude with a set of recommendations for practitioners working with typically developing children emitting problem behavior.

As Hanley noted, there are hundreds of published studies documenting use of a functional assessment. The vast majority of these studies were conducted with individuals with developmental disabilities.¹ In a comprehensive review of the functional analysis literature, Hanley, Iwata, and McCord (2003) reported that 91% of participants in published studies had developmental delay. Lydon, Healy, O'Reilly, and Lang (2012) reviewed studies using variations of traditional functional analysis methods (e.g., brief functional analysis) and reported that 81% of studies included individuals with developmental delay. To date there has not been a comprehensive review of the broader body of functional assessment literature. In one of the few partial reviews, Kates-McElrath, Agnew, Axelrod, and Bloh (2007) evaluated school-based functional assessment studies conducted between 1992 and 2005. They included only studies with a data set; thus, studies using only indirect methods were excluded. Of the 11 articles that met inclusion criteria, 64% of participants were diagnosed with severe mental retardation (*sic*) or autism. Given that the vast majority of research on functional assessment in general, and functional analysis more specifical-

¹ We use the term "developmental disability" throughout to refer to individuals with a diagnosis of intellectual delay, autism spectrum disorder, and other developmental delays.

ly, has been conducted with individuals with intellectual and developmental delay, generalizing recommendations for best practice with other populations from this body of literature should be done with great caution.

The Process of Functional Assessment

As described by Hanley (2012), the types of functional assessment used in published studies range from indirect methods such as interviews or rating scales to experimental methods referred to as functional analysis. The vast majority of functional-assessment articles published in the *Journal of Applied Behavior Analysis*, focus on functional analysis and, more often than not, functional analysis procedures similar to those described by Iwata, Dorsey, Slifer, Bauman, & Richman (1982/1994). This robust literature on functional analysis includes a number of procedural variations, all involving manipulation of antecedents and/or consequences, that effectively identify behavioral function in a majority of cases (up to 93% if multiple modifications are made to the procedure; Hagopian, Rooker, Jessel, & DeLeon, 2013).

Interestingly, in the field of education, where functional assessment is mandated in some cases (P.L. 99-142; Individuals with Disabilities Education Act) other methods of functional assessment (indirect methods, descriptive or structural analysis) are commonly found in the published literature (e.g., Ellingson, Miltenberger, Stricker, Galensky, & Garlinghouse, 2000; Grandy & Peck, 1998; Lalli, Browder, Mace, & Brown, 1993; Peck, Sasso, & Jolivette, 1997; Restori, Gresham, Chang, Lee, & Laija-Rodriguez, 2007). Experimental analyses are reported but are by no means the norm. School-based *research* using functional assessment seems to follow the approach advocated by some researchers (e.g., Anderson & Scott, 2009; Matson, 2012; O'Neill, Horner, Albin, Storey, & Sprague, 1997; Scott, Bucalos, Liaupsin, Nelson, Jolivette, & DeShea, 2004) and referred to by Hanley as the "least restrictive hierarchical approach." Indirect assessment is conducted first followed by descriptive observations (ABC observations, structural analysis) and, in some case, a functional analysis. It is probable, that the actual *practice* of functional assessment in school settings may deviate from this

body of research, given a variety of factors such as poor staff training, and a limited number of behavior analysts working in schools. As a result, functional assessments conducted by school-based practitioners often are missing critical features such as clear operational definitions or identification of environmental variables (versus hypothetical constructs such as power or control) influencing responding. Further, practitioners rarely conduct even fairly simple descriptive observations accurately, much less an experimental analysis (Quinn et al., 2001; Van Acker, Boreson, Gable, & Potterton, 2005). Given these factors as well as potential limitations in the use of traditional functional assessment we discuss next, it thus may be necessary to consider a more practical, hierarchical approach to assessment.

A Hierarchical Approach to Functional Assessment

In arguing against the use of the least restrictive hierarchical approach, Hanley (2012) questioned the reliability and validity of indirect methods of functional assessment and descriptive assessment, citing studies documenting poor psychometric properties. The research on functional assessment rating scales is actually quite mixed, with some studies suggesting poor reliability (these studies primarily compared results of an indirect assessment to results of the traditional functional analysis documented by Iwata et al., 1982/1994), but others documenting adequate reliability and validity (e.g., Carter & Horner, 2009; Doggett, Edwards, Moore, Tingstrom, & Wilczynski, 2001; Healy, Brett, & Leader, 2013; McIntosh et al., 2008; Watkins & Rapp, 2013). Studies suggesting adequate agreement typically compared results of indirect assessment to experimental functional analysis more broadly. For example, in a review of the literature, McIntosh et al. documented good agreement between a functional assessment interview and experimental methods. Rather than discounting closed-ended interviews and rating scales completely, practitioners should be aware that the reliability and validity of the assessment depends in large part on the skill of the assessor and on the knowledge and goals of the individual completing the rating scale or being interviewed (Haynes, Kaholokula, & Yoshioka, 2008; Lydon, Healy, O'Reilly, & Lang, 2012;

Suen & Rzasa, 2004). Further, instruments should be used for the population for which they were intended. For example, the Questions About Behavioral Function (Paclawskyj, Matson, Rush, Smalls, & Vollmer, 2000) was designed for use with individuals with developmental delay and likely would not be useful for developing hypothesis about the function of problem behavior emitted by typically developing individuals.

That said, we agree with Hanley that it generally is not advisable to rely on indirect assessment alone. Instead, indirect assessment can be a valuable first step in the process, useful for obtaining operational definitions of problem behavior, a history of previously attempted interventions, and to identify the context in which problem behavior occurs most often.

Indirect assessment can also be a useful step in determining which behaviors are most important to the child and the child's caregivers and how a functional assessment and intervention might facilitate progress toward their long-term goals. Subsequent observations can then focus on behaviors identified during the interview and can occur in identified contexts.

The next step in the hierarchical approach to functional assessment is descriptive assessment, such as ABC observations or structural analysis. Hanley (2012) argued that descriptive assessment probably should be avoided. Instead, he suggested that practitioners conduct an open-ended interview and a brief observation and then proceed to a functional analysis to test hypotheses about variables affecting problem behavior. He based this recommendation on his perception of the literature, noting that, "descriptive assessments are notoriously invalid for detecting behavioral function"

(p. 56). Indeed, several studies have suggested that descriptive assessments may lead to inaccurate hypotheses about the function of problem behavior (e.g., St. Peter et al., 2005; Thompson & Iwata, 2007). Across such studies, however, results of descriptive analyses

were compared to results of a traditional functional analysis similar to the one described by Iwata et al. (1982/1994). None has evaluated a function-based intervention in the natural setting.

Functional analysis documents causal relations between problem behavior and environmental variables, but the external validity of those causal relations is not typically demonstrated in the functional analysis. The difference in context between traditional functional analyses (typically conducted in a highly

controlled setting) and descriptive analyses (conducted in a naturalistic setting) may account for the differences. Further, there are studies documenting (1) poor agreement between results of a functional analysis and a descriptive assessment, and (2) positive intervention effects for descriptive assessment results but not results of the functional analysis (e.g., Anderson & Long, 2002; English & Anderson, 2006). There are numerous studies in the school-based literature documenting positive treatment outcomes based exclusively on indirect and descriptive assessments (e.g., Blair, Liaupsin, Umbreit, & Kweon, 2006; Carter & Horner, 2009; Ellingson et al., 2000; English & Anderson; Grandy & Peck, 1997; Ingram, Lewis-Palmer, & Sugai, 2005; Peck et al., 1997).

In our opinion, descriptive assessments, including structural analyses, are valuable tools that should be included in the arsenal of behavior analysts. If results of

indirect assessment can be a valuable first step in the process, useful for obtaining operational definitions of problem behavior, a history of previously attempted interventions, and to identify the context in which problem behavior occurs most often

a descriptive assessment suggest clear relations between problem behavior and environmental influences, there may be no need to proceed further in the assessment hierarchy. Instead, behavior analysts can work with stakeholders to develop an intervention plan designed to prevent the occurrence of problem behavior and increase the frequency of pro-social skills.

The last step in the hierarchy is functional analysis. A functional analysis reveals causal relations between problem behavior and environmental variables, thus affording greater confidence in intervention decisions. We are not advocating that functional analysis be abandoned, rather that it not be considered a mandatory part of the functional assessment process. Instead, a functional analysis should be considered only if (1) the behavior analyst is skilled in the use of functional analysis *with the target population*, and (2) other methods of assessment indicate that a functional analysis may be beneficial. For example, if results of observations suggest that disruptive behavior during independent work and that frequently observed consequences are both teacher attention and escape then a functional analysis might be used to identify whether one consequence or both maintains disruption.

In sum, it is difficult to imagine a situation in which at least a functional assessment interview would not be conducted—the results of the interview should guide the hierarchy of functional assessment to be followed (e.g., interview, functional analysis; interview, descriptive assessment, functional analysis if necessary). If a functional analysis is warranted, we concur with Hanley's recommendation that the functional analysis conditions be individualized. As Hanley noted, "Simply put, there is no standard analysis; a functional analysis of problem behavior simply involves the direct observation of behavior while some event suspected of being related to problem behavior is manipulated" (p. 57).

Questions Surrounding the Implementation of Functional Analysis for Typically Developing Populations

A number of decisions must be made prior to initiating a functional analysis. These decisions include who

will conduct the analysis, where the analysis will be conducted, the test conditions to be constructed, the feasibility of manipulating contingencies in consistent manner, and the topography of the response

1. Who will conduct the analysis and where? One of the first decisions to be made is who will conduct the functional analysis and where it will be conducted. In published research, a trained researcher often conducts the functional analysis in a controlled setting. The appeal of this approach is that time need not be devoted to training, and the fidelity of the analysis likely will be high. A similar rationale can be offered for conducting the analysis in a controlled setting—extraneous influences can be controlled and the variables of interest can be presented systematically. Unfortunately, the person conducting the analysis and setting of the analysis may dramatically influence the results of assessments with typically developing individuals. The complex discrimination skills of typically developing individuals may exacerbate differences in function identified across caregivers or settings. This issue has been examined in the context of functional analysis in a handful of studies, almost exclusively with individuals with disabilities. Several studies have demonstrated differential outcomes across settings or therapists (Anderson & Long, 2002; English & Anderson, 2004; Gardner, Spencer, Boelter, Dubard, & Jennett, 2012 [working with typically developing individuals]; Lang et al., 2008, 2009).

Thomason-Sassi, Iwata, and Fritz (2011) attempted to clarify this issue with 6 individuals with developmental delay. They compared functional analysis outcomes across caregivers and experimenters and, in some cases, settings. Similar outcomes were reported for 3 participants (although response rates varied for 2) while differential functions were reported for the final 2 participants depending on who conducted the analysis. Clearly, more research is needed to discern conditions under which a functional analysis conducted by clinicians versus caregivers or in controlled versus natural settings is most appropriate. If the decision is made to conduct the functional analysis with caregivers, then time must be allotted for caregiver training—the amount of time needed will vary greatly depending

on the complexity of the functional analysis and the baseline skills of the caregiver. Further, the feasibility of conducting the analysis in the natural setting must be considered.

2. What test conditions will be included? A functional analysis with a typically developing individual may necessitate the inclusion of idiosyncratic contexts and consequences not often seen in published functional analysis research. In our experience working with typically developing individuals, problem behavior often is evoked by multiple antecedent variables, including distal events that can be difficult or impossible to manipulate. For example, a student may emit disruptive behavior when denied access to a preferred activity on the playground only when he got up late that morning or had a negative interaction with a peer earlier in the day. Although it theoretically may be possible to manipulate these events, the costs of doing so (e.g., time commitments of parents, reliability of data collection, time needed to conduct a thorough analysis) may outweigh any added benefit.

As Hanley described, behavior analysts should set up test conditions in which the hypothesized controlling contingency is manipulated. With typically developing individuals, it is often the case that reinforcing contingencies differ from those frequently used in the functional-analysis literature. Examples of these potential atypical reinforcers include peer attention (e.g., Broussard & Northup, 1995) or escape to attention (Muller, Sterling-Turner, & Moore, 2005). At other times, characteristics of the consequence may affect its reinforcing values. For example, problem behavior might be reinforced only by highly emotive teacher responses. Additionally, reinforcers for problem behavior may not be temporally contiguous to the response but instead delayed in time.

3. Is it feasible to conduct the functional analysis?

Once hypotheses about reinforcing consequences are derived, the behavior analyst must determine whether those variables can be manipulated safely and feasibly. In our experience, manipulating consequences in the context of a classroom for typically developing students can be difficult or impossible. If peer attention is the hypothesized reinforcer for disruptive behavior, it may be impossible to control the responses of 25 students in a systematic manner. Other potential reinforcers, such

as being sent home from school, a particular type of peer attention (e.g., a fearful reaction), or a specific adult-delivered consequence (e.g., room clear, timeout room) may be more difficult (or legally impossible) to reproduce consistently and in a systematic manner.

Further, if the problem behavior is potentially dangerous, it may not be appropriate to conduct the functional analysis

due to risk of injury to others. The first author recently worked with a 9-year-old boy who frequently hit and kicked teachers and staff and threw furniture. Interviews and incident reports completed by the teacher suggested these behaviors were maintained by peer attention. The severity of his behavior made the conduct of a functional analysis with peers present inadvisable—the risk of injury to staff or students was simply too great. One might argue that this risk would be no more than what was incurred on a daily basis; however, setting up scenarios to evoke aggressive behavior targeting peers is simply not acceptable in most educational settings. Even when such variables can feasibly be included, the way they can be structured might not match what actually maintains problem behavior. For example, escape delivery in a functional analysis often consists of removal of materials for a fixed period of time. If you spend much time in a classroom, you will quickly see that this is not

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how students typically “escape” instructional activities. Instead, teachers do not prompt a student to complete an assignment or do so only intermittently—materials are close by and the expectation that the student will be working like the other students remains. Because teachers cannot often “make” a student complete an assignment by using physical guidance, it may be difficult to fully reverse the contingency for problem behavior when escape from instruction is the hypothesized reinforcer.

A related problem is that consequences for problem behavior in natural settings rarely are delivered on an FR-1 schedule as is typical in most functional analyses. Practitioners must determine whether an FR-1 schedule would be appropriate for the functional analysis. Hanley (2012) asserts that the use of FR-1 schedules may be important for functional analyses because those schedules reduce the frequency and severity of the problem behavior. However, FR-1 schedules may also increase the momentum of problem behavior, making it more resistant to subsequent intervention (MacDonald, Ahearn, Parry-Cruwys, Bancroft, & Dube, 2013). Further, the use of a schedule markedly different than what is in place naturally may affect the validity of the assessment.

4. Is a functional analysis appropriate for the target response? The very topography of the problem behavior also may not be easily amenable to functional analysis. For example, noncompliance—or simply failure to engage in instructional activities—is a common form of problem behavior in school contexts. However, a very limited literature on functional analysis of noncompliance exists (but see McKerchar & Abby, 2012; Wilder, Harris, Reagan, & Rasey, 2007 as exceptions). The studies that have been done are largely with very young children, whose response repertoires may closely approximate those of older individuals with developmental disabilities. In a functional analysis of noncompliance, instruction must be present across conditions. However, the behavior analyst must first determine what type of instruction should be occurring—independent work in math, group work in reading, didactic instruction? This alone may require extensive evaluation. Next, consequences must be manipulated, but again the way in which “attention” and “escape” are structured

must match the classroom context and it is unlikely that a FR-1 reinforcement schedule will be appropriate.

In summary, designing and conducting an individualized functional analysis requires a highly refined skill-set that must be developed via repeated opportunities to construct, conduct, and analyze results of a functional analysis with high-quality supervision.

Recommendations for Practitioners

We recommend that practitioners select appropriate methods of functional assessment based on the individual case rather than adopting a one-size-fits-all approach. Appropriate assessments might include indirect (survey or interview) components, descriptive assessments, or systematic manipulation of antecedents or consequences. Practitioners must consider which procedures are both feasible and acceptable within the context of their practice.

Recommendation 1: Stay on Top of Research

It will be imperative for practitioners working in this area to keep abreast of recent developments in research on functional analysis in particular and functional assessment more generally. Particular attention should be paid to studies documenting use of functional assessment with typically developing populations. Practitioners working with typically developing children in school settings will find some guidance in educationally oriented journals publishing evidence-based research, including *School Psychology Review*, *Journal of Positive Behavior Interventions*, *Behavioral Disorders*, and *Journal of Behavioral Education*.

Recommendation 2: Use the Functional Assessment Interview to Guide the Hierarchy of Functional Assessment Conducted

Results of the interview can be used to guide the conduct of the rest of the functional assessment. Interviews may be particularly helpful in identifying particular forms of problem behavior that are most problematic for caregivers, in identifying common routines in which problem behavior is likely to occur, and in suggesting idiosyncratic events that may evoke or maintain problem behavior. Like children with developmental dis-

abilities emitting problem behavior, typically developing children referred for a functional behavior assessment often engage in multiple forms of challenging behavior. These different forms of behavior may be part of the same response class (have the same operant function), or may occur for different reasons. Practitioners should consider using the initial interview to identify the most challenging form of problem behavior, and whether there are any clear precursors to that behavior. Many children emit behavior in an escalating pattern of behavior in which relatively mild forms of problem behavior (e.g., head down on desk, noncompliance) reliably proceed aggression or other severe instances of behavior (Bullis, Walker, & Sprague, 2001; Kingery & Walker, 2002). If the functional assessment does not include these earlier responses then the initial triggering event—and subsequent chain of environment-behavior responses—might be missed, making it more difficult to develop an effective intervention.

The routines identified as problematic during the initial interview may also provide some guidance regarding functional assessment procedures. Often, results of the interview will indicate that problem behavior reliably occurs during specific routines, such as during group work or when the level of instruction is at or above the child's current level of performance. In such cases, a structural analysis or other descriptive assessment might be appropriate, or an experimental analysis might be conducted. For example, the type of instruction might be held constant while the level is varied. At other times, putative establishing operations (e.g., parental fight, morning dose of medicine not delivered) may be identified. In these cases, consistent descriptive data collection across home and school contexts may be sufficient to identify a pattern—and to suggest an appropriate intervention.

As noted earlier, and as discussed in some detail by Hanley (2012), it may be necessary to include idiosyncratic events in the functional assessment. The interview may be especially useful for identifying such variables. Practitioners should use the interview to identify events that seem to evoke problem behavior and that frequently follow and might reinforce problem behavior.

In gathering such information, it will be important to get detailed descriptions of the variables under consideration. For example, rather than simply identifying “attention” as a possible reinforcer, gather information about who routinely provides attention and what they say or do that constitutes attention.

Recommendation 3: Pay Careful Attention to the Design of the Functional Analysis

When using functional analysis procedures, practitioners should consider whether the test and control conditions (a) are designed appropriately to systematically identify variables that affect the target behavior, and (b) are *analogous* to situations that the child typically experiences. To address the first consideration, practitioners must ensure that contingencies assessed during test conditions have an appropriate control in another condition. For example, if a single function is being tested, practitioners could consider structuring response-independent access to the putative reinforcer, or access based on emission of an appropriate alternative response, during the control condition. When multiple consequences are tested, each possible reinforcer should have a control comparison against which rates can be compared. Rates of responding should only be compared across the test and relevant control conditions, not from one test condition to another. In other words, It does not matter if problem behavior occurs 10 times during one test condition and 8 times during another—what matters is how often problem behavior occurred in each of those conditions relative to the control. If problem behavior never occurred in the control condition then two reinforcers have been identified; one is not “more reinforcing” than the other.

To make functional-analysis conditions more analogous to naturally occurring events, practitioners should ensure that the structure of the contingencies resembles that which the child typically experiences. For example, a therapist turning away from a typically developing child while physically removing the work materials for 30 s may be unlike any form of escape that the child typically experiences in the classroom environment. If anything, these adult responses may signal to the

child that a substantial aversive event is about to occur. Instead, the therapist could structure the provision of escape so that condition tested a consequence that was more akin to those in the child's typical environment; perhaps the therapist simply stops prompting or moves away from the child during the escape interval (e.g., Magee & Ellis, 2000).

Recommendation 4: Consider Structural Analysis

An oft-overlooked but potentially valuable method of functional assessment is structural analysis. Structural analysis incorporates valuable components of descriptive analyses (conducted in the natural context, naturally occurring contingencies can be observed) and experimental analyses (observations are structured, repeated observations are conducted in an experimental design). Structural analysis can be used to corroborate information gleaned from functional assessment interviews. In a structural analysis, antecedent contexts are arranged systematically and data on response-consequence patterns are collected (Anderson & Long, 2002; English & Anderson, 2006; Mace, Yankanich, & West, 1988; Stichter, Randolph, Kay, & Gage, 2005). Use of a structural analysis may reduce the occurrence of many of the problems with descriptive analysis identified by Hanley (2012), including the likelihood that caretakers have removed antecedent variables likely to evoke problem behavior. In a structural analysis, the behavior analyst ensures that antecedent variables identified as possibly evoking problem behavior in the interview are presented systematically so that effects on problem behavior can be observed. For instance, if results of an interview suggest a child frequently disrupts the classroom during independent work in math, the structural analysis might consist of two conditions—independent math and didactic instruction in math. Observations would occur when independent math or didactic instruction was occurring—but the behavior analyst would not manipulate the delivery of those routines, for example by stipulating that prompting occurred on some set schedule. Instead, teachers would be instructed to implement the routine as was typical. The behavior analyst would conduct a series of repeated observations under both

conditions, recording instances of problem behavior and possible consequences such as adult attention, peer attention, and task avoidance. Whenever possible, data on environmental variables should be collected independently of the occurrence of problem behavior. If data are collected in this manner, it becomes possible to examine the contingency (but not dependency) between problem behavior and the various events that follow.

One way to analyze the possibility of a contingency between challenging behavior and consequences in a structural analysis (as well as in descriptive analysis) is through the use of a contingency space analysis (Eckert, Martens, & DiGennaro, 2005). In a contingency space analysis, the probability of an event (such as peer attention) occurring independently is plotted against the probability of that event following problem behavior. Events that are more likely to occur follow challenging behavior than independently of that behavior represent “positive contingencies” (e.g., Vollmer, Borrero, Wright, Van Camp, & Lalli, 2001), which may be reinforcers for behavior.

Structural analyses can overcome several of the limitations of descriptive analysis outlined by Hanley (2012). As described above, they are useful in situations when caretakers have removed or limited antecedent variables likely to evoke problem behavior. Further, because structural analysis generally involves repeated but relatively short (e.g., 20 min) observations, it becomes possible to examine patterns of environment-behavior relations over time. A third advantage of structural analysis is that the resulting data can be used as a baseline condition against which to evaluate an intervention. Hanley rightly argued against the use of descriptive analysis as baseline due to the variability inherent in data collected across contexts. This variability necessarily will be reduced in a structural analysis because as data are collected only during specific contexts. Further, because the structural analysis is conducted under real-world conditions with the naturally occurring contingencies in place, it may actually be a more appropriate baseline for evaluating the external validity of an intervention than a functional analysis.

Recommendation 5: When Consulting in Schools, Don't Overlook the Importance of Instructional Match

When a child is engaging in problem behavior that appears to be maintained by avoidance of instructional activities, a follow-up assessment must be conducted to determine why instruction establishes escape as a reinforcer. It is rarely the case that a child will engage in problem behavior during all activities that occur in the context of a school day. Instead, problem behavior may be more likely during activities that involve reading, handwriting, or math. The onus is on the behavior analyst to determine the features of that activity that render it aversive—and to develop an intervention that addresses those features. For example, it is not acceptable—and likely will not be effective—to implement a contingency-based intervention to decrease disruptive behavior occurring during independent reading for a student who is reading three grade levels below the current level of instruction. A more appropriate intervention would adjust the level of instruction to match the student's current skill.

There are a number of evidence-based assessments useful for evaluating a student's skill in core instructional areas including reading and math. Examples include DIBELS Next (Good et al., 2010) and AIMSweb (Pearson Education, 2010; Shinn & Shinn, 2002). Results of these assessments or other methods of curriculum-based measurement are used to (1) identify if there is a discrepancy between the student's current level of performance and where students at that grade level should be performing (often referred to as benchmarking), (2) identify the specific areas of weakness to be addressed in supplemental instruction (e.g., phonemic awareness, addition, mixed computation), and (3) frequently monitor student progress to assess intervention effects. Curriculum-based measurement also can be used to determine whether an entire class (or grade level in a school) is making adequate progress by comparing performance of that group to national averages. This information is useful for determining whether the problem is student-specific or more systemic (e.g., inappropriate curriculum or poor fidelity). If a behavior analyst is not trained to

conduct these evaluations, then consultation with a colleague with expertise in this area is recommended (most likely a school psychologist).

Recommendation 6: Consider Evidence-Based Practices Beyond Functional Assessment

Practitioners should be aware that functional assessment and the resulting functionally derived intervention might not be the answer to all problems. There is a vast body of literature—largely outside the realm of contemporary behavior analysis—documenting positive treatment outcomes without the use of any type of pre-intervention functional assessment. For example, interventions for many anxiety disorders, although based on a presumed function of escape or avoidance of certain events or contexts, routinely are implemented without a pre-intervention functional assessment to confirm this hypothesis. The effect size for such interventions is impressive (e.g., Haynes et al., 2008; Norton & Price, 2007; Olatunji, Cisler, & Deacon, 2010; Opri et al., 2012). There are numerous examples of other multicomponent interventions developed without a pre-intervention functional assessment with documented effectiveness for problems including, but not limited to, depressive disorders (e.g., Cuijpers, Andersson, Donker, & van Straten, 2011; Hans & Hiller, 2013), pain management (e.g., Lunde, Nordhus, & Pallesen, 2009; Veehof, Oskam, Schreurs, & Bohlmeijer, 2011), and childhood conduct problems (Lee, Niew, Yang, Chen, & Lin, 2012; Maughan, Christiansen, Jenson, Olympia, & Clark, 2005). More often than not, these evidence-based interventions have an accompanying implementation manual. Such programs have been packaged to enhance their social validity and effectiveness with clients. Further, accompanying implementation manuals render them easy to implement by practitioners who have been trained in the intervention.²

For behavior analysts working in schools, there are

² Training in evidence-based interventions is of critical importance. The effectiveness of the intervention is largely predicated upon the fidelity with which it is implemented. Thus, behavior analysts should either secure training in a selected intervention before its use or refer clients to practitioners with expertise in the desired intervention. The Association for Behavioral and Cognitive Therapies maintains a website through which one can search for a psychologist with expertise in a given area/evidence-based practice (www.abct.org).

many evidence-based interventions that do not involve a pre-intervention functional assessment and are implemented without knowledge of the specific operant function, yet have well-documented effectiveness. 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. Examples of evidence-based interventions that may be effective in such situations include classroom behavior management strategies (e.g., Babyak, Luze, & Kamps, 2009; Kellam et al., 2008; Kleinman & Saigh, 2011), group contingencies (Heering & Wilder, 2006; Kirk et al., 2010), and self-management programs (e.g., Briesch & Chafouleas, 2009; Shogren, Lang, Machalicek, Rispoli, & O'Reilly, 2011). In fact, many of these intervention strategies were developed and researched by behavior analysts.

Concluding Thoughts

Hanley (2012) concluded with a plea that behavior analysts stop expecting teachers and allied health professionals to conduct adequate functional assessments. Hanley argued that the skills inherent in the conduct of a functional analysis are beyond what can be expected of professionals who do not have training in behavior analysis. We believe that, before focusing on teaching quality functional assessment to parents and educators, we must first teach the foundational assumption that problem behavior is learned and that altering the environment is the best way to address problem behavior. We concur with Hanley's recommendation that behavior analysts who address problem behavior should ensure they are adequately trained in the conduct of a functional assessment—with the population with whom they seek to work.

The points made in this paper should not be taken as an argument against the use of functional assessment in general or functional analysis in particular. For individuals who are emitting severe or persistent problem behavior that has not responded to well-designed and implemented interventions, a functional assessment certainly is warranted. Further, we agree with Hanley

that, for individuals with developmental delay engaging in severe problem behavior, a functional analysis is best practice for intervention development. Even when a functional assessment is warranted, however, we are not convinced that a functional analysis must be conducted in all cases. This may particularly be the case for typically developing clients. There are other methods of functional assessment that can be used to develop effective function-based interventions. The question then becomes: when is a functional analysis necessary and what type of functional analysis should be used?

In our opinion, the "boundaries" for using a functional analysis are not yet well established, particularly with typically developing populations. Additional research in this area certainly is needed. Until such research exists, we suggest behavior analysts continue to use an individualized hierarchical approach to functional assessment with typically developing clients, conducting the method of functional assessment that seems most likely to provide valid hypotheses about environment-behavior relations and to lead to an effective intervention.

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