

Technical Adequacy of the Functional Assessment Checklist: Teachers and Staff (FACTS) FBA Interview Measure

Kent McIntosh

University of British Columbia, Vancouver, Canada

Chris Borgmeier

Portland State University, Oregon

Cynthia M. Anderson

Robert H. Horner

Billie Jo Rodriguez

Tary J. Tobin

University of Oregon, Eugene

With the recent increase in the use of functional behavior assessment (FBA) in school settings, there has been an emphasis in practice on the development and use of effective, efficient methods of conducting FBAs, particularly indirect assessment tools such as interviews. There are both benefits and drawbacks to these tools, and their technical adequacy is often unknown. This article presents a framework for assessing the measurement properties of FBA interview tools and uses this framework to assess evidence for reliability and validity of one interview tool, the *Functional Assessment Checklist: Teachers and Staff* (FACTS; March et al., 2000). Results derived from 10 research studies using the FACTS indicate strong evidence of test-retest reliability and interobserver agreement, moderate to strong evidence of convergent validity with direct observation and functional analysis procedures, strong evidence of treatment utility, and strong evidence of social validity. Results are discussed in terms of future validation research for FBA methods and tools.

Keywords: *behavioral assessment; positive behavior supports; functional assessment; behavioral assessment; school-based assessment; applied behavior analysis; Functional behavioral assessment*

Functional behavior assessment (FBA) is a process for identifying problem behaviors and determining the environmental events that predict and maintain them (Crone & Horner, 2003; O'Neill et al., 1997; Sugai, Lewis-Palmer, & Hagan-Burke, 1999–2000). Through the FBA process, a team situates the problem behavior within a context and analyzes the environmental variables that affect its occurrence and nonoccurrence. The primary outcomes of an FBA are (a) an operational definition of the problem behavior, (b) identification of the antecedent events that reliably predict the occurrence and nonoccurrence of the behavior, and (c) identification of a hypothesized consequence maintaining responding (Carr, Langdon, & Yarbrough, 1999; Horner, 1994; Repp & Karsh, 1994; Sugai et al., 2000). A team then uses this information to create an individualized behavior support plan, which contains specific strategies to teach appropriate skills and to modify the environment to make the problem behavior irrelevant, inefficient, and ineffective

(O'Neill et al., 1997). An effective support plan is designed to decrease problem behaviors, increase prosocial behaviors, and improve quality of life (Sugai, Lewis-Palmer, & Hagan, 1998).

FBA is not a new technology for addressing problem behavior; it is rooted in more than 50 years of behavioral research (see Carr, 1977; Carr et al., 2002; Dunlap, 2006; Ervin, Ehrhardt, & Poling, 2001; Skinner, 1953; Sugai et al., 2000). This research supports the value of behavior support plans based on knowledge of the antecedent and consequence events that control problem behavior.

Authors' Note: This research was supported in part by U.S. Department of Education Grant No. H326S980003. Opinions expressed herein do not necessarily reflect the policy of the Department of Education, and no official endorsement by the department should be inferred. The *Functional Assessment Checklist: Teachers and Staff* is readily available online (at <http://www.pbis.org/tools.htm>) and in reproducible print form (Crone & Horner, 2003).

Editor's Note: The action editor for this article was Donald Kincaid.

Initial research on FBA involved systematic manipulation of antecedent and consequent stimuli, often in controlled conditions. This process was labeled *functional analysis* and has a long and tested history (e.g., Carr et al., 1999; Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994; Repp & Karsh, 1994; Vollmer, Northup, Ringdahl, LeBlanc, & Chauvin, 1996).

In recent years, a growing body of research has focused on the use of FBA methods in typical school settings (Crone, Hawken, & Bergstrom, 2007; Ervin, Radford, et al., 2001; Scott et al., 2004; Sugai et al., 2000). This increased interest in school-based FBA is most likely due to two factors. First, the two reauthorizations of the Individuals with Disabilities Education Act (IDEA Amendments of 1997; Individuals with Disabilities Education Improvement Act of 2004) stipulate that school personnel must complete FBAs and behavior support plans when students are at risk for extended suspensions or changes in placement (Drasgow & Yell, 2001). Second, and perhaps in response to these regulations, there has been a recent influx of research supporting the value of FBA procedures in informing intervention in general education settings (e.g., Bergstrom, Horner, & Crone, 2007; Ervin, DuPaul, Kern, & Friman, 1998; Hawken & Horner, 2003; Kearney & Albano, 2004; March & Horner, 2002; Radford & Ervin, 2002; Todd, Horner, & Sugai, 1999). The most convincing evidence to date comes from research studies comparing effects of function-based interventions (indicated from FBA results) with typical school interventions that FBA results indicated would be ineffective (DuPaul, Eckert, & McGoey, 1997; Filter & Horner, in press; Ingram, Lewis-Palmer, & Sugai, 2005; Kearney, Pursell, & Alvarez, 2001; McKenna, 2006; Newcomer & Lewis, 2004). These studies have documented reductions in problem behavior with function-based interventions and either lack of effects or increases in problem behavior with non-function-based interventions (McIntosh, Brown, & Borgmeier, in press).

As the clinical value of FBA became apparent, efforts have shifted to less rigorous, more efficient strategies for accurately identifying the functions of problem behavior, including indirect FBA measures (e.g., rating scales and interviews designed to be used with teachers, family members, or other care providers). Such measures share several advantages. First, they are a logical starting point in the FBA process because they can help to identify specific problem behaviors, contexts, and possible maintaining functions (Johnston & Pennypacker, 1993). Such information narrows the scope of the FBA to relevant behaviors and to routines. Although the information is subject to bias, the respondent is likely to have more exposure to the problem behavior than could be viewed

in hours of observation. This is particularly advantageous in general education settings where conducting extensive direct observations is often difficult because problem behavior often occurs infrequently and, due to the presence of complex environmental variables, may be difficult to predict (Horner, Vaughn, Day, & Ard, 1996; Nelson, Roberts, Rutherford, Mathur, & Aaroe, 1999; Radford & Ervin, 2002; Sprague & Horner, 1999). In addition, indirect measures are widely used in schools because they are readily available, straightforward to use, and less time consuming and invasive than direct observation (Conroy, Fox, Bucklin, & Good, 1996; Merrell, 2003).

Because of these features, indirect FBA measures have increasingly assumed a central role in the practice of school-based FBAs. Typically, the FBA process involves developing a preliminary hypothesis statement (identifying the setting event, antecedent, behavior, and maintaining consequence) through one or more interviews and records reviews, then confirming the statement through direct observation when necessary and/or feasible (Sugai et al., 1999–2000). Functional analysis procedures (as described by Iwata et al., 1994) are rarely used by school personnel because of the difficulty of building local expertise in the procedure and the considerable resources involved; even proponents of functional analysis as best practice in FBA have noted that these experimental procedures are often unfeasible in typical school settings (Carr, Langdon et al., 1999; Sasso, Conroy, Stichter, & Fox, 2001).

FBA Interview Measures

Given that FBA interviews are used widely in schools and that they rely on inferences about functional relations, they deserve an additional level of scrutiny as behavioral measures, particularly in cases in which plans are derived based entirely on interview information. Unfortunately, the evidence base for FBA interview measures is not presently convincing. Researchers have described the lack of empirical evidence regarding psychometric properties of indirect FBA measures in general (Cone, 1997; Gresham, 2003; Sasso et al., 2001), and indirect FBA rating scales in particular (Barton-Arwood, Wehby, Gunter, & Lane, 2003; Floyd, Phaneuf, & Wilczynski, 2005; Stage, Cheney, Walker, & LaRocque, 2002; Zarccone, Rodgers, Iwata, Rourke, & Dorsey, 1991), but only a few studies examining the properties of FBA interview measures exist in the literature, each examining different tools.

From these studies, a general pattern emerges. Taken as a whole, the varying FBA interview measures show initial evidence of interrater reliability (Kinch, Lewis-Palmer,

Hagan-Burke, & Sugai, 2001), moderate evidence of convergent validity between teacher and student interview measures (Kinch et al., 2001; Reed, Thomas, Sprague, & Horner, 1997), and poor evidence of convergent validity between student interviews and teacher rating scales (Kwak, Ervin, Anderson, & Austin, 2004). The strongest agreement typically occurs on problem behavior, and the weakest agreement on setting events. Convergent validity with direct observation has been weak, particularly on maintaining consequences (Kwak et al., 2004). In addition, information to establish content validity or treatment utility has not been readily available (Floyd et al., 2005). In sum, increased exploration of the technical adequacy of specific FBA interview measures is justified, especially given their continued use by practitioners in developing individual behavior support in school settings.

Determining the Technical Adequacy of FBA Interview Measures

Assessing the psychometric properties of an FBA interview measure presents challenges. These challenges include the level of inference in identifying "true" function, situational specificity of behavior, the idiographic nature of the FBA process, and characteristics of the interview process. As a result, many researchers have suggested that some traditional measurement standards may be less helpful in assessing the validity and reliability of FBA measures (Cone, 1997; Floyd et al., 2005; Gresham, 2003; Hayes, Nelson, & Jarrett, 1986; Shriver, Anderson, & Proctor, 2001). The reasoning for this position comes from two points. First, direct observation of behavior is seen as a low-inference measurement when compared to assessing within-child traits and is therefore less subject to measurement error (Johnston & Pennypacker, 1993; Shriver et al., 2001). Second, the ultimate test of any measure is to what extent it contributes information that is valuable for intervention or treatment utility (Gresham, 2003; Hayes et al., 1986; Kern & Dunlap, 1999; Nelson-Gray, 2003).

These points may be valid for more direct FBA measures, such as direct observation, functional analysis, and structural analysis, but indirect measures deserve closer scrutiny. Although the outcome may be identical, measuring the verbal behavior of an interviewee (i.e., information from informants) may be more prone to error than directly observing the problem behavior because of the higher level of inference required (Gresham, 2003; Gresham & Davis, 1988; Johnston & Pennypacker, 1993). If instrumentation error leads to inaccurate conclusions of maintaining consequence, the resulting intervention could do more harm than good. As such, determining the technical adequacy of existing FBA interview measures is an important task for

the field. The purpose of this article is to illustrate how the technical adequacy of indirect measures of FBA might be assessed in a systematic way. To better describe the process, we used an evaluation of the technical adequacy of a brief FBA interview measure, the *Functional Assessment Checklist: Teachers and Staff* (FACTS; March et al., 2000), as an example.

Method

Evaluations of the technical adequacy of an assessment procedure can be conducted in one of two ways. First, a researcher could set out to conduct a study designed specifically to evaluate the measure in some way. For example, the researcher might compare results obtained with the assessment in question to results obtained from an already established measure. If a number of studies already have been conducted using the measure in question, an alternative strategy—and the strategy used here—is to compile existing research and to evaluate the extent to which the measure is found to be technically adequate across studies.

Research Studies Sampled and Review Process

If a measure is widely known and used, an appropriate search strategy would be to use a literature database (e.g., PsycINFO) to identify relevant studies. Because the FACTS was developed at the University of Oregon and, to date, has been used in research primarily by those affiliated with the University of Oregon, we chose instead to contact colleagues and request studies in which the FACTS had been used and two additional criteria had been met: (a) the most current version of the FACTS measure (March et al., 2000) was used and (b) either direct observation or functional analysis procedures were conducted to confirm the information generated from the FACTS interviews. Nine studies (identified in the tables and reference list) met these criteria, and one study that provided only social validity information was also included, bringing the total to 10.

All studies were read and coded by at least one of the authors (the process for evaluating interobserver agreement is described below) to gather information. First, one author coded general characteristics of the study (i.e., participant demographics, setting of the study) and the hypothesis statement generated from the FACTS measure. Because the actual FACTS protocols used in the studies were not included, this information was gathered simply by coding the hypothesis statement provided in text by the authors.

Agreement between the FACTS interview and other FBA measures was evaluated in two ways. First, for studies in which other interviews and unstructured observations were used, one author recorded the hypothesis statements

reported by the authors for those measures. This was necessary because the authors did not include the raw data (i.e., sheet on which interview responses were coded, data from observations). Second, for studies using functional analysis, two raters independently evaluated the functional analysis graphs and developed hypothesis statements. Agreement was 100% for all participants across the five studies reporting functional analyses. Finally, two raters independently evaluated intervention graphs to determine percentage change from baseline to intervention. Each rater used a ruler to calculate the mean of the last three baseline points and the last three intervention points. This technique was selected for two reasons: First, the last three points are most likely to be stable and thus reflect minimal effects of extraneous variables, and second, it was the approach used in a recent meta-analysis of the effectiveness of function-based support (Carr et al., 1999). Each rater then independently calculated percentage change. Total agreement on percentage change was better than 99%.

Participants

A total of 41 students participated in the reviewed studies. Participant characteristics are summarized in Table 1. With the exception of 6 participants, all were in public elementary schools at the time of the study. Of the remaining 6, 3 were in preschool and 3 were in public middle schools when the study was completed. For all participants, FACTS interviews were administered either by doctoral students or by school personnel with expertise in FBA and experience using the FACTS. For all participants, the FACTS was administered to school personnel (most often the student's regular teacher) who had regular contact with the child in the challenging context and were knowledgeable about the behavior being assessed; for Participants 4 through 12, a number of school personnel served as additional informants, with varying levels of contact with the student and his or her problem behavior.

FBA Measures

Functional Assessment Checklist for Teachers and Staff

The FACTS (March et al., 2000) is a semistructured FBA interview measure designed for use in schools with teachers or other school staff as informants. The form was developed by adapting and streamlining the *Functional Assessment Interview Form* (O'Neill et al., 1997) for use by teams completing FBAs in typical school settings. The FACTS requires 10 to 25 min to complete, with the knowledge level of the informant and complexity of the behavior serving as the determining factors. The form itself consists of two segments, Parts A and B. In Part A, the

respondent identifies problem behaviors and completes a routines analysis, identifying the student's daily schedule of activities and determining which of them are most and least associated with occurrence of the problem behaviors. Part B focuses on a specific problem behavior routine identified in Part A. The interviewer asks the respondent to identify an operational definition of the problem behavior and its setting events, immediate antecedents, and maintaining functions. If multiple problem behavior routines are identified, a separate Part B is completed for each. The outcome of the FACTS is one or more behavioral hypothesis statements as described in the previous section.

Other Measures

Each of the included studies reported the results of other FBA measures to confirm or disconfirm FACTS behavioral hypothesis statements (see Table 2). The additional measures used with participants were student-guided interviews (15%), direct observation procedures (59%), functional analysis procedures (63%), and office discipline referrals (7%). In addition, the researchers used the hypothesis statements generated from FACTS interviews to design behavior support plans for 47% of the participants. Because of the relatively low number of studies using student-guided interviews and office discipline referral reviews, agreement with these measures was not included in our analyses.

Direct Observation

Direct observation was used to collect FBA information in a number of studies reviewed. Across studies, the setting for direct observations was identified based on the FACTS interview; observations were conducted in settings where problem behavior was reported to be most frequent. A variety of direct observation forms were used, including standard A-B-C observation forms (Bijou, Peterson, & Ault, 1968) and the *Functional Assessment Observation* form (O'Neill et al., 1997). Each of the forms allowed for event-based measurement of problem behavior, as well as identification of the antecedents (e.g., presentation of specific tasks, periods of independent work) and consequences (e.g., removal of tasks, teacher attention) associated with the problem behavior. After observations were completed, data were analyzed to identify frequently occurring antecedents and consequences for problem behavior. For all studies, authors did not report the raw data gleaned from direct observations but instead reported a hypothesis statement, including problem behavior, antecedents, and consequences, which was compared to the hypothesis statements generated from FACTS interviews.

Table 1
Demographic Information of Participants Included in Analyses

Study	Participant	Grade	Gender	Special Education classification	Target Behavior
Bergstrom (2003)	1	3	M	None	Talking out
	2	2	F	None	Talking out; out of seat
	3	2	M	Learning disability	Talking out; out of seat; inappropriate use of objects
Borgmeier & Horner (2006)	4	2	F	None	Talking out; out of seat; banging objects
	5	1	F	Cognitive impairment	Out of seat; work refusal; disruptive
	6	3	M	Emotional disturbance	Out of seat; work refusal; disruptive
	7	2	M	None	Out of seat; work refusal, disruptive
	8	4	M	Autism	Work refusal; off task
	9	2	M	Cognitive impairment	Work refusal; disruptive; out of seat
	10	4	F	Autism (ADHD)	Off task; inappropriate use of objects
	11	5	M	Other health impairment(ADHD)	Out of seat; work refusal; disruptive
	12	5	M	Other health impairment(ADHD)	Out of seat; work refusal; disruptive
	Filter & Homer (in press)	13	4	M	Learning disability
14		4	M	None	Talking out; out of seat
15		4	M	Learning disability	Talking out; out of seat
16		4	M	None	Talking out; work refusal; inappropriate noises; wandering
March & Horner (2002)	17	7	M	Eligible (not specified)	Talking out; throwing items; elopement; aggression
	18	7	M	None	Defiance; insubordination
	19	6	F	Eligible (not specified)	Disruption; aggression
McKenna (2006)	20	3	M	None	Off task
	21	3	M	None	Talking out; out of seat
	22	3	M	None	Talking out; not following directions
	23	3	M	None	Talking out; out of seat; off task
	24	3	M	None	Talking out; out of seat; off task
	25	3	F	None	Talking out; off task
Preciado (2006)	26	4	M	None	Not following directions
	27	3	F	None	Not following directions
	28	2	M	None	Not following directions; out of seat
	29	2	M	Learning disability	Talking out; disruptive; verbal aggression
Carter & Horner (2007)	30	3	M	None	Talking out; out of seat; noncompliance; aggression
Salentine (2003)	31	K	NS	NS	NS
	32	1	NS	NS	NS
	33	1	NS	NS	NS
	34	1	NS	NS	NS
	35	1	NS	NS	NS
	36	2	NS	NS	NS
	37	3	NS	NS	NS
	38	3	NS	NS	NS
Schindler & Horner (2005)	39	Pre-K	M	Autism	Aggression
	40	Pre-K	F	Autism	Screaming
	41	Pre-K	M	Autism	Tantrums

Note: NS = not specified. ADHD (attention-deficit/hyperactivity disorder) is not a special education classification but is added in parentheses when a medical diagnosis was available.

Functional Analysis

Experimental functional analysis is a procedure in which antecedent and/or consequence variables are

manipulated systematically using a single-subject design. This allows for causal statements to be made about the relation between environmental variables and problem behavior (Iwata et al., 1982/1994; O'Neill et al., 1997).

Table 2
Measures Used to Confirm FACTS Information

Study	Participant	Method of Functional Assessment				
		Direct Observation	Functional Analysis	Office Referral Review	Student-Guided Interview	Behavior Support Plan (Based on FACTS Information)
Bergstrom (2003)	1	X	X	—	X	X
	2	X	X	—	X	—
	3	X	X	—	X	X
Borgmeier & Horner (2006)	4	—	X	—	—	—
	5	—	X	—	—	—
	6	—	X	—	—	—
	7	—	X	—	—	—
	8	—	X	—	—	—
	9	—	X	—	—	—
	10	—	X	—	—	—
	11	—	X	—	—	—
	12	—	X	—	—	—
Filter & Horner (in press)	13	—	X	—	—	X
	14	—	X	—	—	X
	15	—	X	—	—	—
	16	—	X	—	—	—
March & Horner (2002)	17	X	—	X	X	X
	18	X	—	X	X	X
	19	X	—	X	X	X
McKenna (2006)	20	X	X	—	—	X
	21	X	X	—	—	X
	22	X	X	—	—	X
	23	X	X	—	—	X
	24	X	X	—	—	X
	25	X	X	—	—	X
Preciado (2006)	26	—	X	—	—	—
	27	—	X	—	—	—
	28	—	X	—	—	—
	29	—	X	—	—	—
Carter & Horner (2007)	30	X	—	—	—	—
Salentine (2003)	31	X	—	—	—	—
	32	X	—	—	—	—
	33	X	—	—	—	—
	34	X	—	—	—	—
	35	X	—	—	—	—
	36	X	—	—	—	—
	37	X	—	—	—	—
	38	X	—	—	—	—
	39	X	—	—	—	X
Schindler & Horner (2005)	40	X	—	—	—	X
	41	X	—	—	—	X

Note: FACTS = *Functional Assessment Checklist: Teachers and Staff* (March et al., 2000).

In contrast to analog functional analysis (Iwata et al., 1982/1994), in which three or four predetermined hypotheses (e.g., “Problem behavior is evoked by adult attention deprivation and maintained by attention delivery”) are tested with all participants, the studies reviewed here used confirmatory functional analysis procedures (O’Neill et al., 1997), in which specific hypothesis statements derived

from another FBA measure (in this case, the FACTS) are tested against an alternative hypothesis statement and a control condition (described more fully in Borgmeier & Horner, 2006). These procedures are often completed in naturalistic settings, with manipulation of the specific environmental variables that are hypothesized to control the behavior (e.g., requests to read grade-level passages

Table 3
Criteria for Determining Reliability and Validity of FBA Interview Measures

General Area	Specific Area of Measurement	Criteria
Reliability	Test-retest reliability	Do interviews given at different times generate the same hypothesis statement(s)?
	Interrater reliability	Do interviews with different informants (regarding the same context) generate the same hypothesis statement(s)?
Validity	Interobserver agreement	Do different interviewers generate the same hypothesis statement?
	Content validity	Do the questions in the interview measure adequately reflect the research base?
	Process validity	Does the interview format itself produce valid results?
	Convergent validity	Are the hypothesis statements generated consistent with other (particularly direct and/or experimental) FBA procedures?
	Treatment utility	Are behavior support plans based on interview hypothesis statements related with meaningful reductions in problem behavior?
	Social validity	Is the interview process viewed by informants as efficient and effective?

Note: Based on information from Floyd et al. (2005) and Shriver, Anderson, and Proctor (2001). FBA = functional behavior assessment.

instead of generic requests). This increased specificity may lead to increased precision in determining the maintaining consequence of behavior (Horner, 1994). As with analog functional analysis, the conditions are presented in random order and occurrences of problem behavior are recorded to determine differences in levels of problem behavior for each condition.

Measurement Criteria

We adopted criteria established by Floyd et al. (2005) to determine overall measurement properties of the FACTS measure. The researchers adapted criteria from multiple sources, including the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999), to generate a set of criteria relevant to the specifics of FBA measures. In accordance with their recommendations for interview measures, we did not include internal structure as a criterion. The resulting areas of measurement were (a) test-retest reliability, (b) interrater reliability, (c) interobserver agreement, (d) content validity, (e) process validity, (f) convergent validity, (g) treatment utility, and (h) social validity. The criteria are described in Table 3.

Results

Reliability

One study to date (Borgmeier, 2003; Borgmeier & Horner, 2006) has examined the FACTS on a scale that allows for examination of its reliability. This study involved FACTS interviews from 63 informants for nine target students. The following information about reliability is reported from that study.

Table 4
Test-Retest Reliability Estimates
for the FACTS Measure

Setting events	Antecedents	Functions	Total statement
.62 (8/13)	.77 (10/13)	.92 (12/13)	.77 (30/39)

Note: From Borgmeier (2003). FACTS = *Functional Assessment Checklist: Teachers and Staff* (March et al., 2000).

Test-Retest Reliability

To evaluate test-retest reliability, Borgmeier (2003) administered FACTS interviews twice (5 to 7 days apart) for 13 of the 63 informants (21%). Test-retest agreement was calculated through point-to-point comparison of the summary statements generated through the FACTS. Agreement was calculated by dividing the number of agreements per section of the FACTS behavioral hypothesis statement (e.g., setting event, antecedent or maintaining consequence) by agreements plus disagreements. In addition, total FACTS agreement was calculated for the hypothesis statements from each FACTS administration by counting the total number of agreements across all sections. Table 4 provides test-retest reliability estimates according to specific items in the hypothesis statements generated as well as the entire statements. Results showed strong test-retest reliability levels for antecedents, functions, and total statements and moderate levels for setting events. Among the nine responses for which there was disagreement in the test and retest results, the mean level of contact with the student in the specific routine being assessed was 2.2 ($n = 9$), a rating indicating less than 1 hour per week with the student in that routine. When reporting maintaining functions, the one informant without agreement across

administrations did not have contact with the student in the specific routine being assessed.

Interrater Reliability

For each student, Borgmeier (2003) completed FACTS interviews with five to eight staff members with varying levels of exposure to the students (in terms of settings and experience with the problem behavior) and knowledge about behavioral theory. Interrater reliability was determined by comparing agreement on maintaining consequence across all informants. Results showed moderate agreement among 5 to 8 informants in varied settings, ranging from .50 to .88.

Interobserver Agreement

Interobserver agreement information for the FACTS measure was collected with 9 of 63 participants (14%). To calculate agreement, both the interviewer and an observer completed a FACTS protocol for the same interview. There was 100% agreement across all items of the summary of behavioral hypothesis statements for all nine interviews.

Content Validity

For an FBA measure, content validity refers to the extent to which the measure reflects empirical literature on functional relations. Like other FBA interview measures, the FACTS measure generates a behavioral hypothesis statement, identifying an operational definition of problem behavior and environmental events that evoke it (discriminative stimuli, establishing operations), maintain it (consequences), and momentarily change the value of consequences (setting events). Such information has strong evidence for validity; this evidence is based on more than 50 years of research documenting a functional relation between behavior and environmental events that precede and follow them (Carr et al., 1999; Hayes et al., 1986; Shriver et al., 2001; Skinner, 1953).

The routines analysis item is a unique feature of the FACTS that is designed to produce more accurate information about the context of problem behavior. Because of the situational specificity of behavior, some students' problem behavior may be maintained by different consequences across contexts (e.g., physical aggression is maintained by peer attention in nonclassroom areas and escape from tasks in classrooms). The routines analysis was designed to analyze the environmental variables when routines and problem behavior are stipulated. When the routine and problem behaviors are held constant, the controlling variables may be more easily and accurately identified.

The FACTS measure has also been designed to improve contextual fit with school settings. The FACTS has been streamlined from the *Functional Assessment Interview Form* (O'Neill et al., 1997) to a two-page form. The resulting decrease in administration time more closely fits the demands of school personnel. In addition, the checklist answers provided on the form were designed specifically for behaviors and environmental events commonly encountered in school settings (e.g., school routines and academic variables).

Process Validity

The FACTS measure is administered in a semistructured interview format. The interviewer asks a series of questions, most of which include a checklist of responses. The informant is asked to choose responses from the list or provide his or her own. According to the authors (March et al., 2000), this process was developed to help informants consider the problem behavior from a functional perspective. The intended result is a shortened administration time and a process that both guides informants to provide answers consistent with a functional approach and allows for open-ended responses (R. E. March, personal communication, January 20, 2006). Research in the process validity of this checklist format is currently ongoing (Borgmeier, 2007), but as of publication, no evidence was available to assess process validity.

Convergent Validity

Agreement With Direct Observation

Direct observations were conducted following FACTS interviews in five of the studies reviewed. In these studies, observations were conducted in settings where, based on the FACTS, problem behavior was most likely to occur. The authors of these studies reported the results of direct observations in one of three ways: confirmation (direct observation results indicated one clear maintaining consequence that was identical to the consequence generated from the FACTS), disconfirmation (direct observation results indicated one clear maintaining consequence that was not identical to the consequence generated from the FACTS), or multiple consequences (direct observation results indicated multiple maintaining consequences). From a total of 21 participants for whom authors provided both FACTS interview and direct observation results, 19 were confirmed (90%), 1 was disconfirmed, and 1 was partially confirmed (direct observation suggested multiple maintaining consequences, one of which was the primary consequence identified by the FACTS).

Agreement With Functional Analysis

Functional analyses were completed following FACTS in five of the studies reviewed. Across these studies, a total of 17 participants had both completed FACTS interviews and conclusive functional analyses. To evaluate agreement on maintaining consequences identified by the FACTS and the functional analysis, two raters independently coded the results of the functional analysis procedures using visual analysis (e.g., determined that the results of the functional analysis suggested that problem behavior was maintained by adult attention). Interrater agreement was 100% for all hypotheses across participants. Next, the functional relation or relations depicted by the functional analysis (as determined by these raters) were compared to the results obtained from the FACTS. Agreement was scored as either full agreement (functional analysis results produced one clear maintaining consequence that was identical to the consequence generated from the FACTS), partial agreement (functional analysis procedures indicated multiple functions, and the consequence with the greatest amount of problem behavior was identical to the FACTS consequence; or FACTS indicated multiple functions, one of which was confirmed by the functional analysis), or no agreement (functional analysis procedures indicated a different maintaining consequence than the FACTS maintaining consequence). Full agreement was obtained for 9 of 17 cases (53%), partial agreement for 4 cases (24%), and no agreement for 4 cases (24%). The last four cases were the only instances in which information generated from the FACTS measure was disconfirmed by functional analysis procedures.

Treatment Utility

In several studies, researchers developed behavior support plans based on the results of FACTS interviews. A total of 15 students across five studies received function-based behavior support plans designed directly from the FACTS summary statements. Treatment utility was assessed by calculating percentage of change from the last three sessions of baseline to the last three sessions of the final phase of intervention. If a multiple-baseline-across-settings design was used, percentage change was calculated for each setting. Reduction in problem behavior was noted for all students. A greater than 80% reduction in problem behavior was observed for 8 of the 15 students (53%). For 12 (80%), at least a 50% reduction in problem behavior was observed. For the remaining three students, reductions of less than 50% were observed. It should be noted however that, for these three

participants, problem behavior occurred only infrequently during some baseline sessions (i.e., in less than 25% of intervals), which reduced the percentage change between baseline and intervention. In these cases, treatments were associated with reductions in problem behavior, but the low levels in baseline phases resulted in a floor effect.

Social Validity

A number of studies sampled and cited in this article assessed the social validity of the FBA process (Bergstrom et al., 2005; Crone et al., 2007; March & Horner, 2002). These studies reported strong teacher and staff satisfaction with the entire FBA process in terms of ease of use, effectiveness and interest in using the process in the future. One study to date (McIntosh, Kauffman, & Carter, 2007) has assessed teacher perceptions of the FACTS measure in particular. A total of 23 teachers and school staff informants were asked their perceptions of the FACTS interview process in terms of ease of responding, value of the outcome, and recommendation for future use. On average, school personnel found the FACTS interview process easy ($M = 5.1$ out of 6.0), not requiring more effort than it was worth ($M = 1.5$ out of 6.0), and would recommend that others use it ($M = 5.2$ out of 6.0). Although reported perceptions of satisfaction are often subject to error, these results provide some indication of the social validity of the FACTS measure.

Discussion

Functional behavior assessment has been shown to be useful in developing effective interventions for reducing problem behavior and increasing prosocial skills across a variety of settings and populations, including individuals with significant disabilities (for a review, see Pelios, Morren, Tesch, & Axelrod, 1999), clinical populations (e.g., adults diagnosed with depression; Sturmey, 2007), and children in educational settings (e.g., Hoff, Ervin, & Friman, 2005; Reitman & Hupp, 2003; Sterling-Turner, Robinson, & Wilczynski, 2001). The increased use of FBA measures by practitioners in schools and community settings has resulted in a call for efficient and effective methods of FBA. Indirect methods of FBA, while meeting the efficiency criteria, may or may not be useful for intervention development. What is needed at this point is a clear line of research focused on evaluating the reliability, validity, and treatment utility of indirect methods of FBA.

In this article we outlined a framework for assessing the technical adequacy of indirect FBA interview methods of

FBA, using the FACTS as an example. When evaluating a measure used in previous research, an efficient strategy for evaluating technical adequacy is to compile existing research and, evaluate the extent to which the measure is found to be technically adequate across studies. Using this method, we evaluated the measurement properties of the FACTS and reported evidence of its reliability and validity, using commonly identified psychometric criteria.

Reliability

We evaluated the FACTS in terms of test–retest reliability, interrater reliability, and interobserver agreement. Evidence of test–retest reliability and interobserver agreement were reported as strong, and evidence for interrater reliability was moderate. This is to some extent expected because the interrater reliability scores reported were intentionally derived from informants in different settings, and environment–behavior relations often are setting-specific. This does not necessarily indicate error in reporting the same behavior but may rather indicate that the informants are accurately describing behavior that varies in function across settings (Shriver et al., 2001). Also, we note here a contemporary view that reliability is not an inherent property of a measure but is dependent on the characteristics of interviewers and informants (Thompson, 2003). As such, it is important that the measure is used with skilled interviewers and knowledgeable informants to increase the likelihood of reliable measurement.

Validity

We evaluated validity in terms of content validity, process validity, convergent validity (with direct observation and functional analysis), treatment utility, and social validity. The evidence of content validity appears to be strong, given the abundant evidence in the literature that determining behavioral hypothesis statements is a critical feature of function-based support. At this point, there is no convincing evidence in the literature that the process used to complete the FACTS is either valid or invalid. Evidence of convergent validity with direct observation methods and functional analysis procedures was strong and moderate, respectively.

One factor in the functional analysis review was the relative difficulty of correctly assessing problem behavior maintained by multiple functions. More specifically, most interviewees using the FACTS focused on only one maintaining consequence in their hypothesis statement, the consequence indicated by informants as the primary consequence maintaining problem behavior. It is possible that other consequences were identified as well but were not included in the hypothesis statements. Because

we did not have access to the original FACTS interviews, we could not include those consequences in the analysis. In contrast, the data from the functional analyses were directly available, and some suggested that problem behavior was maintained by more than one consequence. Informants could have identified one of a number of consequences that occurred regularly after the problem behavior but did not actually maintain the behavior. But given that the FACTS and functional analyses identified the same single maintaining consequence or one of multiple consequences in 77% of cases, the evidence in this area appears to be at least moderate.

Evidence of both treatment utility and social validity of the FACTS measure is strong, with the vast majority of cases showing significant reductions in problem behavior and high levels of informant satisfaction. Considering that many experts view treatment utility as the most important factor in FBA validity (Gresham, 2003; Hayes et al., 1986; Kern & Dunlap, 1999; Nelson-Gray, 2003), evidence of the validity of the FACTS measure appears to be strong.

Overall, there is evidence that the FACTS measure possesses adequate reliability and validity for use as an indirect measure as part of a comprehensive FBA to design function-based support. Yet, this conclusion is certainly not without limitations. These findings are based on a small number of studies, and more than one third of the studies are doctoral dissertations that have yet to be published in peer-reviewed journals. Further, the interviewers in all of these studies were individuals with training in behavioral theory and the use of the FACTS measure. As such, our findings regarding reliability and validity are stipulated for use of the FACTS by experienced individuals. We recognize that the vast majority of individuals using indirect assessments in schools have not received such training, and these findings do not extend to these circumstances. Clearly, more research is needed to determine under which conditions typical school personnel can complete a reliable and valid FACTS interview.

Future Research

FBA is derived directly from the science of behavior analysis. One of the hallmarks of behavior analysis is an emphasis on direct observation (Baer, Wolf, & Risley, 1968; Baer, Wolf, & Risley, 1987), as hypothesis statements developed based on the recorded observations of a trained observer require less inference than do hypotheses developed based on the opinions of an informant (which may or may not accurately reflect the actual environment–behavior relations). Although direct assessment is preferable when possible, indirect methods of FBA serve an important role in many educational

settings. Given this reality, the onus is on researchers to develop, evaluate, and disseminate effective indirect FBA methods and procedures.

As illustrated in this article, one obvious line of research should focus on evaluating the technical adequacy of existing methods of FBA. The goal of this line of research would be to identify indirect assessments that are psychometrically sound and useful for development of interventions under well-defined conditions, such as characteristics of the informants, interviewers, and participants. A second line of research, possibly more important than the first, would focus on the qualifications needed to conduct an indirect FBA with fidelity and accuracy. It seems likely that PhD-level behavior analysts are capable of interviewing a teacher or parent and accurately identifying functional relations, even without the use of a structured assessment tool. It seems equally likely that individuals with little or no training in behavioral theory would be unable to accurately identify functional relations even using a psychometrically sound tool. Research is needed, therefore, to identify skills critical for successful use of a psychometrically sound indirect FBA measure.

As FBA is increasingly used by practitioners in typical settings, existing methods will continue to be refined and modified to increase their applicability and utility. Due to their efficiency, indirect methods of FBA will continue to play a large role in the FBA process in schools. Although indirect methods of FBA are always less methodologically rigorous than direct ones, we contend that the reliability, validity, and treatment utility of indirect assessment can be enhanced through training in behavioral theory and ongoing technical support in the use of methods that are technically sound.

References

*References marked with an asterisk indicate studies included in the review.

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (1999). *Standards for educational and psychological testing*. Washington, DC: Author.

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1*, 91-97.

Baer, D. M., Wolf, M. M., & Risley, T. R. (1987). Some still-current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 20*, 313-327.

Barton-Arwood, S. M., Wehby, J. H., Gunter, P. L., & Lane, K. L. (2003). Functional behavior assessment rating scales: Intrarater reliability with students with emotional or behavioral disorders. *Behavioral Disorders, 28*, 386-400.

*Bergstrom, M. K. (2003). *Efficacy of school-based teams conducting functional behavioral assessment in the general education environment*. Unpublished doctoral dissertation, University of Oregon.

Bergstrom, M. K., Horner, R. H., & Crone, D. A. (2007). *School-based team members conducting functional behavioral assessments in the general education environment*. Manuscript submitted for publication.

Bijou, S. W., Peterson, R. F., & Ault, M. H. (1968). A method to integrate descriptive and experimental field studies at the level of data and empirical concepts. *Journal of Applied Behavior Analysis, 1*, 175-191.

Borgmeier, C. (2003). *An evaluation of informant confidence ratings as a predictive measure of the accuracy of hypotheses from functional assessment interviews*. Unpublished doctoral dissertation, University of Oregon.

Borgmeier, C. (2007). *Interview prompts: The antecedents to informant responding in functional behavioral assessment interviews*. Manuscript in preparation.

*Borgmeier, C., & Horner, R. H. (2006). An evaluation of the predictive validity of confidence ratings in identifying accurate functional behavioral assessment hypothesis statements. *Journal of Positive Behavior Interventions, 8*, 100-105.

Carr, E. G. (1977). The motivation of self-injurious behavior: A review of some hypotheses. *Psychological Bulletin, 84*, 800-816.

Carr, E. G., Dunlap, G., Horner, R. H., Koegel, R. L., Turnbull, A. P., Sailor, W., et al. (2002). Positive behavior support: Evolution of an applied science. *Journal of Positive Behavior Interventions, 4*, 4-16, 20.

Carr, E. G., Horner, R. H., Turnbull, A., Marquis, J., Magito-McLaughlin, D., McAtee, M., et al. (1999). *Positive behavior support as an approach for dealing with problem behavior in people with developmental disabilities: A research synthesis*. Washington, DC: American Association on Intellectual and Developmental Disabilities.

Carr, E. G., Langdon, N. A., & Yarbrough, S. (1999). Hypothesis-based intervention for severe problem behavior. In A. C. Repp & R. H. Horner (Eds.), *Functional analysis of problem behavior: From effective assessment to effective support* (pp. 9-31). Belmont, CA: Wadsworth.

*Carter, D. L., & Horner, R. H. (2007). Adding functional behavioral assessment to First Step to Success: A case study. *Journal of Positive Behavior Interventions, 9*, 229-238.

Cone, J. D. (1997). Issues in functional analysis in behavioral assessment. *Behaviour Research and Therapy, 35*, 259-275.

Conroy, M. A., Fox, J. J., Bucklin, A., & Good, W. (1996). An analysis of the reliability and stability of the Motivation Assessment Scale in assessing the challenging behaviors of persons with developmental disabilities. *Education and Training in Mental Retardation and Developmental Disabilities, 31*, 243-250.

Crone, D. A., Hawken, L. S., & Bergstrom, M. K. (2007). A demonstration of training, implementing, and using functional behavioral assessment in 10 elementary and middle school settings. *Journal of Positive Behavior Interventions, 9*, 15-29.

Crone, D. A., & Horner, R. H. (2003). *Building positive behavior support systems in schools: Functional behavioral assessment*. New York: Guilford.

Dragow, E., & Yell, M. L. (2001). Functional behavioral assessment: Legal requirements and challenges. *School Psychology Review, 30*, 239-251.

Dunlap, G. (2006). The applied behavior analytic heritage of PBS: A dynamic model of action-oriented research. *Journal of Positive Behavior Interventions, 8*, 58-60.

DuPaul, G. J., Eckert, T. L., & McGoey, K. E. (1997). Interventions for students with attention-deficit/hyperactivity disorder: One size does not fit all. *School Psychology Review, 26*, 369-381.

- Ervin, R. A., DuPaul, G. J., Kern, L., & Friman, P. C. (1998). Classroom-based functional and adjunctive assessments: Proactive approaches to intervention selection for adolescents with attention deficit hyperactivity disorder. *Journal of Applied Behavior Analysis, 31*, 65–78.
- Ervin, R. A., Ehrhardt, K. E., & Poling, A. (2001). Functional assessment: Old wine in new bottles. *School Psychology Review, 30*, 156–172.
- Ervin, R. A., Radford, P., Bertsch, K., Piper, A., Ehrhardt, K., & Poling, A. (2001). A descriptive analysis and critique of the empirical literature on school-based functional assessment. *School Psychology Review, 30*, 193–210.
- *Filter, K. J., & Horner, R. H. (in press). Functionally-indicated academic interventions for problem behavior. *Journal of Positive Behavior Interventions*.
- Floyd, R. G., Phaneuf, R. L., & Wilczynski, S. M. (2005). Measurement properties of indirect assessment methods for functional behavioral assessment: A review of research. *School Psychology Review, 34*, 58–73.
- Gresham, F. M. (2003). Establishing the technical adequacy of functional behavioral assessment: Conceptual and measurement challenges. *Behavioral Disorders, 28*, 282–298.
- Gresham, F. M., & Davis, C. J. (1988). Behavioral interviews with teachers and parents. In E. Shapiro & T. Kratochwill (Eds.), *Behavioral assessment in schools: Conceptual foundations and practical applications* (pp. 455–493). New York: Guilford Press.
- Hawken, L. S., & Horner, R. H. (2003). Evaluation of a targeted group intervention within a school-wide system of behavior support. *Journal of Behavioral Education, 12*, 225–240.
- Hayes, S. C., Nelson, R. O., & Jarrett, R. B. (1986). Evaluating the quality of behavioral assessment. In R. O. Nelson & S. C. Hayes (Eds.), *Conceptual foundations of behavioral assessment* (pp. 463–503). New York: Guilford.
- Hoff, K. E., Ervin, R. A., & Friman, P. C. (2005). Refining functional behavioral assessment: Analyzing the separate and combined effects of hypothesized controlling variables during ongoing classroom routines. *School Psychology Review, 34*, 45–57.
- Horner, R. H. (1994). Functional assessment: Contributions and future directions. *Journal of Applied Behavior Analysis, 27*, 401–404.
- Horner, R. H., Vaughn, B. J., Day, H. M., & Ard, W. R. (1996). The relationship between setting events and problem behavior: Expanding our understanding of behavioral support. In L. Koegel, R. L. Koegel, & G. Dunlap (Eds.), *Positive behavioral support: Including people with difficult behavior in the community* (pp. 381–402). Baltimore: Brookes.
- Individuals with Disabilities Education Act of 1990, 20 U.S.C. § 1400 *et seq.* (1990) (amended 1997).
- Individuals with Disabilities Education Improvement Act of 2004, 20 U.S.C. § 1400 *et seq.* (2004) (reauthorization of the Individuals with Disabilities Education Act of 1990).
- Ingram, K., Lewis-Palmer, T., & Sugai, G. (2005). Function-based intervention planning: Comparing the effectiveness of FBA function-based and non-function-based intervention plans. *Journal of Positive Behavior Interventions, 7*, 224–236.
- Iwata, B., Dorsey, M., Slifer, K., Bauman, K., & Richman, G. (1994). Toward a functional analysis of self injury. *Journal of Applied Behavior Analysis, 27*, 196–209. (Original work published in 1982 in *Analysis and Intervention in Developmental Disabilities, 2*, 3–20.)
- Iwata, B., Pace, G., Dorsey, M., Zarccone, J., Vollmer, T., Smith, R. G., et al. (1994). The functions of self-injurious behavior: An experimental epidemiological analysis. *Journal of Applied Behavior Analysis, 27*, 215–240.
- Johnston, J. M., & Pennypacker, H. S. (1993). *Strategies and tactics of human behavioral research* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Kearney, C. A., & Albano, A. M. (2004). The functional profiles of school refusal behavior: Diagnostic aspects. *Behavior Modification, 28*, 147–161.
- Kearney, C. A., Pursell, C., & Alvarez, K. (2001). Treatment of school refusal behavior in children with mixed functional profiles. *Cognitive and Behavioral Practice, 8*, 3–11.
- Kern, L., & Dunlap, G. (1999). Assessment-based interventions for children with emotional and behavioral disorders. In A. C. Repp & R. H. Horner (Eds.), *Functional analysis of problem behavior: From functional assessment to effective support* (pp. 197–218). Monterey, CA: Brooks/Cole.
- Kinch, C., Lewis-Palmer, T., Hagan-Burke, S., & Sugai, G. (2001). A comparison of teacher and student functional behavior assessment interview information from low-risk and high-risk classrooms. *Education and Treatment of Children, 24*, 480–494.
- Kwak, M. M., Ervin, R. A., Anderson, M. Z., & Austin, J. (2004). Agreement of function across methods used in school-based functional assessment with preadolescent and adolescent students. *Behavior Modification, 28*, 375–401.
- *March, R. E., & Horner, R. H. (2002). Feasibility and contributions of functional behavioral assessment in schools. *Journal of Emotional and Behavioral Disorders, 10*, 158–170.
- March, R. E., Horner, R. H., Lewis-Palmer, T., Brown, D., Crone, D., Todd, A. W., et al. (2000). *Functional Assessment Checklist: Teachers and Staff (FACTS)*. Eugene, OR: Educational and Community Supports.
- McIntosh, K., Brown, J. A., & Borgmeier, C. J. (in press). Validity of functional behavior assessment within an RTI framework: Evidence and future directions. *Assessment for Effective Intervention*.
- McIntosh, K., Kauffman, A. L., & Carter, D. R. (2007). *Relations among informal, standardized, and functional behavior measures: ODRs, suspensions, BASC-2, and FACTS*. Manuscript submitted for publication.
- *McKenna, M. K. (2006). *The role of function-based academic and behavior supports to improve reading achievement*. Unpublished doctoral dissertation, University of Oregon.
- Merrell, K. (2007). *Behavioral, social, and emotional assessment of children and adolescents* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Nelson, J. R., Roberts, M. L., Rutherford, R. B., Mathur, S. R., & Aaroe, L. A. (1999). A statewide survey of special education administrators and school psychologists regarding functional behavioral assessment. *Education and Treatment of Children, 22*, 267–279.
- Nelson-Gray, R. O. (2003). Treatment utility of psychological assessment. *Psychological Assessment, 15*, 521–531.
- Newcomer, L. L., & Lewis, T. J. (2004). Functional behavioral assessment: An investigation of assessment reliability and effectiveness of function-based interventions. *Journal of Emotional and Behavioral Disorders, 12*, 168–181.
- O'Neill, R. E., Horner, R. H., Albin, R. W., Sprague, J. R., Storey, K., & Newton, J. S. (1997). *Functional assessment and program development for problem behavior: A practical handbook* (2nd ed.). Pacific Grove, CA: Brooks/Cole.
- Pelios, L., Morren, J., Tesch, D., & Axelrod, S. (1999). The impact of functional analysis methodology on treatment choice for self-injurious and aggressive behavior. *Journal of Applied Behavior Analysis, 32*, 185–195.

- *Preciado, J. A. (2006). *Using a function-based approach to decrease problem behavior and increase reading academic engagement for Latino English language learners*. Unpublished doctoral dissertation, University of Oregon.
- Radford, P. M., & Ervin, R. A. (2002). Employing descriptive functional assessment methods to assess low-rate, high-intensity behaviors: A case example. *Journal of Positive Behavior Interventions, 4*, 146–155.
- Reed, H., Thomas, E., Sprague, J. R., & Horner, R. H. (1997). The student guided functional assessment interview: An analysis of student and teacher agreement. *Journal of Behavioral Education, 7*, 33–49.
- Reitman, D., & Hupp, S. D. (2003). Behavior problems in the school setting: Synthesizing structural and functional assessment. In M. L. Kelley, G. H. Noell & D. Reitman (Eds.), *Practitioner's guide to empirically based measures of school behavior* (pp. 23–36). New York: Kluwer Academic/Plenum Press.
- Repp, A. C., & Karsh, K. G. (1994). Hypothesis-based interventions for tantrum behaviors of persons with developmental disabilities in school settings. *Journal of Applied Behavior Analysis, 27*, 21–31.
- *Salentine, S. P. (2003, May). The impact of "contextual fit" on the selection of behavior support plan procedures. In R. H. Horner (Chair), *Moving from functional assessment to the design of behavior support*. Symposium conducted at the conference of the International Association for Behavior Analysis, San Francisco.
- Sasso, G. M., Conroy, M. A., Stichter, J. P., & Fox, J. J. (2001). Slowing down the bandwagon: The misapplication of functional assessment for students with emotional or behavioral disorders. *Behavioral Disorders, 26*, 282–296.
- *Schindler, H. R., & Horner, R. H. (2005). Generalized reduction of problem behavior of young children with autism: Building trans-situational interventions. *American Journal of Mental Retardation, 110*, 36–47.
- Scott, T. M., Bucalos, A., Liaupsin, C., Nelson, C. M., Jolivet, K., & DeShea, L. (2004). Using functional behavior assessment in general education settings: Making a case for effectiveness and efficiency. *Behavioral Disorders, 29*, 189–201.
- Shriver, M. D., Anderson, C. M., & Proctor, B. (2001). Evaluating the validity of functional behavior assessment. *School Psychology Review, 30*, 180–192.
- Skinner, B. F. (1953). *Science and human behavior*. New York: Macmillan.
- Sprague, J. R., & Horner, R. H. (1999). Low-frequency high-intensity problem behavior: Toward an applied technology of functional assessment and intervention. In A. C. Repp & R. H. Horner (Eds.), *Functional analysis of problem behavior: From effective assessment to effective support* (pp. 98–116). Belmont, CA: Wadsworth.
- Stage, S. A., Cheney, D., Walker, B., & LaRocque, M. (2002). A preliminary discriminant and convergent validity study of the Teacher Functional Behavioral Assessment Checklist. *School Psychology Review, 31*, 71–93.
- Sterling-Turner, H. E., Robinson, S. L., & Wilczynski, S. M. (2001). Functional assessment of distracting and disruptive behaviors in the school setting. *School Psychology Review, 30*, 211–226.
- Sturmey, P. (Ed.). (2007). *Functional analysis in clinical treatment*. Chicago, IL: Elsevier.
- Sugai, G., Horner, R. H., Dunlap, G., Hieneman, M., Lewis, T. J., Nelson, C. M., et al. (2000). Applying positive behavior support and functional behavioral assessment in schools. *Journal of Positive Behavior Interventions, 2*, 131–143.
- Sugai, G., Lewis-Palmer, T., & Hagan, S. (1998). Using functional assessments to develop behavior support plans. *Preventing School Failure, 43*, 6–13.
- Sugai, G., Lewis-Palmer, T., & Hagan-Burke, S. (1999–2000). Overview of the functional behavioral assessment process. *Exceptionality, 8*, 149–160.
- Thompson, B. (Ed.). (2003). *Score reliability: Contemporary thinking on reliability issues*. Thousand Oaks, CA: Sage.
- Todd, A. W., Horner, R. H., & Sugai, G. (1999). Self-monitoring and self-recruited praise: Effects on problem behavior, academic engagement, and work completion in a typical classroom. *Journal of Positive Behavior Interventions, 1*, 66–76.
- Vollmer, T. R., Northup, J., Ringdahl, J. E., LeBlanc, L. A., & Chauvin, T. M. (1996). Functional analysis of severe tantrums displayed by children with language delays. *Behavior Modification, 20*, 97–115.
- Zarcone, J. R., Rodgers, T. A., Iwata, B. A., Rourke, D. A., & Dorsey, M. F. (1991). Reliability analysis of the Motivation assessment scale: A failure to replicate. *Research in Developmental Disabilities, 12*, 349–360.
- Kent McIntosh, PhD**, is an assistant professor of school psychology at the University of British Columbia. His current research interests include school-wide positive behavior support, functional behavior assessment, response to intervention models, and academic and behavioral systems change.
- Chris Borgmeier, PhD**, is an assistant professor of special education at Portland State University. His current research interests include function-based behavioral support and school-wide positive behavior support.
- Cynthia M. Anderson, PhD**, is an associate professor of school psychology at the University of Oregon and coordinator of the school psychology program. Her current research interests include function-based supports, pediatric feeding disorders, and systems for scaling up behavioral interventions.
- Robert H. Horner, PhD**, is the Alumni-Knight Professor of Special Education at the University of Oregon, interim associate dean for research, and director of Educational and Community Supports, a research center within the College of Education at the University of Oregon. His current research interests include scaling up and sustaining school-wide positive behavior support and functional behavioral assessment.
- Billie Jo Rodriguez, BS**, is a doctoral student in the school psychology program at the University of Oregon. Her research interests include function-based assessment and interventions, systems change and sustainability for behavior supports, response to intervention models for academic and behavior change, and social skills assessment and training, particularly for individuals diagnosed with developmental disabilities.
- Tary J. Tobin, PhD**, is a research associate and adjunct assistant professor in special education at the University of Oregon. Her research interests include positive behavior support, teacher training, and youth empowerment programs for Latino middle school students.

Copyright of Journal of Positive Behavior Interventions is the property of PRO-ED and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.