An Examination Of the Effects Of a Video-based Training Package On Professional Staff’s Implementation Of a Brief Functional Analysis and Data Analysis

Dissertation

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By

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Abstract

Minimal research has investigated training packages used to teach professional staff how to implement functional analysis procedures and to interpret data gathered during functional analysis. The current investigation used video-based training with role-play and feedback to teach six professionals in a clinical setting to implement procedures of a brief functional analysis. A multiple-probe across participant pairs design was used to assess the effectiveness of the training package. Results indicated that following intervention, all participants were able to implement procedures of a brief functional analysis with a high degree of accuracy. The investigation also sought to extend the literature on training visual analysis of graphed data. Results of this phase indicated that the visual analysis of all four participants improved after lecture-based instruction.
Dedicated to my family:

To my father Larry Cruse, my mother Beth Cruse, my sister Kimberly Cruse, and my husband Robert Fleming, who have always supported and believed in me.
Acknowledgments

Thank you to my dissertation committee for contributing to my improvement as a researcher and a writer. To my advisor, Dr. Sheila Morgan, I am grateful for the support you have provided during my graduate studies. To Dr. Helen Malone and Dr. Paula Rabidoux, thank you for your dedication to this project, and for working with me and providing the opportunity to build upon previous research efforts. These experiences have proven to be highly valuable and would not have been possible without your support.

To my participants, I extend my sincerest thanks. Your eagerness to learn and your interest in the assessment and its implications to your professional activities have contributed to the literature as well as my own professional development, and helped to make this project a fulfilling and enjoyable experience.
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Fields Of Study

Major: Education
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CHAPTER 1

Introduction

Challenging behavior presents significant barriers to teaching and learning, such as decreased learning opportunities and limited access to social environments (Reid & Parsons, 2002), the effects of which can pervade across clinic, school, and home environments. Behaviors that are most often assessed for individuals with developmental disabilities include self-injury, aggression, vocal disruption, inappropriate vocalizations, and property destruction (Hanley, Iwata, & McCord, 2003), although challenging behavior impacts educational outcomes of students with learning disabilities as well (Lowe et al., 2007). With respect to individuals with developmental disabilities, research has indicated that pharmacological interventions are a primary response from practitioners faced with such challenges (e.g., Spreat, Conroy, & Fullerton, 2004). In addition to potentially detrimental side effects, the use of medication alone does not address skill deficits, which are a common characteristic of individuals who engage in challenging behavior (Algozzine, Sernal, & Patton, 2001). However, a growing base of literature on the assessment of challenging behavior has made significant contributions to function-based interventions (Carr & Durand, 1985; Iwata, Pace et al., 1994; O'Neill et al., 1997; Wacker et al., 1994). Furthermore, research has shown that interventions that follow assessment activity have evidenced more robust behavior change relative to those
interventions that have not, particularly assessment that involves direct observation and measurement of challenging behavior (Carr et al., 1999).

The goal of assessment is to generate a hypothesis regarding behavioral function and throughout the process, gather information to inform subsequent interventions that ultimately test the hypothesis. The functions of behavior have been conceptualized as sensory/automatic, attention, and escape (Iwata, Pace et al., 1994; Matson, Sipes et al., 2011) as well as access to a specific event or tangible object (Durand & Crimmins, 1988). Assessment activities collect information about events that occur before—antecedents—and those that follow—consequents—the behavior of interest. Together, these environmental variables occasion and strengthen—maintain—behavior.

When equipped with valid assessment tools, practitioners and caregivers are better able to identify the function of challenging behavior in the context of maintaining contingencies. Together, this knowledge can help guide the development of interventions designed to decrease challenging behavior and teach adaptive replacement skills (Carr et al., 1994; Matson, Shoemaker et al., 2011). Therefore, it is critical that practitioners and caregivers alike understand that all behavior serves a purpose—or function—and that knowledge of the function of challenging behavior can contribute to the development of a more effective intervention. Ultimately, those responsible for the design and delivery of such services should conduct valid, meaningful assessment.

The term behavioral has been used to describe assessment methods based on direct observation and measurement to identify the contingencies that maintain behavior (e.g., Neef & Iwata, 1994). Assessments and interventions based on such strategies have
received increased attention in applied settings (Carr et al., 1999; Hanley et al., 2003),
where requests for training related to assessment and intervention for challenging
behavior suggest that professional development should emphasize assessment and
intervention competencies (Prindipolu, Peterson, & Bergdorf, 2007). In addition to
reports from in-service personnel, research in the educational sector has identified a
significant need for training in validated assessment methodology (Crone & Horner,
2001). Breakdowns in the transfer of knowledge to application in environments affected
by challenging behavior have been attributed in part to a documented research-to-practice
gap (Broekkamp & Hout-Wolters, 2007; Meyer & Evans, 1993). Training delivered to
educators may remedy existing concerns, however dissemination of training technology
in academic settings (e.g., pre-service programs) may help prevent such problems.

Methodologies used to identify factors that evoke and maintain challenging
behavior can be categorized into three general categories: indirect, direct, and functional
analysis. Indirect methods typically utilize interviews, checklists, or rating scales, and are
often used by personnel in educational settings (Stichter, Shellady, & Sealander, 2000).
These methods are used as a means of collecting information from significant others,
such as the frequency of challenging behavior, the antecedent and consequent events that
typically occur, and other motivational variables such as favorite activities or tangible
items. Indirect assessment tools can be completed outside of the settings where services
are delivered, and therefore are more feasible for practitioners.

One example of an indirect assessment tool is the Motivational Assessment Scale
(MAS; Durand & Crimmins, 1988), a survey in which the respondent ranks questionnaire
items related to the challenging behavior that together provides information that practitioners can use to help guide intervention planning. Additionally, data obtained may guide direct observation in those settings where challenging behavior is more likely to occur. That being said, this advantage does not ensure further or more direct assessment. Although indirect methods such as the MAS may be more feasible than direct observation and measurement of the behavior of interest, the use of subjective measures as the only basis for intervention planning may provide inaccurate or insufficient information. In these events, it is likely that subsequent interventions are not only ineffective but also potentially detrimental to the individual with disabilities. Therefore, practitioners and caregivers should continue with direct assessment following indirect approaches.

Direct assessment relies on observation of challenging behavior in the context of relevant home, school, or clinic settings. Interventions developed from behavioral hypotheses that follow direct assessment have shown to be effective (Underwood, Umbreit, & Liapsin, 2009). Typically, direct assessments are conducted by practitioners, such as teachers and related specialists, and involve collecting information about the antecedent and consequent events that influence a particular behavior. Collection of this information contributes to the development of individualized goals designed to teach the learner more adaptive behavior which results in access to reinforcement (Horner & Carr, 1997). During direct assessment, the practitioner can identify patterns in the events that occasion challenging behavior, such as task requirements, and make modifications that support the individual’s success during these activities. Upon developing and
implementing interventions, practitioners must continue to monitor the effectiveness and respond with relevant changes as needed.

One type of direct assessment is functional behavior assessment (e.g., O’Neill et al., 1997). The term functional behavior assessment (FBA) has also been used broadly to describe the process by which practitioners gather information to formulate a hypothesis of behavioral function that is tested directly during intervention. In educational settings, a FBA is often the precursor to delivery of interventions based on the use of positive behavior supports (PBS; Sugai et al., 2000). This trend is due in part to recent legislative changes, which mandate that a FBA take place before a student with a disability is expelled or suspended for more than 10 days in an academic year (IDEA, 1997). In theory, this advancement provides safeguards for students in special education; however, legislative language does not define FBAs with procedural specificity, which is likely related to the inherently individualized nature of the assessment. Despite the lack of procedural guidelines in the legislature, FBAs have proven effective to guide the development of function-based interventions that produce durable and meaningful behavior change (Kern et al., 2006).

Functional analyses (FA) represent a more rigorous approach to assessment, the goal of which is to experimentally identify the contingencies responsible for behavior maintenance (Iwata et al., 1982/1994). More common in the clinical setting (e.g., Hanley et al., 2003), FA methodology is typically delivered by personnel who specialize in assessment and conducted outside of the individual’s educational or clinical placement (Carr et al., 1999), thus the term analogue is often used to denote such arrangements.
Given the complexity and variability of the natural environment, it is no surprise that FA methodology may fail to identify variables responsible for behavioral maintenance (e.g., Khang & Iwata, 1999). Researchers have responded with recommendations for direct assessment to systematically identify variables in the environment prior to FA (e.g., Anderson & Long, 2002).

When conducting an FA, the practitioner directly manipulates antecedent and consequent variables across different assessment conditions and measures the occurrence of behavior during each. These data are typically presented in a graph that practitioners visually analyze to generate a hypothesis of behavioral function. Assessment outcomes can then be used to inform interventions designed to teach the individual alternative and more adaptive means to access the functional reinforcer (Carr et al. 1994; Bambara & Kern, 2005).

FA methodology has proven effective in guiding intervention efforts, especially for individuals with developmental disabilities (e.g., Iwata, Pace et al., 1994; Hanley et al., 2003). Despite considerable evidence to support its validity, concerns have been raised regarding the feasibility of conducting an FA in applied settings, including limited resources such as time and clinical expertise (e.g., Northrup et al., 1991), as well as the validity of outcomes in the case of assessment conducted by unfamiliar personnel (Huete & Kurtz, 2010). Furthermore, research has suggested that results obtained do not always transfer to intervention across those settings in which challenging behavior occurs (Carr et al., 1999).

Antecedent variables are of significant relevance to behavioral assessment and the
planning of subsequent intervention. One powerful approach exists in knowledge of learner preference, as expressed through choice making. Preference assessment (PA) methodology has contributed significantly to the development of function-based interventions by identifying highly preferred options to incorporate into interventions as components of instructional tasks and the selected reinforcement strategies (Cannella, O’Reilly, & Lancioni, 2005). PAs are characterized by initial use of questionnaire or survey-type data to identify potentially preferred items (e.g., Reinforcer Assessment for Individuals with Severe Disabilities survey; Fisher, Piazza, Bowman, & Amari, 1996), which are then tested to determine their value to the individual. As such, results of preference assessments provide meaningful information about potential sources of motivation, for example access to a favorite game or tangible item.

Assessment methodologies available to practitioners in the form of indirect and direct assessment present relative strengths and weakness. Although reliant on primarily subjective measures, indirect approaches require minimal time and resources of the practitioner and are more widely used by those who work directly and thus are familiar with the individual. Direct methods provide a more objective account of the behavior of interest, however procedures used and their application often varies, and as such the validity of the practices as implemented is unclear. When intervention efforts are informed by assessment results, functional analyses produce the greatest success, but require significantly more resources to implement. Given the relative benefits of each, research has suggested that outcomes can be maximized when assessment involves a combination of indirect and direct measures, although the greatest impact is demonstrated
by behavioral assessment that involves a functional analysis (Carr et al., 1999). Additionally, direct assessment of individual preferences can contribute to the effectiveness of intervention.

Summary of Methodological Refinements and Training Packages

Modifications to FA methodology have evolved due, in part, to concerns regarding feasibility. Given that time can be limited in clinical and educational settings, the length of time required to conduct a full FA may be inefficient and costly (mean=6.5 hours, 26.2 sessions; range=two to 16.5 hours, 8 to 66 sessions, respectively; Iwata, Pace et al., 1994). In response, researchers have studied the utility of a brief format (Northrup et al., 1991), demonstrating that procedures can be conducted with similar efficacy in a shorter period of time (e.g., 90 minutes). Despite concerns raised regarding the validity of a brief assessment (Khang & Iwata, 1999), use of a brief format has made significant contributions to intervention outcomes for individuals across clinic (Derby et al., 1992), vocational (Wallace & Knights, 2003), residential (Wilder, Masuda, O’Connor, & Baham, 2001), school (Barretto et al., 2006), and home settings (Wacker, Berg, Harding, & Cooper-Brown, 2004). In a more recent review of challenging behavior, 13.6% of the studies reported use of a brief FA design (Hanley et al., 2003), suggesting that such refinements are influencing practice.

With regard to concerns related to clinical expertise and knowledge of procedures, researchers have shown that, under the advisement of a behavior analyst, parents can be instructed to implement procedures (Wacker et al., 2004). Such consultation can also be brought into relevant settings including home and school through the use of video-based
technology to deliver consultation during assessment (Barretto et al., 2004), thereby retaining the features of the natural setting and involving significant others in the process. Although advantageous, this solution does not address the underlying need for clinicians trained to a high level of expertise, and suggests a more prohibitive constraint may exist in terms of a lack of training methodology available to practitioners that targets the competencies required to implement FA procedures (e.g., Iwata et al., 2000). Furthermore, the extent to which practitioners are trained to interpret results of FA data is unclear, although structured criteria for visual analysis have been provided for application to data generated from multi-element designs (Hagopian et al., 1997).

A growing body of literature has demonstrated the effectiveness of multi-component training packages to teach practitioners FA procedures (Iwata et al., 2000; Moore et al., 2002; Moore & Fisher, 2007; Phillips & Mudford, 2008; Stokes & Luiselli, 2008; Wallace, Dooney, Mintz-Resudek, & Tarbox, 2004). Additionally, structured criteria for visual analysis have been developed as a tool that practitioners can use to interpret FA data (Hagopian et al., 1997). To date, the extant FA training packages have taught participants to implement procedures, although none report training interpretation of those results, or to use the results to identify potential components of subsequent intervention.

Purpose of the Study

The purpose of the current investigation was to contribute to the existing literature base by assessing the effectiveness of a video-based training package to teach professionals to implement FA procedures, and extend the literature by teaching
procedures of four assessment conditions in a brief FA format. The current study also sought to assess the extent to which those skills generalize to the clinical setting. In addition to training FA procedures, a goal of the investigation was to extend the literature on training visual analysis of data and recommendations for function-based intervention.

The specific research questions are as follows:

**Research Questions**

1. What effect does a video-based package with role-play have on the implementation of brief functional analyses of professional staff?

2. Will implementation skills learned in the training setting generalize to assessment with individuals in the clinical setting?

3. What effect does a lecture-based training package have on the visual analysis and function-based intervention recommendation skills of professional staff?

4. Will visual analysis and function-based intervention recommendation skills learned during training generalize to assessment data in the clinical setting?
CHAPTER 2

Literature Review

This chapter describes functional analysis methodology and reviews the literature on strategies used to train practitioners and caregivers to implement procedures of functional analysis and to interpret data from functional analysis.

Overview of Functional Analysis Methodology and Procedures

Functional analysis (FA) methodology has evidenced effectiveness in the assessment of challenging behavior (e.g., Hanley et al., 2003; Iwata et al., 1994) through the experimental demonstration of contingencies that occasion and maintain behavior, which are generally conceptualized as sensory/automatic, attention, and escape (Matson et al., 2011). To identify the function of challenging behavior, analysis is conducted across different assessment conditions that approximate events in the applied setting that can influence challenging behavior, including academic, alone, social disapproval, and play (Iwata et al., 1982/1994). FA procedures across these conditions involve the systematic manipulation of specific antecedent and consequent variables, during which the practitioner measures the occurrence of the target behavior.

Interest in the topic of motivation has increased in applied research (Iwata, Smith, & Michael, 2000), a trend that has impacted approaches to both assessment and
intervention. The study of motivating operations (MO) as antecedent variables that strengthen or weaken the value of environmental events (i.e., establishing- and abolishing operations, respectively) and thus their relative effects on behavior (i.e., evocative- and abative effects, respectively; Michael, 2000) has contributed to both assessment and intervention for challenging behavior. During intervention, MOs can decrease the reinforcing value and thus the occurrence of challenging behavior by providing the functional reinforcer for more appropriate behavior (McGill, 1999). Thus it is no surprise that the investigation of MOs during assessment (Call, Wacker, Ringdahl, & Boelter, 2005) as well as intervention has contributed to more valid and effective procedures.

Assessment Conditions

The escape condition tests for behavior that is maintained by social negative reinforcement by way of contingent removal of the demand, and involves the presentation of some form of task demand presented by the practitioner (Carr, Newsom, & Binkoff, 1980). Social disapproval tests for behavior maintained by social positive reinforcement through the contingent delivery of attention from the therapist, who is typically engaged in non-client directed activity (Carr & McDowell, 1980).

The alone condition involves practitioner absence (i.e., leaves the assessment room) and tests for behavior maintained by automatic reinforcement by analyzing the extent to which behavior persists when no social consequences are delivered (Rincover & Devaney, 1982). Play serves as a control condition during which no demands occur, and access to attention and leisure materials is available. When it is believed that challenging behavior may be maintained by access to a specific object or event, a tangible condition has been
included to test the effects of contingent access (Durand & Crimmins, 1988).

Design

When conducting a multi-element FA, two or more assessment conditions are presented sequentially, typically in a prescribed order (i.e., alone, attention, play, escape), although random selection is another option to determine sequence. An alternative to the multi-element design is use of a pairwise design that presents a single test condition (i.e., alone, attention, escape, or tangible) followed by a single play condition (Iwata, Duncan, et al., 1994). Across these designs, one session is conducted across each condition selected for assessment—comprising one series—and series are repeated until sufficient data are collected to demonstrate a functional relation.

Motivational Influence

Study of the effects of antecedent variables has been characteristic of FA methodology and subsequent intervention (e.g., Iwata, Smith, & Michael, 2000). Earlier investigations have emphasized antecedents such as setting events (Kennedy & Itkonen, 1993), the effects of task sequence (Kern et al, 2001), and the effects of choice within task demand (Dyer, Dunlap, & Winterling, 1990). For the most part, the effects of establishing operation (EO) have been the focus of analysis (e.g., McGill, 1999), although abolishing operations during FA of challenging have contributed to assessment methodology (e.g., O’Reilly et al., 2009).

In addition to antecedent manipulations within each condition, such as the presentation of demands or low-levels of attention, the order of conditions in an FA series (i.e., alone, attention, play, escape; Iwata, Pace et al., 1994) is conceptualized as an EO as
well. For example, the absence of social contingencies during the alone condition should increase the value of attention during the subsequent session and therefore evoke behavior influenced by social-positive reinforcement. The EO is of particular value during assessment of low-frequency behavior, which can be difficult to detect during analogue assessment, especially those in a brief format (i.e., five to 10 minute sessions, across one or two series) in format (Derby et al., 1992).

Session Characteristics

More common to clinical settings, FA methodology is typically delivered by personnel who specialize in assessment, which is often conducted outside of the client’s educational or clinical placement (Carr et al., 1999), hence use of the term analogue has been used to describe such arrangement. During each session of FA, practitioners typically implement procedures of each condition during a 10-minute session, although some designs use 15- or 5-minute sessions (Hanley et al., 2003). Together, data collected across all sessions of an FA are analyzed to identify the differential effects of assessment conditions on observed behavior, and thus generate a hypothesis of behavioral function.

Interpretation of Functional Analysis Data

Research has shown that most often, practitioners use visual analysis of graphs to interpret the results of FA (i.e., 75.1% of reviewed studies; Hanley et al., 2003). To interpret that data, the practitioner looks for patterns in the level and trend of behavior observed during assessment activity. A single data point can be used to display the occurrence of behavior during each session across all series in the assessment. In some cases, analysis of within-session data has allowed practitioners options, such as minute-
by-minute analysis (e.g., Vollmer, Iwata, Zarcone, Smith, & Mazaleski, 1993). To illustrate, the occurrence of behavior during a 10-minute session can be represented as a cumulative value, or responses during each minute of that session. These analyses—which can be planned or occur during post-hoc analysis—can provide more sensitive analysis of within-session trends that may be lost when data are aggregated in a single data point.

Overview of Methodological Refinements

Despite considerable evidence to support the effectiveness of FA in the assessment for challenging behavior, limitations to the methodology have raised concerns regarding its validity in applied settings. As mentioned previously, FA methodology is often conducted in analogue settings. Therefore, assessment under such conditions is of particular concern with respect to the absence of relevant variables and the potential for false-negatives. One such example is the differential effects of assessor familiarity on FA outcomes, suggesting that involvement of significant others during implementation can increase the effectiveness of procedures to identify a functional relation (e.g., Huete & Kurtz, 2010).

It is unfortunate that research has indicated results obtained do not always transfer to intervention across those settings in which challenging behavior occurs (Carr et al, 1999). This may be due in part to the aforementioned trend of unfamiliar personnel, and assessment outcomes that may or may not influence subsequent intervention, which is likely delivered by other individuals such as direct care staff or teachers. Additionally, the extent to which practitioners are trained to interpret results of FA data is unclear,
although structured criteria for visual analysis have been provided for application to data generated from observation and measurement of multi-element FA (Hagopian et al., 1997).

The potential for behavioral assessment to influence intervention relies foremost on effective application of procedures in the context of relevant environmental variables. That being said, concerns have been raised regarding the feasibility of FA methodology in applied settings, including limited resources such as time and clinical expertise (e.g., Carr et al., 1999). The length of time and number of sessions required in a full FA varies, as assessment continues until sufficient data are obtained. However, full FA has been reported to last on average 6.5 hours and conducted across 26.2 sessions (range=two to 16.5 hours; 8 to 66 sessions, respectively; Iwata, Pace et al., 1994). Given that time can be limited in clinical and educational settings, the length of time required to conduct a full FA may be inefficient and costly.

In response, researchers have studied the utility of a brief format (Northrup et al., 1991), demonstrating that procedures can be conducted with similar efficacy in a shorter period of time (e.g., 90 minutes). Use of a brief format is more typical of evaluations in outpatient clinical settings, where greater efficiency of assessment may allow delivery of services to more individuals in a shorter amount of time. Despite concerns regarding the validity of brief FA when data from the initial exposure to each condition (i.e., first series) of a full FA are analyzed (Khang & Iwata, 1999), a growing body of literature has made significant contributions to intervention outcomes for individuals across clinic (Wacker et al., 2004), vocational (Wallace & Knights, 2003), residential (Wilder, Masuda,
O’Connor, & Baham, 2001), school (Barretto, Wacker, Harding, Lee, & Berg, 2006), and home settings (Wacker, Berg, Harding, & Cooper-Brown, 2004). Additionally, researchers involved in the development of brief formats have provided recommendations to help guide practitioners towards use of the most appropriate assessment format. One recommendation is that low-frequency challenging behavior may not be suited for analysis in a brief format, due to the increased risk for false-negative assessment outcomes (Derby et al., 1992). Trends in applied research suggest that a continually developing brief FA format is influencing practice, as evidenced by increased prevalence of brief formats (i.e., 13.6% of published FA, Hanley et al., 2003).

Where concerns are related to clinical expertise and knowledge of procedures, researchers have shown that, under the advisement of a behavior analyst, parents can be instructed to implement procedures (Wacker et al., 1994). Such consultation can also be brought into relevant settings including home and school through use of video-based technology to deliver consultation during assessment (Barretto et al., 2004), thereby retaining the features of the natural setting and involving significant others in the process. Although advantageous, this solution does not address the underlying need for clinicians trained to a high level of expertise, and suggests a more prohibitive constraint may exist in terms of a lack of training methodology available to practitioners that targets the competencies required to implement FA procedures (Iwata et al., 2000). Furthermore, the extent to which practitioners are trained to interpret FA results is unclear, although structured criteria for visual analysis have been provided for application to data generated from observation and measurement of multi-element FA (Hagopian et al., 1997).
Functional Analysis Training Packages

Research has been conducted to examine the effects of training packages on practitioner and caregiver implementation of FA procedures. To review the effects of these training packages, six studies were investigated that trained practitioners and caregivers of individuals diagnosed with either developmental or learning disabilities to implement FA procedures. The reviewed studies were published in peer-reviewed journals during the last decade. The review consists of three categories, including summary of participants, characteristics of training package and instructional components, and a review of functional analysis training packages.

Participants

A total of 36 participants were involved in the reviewed studies, including 28 trainees and eight clients who received assessment. Trainees included university students, clinical staff, school staff, and parents. Varying educational levels were represented by participants, which ranged from a high school diploma to a graduate-level student working toward an MA degree. Clients were students in special education or individuals with developmental- or learning disabilities. Table 2.1 displays a summary of participant characteristics.
<table>
<thead>
<tr>
<th>Reference</th>
<th>Design</th>
<th>Trainee Role(N)</th>
<th>Education/ Age(N)/ Gender</th>
<th>Client Diagnosis</th>
<th>Age(N)/ Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iwata et al. (2000)</td>
<td>Multiple baseline across participants</td>
<td>Undergraduate students (11)</td>
<td>Undergraduate course-work</td>
<td>Not specified</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(10)/F</td>
<td>(1)/M</td>
</tr>
<tr>
<td>Moore &amp; Fisher (2007)</td>
<td>Multiple baseline across participants</td>
<td>Clinical staff</td>
<td>BA (2)</td>
<td>Not specified</td>
<td>Not specified</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MA student (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moore et al. (2002)</td>
<td>Multiple baseline across participants</td>
<td>General education teacher (2)</td>
<td>Not specified</td>
<td>Learning disability and teacher report of disruptive behavior (3)</td>
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</tr>
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<td></td>
<td></td>
<td>Inclusion teacher (1)</td>
<td></td>
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</tr>
<tr>
<td>Phillips &amp; Mudford (2008)</td>
<td>Multiple baseline across participants</td>
<td>Residential staff</td>
<td>High School</td>
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<td>1M</td>
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</tr>
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</tr>
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<td>School psychologist (1)</td>
<td>MA (1)</td>
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<td></td>
<td>General education teacher (1)</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.1 Summary of research design and participant characteristics
University students. The largest sub-group of trainees consisted of eleven undergraduate level students working in a clinical setting, one of whom was male (Iwata et al., 2000). Initial training was delivered in a classroom, while role-play activity occurred in a university-based clinical facility that housed treatment services for individuals with developmental disabilities.

Clinical staff. The highest level of education attained was reported for all seven clinical staff participants, who typically held a bachelor’s degree, although four trainees held high school diplomas, and one was a graduate school student during the course of the study. Although gender was not specified for three trainees (Moore & Fisher, 2007), Phillips and Mudford (2008) trained three females and one male in an on-site facility that provided residential care.

School staff. A total of six practitioners employed in educational settings received training in the reviewed studies, three of whom were identified as General Education teachers (Moore et al., 2002; Wallace et al., 2004). The remaining trainees were identified as a dually certified teacher (i.e., General & Special Education; Wallace et al., 2004), an inclusion teacher (Moore et al., 2002), and a school psychologist (Wallace et al., 2004). Training was delivered in educational environments, such as the participants’ classrooms, on-site during designated staff development times, or in administrative school buildings.

Parents. One study trained four parents with high school diplomas or bachelor’s degrees (Stokes & Luiselli, 2008). Both males and females ranging in age from 25 to 40 participated in training delivered in their homes.
Characteristics of Training and Instructional Components

Setting/Format. The reviewed studies took place across a range of settings that included a university classroom (Iwata et al., 2000), clinical day treatment program (Moore & Fisher, 2007), residential program (Phillips & Mudford, 2008), school (Moore et al., 2002; Wallace et al., 2004), and participants’ home (Stokes & Luiselli, 2008). The majority of training sessions were delivered in a one-on-one format lasting approximately 30 min to 1½ hours (Moore & Fisher, 2007; Moore et al., 2002; Phillips & Mudford, 2008; Stokes & Luiselli, 2008). Two packages included an initial workshop prior to instruction at the individual level (Iwata et al., 2000; Wallace et al., 2004), one of which occurred during an in-service for school staff (Wallace et al., 2004). Table 2.2 reports assessment conditions trained and the setting in which training was delivered.
Table 2.2 Characteristics of training packages

<table>
<thead>
<tr>
<th>Reference</th>
<th>Conditions</th>
<th>Setting</th>
<th>Format</th>
<th>Group Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iwata et al. (2000)</td>
<td>attention, escape, and play</td>
<td>- Phase 1: University classroom</td>
<td>- Phase 1: Group format, 1 ½ hours</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Phase 2: clinical day treatment program</td>
<td>- Phase 2: 1:1, 30 min</td>
<td>1</td>
</tr>
<tr>
<td>Moore &amp; Fisher (2007)</td>
<td>attention, escape, and play</td>
<td>Clinical day treatment program</td>
<td>1:1</td>
<td>1</td>
</tr>
<tr>
<td>Moore et al. (2002)</td>
<td>attention and escape</td>
<td>At school during planning period; probes in classroom during instruction</td>
<td>1:1</td>
<td>1</td>
</tr>
<tr>
<td>Phillips &amp; Mudford (2008)</td>
<td>attention, escape, alone, and play</td>
<td>Residential care facility</td>
<td>1:1 sessions (60-100 min)</td>
<td>1</td>
</tr>
<tr>
<td>Stokes &amp; Luiselli (2008)</td>
<td>attention, escape, and play</td>
<td>Family home</td>
<td>1:1, with 8-11 sessions per trainee</td>
<td>1</td>
</tr>
<tr>
<td>Wallace et al. (2004)</td>
<td>attention, escape &amp; play</td>
<td>Conference room in school</td>
<td>3 hour workshop; 1:1 role-play</td>
<td>38</td>
</tr>
</tbody>
</table>

Table 2.2 Characteristics of training packages

*Instructional Components*

All packages included a variety of instructional materials, primarily in the form of a written description or a list of procedures, as well as lecture-based instruction in the form of a PowerPoint presentation. These materials supplemented multiple activities, such as researcher demonstration, practice, and feedback. Table 2.3 identifies the instructional components and the outcomes of each training package.
<table>
<thead>
<tr>
<th>Instructional Components</th>
<th>Participant Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Material</strong></td>
<td><strong>Activity</strong></td>
</tr>
<tr>
<td>Iwata et al. (2000)</td>
<td>- Phase 1: Written description</td>
</tr>
<tr>
<td></td>
<td>- Phase 2: List of procedures</td>
</tr>
<tr>
<td>Moore &amp; Fisher (2007)</td>
<td>- Written description - Partial video: half of potential implementation skills - Full video: all skills - Role-play</td>
</tr>
<tr>
<td></td>
<td>- Powerpoint with lecture</td>
</tr>
<tr>
<td>Moore et al. (2002)</td>
<td>Written description - In-vivo model - Role-play</td>
</tr>
<tr>
<td>Phillips &amp; Mudford (2008)</td>
<td>Written description - 5-min verbal description - In-vivo model with client - Practice with client</td>
</tr>
</tbody>
</table>

Table 2.3 Training components and effectiveness

(Continued)
**Table 2.3 (Continued)**

<table>
<thead>
<tr>
<th>Method</th>
<th>Written Description</th>
<th>Instructional Model</th>
<th>Practice Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stokes &amp; Luiselli (2008)</strong></td>
<td>- Verbal description</td>
<td>- Phase 1: slight verbal improvement</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td>- Video model of conditions</td>
<td>- Phase 2: greatest gains</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Role-play</td>
<td>- Trainee-preference for video-feedback</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-5 min verbal &amp; written</td>
<td>3-5 min video</td>
<td></td>
</tr>
<tr>
<td><strong>Wallace et al. (2004)</strong></td>
<td>- Role-play with workshop trainee; with trainer after-workshop</td>
<td>Verbal after role-play with trainer if accuracy below 90%</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Role-play &amp; feedback effective for 2 participants</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 1 required feedback for escape condition</td>
<td></td>
</tr>
</tbody>
</table>

*Written instructions.* All packages included a written description of the assessment and implementation procedures. Iwata and colleagues (2000) were the only researchers that specified a list of procedures was included in material provided to participants.

*Instructional model.* Experimenters in five of the six reviewed packages provided examples of implementation, either by way of in-vivo (Moore et al., 2002; Phillips & Mudford, 2008) or video-modeled (Iwata et al., 2000; Moore & Fisher, 2007; Stokes & Luiselli, 2008) demonstration. Wallace and colleagues (2004) represent the only package that did not include a demonstration of procedures.

*Practice Opportunity.* All training packages included the opportunity for participants to practice implementation, either through simulated assessment (i.e., role-play with the experimenter) or with a client under supervision of the experimenter.
(Phillips & Mudford, 2008).

*Performance feedback.* Delivery of feedback was programmed into all packages, with the exception of Moore and Fisher (2007) who eventually delivered verbal feedback to one participant in order to teach procedures of the play condition. Subsequently, all training packages delivered some form of performance feedback. Three packages provided verbal feedback only, which was delivered after every practice session (Moore et al., 2002; Phillips & Mudford, 2008) or following those sessions in which participant accuracy was less than 90% (Wallace et al., 2004). Iwata and colleagues (2000) provided verbal feedback after every role-play session, and if participant performance was below 95%, the experimenters delivered included video-feedback. Stokes & Luiselli (2008) designed a training package with multiple feedback methods. Both verbal and written feedback was delivered after role-play during Phase 1, and video-feedback was used in Phase 2. Those packages that included video-feedback did so immediately after role-play activities.

**Review of Functional Analysis Training Packages**

In the first known study to address training functional analysis methodology, Iwata and colleagues (2000) developed a package to teach undergraduate students the procedures of three assessment conditions (i.e., attention, escape, play). Instructional components included provision of written materials, viewing videotaped simulations, completion of a written quiz, and experimenter-delivered feedback after role-play of implementation. This first phase of training occurred in a university classroom, whereas role-play activity occurred in the clinical facility located at the university.
Written materials included the methods section of Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994) and an overview of the purpose and procedures of functional analysis. Additionally, participants were provided a list of procedures for each condition. General procedures were specified (e.g., “Activate stopwatch and direct client towards toys”), as well as correct responses to behavior targeted for assessment (e.g., “client emits target behavior: Express concern paired with brief physical contact”) and non-target behavior (e.g., “Client emits inappropriate behavior other than the target: Ignore”) (Appendix B, Iwata et al., 2000).

After reviewing instructional materials, participants were shown a video clip demonstration of procedures. After this, participants engaged in role-play with experimenters and received verbal feedback regarding their performance. If accuracy of implementation was below 95%, participants received additional video-based feedback. Results indicated that all participants demonstrated skills with at least 95% accuracy following the 2-hour training. Although performance during training indicated high accuracy of implementation, researchers did not assess performance outside of role-play scenarios, thus it is not known if skills would generalize to the applied setting.

For the purpose of role-play, experimenters generated scripts for each assessment condition that specified activity during simulated assessment. Scripts included five categories of responses: 1) self-injurious behavior targeted for assessment, 2) disruptive behavior not targeted for assessment such as throwing instructional material, 3) appropriate play such as engagement with leisure material, 4) appropriate socialization such as vocal statements to the participant, and 5) compliance to instructions. This outline
provides practitioners interested in training FA procedures with guidelines for conducting role-play, however a lack of data reporting the extent to which these behaviors occurred was not reported.

In an extension to the educational setting, Moore et al. (2002) trained three elementary school teachers to implement two assessment conditions (i.e., attention, demand). The training was delivered in the classroom, wherein researchers provided verbal and written explanation of assessment procedures. After this initial instruction, teachers attempted to implement assessment procedures. When performance indicated only minimal improvement, researchers expanded training to include a live demonstration. After watching experimenters model assessment skills, participants were able to practice with an experimenter, who then provided feedback about their performance.

Even though slight gains were observed after initial instruction, inclusion of a visual model produced the greatest gains in participant implementation. In addition to increased performance during training sessions, all three participants maintained skills during a three-month follow up. Furthermore, teachers were able to implement assessment procedures with students in the classroom setting. These findings support the effectiveness of FA training packages and extended findings of Iwata and colleagues (2000) by demonstrating that professionals with a limited background in behavioral assessment can be trained to implement FA procedures in the classroom.

Research has further examined training in the school setting, where Wallace, Dooney, Mintz-Resudek and Tarbox (2004) delivered a group-workshop to teach
procedures of escape, attention, and play conditions. Similar to Moore et al. (2002), instruction included verbal explanation, written materials and role-play. However, training was expanded to include videotaped demonstration of procedures. During the workshop-based portion of training, researchers provided 38 school staff with verbal and written explanation before delivering the video-model. Afterwards workshop attendees paired to practice implementation, alternating between playing the role of practitioner and client, to allow practice opportunity for all attendees. After role-play, experimenters concluded the three-hour workshop by answering attendees’ questions.

Following workshop training, researchers provided further instruction to three attendees who participated in additional role-play sessions with an experimenter. A modification was made to the training package when one participant could not implement procedures of the escape condition with 90% accuracy during role-play. This participant received verbal feedback and additional role-play opportunities until performance met mastery criteria. Experimenter-behavior during simulated assessment was reported as equivalent across role-play sessions, however descriptions and the extent to which behavior occurred was not reported. Overall, results indicate that all three individuals with limited prior knowledge gained the skills necessary to conduct a functional analysis within a brief training format, lasting approximately three hours. Furthermore, one participant generalized use of those skills to the classroom setting.

Research has extended beyond clinical and educational settings to train the parents of individuals with disabilities (Stokes & Luiselli, 2008). Training included both verbal and written explanation of procedures, video-modeled implementation, role-play, and
feedback to teach three conditions (i.e., attention, play, escape). During an initial training phase, participants received verbal and written feedback after role-play, and in the subsequent phase the feedback component was modified to include video footage of the previous role-play session. Performance during role-play indicated that the greatest gains were demonstrated after video-feedback was incorporated into training. Additionally, measures of social validity suggested a participant preference for inclusion of video-feedback. After training was complete, all parents were able to implement one assessment condition with their own child.

Thus far, the reviewed training methodology have taught implementation of two to three assessment conditions. However, Phillips and Mudford (2008) taught four residential staff to implement procedures of four assessment conditions, including alone, attention, play, and escape. This training package omitted use of video technology, and researchers instead provided in-vivo models of implementation via assessment conducted with a client. Under the supervision of the experimenter, participants practiced with a client and received verbal feedback. Although results indicated training was effective to teach most participants, one required corrective prompts from the experimenter during the attention and escape conditions. After training was complete, one participant received the opportunity to conduct assessment of a different target behavior with the same client.

A potential benefit to inclusion of a client-participant during training is that the trainee may be exposed to client-behavior that is more characteristic of assessment and thus the skills required, a feature that could enhance generalization and reduce any artificiality imposed by simulated role-play with an experimenter. Alternatively, use of a
client may restrict practice opportunity, for example in the event that low-levels of behavior are observed during sessions conducted by an unfamiliar practitioner (e.g., Huete & Kurtz, 2011).

Although support for generalization is demonstrated by one participant’s assessment of a novel target behavior with the same client, it remains unclear if similar generality would occur during assessment with a different client who is likely to display different idiosyncrasies in target and non-target behavior. In settings where in-vivo practice may not be in the best interest of a client who might require a practitioner with established competencies, or where practice with a client is not an option, systematic planning may achieve similar effects by programming a range of potential client behavior into role-play activity.

Researchers have expanded use of video-based technology to study the relative effects of three instructional formats (Moore & Fisher, 2007), including full video instruction presenting multiple exemplars of implementation behavior, a lecture combined with partial video containing examples of approximately 50% of potential skills required, and a lecture only format that did not provide demonstration. The package consisted of verbal explanation, videotaped instruction, and role-play with another adult to teach procedures of three conditions (i.e., attention, play, escape). Training was delivered to a group of clinical staff in approximately three hours.

Full-video instruction resulted in the most significant improvements, as well as generalization to assessment in to the clinical setting. These results provide further support for multi-component training packages and extend the literature by contributing
evidence for systematic inclusion of a range of implementation behavior during video-based instruction. Effectiveness of this format is further supported, given that the training package represents the only approach in the reviewed studies that did not include performance feedback for all participants. Although participant background in behavior analysis may have influenced instructional requirements during skill acquisition, researchers did not systematically study the effects of feedback.

To date, these studies represent the known evidence base on training implementation of functional analysis methodology. Although these studies evidenced effectiveness of training packages, there remains a need to further refine procedures to train clinicians to implement functional analysis methodology and to use visual analysis of data to generate hypotheses of behavioral function and make subsequent intervention recommendations.

Training Interpretation of FA Data

In the first demonstration of structured criteria for interpretation of functional analysis data, Hagopian and colleagues (1997) employed a multiple baseline across participants design to train application of structured criteria to three psychology doctoral students. The initial phase of the study consisted of researchers collecting 64 graphs displaying outcomes of FAs that were conducted in clinical settings, each of which included two to four experimental conditions and a play condition, with ten data points per assessment condition. As such, each graph contained at least 30, but no more than 50, data points. Using visual analysis, two behavior analysts regarded as experts on FA methodology (i.e., Brian Iwata and David Wacker) interpreted the behavioral function
Based on expert interpretation, researchers used statistical analysis to generate structured criteria for interpreting FA data with ten points per condition. The structured criteria contained 15 steps, including: application of general procedure, identifying trends in each condition, and responding to data with one or more conditions that are differentiated, as well data in which no condition is differentiated. Next, researchers created 195 computer-generated graphs that were similar to those interpreted by the experts for use as instructional material during training. Training was delivered in a one-on-one format, in which the research trained the participant to apply the structured criteria. After the one to two hour training sessions, participants demonstrated high levels of agreement with expert analysis (i.e., 94%). This study represents the only known study to train systematic interpretation of multi-element FA data, and thus a significant contribution to the literature on function-based assessment and intervention planning.

Summary of Functional Analysis Training Packages

In reviewing the existing body of literature on training functional analysis procedures, consistent across all training packages was the use of experimenter demonstration of target skills—either by way of in-vivo or video-model—followed by role-play with a simulated client, or implementation with a client participant under supervision of the experimenter. In fact, hands-on practice was the only component programmed into all training packages. Use of video-technology was characterized in many of the training packages reviewed, either the delivery of instruction or feedback.
Of particular interest are effects of manipulating the instructional models included in the full video condition of training by Moore & Fisher (2007), which produced the most consistent implementation and generalized to the clinical application. It is likely that generality was increased by the systematic presentation of skills in the instructional video. Assessment procedures trained in a full video format required overall fewer sessions (i.e., three to four) relative to procedures presented during partial video (i.e., eight sessions). When exposure to partial video was not sufficient, experimenters introduced full video instruction, and all participants required an additional four to six sessions (i.e., twelve to fourteen sessions total). One participant required verbal feedback to learn procedures of the play condition. These trends suggest that participant errors in the partial video-format may have increased instructional requirements, providing further support for inclusion of full instructional examples as well as performance feedback.
CHAPTER 3

Method

This chapter describes the research methods used in this study. The setting, participants, materials and equipment, definition and measurement of the dependent variables, and the experimental design are detailed. Experimental procedures, procedural integrity, and social validity are also described.

Setting

The study took place in a metropolitan city at a university designated as a center for excellence in developmental disabilities (UCEDD). The university facility provides both outpatient clinical services and clinic-based education for professionals serving individuals with developmental disabilities. All experimental sessions took place in the university facility in a conference room, and either an assessment room, or an empty preschool classroom.

The conference room contained a 4-foot by 2-foot table, a video-projector, a 10-foot by 4-foot conference table, and ten chairs. A 12-foot by 6-foot assessment room was used for role-play and was equipped with a two-way mirror, a microphone and audio-system, and contained two small tables and two chairs. The 30-foot by 30-foot preschool classroom was used for role-play and contained a circular table and two chairs, an area
that contained dramatic play and gross motor materials, four bookshelves that contained books and toys, and an adjacent observation room which had two chairs and a two-way mirror for the purpose of classroom observation.

Participants

Six graduate-level individuals participated in the study, all of whom were recruited from the university. Inclusion in the study was determined by the following: the participant was either a graduate student involved in the university’s Leadership in Education Excellence in Neurodevelopmental Disabilities (LEND) program, enrolled in the Special Education and Applied Behavior Analysis program, or was a clinical staff member employed by the outpatient clinic. Those respondents who met one of these criteria were included as participants in the study. All six participants were involved in Training 1 and four also participated in Training 2. Two participants were not able to attend Training 2 due to prior commitments.

In particular, graduate students involved in the LEND program were recruited for involvement to support program goals of providing leadership development to graduate and postgraduate trainees from a range of interdisciplinary specializations. The primary objective of the program is to develop high levels of clinical expertise and leadership attributes that will support the improved health of infants, children, and adolescents with or at-risk for neurodevelopmental and related disabilities, and their families.

The training package used in this study was included as one available opportunity presented along with other existing LEND-sponsored training programs, for which attendance is open to graduate-level students in related disciplines serving individuals
with developmental disabilities. Additionally, clinical staff members employed in the Behavior Support Unit of the university’s outpatient clinic were recruited for the study. Behavior Support staff are responsible for conducting assessment of challenging behavior and the subsequent supervision of function-based interventions. As such, participants represented a diverse demographic in terms of experience and educational background. Table 3.1 displays each participant’s university title and educational discipline.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Title</th>
<th>Discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kayla</td>
<td>LEND trainee Graduate Student</td>
<td>Physical Therapy</td>
</tr>
<tr>
<td>Leigh</td>
<td>LEND trainee Graduate Student</td>
<td>Occupational Therapy</td>
</tr>
<tr>
<td>Julia</td>
<td>Doctoral Student</td>
<td>Special Education &amp; Applied Behavior Analysis</td>
</tr>
<tr>
<td>Jordan</td>
<td>Behavior Support Specialist</td>
<td>M.A. Dance &amp; Movement Therapy</td>
</tr>
<tr>
<td>Shaniqua</td>
<td>Behavior Support Specialist</td>
<td>M.A. Special Education &amp; Applied Behavior Analysis</td>
</tr>
<tr>
<td>Skylar</td>
<td>Doctoral Student</td>
<td>Special Education &amp; Applied Behavior Analysis</td>
</tr>
</tbody>
</table>

Table 3.1 Participant demographics

All six participants were Caucasian females. Kayla was a Master’s student in Physical Therapy. Leigh was a Master’s student in Occupational Therapy. Both were full-time graduate students in their respective disciplines and were also involved in the LEND program, through which they were assigned practicum placements in the on-site preschool. Both participants report no knowledge of or involvement in behavioral treatment prior to their involvement in the LEND program. Prior to the end of the
academic quarter, Leigh began an out-of-state practicum placement, and Kayla was out of town; therefore, neither were participants in Training 2.

Julia and Skylar were both doctoral students in the Special Education and Applied Behavior Analysis program with coursework in classroom management that covered topics of functional behavior assessment. Although Julia had previously served as a member of intervention planning teams as a special education teacher in a public school, she did not report observation of or involvement with functional analysis. While Skylar reported coursework specific to functional analysis, this experience did not include observation of or involvement with functional analysis.

Jordan and Shaniqua both held a Master’s degree (i.e., Dance and Movement Therapy, Special Education and Applied Behavior Analysis, respectively) and were currently employed as Behavior Support Specialists. Although prior coursework reflects differing exposure to behavioral assessment, their job requirements and experience with functional analysis were the same. That is, they develop, monitor, and train care providers to implement behavioral interventions; additionally, both have attended professional conferences at which they viewed video-clips of functional analysis, yet have not been involved in the implementation of a functional analysis.

Participant Background

Prior to the recruitment of participants, approval was obtained from the Institutional Review Board of The Ohio State University. The experimenter also met with each participant to explain the purpose, procedures, and expected duration of the study. Written consent forms (see Appendix A) were obtained from participants prior to
involvement in the study. After participant consent was obtained, a questionnaire-type survey (see Appendix B) was given to each participant to gather descriptive data regarding knowledge of and prior experience with behavioral assessment. Table 3.2 displays each participant’s reported knowledge and experience.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Relevant coursework &amp; assessment topic(s)</th>
<th>Experience providing behavioral treatment</th>
<th>Observation and/or participation in functional analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kayla</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Leigh</td>
<td>No</td>
<td>Assisting with development &amp; implementation of a behavior plan in current practicum placement</td>
<td>No</td>
</tr>
<tr>
<td>Julia</td>
<td>Classroom Management; FBA</td>
<td>Member of intervention planning team in public school</td>
<td>No</td>
</tr>
<tr>
<td>Skylar</td>
<td>Classroom Management, Developmental Disabilities &amp; Treatment; FBA</td>
<td>Direct treatment provider, supervision of teachers implementing interventions</td>
<td>No</td>
</tr>
<tr>
<td>Jordan</td>
<td>Behavior Assessment &amp; intervention; N/S</td>
<td>Currently managing behavior plans for clients in outpatient clinic</td>
<td>Observed video clips of FA at professional conference</td>
</tr>
<tr>
<td>Shaniqua</td>
<td>Moderate/intensive methods course; FBA</td>
<td>Currently managing behavior plans for clients in outpatient clinic</td>
<td>Observed video clips of FA at professional conference</td>
</tr>
</tbody>
</table>

Table 3.2 Participant background
Collection of these data served two purposes: first, to provide support for explicit, video-based instruction across a range of disciplinary backgrounds; second, to assist the experimenter in selecting participant pairs during experimental sessions during Training 1. With respect to the latter, priorities were experimental as well as administrative in nature. Specifically, each participant’s restricted availability for experimental sessions relative to class and/or clinical schedules.

The selection of participant pairs was guided in part by individual participant’s relative experience and familiarity of with behavioral assessment and intervention. Rational for use of this strategy during the planning process is that exposure to assessment procedures (e.g., history of viewing video-footage of functional analysis at professional conference) could potentially influence instructional requirements. For example, one variable is the exposure to video-based instructional material (i.e., number of training sessions) necessary to acquire implementation skills.

The format of training—which was delivered to participant pairs during a pre-scheduled two-hour time block—introduced new content (i.e., next assessment condition) contingent upon participant mastery of the condition previously trained. Therefore, participant pairs were constructed prior to the scheduling of experimental sessions, based on their familiarity with functional analysis procedures, in addition to extra-experimental schedule requirements. However, pairs used during training phases were ultimately selected based on accuracy of implementation observed during the first four baseline sessions. Subsequently, changes were made to Pair 2 and Pair 3, prior to the second
baseline measure. Participant pairs during all experimental sessions are displayed in Table 3.3.

<table>
<thead>
<tr>
<th></th>
<th>Sessions 1 – 4</th>
<th></th>
<th>Sessions 5 – 116</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pair 1</td>
<td>Pair 2</td>
<td>Pair 3</td>
</tr>
<tr>
<td>Kayla</td>
<td>Jordan</td>
<td>Leigh</td>
<td>Julia</td>
</tr>
<tr>
<td>Leigh</td>
<td>Shaniqua</td>
<td>Julia</td>
<td>Shaniqua</td>
</tr>
</tbody>
</table>

Table 3.3 Participant pairs across experimental phases

**Experimenters and Observers**

The primary experimenter during all experimental sessions was a doctoral candidate in the Special Education and Applied Behavior Analysis graduate program. In attendance during some sessions was the LEND staff, who participated in that day’s experimental sessions, including lecture-based instruction and/or role-play. A third observer who was an MA student in the Special Education and Applied Behavior Analysis graduate program

**Equipment and Materials**

Materials and equipment used in the study included a video camera, laptop computer, PowerPoint presentations, instructional materials, and assessment stimuli.
**Video Camera**

A handheld JVC Everio video camera was used to record instructional video clips in which experimenters served as actors demonstrating assessment procedures in a simulated role-play.

**Laptop Computer**

A MacBook Air laptop computer was used to create and project a PowerPoint presentation. Additionally, the computer included iMovie software and a built-in camera, which was used to record all sessions for the purpose of video feedback and data collection. Video feedback was displayed on the 11” monitor.

**PowerPoint Presentations**

During both Training 1 and Training 2, lecture-based instruction was delivered via audio-visual technology available in the conference room.

*Training 1: Implementation of functional analysis procedures.* The presentation (see Appendix C) provided an overview of functional analysis methodology, a description of procedures in each assessment condition (i.e., alone, attention, play, escape), and a total of four, 5-min embedded video clips in which experimenters demonstrated procedures of each condition.

*Training 2: Visual analysis of brief functional analysis data.* The presentation (see Appendix H) provided a brief overview of the purpose and procedural variations of brief functional analyses. Included in the presentation were results of a brief FA presented in a graph, all of which were published in peer-reviewed journal articles.

**Instructional Material (Training 1)**
Content of the instructional material in Training 1 was consistent with Iwata et al. (2000), and expanded material to include the alone condition. Materials included a handout, quiz, and assessment materials.

**Handout.** A pen and printed instructional material corresponding to the PowerPoint presentation (see Appendix C) were provided at the beginning of each training session. During the first training session, the handout included an overview of functional analysis methodology with additional space for note taking, an overview of the first assessment condition trained, and a list of implementation behaviors (i.e., assessment procedures). During subsequent training sessions, the handout included an overview of the relevant assessment condition and a list of implementation behaviors.

**Quiz.** A cumulative pencil and paper quiz that contained 26 questions was administered during baseline. During training, those questions relevant to the assessment condition trained were administered (see Appendix D). Each condition-specific quiz contained approximately three to six questions.

**Assessment Stimuli**

All of the material required to conduct the assessment procedures were provided during all role-play sessions. Within each role-play session, only those materials necessary to implement the relevant condition were present. The digital timer included a feature that allowed the participant to control the display of time elapsed (i.e., count up from 0:00 or count down from 5:00). Table 3.4 displays the material provided during each condition.
<table>
<thead>
<tr>
<th>Condition</th>
<th>Stimuli</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alone</td>
<td>Digital timer</td>
</tr>
<tr>
<td>Attention</td>
<td>Books, magazines, digital timer</td>
</tr>
<tr>
<td>Play</td>
<td>Books, magazines, digital timer</td>
</tr>
<tr>
<td>Escape</td>
<td>Oreo-match task in container, digital timer</td>
</tr>
</tbody>
</table>

Table 3.4 Assessment stimuli used during role-play of each condition

*Instructional Materials (Training 2)*

Instructional materials used during Training 2 were created by the experimenter and included a pre- and post-test, a handout, and an answer key.

*Pre- and post-test.* A pen and paper quiz that contained 17 test items was administered both before and after the delivery of Training 2. The pre- and post-test were identical (see Appendix I), and included a total of twelve graphs selected from six papers published in peer-reviewed journals. Papers were 12 that described assessment techniques as brief (e.g., 5-min sessions conducted across two to three series) and met the following criterion: (1) stated hypothesis regarding behavioral function, (2) described treatment components that included the functional reinforcer(s) and/or alternative behavior, and (3) demonstrated a treatment effect.

Test items one through 12 assessed participant visual analysis of graphically-presented data by including (1) a graph presenting data gathered during a brief functional analysis and (2) eleven multiple choice response options identifying potential hypotheses.
regarding behavioral function. Each graph was presented only once, while the same multiple choice response options were used throughout.

Test items 13 to 17 assessed participant knowledge of function-based intervention and included the following: a written description of a challenging behavior and its behavioral function followed by two lines for participant written response. Additionally, these items sampled those behavioral functions represented in graphs used for test items one through twelve.

*Handout.* A pen and the printed instructional materials corresponding to the PowerPoint presentation (see Appendix H) were provided after the pre-test and before the presentation began. The handout was generated from the Powerpoint file and included additional space for note taking.

*Key.* A key was provided to participants after the administration and scoring of all post-tests was complete (see Appendix J). Included in the printed material were all twelve graphs included as test items, presented with their corresponding (1) treatment data to confirm hypothesis, and (2) full citation of the source from the paper was obtained.

**Definition and Measurement of the Dependent Variables**

The dependent variables included in this study were (1) accuracy of procedures during implementation of each assessment condition, (2) accuracy of written responses to quiz questions, (3) level of exact agreement between visual analysis and behavioral function, and (4) accuracy of written responses to function-based intervention questions. The definition and measurement of each dependent variable were as follows.

*Accuracy of Procedures During Implementation of Each Condition*
Accurate implementation was defined as a participant response that was consistent with the prescribed procedures for each condition, including alone, attention, play, and escape. Each list of procedures identified general steps (e.g., participant starts timer), and specified the correct participant response to non-target behaviors (e.g., continues with prompt sequence during the escape condition) as well as the antecedent and consequent events relevant to the assessment condition.

For example, an antecedent event (e.g., the delivery of instruction during the escape condition) was scored as correct if it occurred at the prescribed time (i.e., within the first 5 s of a 30 s interval), or incorrect if it did not occur at the prescribed time. A consequent (e.g., termination of an instructional trial during the escape condition) was scored as correct if it occurred at the prescribed time (i.e., within 5 s of task completion, or within 5 s of the client emitting the target behavior), or incorrect if it did not occur within the prescribed time.

For each condition, a data sheet was constructed to include each step of implementation (see Appendix E). A correct response was indicated by writing a + on the data sheet. An incorrect response was indicated by writing a – on the data sheet. Mastery criteria during the training phase was defined as participant implementation of each assessment condition with 95% accuracy across two sessions, one of which was a post-training probe.

*Accuracy of Written Responses to Quiz Questions*

A response was defined as at least one word written by participants when presented with a written question. A written response was scored correct if it contained
key components consistent with the pre-defined answer. For example, a response to the question “during an instructional trial, if the client does not respond to your instruction within 5s, what should you do?” was scored correct if it included language that specified both (1) a repeated instruction, and (2) a demonstration of response expectation.

**Level of Agreement Between Visual Analysis and Behavioral Function**

Agreement between visual analysis and behavioral function was defined as participant selection of a multiple-choice response that is consistent with answer key (see Appendix 6) that identified the behavioral function represented by each graph. The answer key was constructed according to the following steps: the experimenter identification of (1) a hypothesis regarding behavioral function made by the author(s) of the paper, (2) a description of treatment components that included the hypothesized functional reinforcer(s) and/or an alternative behavior, and (3) a treatment effect described by the author(s) of the paper that confirmed the hypothesis. A set of data that met these qualifications was considered an accurate hypothesis of behavioral function, and as such the comparison for participant visual analyses.

Consistent with the Hagopian and colleagues, an agreement was scored as occurring if the participant identified the behavioral function from the multiple-choice response options, and a disagreement was scored as occurring if the participant did not identify the behavioral function. The level of agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and then multiplying by 100.

**Accuracy of Written Responses to Function-based Intervention Questions**
A written response was defined as a one- to two- sentence description of a function-based intervention when given a description of challenging behavior and its functional reinforcer. A written response was scored correct if it included both of the following components: (1) an alternative to the challenging behavior, and (2) the functional reinforcer. A written response was scored incorrect if either component was absent.

Interobserver Agreement on the Dependent Variable Measures

Interobserver Agreement (IOA) on the dependent variable measures was assessed by two independent observers: (1) the experimenter, and (2) a second observer who was either a graduate level staff member of the LEND program or a graduate student in special education, both of who were trained to collect data. During training the independent observer was given a data sheet, taught the dependent variables, and instructed on how to use the data sheet. The second observer was given a digital timer and a data sheet, instructed how to use the data sheet, and practiced data collection of the dependent variable until the observers reached 90% or higher agreement. Sessions used to train the second observer were not included in reported measures of IOA. Quizzes, and the pre- and post-tests were scored by the second observer, who was given the answer key and the completed pre- and post-tests.

The two observers independently measured six to seven sessions per participant that were randomly selected across conditions (i.e., baseline, training, post-training probe, and maintenance). Six sessions were measured for Kayla and Leigh (i.e., 61.3% of sessions) as well as Jordan (30% of sessions), and seven sessions were measured for
Shaniqua (31.8% of sessions), Julia, and Skylar (33.3% of sessions). All quizzes were scored by the second observer, including cumulative (i.e., 6 total) and post-training quizzes (i.e., 24 total).

A total of eight pre- and post-tests were measured by the second observer. An agreement was scored when the experimenter and the second observer reported the same level of participant accuracy during the experimental session. Interobserver agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and then multiplying by 100.

Experimental Design

A multiple-probe across participant pairs design (Horner & Baer, 1978) was used to assess the effects of the video-based training package on participant implementation of brief functional analysis procedures during Training 1. The order of assessment conditions during training was alternated across participant pairs. A pre-post test design was used to assess the effects of classroom-based instruction on participant visual analysis of data from brief functional analyses and function-based intervention during Training 2.

General Procedures

Across all experimental phases, participants were scheduled for a weekly session that took place during a two-hour time block. During training 1, participant pairs were scheduled for weekly sessions, while Training 2 was delivered to the group of four participants during one weekly session.

Procedures included baseline, video-based lecture, role-play, post-training probe, video-feedback and maintenance. During the first weekly meeting, baseline measures were collected on participant accuracy of response to quiz questions and implementation of assessment procedures. After all baseline measures were collected for each pair, the experimenter introduced the video-based training package designed to teach the procedures of four conditions (i.e., alone, attention, play, escape) in a brief functional analysis.

During the intervention phase of the study, participants were introduced to the procedures of one assessment condition. Implementation of those procedures was trained through role-play until both participants demonstrated implementation of those procedures with 95% accuracy across two role-play sessions (i.e., one role-play and one post-training probe). If participant implementation did not meet 95% accuracy, the experimenter immediately delivered error correction in the form of video-feedback. After demonstrating mastery of the first assessment condition, a second condition was introduced and trained accordingly, until both members of the participant pair learned all four of assessment conditions. Finally, a maintenance phase took place during a one-hour session in which each participant implemented the procedures of all four conditions consecutively (i.e., one series in a brief functional analysis) across four to six sessions.

Each weekly training consisted of two to six consecutive experimental sessions delivered by the experimenter. In attendance during some sessions was the LEND staff, who participated in that day’s experimental sessions, including lecture-based instruction and role-play. This represents one instructional strategy used by the experimenter to
promote generalization of skills beyond the training setting by including variations across
discriminative stimuli used during the delivery of instruction (Stokes & Baer, 1977).

Training 2: Visual Analysis of Brief Functional Analysis Data

After all participants completed Training 1, the experimenter delivered Training 2
to the group of four participants during a single, two-hour session that took place in the
conference room. Procedures included a pre-test, followed immediately by classroom-
based instruction, and ended with a post-test.

Role-play

Simulated assessment in the form of role-play occurred in the assessment room or
the preschool classroom. Role-play consisted of either the experimenter or LEND staff—
who served as the client receiving assessment—engaging in a range of potential client
behavior, while the participant served the role of clinician implementing the assessment
procedures. Practice through role-play provided participants the opportunity implement
assessment procedures specific to each condition, as well as respond to non-target client
behavior in the context of assessment activity. To this end, experimenter behavior
followed a pre-determined script (see Appendix D) such that behavior emitted within
each session was scheduled to include a range of target and non-target behavior. This
strategy was used to promote generalization of assessment to the applied setting by
exposing participants to a range of potential client behavior during assessment (Stokes &
Leiblen, 2003).

Target behavior. The target behavior emitted by the experimenter during role-
play across all experimental phases was head banging, which was defined as contact of
the head with any object. Self-injurious behavior represents the most common


classification of challenging behavior assessed with functional analysis procedures (Hanley et al., 2003). This target behavior was also selected because it posed the least risk of


bodily harm to participants relative to other topographies (e.g., aggression).


**Non-target behavior.** In addition to the behavior targeted for assessment,


experimenter-behavior during role-play across all experimental conditions was selected
to sample a range of non-target behaviors, including: 1) vocalizations (e.g.,


classificational bids, information seeking questions, requests), 2) off-task behavior (e.g.,
inattentive or non-responsive behavior, engagement in task unrelated to assessment
condition), and 3) challenging behavior not targeted for assessment (e.g., inappropriate


vocalizations, property destruction, and self-injurious responses not targeted for


assessment).


Vocalizations were classified as three types, including conversational bids (e.g.,


“Look at this silly picture!”), information seeking (e.g., “When are we done?”) and


requests (e.g., “I need help”, or “This is too hard, can you please help me?” Off-task


behavior was classified as two types, including inattentive/non-responsive behavior (e.g.


failure to respond within 5s of instructional delivery), and engagement in non-assessment


related activity (e.g., walking around room, turning light switch on and off). Challenging


behavior was classified as three types, including inappropriate vocalizations (e.g., “stupid


book”), property destruction (e.g., throwing instructional material), and self-injurious


responses not targeted for assessment (e.g., striking own head with an open or closed


hand).
Experimental Procedures

Baseline

Baseline sessions were conducted to assess participant knowledge of functional analysis procedures. To this end, the experimenter first administered the comprehensive 26-item quiz and conducted role-play. The quiz was administered in the conference room, after which the experimenter verbally identified the target behavior and its definition. The experimenter then directed the participant pair to the assessment room, where one participant engaged in role-play while the other remained in the adjacent observation room, seated behind the two-way mirror, until their opportunity to engage in role-play.

The order of assessment conditions during baseline was alone, attention, play, then escape. One baseline measure was collected across each assessment condition (i.e., four consecutive sessions) that occurred for approximately 20 minutes per participant. Each baseline session began with the experimenter identifying the relevant assessment condition. For example, during a baseline session of the escape condition the experimenter stated to the participant, “Next you will conduct the escape condition. During training, you will be taught the procedures, but for now, implement the procedures to the best of your ability. Please begin.”

At the end of the 5-minute interval, the experimenter notified the participant that the session was complete, and the participant received no further instruction or performance feedback. After the participant completed each of the four baseline measures, they exited the assessment room and entered the adjacent observation room, and the
second participant began role-play. Once both participants completed role-play, the weekly session was terminated.

The first series of baseline probes was collected with all participants in the span of a 24-hour period. For Pair 1, one baseline measure was collected across each assessment condition. For Pair 2 and Pair 3, a second baseline probe was collected across each condition, which occurred during the next scheduled weekly session, and prior to their start of the intervention phase.

*Training 1: Implementation of Functional Analysis Procedures*

Instructional components included video-based lecture, role-play, post-training probe, and video-feedback. During training, each weekly training session consisted of two to four consecutive sessions that typically began with a post-training probe with video-feedback as needed, followed by a video-based lecture session, and ended with a role-play.

*Video-based lecture.* The experimenter began the first session with a brief, 10-min overview of functional analysis methodology, and discussed rationale of the assessment procedures as well as the implications for function-based intervention. After this introduction, one of the four assessment conditions was introduced. During each subsequent video-based training session, a new condition was introduced. Table 3.5 displays the order of assessment conditions introduced by participant pair.

Each video-based lecture sessions took place in the conference room and were delivered to participant pairs during a session lasting approximately one hour. The experimenter delivered a Power-point presentation that identified the purpose and
procedures of the relevant assessment condition, and included a 5-minute embedded video-clip of simulated role-play.

<table>
<thead>
<tr>
<th></th>
<th>Order of conditions trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>alone</td>
</tr>
<tr>
<td>Pair 2</td>
<td>attention</td>
</tr>
<tr>
<td>Pair 3</td>
<td>escape</td>
</tr>
</tbody>
</table>

Table 3.5 Order of conditions introduced by participant pair

During each session, the procedures of the relevant assessment condition were described in conjunction with the list of procedures, and participants were shown a 5-min video clip in which experimenters demonstrated procedures of the relevant condition. After the clip was shown in its entirety, the experimenter restated the list of procedures, and then asked participants if they had any questions. However, participants were able to ask questions at any point during lecture-based instruction.

Next, the condition-specific quiz was administered and scored immediately by the experimenter. If the experimenter observed any errors to quiz questions, the experimenter reviewed those responses with the pair, and answered any questions. Finally, participants proceeded to the assessment room with the experimenter for a role-play session.

Role-play. All role-play sessions were five minutes in duration and took place in the assessment room. While one participant engaged in role-play, the other remained in the adjacent observation room, seated behind the two-way mirror, until their opportunity
to engage in role-play. After both participants completed role-play, the daily session was terminated until the next scheduled training session.

During each session, all materials required to conduct the relevant condition were present (see Table 3.4). For example, during a session in the escape condition, a digital timer displaying “5:00” was present and the Oreo-match task sat available on the table, which was positioned in front of the two-way mirror. At the beginning of each session, the experimenter identified the relevant condition with a verbal directive. For example, “Now you will conduct a session in the escape condition. Please begin.”

The participant—who could use the list of procedures—implemented procedures of the previously trained condition. At the end of the session, the experimenter notified the participant that the session was complete. If implementation during role-play was at least 95% accurate, the participant exited the assessment room then entered the observation area, while the second participant left the observation room and entered the assessment room to begin role-play. Once both participants demonstrated implementation with 95% or higher accuracy, the weekly session was terminated until the next scheduled meeting, at the beginning of which the experimenter conducted a post-training probe.

*Video-feedback.* If accuracy of implementation was less than 95%, the experimenter immediately delivered video-feedback to the participant. The experimenter and participant remained in the assessment room, seated at the table and facing the one-way mirror, while the second participant remained in the observation room. Subsequently, the second participant could not see the video display, although they could hear the experimenter deliver feedback to their partner.
Video-feedback consisted of the experimenter displaying the videotaped role-play session on the laptop computer and correcting participant errors by identifying the incorrect step(s) and delivering behavior-specific feedback. For example, upon viewing the delivery of attention contingent upon a non-target behavior, the experimenter said to the participant, “here, you delivered reinforcement for a non-target behavior; the definition of head banging is contacting the head to an object”). Video-feedback lasted no longer than five minutes, and was terminated after the experimenter identified all errors and delivered behavior-specific feedback.

Post-training probe. All sessions took place in either the assessment room or the preschool classroom. Each post-training probe was conducted after the participant demonstrated at least 95% accuracy during the previous role-play with video-feedback session—that occurred on a different day—which was typically one week later. Although the majority of post-training probes occurred one calendar week after video-based training and role-play, schedule changes were necessary at times for some participants. For example, training continued through the end of the academic quarter, during which some participants requested two training sessions a week to accommodate course schedules during final examinations.

Procedures used during post-training probes were the same as those used during role-play. However, there was one setting variable that was different during some post-training probes: the number of participants present. Specifically, the participant’s training partner was not always in attendance, and thus not located in the observation room. Ultimately, this decision was made due to the limited time during which the assessment
room was available for experimental sessions, as the primary purpose was on-site assessment with clients. As such, the room was often scheduled for use by other diagnostic clinics housed in the UCEDD. Additionally, consideration for participant time was a factor. For instance, if one participant was present at the university facility but their partner had not yet arrived to the scheduled training session, the post-training probe was conducted with the available participant.

In those instances where post-training probes were conducted individually (i.e., one condition per participant pair, six sessions total), the partner completed the post-training probe within one week. Although the majority of post-training probes were conducted with both participants present, unexpected changes in schedules prevented such consistency across all post-training probe sessions. When the participant demonstrated implementation with at least 95% accuracy, the session was terminated until the next weekly meeting, during which a new assessment condition was introduced. 

**Maintenance**

All sessions took place in the assessment room. Only one participant and the experimenter were present during this phase, when the participant implemented all assessment conditions consecutively (i.e., one series in a brief functional analysis) in a single session, lasting approximately 50 to 60-min for each participant pair. During maintenance, the participants did not take with them the list of procedures. Additionally, if participant accuracy of implementation during any assessment condition was less than 95%, the experimenter used the same video-feedback procedures. 

*Training 2: Visual Analysis of Brief Functional Analysis Data*
Training 2 began after all participants completed Training 1, and was delivered by the experimenter during a single, two-hour session that took place in the conference room. Training 2 was delivered to the group of four participants, consisted of a pre-test, followed immediately by classroom-based instruction, and ended with a post-test.

Pre-test

The experimenter began the session by providing each participant with a pen and a pre-test (see Appendix 4), at the top of which were written instructions for completing the pre-test. In addition to the written format, the experimenter read aloud the instructions. Participants were told there was no time limit for completion. After all four of the pre-tests were turned in, the experimenter notified participants that they could take a brief break while the tests were scored, although all participants remained in the room. While the experimenter graded the pre-tests, the participants remained seated at the conference table and socialized amongst themselves. After all pre-tests were scored, the experimenter began the Power-point presentation.

Lecture-based Instruction

The experimenter began by providing each participant with instructional material corresponding to the Power-point presentation (see Appendix 5). During this presentation, the experimenter first discussed the purpose and procedures of brief functional analysis, and identified common test conditions (i.e., alone, attention, escape, and tangible) and the use of a control condition (i.e., play). Although procedures of a tangible condition were not trained during Training 1, participants were exposed to this condition and its rationale, as it was included in instructional and test material used.
Next the experimenter explained visual analysis of data presented in graph form, in terms of the observed levels and trends of data therein. The experimenter then explained the comparison of data across test condition, as well as the use of a control condition, to compare patterns observed in the data. These topics were discussed in conjunction with graphs that were embedded in the presentation. After this content was covered, the experimenter discussed the next step, decision-making to identify a hypothesis regarding behavioral function.

Decision-making in response to visual analysis was discussed in terms of the relative differentiation of data across the observed conditions. During this portion of the lecture, graphically represented data were also presented in conjunction with relevant discussion points. This portion of the presentation also included a brief discussion of function-based treatment, in terms of testing behavioral hypotheses generated by visual analysis. Specifically, content emphasized that treatment components should include both an alternative behavior and the hypothesized functional reinforcer. After this content was delivered, the presentation was stopped for the purpose of administering the post-test.

There were three slides that remained in the presentation, which were delivered after the completion of the post-test. Content of these slides provided procedural considerations for clinicians when conducting a brief functional analysis. Although this information was not tested, the experimenter included content for its applied value and implications to assessment. This decision was made out of consideration for one participant, who stated at the beginning of the session that she needed to leave 15 minutes prior to the scheduled end of the session. Therefore, the three slides that delivered content
not included in the post-test were covered after the test to ensure all participants received the equal amount of time to complete the post-test.

Post-test

The experimenter provided each participant with a post-test (see Appendix 4), at the top of which were written instructions for completing the test items. In addition to the written format, the experimenter read aloud the instructions. Participants were told there was no time limit for completion. After all four of the post-tests were turned in, the experimenter resumed with the presentation and delivered content of the remaining slides.

A brief discussion followed, guided by participant comments about their experience during assessment and intervention on challenging behavior. After this discussion, the experimenter provided each participant with the key (see Appendix 6) as well as a Social Validity questionnaire (see Appendix K) to be completed later (i.e., outside of the session). Participants were told that they could remain until the post-test were scored, which occurred immediately. This concluded the session.

Procedural Integrity

Similar to Iwata et al. (2000), the events that occurred during role-play served as the measure of procedural integrity. The occurrence of specific events was required during each role-play to ensure that participants had the opportunity to practice response requirements. The three categories of behavior included: (1) target, (2) inappropriate, and (3) appropriate. These categories allowed variations in topography of non-target behavior, with the only requirement that at least five occurrences were observed in each category.
Using the treatment integrity form (see Appendix F), the observer measured the occurrence of behavior during each session. After observing the 5-min session, the total number of occurrences in each category was recorded on the data collection form. A session that included five target behaviors, five inappropriate non-target, and five appropriate non-target behaviors met procedural integrity criteria.

Additional requirements were set for experimenter-behavior in the escape condition during intervention for the purpose of ensuring practice with the prompt sequence and potential response requirements. Across each of the ten instructional trials, the experimenter: (1) complied with initial instruction two times, (2) complied with one to two model prompts, (3) complied with one physical prompt, (4) emitted the target behavior in response to one to two initial instruction(s), (5) emitted the target behavior in response to one to three model prompts, and (5) emitted the target behavior in response to one physical prompt. Because experimenter-behavior was controlled by the participant’s delivery of instruction, these parameters could not be placed on baseline sessions. However, in the event that participants delivered instructional demand(s) during baseline, the experimenter responded by sampling the range of responses: the first instruction produced compliance, the second in emission of target behavior, the third in non-responsiveness to the instruction to allow the participant to deliver a model prompt, and the fourth in non-responsiveness to the model to allow the participant to deliver a physical prompt. Procedural integrity was calculated by dividing the number of sessions that met criterion by the total number of sessions, and multiplying by 100%.
Social Validity

A social validity questionnaire developed by the experimenter was distributed to participants after all experimental phases were complete. The questionnaire (see Appendix K) included a total of five items, four of which were Likert-type questions and one presented in a multiple-choice format. Additionally, the experimenter provided additional space for free-response comments, which could be written or typed. With each questionnaire, participants were given a self-addressed, stamped envelope for the purpose of returning the completed questionnaire. The Likert-type questions included a 5-point scale (i.e., strongly agree, agree, neutral, disagree, or strongly disagree) from which participants could respond to each questionnaire item. The multiple-choice item identified individual components of the intervention (e.g., role-play, handouts) to prompt participant feedback regarding components they found most beneficial.
CHAPTER 4

Results

This chapter describes the results of the study. First, experimental data are presented for Training 1, which includes accuracy of procedures during implementation of each assessment condition, and accuracy of written responses to quiz questions. For data on participants’ accuracy of procedures during implementation of each assessment condition, the mean percentage of procedures correctly implemented during role-play is reported across all phases. These data are also reported for each participant pair and includes the total number of sessions in which video-feedback was delivered by the experimenter. For data on the accuracy of written responses to quiz questions, each participant’s cumulative total of correct written responses to quiz questions are reported as a percentage.

Second, experimental data are presented for Training 2, which includes level of exact agreement between visual analysis and behavioral function, and accuracy of written responses to function-based intervention questions. For data on participants’ level of exact agreement between visual analysis and behavioral function, the percentage of items with exact agreement are reported for pre- and post-test outcomes. Additionally, data on participants’ accuracy of written responses to function-based intervention questions are reported as a percentage of correct responses. Third, interobserver agreement on the
dependent variable measures is presented across participants and conditions. Fourth, procedural integrity for the experimenter’s behavior during role-play sessions is reported. Finally, social validity results reported by the participants are summarized.

Experimental Data

Accuracy of Procedures During Implementation of Each Condition

The primary measure of participant’s accuracy of implementation during role-play was the percentage of correct procedures, as prescribed by the list of procedures specific to each assessment condition. Figure 4.1 illustrates participant accuracy of procedures during implementation of conditions across all experimental phases.

During baseline, participants’ performance during test conditions was low (i.e., alone=19.8%, range 0 – 33; attention=18%, range 0 – 66; escape=23%, range 0 – 63) relative to the control condition (i.e., play=72.8%, range 62 – 92), indicating that participants could not implement procedures of a brief FA with a high degree of accuracy (i.e., 95%). When intervention introduced procedures of one condition, participants demonstrated immediate increased accuracy during role-play (i.e., alone=100%; attention=100%; play=99.3%, range 96 – 100; escape=97.8%, range 96 – 100). Additionally, participants demonstrated procedures of each condition to mastery criterion after two to three role-play sessions (i.e., video-feedback, and post-training probes with video-feedback). Overall, participant accuracy of implementation remained high during the maintenance phase, although greater variability across participants was observed during this phase.
Figure 4.1 Accuracy of procedures during implementation of each condition
The accuracy of implementation during each assessment condition across experimental phases is also reported. Table 4.1 displays the means and ranges of procedures implemented correctly across participants. Although participant performance during baseline was relatively high during the Play condition, accuracy of implementation across assessment conditions was generally low, ranging from 18% to 72.8% (i.e., alone=19.8%, range 0 – 33; attention=18%, range 0 – 66; escape=23%, range 0 – 63).

Overall, data during training phases indicates that participants implemented procedures of each assessment condition with high accuracy, ranging from 97.8% to 100% across conditions. Although implementation across assessment conditions was somewhat lower during the maintenance phase, participant performance overall remained accurate during the majority of maintenance sessions, ranging from 86.3% to 100% across assessment conditions.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Role-play</th>
<th>Post-training probe</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alone</td>
<td>19.8% (0-33)</td>
<td>100% (100-100)</td>
<td>100% (100-100)</td>
<td>95.1% (66-100)</td>
</tr>
<tr>
<td>Attention</td>
<td>18% (0-66)</td>
<td>100% (100-100)</td>
<td>98.3% (90-100)</td>
<td>86.3% (4-100)</td>
</tr>
<tr>
<td>Play</td>
<td>72.8% (62-92)</td>
<td>99.3% (96–100)</td>
<td>100% (100-100)</td>
<td>100% (100-100)</td>
</tr>
<tr>
<td>Escape</td>
<td>23% (0-63)</td>
<td>97.8% (96–100)</td>
<td>99.5% (97-100)</td>
<td>96.3% (77-100)</td>
</tr>
</tbody>
</table>

Table 4.1 Means and ranges (in parenthesis) of accuracy of procedures during implementation across participants

Outcome data, including number of sessions the experimenter delivered video-feedback during role-play, are also reported for each participant. Table 4.2 displays the
means and ranges of accuracy of procedures during implementation across all assessment
conditions, which is presented by participant pair, and Table 4.3 reports analysis of errors
during intervention phases. Participant performance during role-play that took place
immediately after video-based instruction remained high, ranging from 99.3% to 100%.
Subsequently, participants did not receive video-feedback, and only one session per
assessment condition was required across all participants.

Performance during post-training sessions across all assessment conditions was
slightly lower, ranging from 98% to 100%. Due to performance during role-play, video-
feedback was not delivered to five of the six participants, who each required a total of
four post-training sessions. One participant received video-feedback after role-play in one
assessment condition, and as such required five post-training role-play sessions.

Those data collected during the maintenance phase—which consisted of
participant implementation of each assessment condition—were more variable across
participants. High accuracy of implementation was observed with four participants, three
of whom demonstrated 100% accuracy of procedures across assessment conditions, while
the performance of one was relatively lower during one assessment condition, for an
overall measure of 99.3% accuracy. The performance of two participants indicated lower
accuracy across assessment conditions, ranging from 80.8% to 90.5%. Therefore, a total
of three sessions during the maintenance phase required video-feedback.
<table>
<thead>
<tr>
<th>Pair 1</th>
<th>Kayla</th>
<th>Leigh</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline</strong></td>
<td>25.3% (0-63)</td>
<td></td>
</tr>
<tr>
<td>% of correct steps</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td># of sessions/with feedback</td>
<td>18.3% (0-62)</td>
<td>4</td>
</tr>
<tr>
<td>Role-play</td>
<td>100%</td>
<td>4 (0)</td>
</tr>
<tr>
<td>% of correct steps</td>
<td>100%</td>
<td>4 (0)</td>
</tr>
<tr>
<td># of sessions/with feedback</td>
<td>4 (0)</td>
<td>4 (0)</td>
</tr>
<tr>
<td>Post-training</td>
<td>100%</td>
<td>4 (0)</td>
</tr>
<tr>
<td>% of correct steps</td>
<td>100%</td>
<td>4 (0)</td>
</tr>
<tr>
<td># of sessions/with feedback</td>
<td>4 (0)</td>
<td>4 (0)</td>
</tr>
<tr>
<td>Maintenance</td>
<td>100%</td>
<td>4 (0)</td>
</tr>
<tr>
<td>% of correct steps</td>
<td>100%</td>
<td>4 (0)</td>
</tr>
<tr>
<td># of sessions/with feedback</td>
<td>4 (0)</td>
<td>4 (0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pair 2</th>
<th>Jordan</th>
<th>Julia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline</strong></td>
<td>16.8% (0-68)</td>
<td></td>
</tr>
<tr>
<td>% of correct steps</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td># of sessions/with feedback</td>
<td>22% (0-68)</td>
<td>8</td>
</tr>
<tr>
<td>Role-play</td>
<td>99.3% (97-100)</td>
<td>4 (0)</td>
</tr>
<tr>
<td>% of correct steps</td>
<td>100%</td>
<td>4 (0)</td>
</tr>
<tr>
<td># of sessions/with feedback</td>
<td>4 (0)</td>
<td>4 (0)</td>
</tr>
<tr>
<td>Post-training</td>
<td>99.3% (97-100)</td>
<td>4 (0)</td>
</tr>
<tr>
<td>% of correct steps</td>
<td>100%</td>
<td>4 (0)</td>
</tr>
<tr>
<td># of sessions/with feedback</td>
<td>80.8% (4-100)</td>
<td>5 (1)</td>
</tr>
<tr>
<td>Maintenance</td>
<td>99.3% (97-100)</td>
<td>4 (0)</td>
</tr>
<tr>
<td>% of correct steps</td>
<td>99.3% (97-100)</td>
<td>5 (1)</td>
</tr>
<tr>
<td># of sessions/with feedback</td>
<td>80.8% (4-100)</td>
<td>5 (1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pair 3</th>
<th>Shaniqua</th>
<th>Skylar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline</strong></td>
<td>56.5% (33-80)</td>
<td></td>
</tr>
<tr>
<td>% of correct steps</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td># of sessions/with feedback</td>
<td>50.1% (25-92)</td>
<td>8</td>
</tr>
<tr>
<td>Role-play</td>
<td>99.3% (97-100)</td>
<td>4 (0)</td>
</tr>
<tr>
<td>% of correct steps</td>
<td>99.3% (97-100)</td>
<td>4 (0)</td>
</tr>
<tr>
<td># of sessions/with feedback</td>
<td>98% (90-100)</td>
<td>5 (1)</td>
</tr>
<tr>
<td>Post-training</td>
<td>100%</td>
<td>4 (0)</td>
</tr>
<tr>
<td>% of correct steps</td>
<td>98% (90-100)</td>
<td>5 (1)</td>
</tr>
<tr>
<td># of sessions/with feedback</td>
<td>100%</td>
<td>4 (0)</td>
</tr>
<tr>
<td>Maintenance</td>
<td>90.5% (66-100)</td>
<td>6 (2)</td>
</tr>
<tr>
<td>% of correct steps</td>
<td>100%</td>
<td>4 (0)</td>
</tr>
<tr>
<td># of sessions/with feedback</td>
<td>100%</td>
<td>4 (0)</td>
</tr>
</tbody>
</table>

a. Means and ranges (in parenthesis) of accuracy of procedures during implementation across assessment conditions
b. Total number of sessions across assessment conditions and # of those with video-feedback (in parenthesis).

Table 4.2 Accuracy of procedures during implementation across assessment conditions by participant pair
### Table 4.3 Analysis of errors during intervention phases

**Pair 1**

Overall, the percentage of procedures implemented correctly during baseline by Kayla and Leigh were low (i.e., 25.3% and 18.3%, respectively). As illustrated by Figure 1, implementation of procedures in the control (i.e., Play) condition were relatively higher for both, who demonstrated significantly lower accuracy when implementing procedures of the test (i.e., Alone, Attention, Escape) conditions. Kayla’s data reflect
some variability across test conditions, with relatively higher accuracy of procedures in the Alone condition, and Leigh’s low, stable data across test conditions indicate slightly elevated accuracy of the Attention condition procedures.

An immediate and significant increase in accuracy of implementation was observed after training began (i.e., 100%) and persisted into the maintenance phase (i.e., 100%). As a result of the high level of accuracy observed during role-play sessions, neither participant received video-feedback. Relative the performance of other participant pairs, data collected during Kayla and Leigh’s implementation during the maintenance phase reflects the highest accuracy. Anecdotally, both participants reported to the experimenter that they reviewed training materials prior to attending the weekly session in which the maintenance phase was conducted.

Pair 2

The percentage of procedures that Jordan and Julia implemented correctly across baseline probes was low (i.e., 16.8% and 22%, respectively). Although both participants’ implementation of the control condition was higher, Jordan’s performance during baseline probes indicates consistent, zero levels of accuracy when implementing test conditions, and Julia’s slightly higher accuracy during the Escape condition was stable across probes. After training began, a significant and immediate increase in accuracy of implementation was observed for both Jordan and Julia during role-play (i.e., 99.3% and 100%, respectively). Data collected during the subsequent role-play session indicated that both participants’ performance maintained at the same level of accuracy during the post-training probe (i.e., 99.3% for Jordan and 100% for Julia).
Video feedback was not required during experimental sessions with Jordan, whose accuracy of implementation during the maintenance phase was consistent with previous role-play sessions (i.e., 99.3% across conditions). Anecdotally, Jordan reported reviewing training materials prior to the weekly session. On the other hand, Julia—who stated that she did not review training materials prior to the maintenance session—demonstrated significantly decreased accuracy of implementation of one session (i.e., 4%, Attention condition) during the maintenance phase. After the experimenter delivered video feedback, accuracy of implementation returned to 100% accuracy.

**Pair 3**

Overall, the percentage of procedures implemented correctly by Shaniqua and Skylar during baseline sessions was moderate, with a mean of 56.5% and 50.1% accurate (range 33% – 75%, and 33% – 92%), respectively. Although accuracy of implementation was elevated across test conditions, both Shaniqua and Skylar’s accuracy was highest during baseline probes (i.e., 80% and 88% during first; 75% and 92% during second, respectively) of the control condition. As displayed by Figure 1, initial baseline sessions conducted with Shaniqua reflect variability across test conditions; specifically, procedures of the Attention and Escape conditions were significantly higher than those of the Alone condition. During subsequent baseline probes, decreased accuracy in both Attention and Escape conditions minimized this variability. Conversely, Skylar’s performance during test conditions—that was slightly lower overall—was relatively stable during the first and second baseline probes, with one exception observed during the Alone condition, during which accuracy of procedures increased from 33% to 66%.
After training began, both Shaniqua and Skylar’s accuracy of implementation during role-play increased immediately across all assessment conditions, with significant increases in accuracy during test conditions. Additionally, both participants’ performance across during subsequent post-training probes was consistent with – or increased from – performance during role-play sessions, with the exception of Skylar’s implementation of one condition (i.e., Attention), for which she required video-feedback.

During the final phase of training, Skylar implemented procedures of all conditions with 100% accuracy. Anecdotally, she reported reviewing training materials prior to the maintenance phase. Alternatively, data for Shaniqua—who stated that she did not review training materials—reflect decreased accuracy during two conditions (i.e., Alone, Escape) during the maintenance phase, after which she received video-feedback and performance returned to 100% accuracy. Subsequently, both Shaniqua and Skylar received video-feedback during either a post-training probe or a maintenance session.

Accuracy of Written Responses to Quiz Questions

The secondary measure of participant knowledge of functional analysis procedures was the accuracy of written responses to quiz questions reported as a percentage correct. Table 4.4 displays participant accuracy of written responses to quiz questions. These data were assessed through the cumulative quiz administered during baseline and the again during the administration of condition-specific quizzes after each video-based training session and expressed as a total percentage.

During baseline, mean accuracy of written responses was 36.5%, indicating a low-moderate knowledge of procedures, ranging from 3.8% to 61.5% across participants.
After training was delivered, mean accuracy improved significantly to 98.7% ranging from 96.2% to 100% across participants. Errors made on quiz questions were consistent across participants, both of whom missed the same item (i.e., #11, see Appendix 2). This quiz item tested participant knowledge of the material present during assessment.

<table>
<thead>
<tr>
<th></th>
<th>Pair 1</th>
<th>Pair 2</th>
<th>Pair 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kayla</td>
<td>3.8%</td>
<td>50%</td>
<td>26.9%</td>
</tr>
<tr>
<td>Leigh</td>
<td>100%</td>
<td>96.2%</td>
<td>96.2%</td>
</tr>
<tr>
<td>Jordan</td>
<td>23.1%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Julia</td>
<td>53.8%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Shaniqua</td>
<td>61.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skylar</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Percentage of correct written responses across assessment conditions

Table 4.4 Accuracy of written responses to quiz questions

Agreement Between Visual Analysis and Behavioral Function

The primary measure of visual analysis of data from brief functional analysis was defined as the level of agreement with behavior function represented by each graph. Table 4.4 reports the mean agreement expressed as a percentage. Figure 4.2 displays the outcome data.

Participants mean level of agreement on pre-test measures of correct responses to quiz questions on the pre-test was 66.7%, ranging from 50% to 91.7%. After training, the mean level of agreement on post-test measures increased somewhat to 83.3%, ranging from 58.3% to 100%. Table 4.6 reports the number of disagreements that occurred between participants and authors across pre- and post-test measures.
Level of Exact Agreement Between Visual Analysis and Behavioral Function

![Bar chart showing level of exact agreement between visual analysis and behavioral function for Jordan, Julia, Shaniqua, and Sklyar. The chart includes data points for pre-test and post-test, with horizontal bars indicating the percentage of agreement.]

Figure 4.2 Level of agreement between visual analysis and behavioral function.

<table>
<thead>
<tr>
<th></th>
<th>Jordan</th>
<th>Julia</th>
<th>Shaniqua</th>
<th>Sklyar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>66.7%</td>
<td>50%</td>
<td>91.7%</td>
<td>58.3%</td>
</tr>
<tr>
<td>Post-test</td>
<td>100%</td>
<td>58.3%</td>
<td>100%</td>
<td>75%</td>
</tr>
</tbody>
</table>

Table 4.5 Level of agreement between visual analysis and behavioral function.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Post-test</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 4.6 Total frequency of disagreements across all participants’ by paper.
**Accuracy of Written Responses to Function-based Intervention Questions**

Participant knowledge of function-based treatment was defined as the accuracy of written treatment recommendations. Table 4.7 reports mean accuracy of written responses to function-based intervention questions. When pre-test responses were scored, the mean accuracy across participants was 100%.

<table>
<thead>
<tr>
<th>Pre-test</th>
<th>Jordan</th>
<th>Julia</th>
<th>Shaniqua</th>
<th>Skylar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.7 Accuracy of function-based intervention recommendations

**Interobserver Agreement**

**IOA on Accuracy of Procedures During Implementation of Each Condition**

Two independent observers collected data on the percentage of steps completed correctly during 33.6% (range 32.5% – 37%) of sessions in all phases of the study. Agreement between the trainer and the independent observer was calculated on a session-by-session basis using the formula: (Agreements/(Agreements + Disagreements)) x 100%. Average IOA was calculated to be 84.4% across all experimental conditions (range 53.8% – 100%). During baseline, 13 sessions were scored (three each in alone, play, and escape; four in attention); for intervention, 26 sessions were scored (five alone, and seven each in attention, play, and escape). Table 4.8 displays IOA across all phases of the study.
Two independent observers collected data on the number of target and non-target behaviors emitted by the experimenter during 24.1% of sessions in all phases of the study (range = 35% - 21%). Agreement between the trainer and the independent observer was calculated on a session-by-session basis for both target and non-target behavior using the formula: \( \frac{\text{Agreements}}{\text{Agreements} + \text{Disagreements}} \times 100\% \). An agreement was scored if both observers reported the same number of behaviors. Across all phases of the study, average IOA on target behavior was calculated to be 92.8% (range = 91.7%–93.8%), and on non-target behavior 65.5% (range 58.3%-75%). Table 4.9 displays IOA on measures of procedural integrity across conditions during all phases of the study.

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Alone</th>
<th>Attention</th>
<th>Play</th>
<th>Escape</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of sessions</td>
<td>26.3%</td>
<td>35%</td>
<td>38.9%</td>
<td>36.8%</td>
</tr>
<tr>
<td>% agreement</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.8 Interobserver agreement for each condition across experimental phases
<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Alone</td>
<td>Attention</td>
<td>Play</td>
</tr>
<tr>
<td>% of sessions</td>
<td></td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>% agreement on target</td>
<td></td>
<td>66%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>% agreement on non-target</td>
<td></td>
<td>66%</td>
<td>33%</td>
<td>66%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Alone</td>
<td>Attention</td>
<td>Play</td>
</tr>
<tr>
<td>% of sessions</td>
<td></td>
<td>21.1%</td>
<td>20%</td>
<td>22.2%</td>
</tr>
<tr>
<td>% agreement on target</td>
<td></td>
<td>75%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>% agreement on non-target</td>
<td></td>
<td>100%</td>
<td>75%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Table 4.9 Interobserver agreement on experimenter behavior during role-play across condition in baseline and intervention phases

Social Validity

A social validity questionnaire (see Appendix L) was given to each of the participants after their final training session. Four of the six questionnaires were returned in the self-addressed, stamped envelope that was included with the form. All four perceived that the training would benefit their professional activity, and that they would recommend the training to colleagues (i.e., strongly agree). Each completed questionnaire identified the instructional video clips as a helpful component of the training package, one of which included a comment that they appreciated seeing the step “in process”. Three respondents identified that video-feedback was beneficial, and one comment stated that it was “a nice option if required, but nice that I didn’t have to if it wasn’t”. The next most commonly identified was role-play, identified by two participants, both of whom included statements that role-play “allowed practice – best part of program” and “week to week carryover helped, liked doing it twice”. 

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CHAPTER 5

Discussion

Question 1: What effect does a video-based package with role-play have on the implementation of brief functional analysis of professional staff?

All six participants implemented procedures to a high level of accuracy during simulated assessment. Their performance improved significantly during role-play following video-based instruction, a finding that to some extent was expected, given the immediacy of role-play after delivery of the model, as well as participants’ level of education and voluntary participation in the study. For the most part, performance was stable during post-training probes at the following training session. It is important to note that their performance may be attributed in part to the opportunity to use the list of procedures, however participants did not always choose to bring the list into simulated assessment. During a maintenance phase in which the supplementary material was not present, participants implemented each condition consecutively, suggesting durability of training effects. Although four participants’ accuracy remained at mastery level across all assessment conditions, feedback was required for two participants in response to decreased performance during one or two conditions. Despite these errors, results of the study further support multi-component training packages that provide video-based
training and feedback following role-play to teach implementation of FA procedures (e.g., Iwata et al., 2000; Stokes & Luiselli, 2008), particularly those designed to present a range of client behavior during assessment (Moore & Fisher, 2007).

All participants acquired procedures of each assessment condition following one video-based instruction session delivered to participant pairs, and one to three role-play sessions, that together lasted approximately 60 to 90 minutes. Similar results have been obtained by previous studies that trained college students (Iwata et al., 2000) and school staff (Wallace et al., 2004), whereas the remainder of training packages have required more training sessions (i.e., four to six) to teach procedures of each condition (e.g., Moore & Fisher, 2007; Moore et al., 2004; Phillips & Mudford, 2008; Stokes & Luiselli, 2008). Furthermore, training delivered to pairs has not been reported, and as such the current study extends the literature on training technology—from both a methodological and applied perspective—with evidence of a package that is effective and efficient. Together these results suggest the package could benefit training efforts in settings with limited time and training resources.

Given that the training package consisted of multiple instructional components, it is not possible to attribute results to any isolated component. Instead, outcomes of the investigation support use of multi-component approaches characterized by video-based delivery of instructional models and feedback in addition to role-play during simulated assessment, and extends the literature in both respects. First, previous research has indicated that video-demonstration is most effective and efficient when instructional content includes examples of all implementation skills required to conduct FA (Moore &
Fisher, 2007). Alternatively, when researchers have provided examples in the form of live models—both simulated and with a client—the number of training sessions required has been greater (Moore et al., 2004; Phillips & Mudford, 2008, respectively). One possible explanation for this difference is that systematic inclusion of a range of client behavior may be difficult to ensure when simulated assessment is live, or may be impossible to achieve when working directly with a client. The control afforded by use of video-demonstration helps researchers and practitioners alike plan for sufficient instructional examples. Findings of the current study support the design of instructional activity that samples a range of antecedent stimuli, and extends the literature by presenting those antecedents during simulated assessment, and thus the opportunity to practice response requirements in the context of role-play.

In previous demonstrations of training FA procedures, participant accuracy during role-play has shown to improve following the delivery of performance feedback. Researchers have suggested that verbal- or video-feedback is necessary only when performance does not improve with role-play alone (i.e., Moore & Fisher, 2007; Iwata et al., 2000, respectively), although training that includes both types has produced more immediate improvements (Stokes & Luiselli, 2008). The current study supports the effectiveness of packages that deliver video-feedback contingent upon performance, demonstrating that similar training effects can be attained without its provision to all participants. This finding extends the literature with evidence of a procedural approach that includes video-feedback throughout all training phases, and suggests this feature may be of particular relevance when training is directed to a more diverse group of learners,
who may require differential instructional requirements. In addition to efficacy, participant responses to the social validity questionnaire suggest a preference for video-feedback, a finding identified in the only prior investigation to report measures of social validity (Stokes & Luiselli, 2008).

Experimenter-demonstration of training effects has foremost been the goal of research agendas, which have also studied effects of the instructional model. Preliminary efforts described experimenter-behavior during role-play activity (e.g., Iwata et al., 2000), although analysis of the opportunity to respond to a range of client behavior during simulated assessment has not been a priority of empirical demonstrations, in that such data have not been reported. While it is possible that researchers have measured the extent to which certain events occurred during simulated assessment, account of experimenter-behavior during role-play has been largely absent from the literature.

Wallace and colleagues (2004) mention that experimenter-behavior was equivalent across simulated assessment, but did not expand in terms of topography and frequency of those responses. In the only other investigation to address activity of simulated assessment, one observer—who measured 26% of experimental sessions—reported that 90% of intervals included experimenter-behavior that was consistent with events specified by the script (Iwata et al., 2000). This measure supports fidelity of training, but does not provide researchers with sufficient information to replicate this procedural component, nor does it support practitioner application of training to achieve similar effects. The current study contributes to the training literature by the systematic inclusion and report of a range of experimenter-behavior, as both a means to analyze the effects of
training, and furthermore to identify areas for future research to promote growth within and beyond the available training technology.

With respect to the effects of training in the current study, error analysis identified trends that may have been influenced by content of the instructional handouts and video demonstration that together served to expose participants to response requirements during FA. Decreased accuracy during two participants’ implementation of the attention condition reflects different types of errors, one of which was procedural whereas the other more conceptual in nature. First, one error occurred during a post-training probe when delivery of attention followed a non-target, self-injurious behavior (i.e., open hand contact to the experimenter’s head). A potential reason for this procedural error is that the experimenter did not restate the target behavior prior to each role-play session, the solution to which could simply be identification of the behavior targeted for assessment and its definition prior to simulated assessment activity. Another option that may prevent this type of error is to include that content in the instructional material, for example on the list of procedures.

The second error impacted performance during the maintenance phase significantly, in that the participant implemented procedures of the play condition. It is possible that performance was influenced by two factors, either the experimenter’s use of the same items as leisure material during the attention and play conditions, or potentially the absence of a list of procedures that identified the purpose of the relevant condition. With respect to the latter, this may suggest the effects of training were less durable in the case of one participant, who may have relied upon the list of procedures during role-play.
so than other participants. Training during this phase of the study targeted application of procedures, perhaps to disadvantage of participants’ conceptual understanding of behavioral principles. Undoubtedly, such errors would present challenges to conducting valid assessment in the applied setting, and therefore instructional efforts should also emphasize behavioral function during the delivery of training.

Almost half (i.e., three) of errors in the escape condition were observed during physical prompt sequence, two of which occurred outside of the prescribed time, and one that consisted of verbal praise following delivery of the physical prompt. These errors can be more directly attributed to experimenter-omission of the physical prompting step during the instructional video-clip. Although these steps were included in the list of procedures and demonstrated in-vivo by experimenters during the video-based instruction portion that introduced the escape condition, error-analysis suggests inclusion of this step in the instructional video may have improved performance. Additional support for this explanation is provided by evidence of decreased accuracy when the instructional model does not include a full range of response requirements (Moore & Fisher, 2008). Furthermore, procedures of the escape condition have evidenced greater instructional requirements during acquisition, a finding consistent across empirical demonstrations (e.g., Iwata et al., 2000; Moore & Fisher, 2007; Phillips & Mudford, 2008; Wallace et al., 2004). As such, researchers should ensure that video-examples include all possible response expectations prior to the delivery of instructional material, even when instructional components otherwise address or include required steps.

Where previous investigations have involved more homogenous groups, the current
study trained participants with varied backgrounds, in terms of level of education and applied experience, to implement procedures of four conditions. Background information in addition to baseline measures on the cumulative quiz and during role-play suggest that to some extent, each participant was familiar with assessment and some of the procedures. In particular, the two Behavior Support Specialist had attended a professional conference at which they viewed video-clips of FA during a presentation. This account underscores the importance of opportunities to respond and receive performance feedback beyond exposure to the antecedent model to the acquisition of FA procedures, given their baseline performance.

It merits discussion, however, that some variability was observed across behavior of the two experimenters during simulated assessment, which may have influenced participants’ opportunity to respond during some of the baseline sessions. There were some instances during baseline sessions that the frequency of the target behavior was high, relative to mean occurrence across experimental sessions in that assessment condition. That being said, all of the participants demonstrated errors during delivery of contingent reinforcement, as well as adherence to the sequence of procedures in each condition. Thus participants’ accuracy of implementation was low, in that application of procedures as observed in baseline would compromise the validity of FA outcomes. After the study was complete, performance of all participants suggests the package was effective in addressing differential instructional requirements of paired participants. These findings contribute to the growing base of evidence that professionals can learn procedures of FA in response to a multi-component training package that includes video-
based instruction and role-play with video-feedback.

Kayla’s overall familiarity and accuracy of FA and procedures prior to training was low relative to other participants. However, her performance was consistently high and more stable across conditions, including the maintenance phase. Anecdotally, she reported to the experimenter that she reviewed procedures prior to maintenance, which may have supported performance. Additionally, her maintenance phase occurred temporally closer to the remainder of training sessions, which may have influenced performance as well.

Leigh’s overall performance was high as well, and errors that occurred during role-play following video-based instruction in the play and escape conditions were not observed during post-probe sessions. Following role-play sessions, she often asked more about the condition and her errors. For example, after the play condition in which she delivered attention within 5-s of a target behavior, she initiated a discussion with the experimenter about the play condition, specifically the topic of non-contingent attention and potential implications in the case of high-rates of target behavior. Although these details are anecdotal in nature, they indicate responsiveness to the instructional activities. Her improved performance across experimental sessions and her interest in the conceptual framework of the assessment suggest that motivational factors may have influenced her engagement during training as well.

Potential motivational factors are important to note with regards to both LEND trainees—who were recruited to the university’s competitive leadership training program—who expressed that behavioral approaches are not common to their profession,
although they have experienced first hand the benefit. Additionally, both trainees were in attendance during all role-play sessions, and thus presence of the partner was held constant across these participants, whereas this was not the case for pair two or pair three.

Jordan’s performance was highly consistent across the experiment, including her observed errors in the form of early demand initiation. Although her role in the university facility was that of a behavior support specialist, her academic major was unrelated and the majority of her behavior analytic skill development occurred through on the job training and learning experience. She also reported anecdotally that she reviewed procedures prior to maintenance, suggesting that motivational factors may have influenced behavior during role-play, which did not always include the presence of her training partner.

Julia’s performance was highly stable as well during role-play and post-training probes. However, her performance during the maintenance phase reflects the most errors, specifically during the attention condition in which her performance was consistent with implementation of the play condition. It is possible this error was influenced by the availability of the list of procedures, both within and outside of experimental sessions. The absence of the list during maintenance is the first and most salient factor. Additionally, across the duration of training Julia requested that the experimenter retain the list of procedures to ensure they would be available during the post-probe, whereas other participants took their list of procedures at the end of every session. This slight variation minimized her opportunity to review materials outside of experimental sessions, a point of relevance with respect to the verbal report of other participants that they
sometimes reviewed these materials outside of sessions.

Shaniqua’s performance during baselines measures of test conditions was relatively higher than other participants. The first training session for pair three addressed escape, and Shaniqua was the first to engage in role-play. Approximately 45-s into the first role-play session, she asked the experimenter if she could stop and begin again, and also requested that the timer count up from 0:00, (i.e., not down from 5:00). Her request was granted, and represents the only session terminated across the duration of the experiment. With the exception of one error that consisted of early initiation of the instructional sequence, her subsequent performance was accurate (i.e., 97%), and improved during the post-probe session. At the end of the final session in the maintenance phase—two of which required video-feedback—she reported anecdotally that she did not review procedures. Her overall familiarity and level of accuracy may have decreased her use of the list of procedures, more so than other participants.

Following observation of Shaniqua’s role-play in the escape condition, Skylar’s accuracy was similarly high. One error during the initial training session occurred when Skylar delivered praise following a physical prompt, an error that did not occur during the post-probe. Additionally, she stated this error as soon as the role-play was complete. Skylar also requested that the timer count up prior to the start of the session, which the experimenter allowed. Although this event does not significantly change the independent variable under investigation, it does represent one aspect not included in training with all participants. It also suggests, anecdotally, that partner observation during role-play can influence behavior of the participant during subsequent sessions. In addition to this,
Skylar asked the experimenter about her accuracy during baseline. Given the purpose of the investigation and components of the package, the experimenter did not provide feedback regarding role-play performance. However, the experimenter did show Skylar the graph that displayed her baseline data, an event that could have introduced a motivational variable that was absent during other participants’ involvement.

Both Skylar and Shaniqua communicated high expectations in terms of their performance during role-play, and displayed indicators of frustration in response to errors, such as comments that “I am doing this wrong” and “I can’t believe I messed that up”. Given more extensive background in behavior analysis, it is possible that their personal expectations in terms of implementation during role-play were higher relative to the other participants. It is also possible that their individual histories of reinforcement with behavioral assessment and intervention differed in the same respect. Both previous experience and expectation of performance are factors that could influence behavior during experimental sessions across all phases of the study. Both across and within participant pairs, anecdotal evidence of the motivational variables suggests that further experimental analysis of the mechanisms that influence performance merits systematic investigation.

Question 2: Will implementation skills learned in the training setting generalize to assessment with individuals in the clinical setting?

The study was conducted at the university facility that houses two preschool classrooms and the offices of behavior support specialists (BSS) who travel to clients’ home and educational settings. The expectation prevailed that a need for assessment—
and thus the opportunity for generalization—would occur, either through the outpatient clinic or the preschool. Clinical demands of the two BSS existing caseload did not require assessment and they did not receive new referrals within the experimental timeframe, nor did events in the preschool setting result in assessment referral. This was potentially related to the clinical involvement of one participant who was a LEND trainee. Although support is anecdotal, the account merits discussion in response to this research question.

Leigh was completing a practicum placement in one of the preschool classrooms, and reported early in training that a preschooler was engaging in challenging behavior (e.g., property destruction), often in response to task demands. The experimenter and LEND staff—who are both presenters at the university facility—delivered a lecture series to the LEND training seminar that began in autumn quarter. The activity-based presentation addressed basic principles of behavior, including motivation, reinforcement, and behavior-management strategies. Trainees observed the trainers (i.e., experimenters) who demonstrated through role-play four episodes of challenging behavior, and trainees recorded the antecedent and consequent events as well as the frequency of behavior (i.e., inappropriate vocalizations, property destruction). The lecture discussed topics of preference and choice and provided trainees with a tip sheet, and emphasized the importance of ongoing measurement when intervening on challenging behavior. Both Kayla and Leigh were in attendance and remained after the lecture to speak more about the content and their experiences with challenging behavior in clinical activity.

Upon returning to campus at the start of winter quarter, Leigh used the material provided at the lecture (i.e., descriptive data collection form) during observation in the
preschool to collect information and identified strategies (i.e., pre-task choice, escape extinction) that were then used during occupational therapy tasks with the preschooler. In the time that followed the final phase of training, after Leigh demonstrated maintenance of procedures across conditions, the challenging behavior was no longer observed in the classroom. Although this anecdotal support of descriptive assessment and intervention was not a goal of the investigation, Leigh’s account of the process and her subsequent experience in the classroom suggest improved outcomes as a result. Additionally, Leigh’s verbal and written report of satisfaction with training included concerns that a behavioral approach has been lacking in her educational and training experience, until her involvement in the lecture and study during the following quarter. Together these events may have decreased the need for FA with this preschooler, and thus the opportunity to answer this experimental question.

*Question 3: What effect does a lecture-based training package have on the visual analysis and function-based intervention recommendation skills of professional staff?*

Although each participant improved in their level of agreement, outcomes of this study are mixed. First, the extent to which participant agreement improved for each at pre- and post-test measures of accuracy varied across participants. It is possible that this was due to the lack of structured criteria by which to analyze FA that are brief in format, as well as the varied procedural approaches and display of data during brief FA. It also remains to be said that the hypothesized function identified by the authors was potentially inaccurate, regardless of the intervention effects reported in the published paper.
This point is relevant given the consistent disagreements in response to graphs that included minute-by-minute analysis (i.e., Cihak et al., 2007). Participants’ response that behavior was multiply maintained was not consistent with the authors’ hypotheses of escape as the function in all four graphs. The intervention used in that study targeted skill remediation in a vocational setting, and included escape extinction as well as reinforcement contingencies that involved the delivery of attention. It is possible that while the participants did not agree with the authors’ hypotheses, the behavior of interest in the paper may have been maintained by both escape and attention contingencies.

It is also possible that the parameters by which the experimenter selected graphs for use during this study restricted the potential data sets for both training and assessment materials, and as such may have precluded sufficient instructional examples. The only empirical demonstration of training structured criteria (Hagopian et al., 1997) involved multi-element FA outcomes and statistical analysis of those data. This approach is more exacting in terms of teaching consistent application of decision-making, whereas the current study focused on visual analysis of trends and level within and across assessment condition. Given this aspect, emphasis was not placed directly on improving the extent to which participants agree with the expert, rather that participants were trained guidelines for the application of visual analysis.

Visual analysis remains to a significant extent a subjective process. While the development of decision-making rules has contributed to training the interpretation of multi-series, analogue functional analysis, it does not follow that consistency across raters ensures validity of hypothesis generated. When training procedures and analysis of
brief FA, future research should emphasize selection of assessment models, pre-
assessment activity to enhance validity of brief FA, and the analysis of data with respect
to the design selected.

**Question 4: Will visual analysis and function-based intervention recommendation skills learned during training generalize to assessment data in the clinical setting?**

Events in the research setting did not provide opportunity for experimental analysis of this research question.

**Limitations**

Despite the outcomes of the study, a significant concern exists in the measurement of the primary dependent variable. This limitation was due in part to the measurement used in the investigation, in that data analysis was not sensitive to all of the events that could potentially occur, specifically in the escape and attention conditions. Accuracy was defined as the percentage of steps completed correctly out of the total opportunities to respond. Because these steps consisted of antecedent and consequent events specific to the condition, together the steps generated a number of potential events, and thus the opportunity to respond. These categories—and thus the measurement tool—were designed to capture participant adherence to prompt sequence in those occurrences of non-target behavior, as well as target behavior that resulted in removal of task as opposed to delivery of a prompt. Although the antecedent opportunities were controlled by parameters of the assessment condition, the occurrence or non-occurrence of experimenter-behavior controlled consequent opportunities. For the most part, this variable was held constant within assessment condition, in that experimenter behavior
followed a script. The same level of consistency cannot be said with regards to response opportunities across assessment conditions. The escape condition presented on average 33 opportunities (range = 27 - 38), whereas attention included an average of 10 (range = nine to twelve), and play provided an average of 16 (range = 15-17). Subsequently, it is possible that accuracy of escape procedures may have been overestimated given the number of possible scoring categories, which allowed the occurrence of one error per role-play defined as mastery-level performance.

Additionally, the data did not capture participant behavior that may have occurred during the reinforcement interval. For example, when target behavior resulted in removal of the task, a post-reinforcement interval lasting potentially 25-s occurred in which there were no further steps required of the participant, beyond non-responsiveness to client behavior. From an applied perspective, this may be considered less of a concern given the purpose of the condition. However, the implications are more significant to the empirical analysis of treatment effect, in that it is possible that a sensitive measure of participant behavior was not captured and thus presents the risk of overestimation of accuracy.

On the other hand, accuracy of attention procedures may have been underestimated, as the measure did not account for those instances in which participants withheld attention for non-target behaviors, a procedural aspect of utmost significance to valid analysis of behavioral function. This step was omitted as a means to reduce potential overestimation in the event of high-frequency, non-target behavior, which was planned during role-play. Future researchers should include this category and strive instead to set a higher mastery criterion when concerns exist related to overestimation. Limitations of
measurement during both the attention and escape conditions underscore the importance of capturing participant responding to non-target behavior. Researchers can better analyze the effects of training through experimental analysis that captures these variables, and practitioners can feel more confident in the validity of assessment skills trained.

As mentioned previously, some variability across experimenters’ behavior was observed during role-play. This may have influenced participants’ opportunity to respond, as there were some sessions that the frequency of target behavior was higher, a few of which occurred during baseline. From an applied perspective, variance in antecedent features such as the frequency and topography of experimenter-behavior during simulated assessment may serve to promote generalization of procedures beyond the training setting. Regardless, the disparities imposed may compromise the extent to which researchers can compare participant performance across experimental sessions. Future research should take precautions to prevent such events, for example experimenter practice of role-play scripts and measurement to ensure behavior is consistent with procedural integrity requirements. This is particularly relevant to integrity during in the pre-training phase of analysis.

When such prevention is not achieved, researchers should ensure that simulated assessment activity during all phases of the study allow for more consistent comparison, either through alternating high- and low- frequency scripts during role-play, or by maintaining similarly high levels across the remainder of experimental sessions.

Use of video-based technology can present benefits and well as challenges, as was the case in the current investigation. The use of computer-based software to record the
sessions proved difficult, in that the field of view provided by the software did not always capture the entirety of the session. For example, if the experimenter was more mobile during simulated assessment, some of this activity took place outside the range of the camera. Although experimenter-behavior typically occurred at the table directly in front of the observation window—and thus the camera lens—and was recorded, experimenter-behavior did not always occur directly in front of the lens. For example, during the alone condition, the experimenter moved around the room and did not direct the majority of role-play activity to the area that typically included the table. In those instances, some of the experimenter behavior occurred out of view of the camera, and was not captured in the video recording. Fortunately, this was not the case during those sessions requiring video-feedback, and thus did not compromise the experimenter’s ability to deliver feedback. It is likely, however, that technology failures influenced the extent to which video-taped sessions displayed the entirety of events that took place each session, and as such represents a significant limitation to the study. As a result, measures of both experimenter and participant behavior during later observation and measurement of the video-taped session may not have reflected the actual occurrence.

Because the experimenter typically conducted role-play sessions without the presence of the LEND staff, measurement of participant accuracy took place both in the context of the session as well as immediately after. During simulated assessment, the experimenter followed a script and thus was aware of the response requirements of that session. In the event that errors occurred, the experimenter proceeded to deliver feedback. The primary measure of participant accuracy occurred after that days training session,
and although the experimenter viewed the session on video, it is possible that scoring was influence by knowledge of immediately prior events. Support for this concern exists in that some of the data sheets scored by the second observer for the purpose of IOA measurement were returned to the experimenter with comments such as “difficult to see” or “could not hear”. Those instances in which disagreement occurred between the primary and secondary observer measurement were characterized by such comments. Additionally, these disagreements were more common during early experimental sessions, in which the experimenter was first using the software and computer obtained for the purpose of the investigation.

Given the occurrence of these events, it is likely that a combination of challenges related to the use of technology impaired the extent to which accurate comparisons could be made across measures between two observers that occurred independent of each other. In order to promote more accurate observation and sensitive measurement, researchers should plan for use of more appropriate technology or software to record and display sessions. Additionally, when experimental sessions require responsiveness from the researcher, for example delivery of contingent feedback, it is critical to plan for situational factors that may arise across the course of the study. Although training may be efficient in terms of skill acquisition, components of the package were designed for application by a pair of researchers. In those cases where extra-experimental events result in minimized resources, the researcher should plan for alternative options.
Implications for Practice

Outcomes of the study present significant implications to practice. Use of a video-based training package could improve training in settings with limited time and training resources, such as outpatient settings or in-service training delivered to school staff. The effectiveness of the package also suggests utility when training is directed to a more diverse group of learners, who may require differential instructional requirements. That being said, the package may help maximize training efforts in settings such as school and academe, as well as clinical environments. Idiosyncratic preference across participants for different components of the package reported by measures of social validity suggest that in addition to effectiveness, that preference for both video-feedback and role-play can make training more enjoyable for trainees, the value of which can improve practitioner satisfaction and engagement during training.

In the development of training packages, practitioners can benefit from use of video-based technology, which may be financially feasible and therefore available in large districts or training facilities such as the current study. The control afforded by use of video-demonstration can help ensure sufficient instructional examples are provided during training. In the creation of instructional materials, practitioners should sample the full range of antecedent stimuli, as well as present those antecedents during simulated assessment. In doing so, more effective training may be achieved by allowing trainees the opportunity to practice response requirements in the context of role-play.

When training efforts are focused on teaching implementation of procedures, it critical that practitioners emphasize as well the behavioral principles underlying
assessment. This factor may be easy to discount when the goal of training is foremost practitioner-acquisition of procedures, however findings of the current study suggest failure to underscore conceptual foundations during training may present challenges to conducting valid assessment in the applied setting. Therefore instruction efforts should better emphasize behavioral function during the delivery of training.

Implication for Future Research

Future research should continue to improve the measurement used during experimental analysis. Researchers should strive to prevent potential over- or under-estimation by selecting a sensitive measure of accuracy, or possibly increasing response requirements, for example requiring 100% accuracy as opposed to 95%. Another option altogether exists in the use of interval-based measurement, which can capture varying antecedent and consequent implementation requirements while holding constant the opportunity to respond. Previous research has used 10-s intervals, although future efforts should consider measures that are both effective and feasible during in-vivo observation and measurement. Researchers should also continue to develop a sensitive measure of duration-based responding such as target or non-target behavior such as vocalizations.

If the dimension of measurement selected is frequency based, performance may be analyzed more accurately through use of computer-based data collection software. In those settings where this type of technology is unavailable, researchers should ensure ample resources for measurement. One option is use of video-recording technology that is appropriate for the setting and can capture all of the events of the experimental session. When such software is not feasible, researchers should ensure availability of researchers
who can directly observe the session and record data in-vivo.

A better understanding of the mechanisms by which training components can influence performance should be a priority of future research agendas. Findings of the current study suggest investigation of prompt fading is a timely area of study, specifically with regards to the availability of instructional materials. One potentially beneficial investigation is the study of potential effects of systematic fading of instructional components. Researchers should assess to the extent to which the list of procedures influence acquisition and maintenance by studying the effects of availability during role-play that follows video-based instruction and their absence during subsequent post-training probes. Research of this type would ensure a more accurate maintenance phase and therefore allow better analysis of the durability of training effects after the removal of supplementary material.

Another area of critical importance is the effect of experimenter-behavior during simulated assessment, as these antecedent stimuli control the opportunity to practice response requirements. More rigorous investigation of the effects of different topographies and frequencies of behavior—both targeted for assessment as well as non-target— during role-play, and the influence of these variables on participant performance may support technological refinement of training strategies. Future research should investigate the effects of experimenter-behavior during role-play, with regards to the distribution of responding both within and across experimental phases. Furthermore, future research should include a more detailed report of the events that occur during simulated assessment activity. This feature is critical to both systematic replication efforts
and analyses of relative effectiveness of training components. Systematic analysis of these antecedents may contribute to the extant training with a better understanding of strategies that promote generalization of assessment to the applied setting.

Training formats in the literature have primarily involved one-on-one instruction, which requires significantly greater training resources. Packages delivered to participant pairs has not been reported, and while the findings of the current study represent an improvement to the available technology, utility of training may be increased if similar effects can be achieved in the context of training delivered to multiple participants. To increase the use of training packages in non-clinical settings such as schools and vocational placements, future research should continue to investigate the effectiveness of instruction that is delivered in a small group format.

In additional to empirical demonstration of training effects, future efforts should continue to solicit participant opinion, including information regarding the subjective liking and perceived benefits of training components. Although indirect, these measures provide information regarding preference that may enhance the study of training components and efficacy. Beyond potential benefits to research, the science of applied behavior analysis strives to understand and improve socially significant behavior. Although it remains that effectiveness is foremost defined by training outcomes, emphasis on participant satisfaction and opportunity to provide feedback to researchers has been significantly lacking in the extant literature, and thus represents a meaningful priority of future research agendas, particularly for those researchers committed to making valid assessment more accessible to practitioners and individuals with disabilities.
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APPENDICES

Appendix A

Consent
The Ohio State University Consent to Participate in Research

Study Title: An examination of the effects of a video-based training package on clinical staff’s implementation of a brief functional analysis

Researcher: Helen I. Malone

Sponsor: The Ohio State University

This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate.

Your participation is voluntary.

Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate. If you decide to participate, you will be asked to sign this form and will receive a copy of the form.

Purpose:

The proposed research seeks to determine if a video-based training package will increase the assessment skills of clinical staff.

Procedures/Tasks:

If you agree to participate in this study, you will receive training that teaches you the skills necessary to conduct an evidence-based assessment method used to identify the function of behavior, which provides knowledge that can be used to develop function-based treatment for individuals with developmental disabilities. This training package includes an initial questionnaire, video-instruction, role-play, video-feedback, and the opportunity to practice learned skills in the clinical setting. You will be paired with another trainee and taught an assessment method that identifies the function of behavior common in educational and clinical settings. You will be taught to identify and measure behavior, and how to implement a clinical assessment method known as a brief functional analysis. In these training sessions, you will watch brief video clips, practice those skills with your partner or trainers, and receive video-feedback of your performance from the trainers. After completion of all training steps, you will be asked to fill out a questionnaire as an additional measure of your trained skills. All training sessions will occur at The Nisonger Center. After this training is complete, we will follow-up with you to determine if the skills learned in training can be transferred to the clinical setting.
Duration:

This study will last approximately 9 months (until the end of this school year). During the initial training in this study, we expect to work with you for approximately three to four hours. After this training is complete, we will follow-up with you to determine if the skills learned in training can be used in the clinical setting. We expect this follow-up will occur two to three times after the initial training, and before the end of this school year. Follow up sessions will last for approximately 30 – 45 minutes.

You may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled. Your decision will not affect your future relationship with The Ohio State University.

Risks and Benefits:

We do not anticipate any risks as a result of participating in this study. You will be working with OSU students you are familiar with, so you should be comfortable in the study sessions. One potential risk is that the study is not successful in training the skills necessary to implement a functional analysis. Another potential risk is the possibility of being the target of challenging behavior within the clinical setting where you are employed. Participation in this study does not increase this risk, but the risk will still be present, as it exists in the classroom regardless of study.

The main anticipated benefit of this study is that we will identify a training package that is effective in teaching the skills necessary to implement a functional analysis. Knowing how to implement a functional analysis would be extremely beneficial. If we are successful, we will be able to provide you with effective training on how to determine the function of behavior in a clinical setting. This knowledge will provide you with the skills to conduct an evidence-based assessment, from which results may be used to guide function-based treatment.

Confidentiality:

Efforts will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law. Also, your records may be reviewed by the following groups (as applicable to the research):

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Ohio State University Institutional Review Board or Office of Responsible Research Practices;
- The sponsor, if any, or agency (including the Food and Drug Administration for FDA-regulated research) supporting the study.
Incentives:

There are no incentives for participating in this study.

Participant Rights:

You may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled. If you are a student or employee at Ohio State, your decision will not affect your grades or employment status.

If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may have as a participant in this study.

An Institutional Review Board responsible for human subjects research at The Ohio State University reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

Contacts and Questions:

For questions, concerns, or complaints about the study you may contact Helen Malone at 614-247-8710 or malone.175@osu.edu.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

If you are injured as a result of participating in this study or for questions about a study-related injury, you may contact Helen Malone at 614-247-8710 or malone.175@osu.edu.
Signing the consent form

I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

Printed name of subject

Signature of subject

Date and time

Printed name of person authorized to consent for subject (when applicable)

Signature of person authorized to consent for subject (when applicable)

Date and time AM/PM

Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Printed name of person obtaining consent

Signature of person obtaining consent

Date and time AM/PM
Appendix B

Background
Background Knowledge

Name:

Discipline:

Date:

1. Have you taken any courses in college related to assessment of challenging behavior? If so, what courses?

2. If so, what assessments have you learned?

3. Have you taken any courses in college related to Applied Behavior Analysis?

4. Have you been involved with a treatment team providing behavioral services?

5. Have you observed a functional analysis being conducted?

6. Have you been trained to implement a functional analysis?

7. Have you read literature related to functional analyses?

8. If so, what literature have you read?
Appendix C

Training 1 Power-point & List of Procedures
Functional Analysis: Effective assessment of challenging behavior
Courtney Fleming, M.A.
Abby Baradaghi, P.A.
The Ohio State University
Winter 2011

Assessment Process
1. team defines the target behavior
2. assessment conducted to directly measure the effects of environmental variables
3. team analyzes outcome data to identify factors that influence target behavior

Advantages
- enables the development of effective, function-based treatments
- ongoing, demonstrated effectiveness
- team-based approach allows careful planning
Functions commonly tested

Attention
Escape (difficult or non-preferred activity)
Automatic reinforcement

Assessment Conditions

Each assessment condition...

- simulates situations that can evoke challenging behavior in educational settings (e.g., task demand, low levels of attention)
- delivers a specific consequence if the target behavior occurs (e.g., remove the task demand, provide attention)

Measures the occurrence of target behavior

Alone Condition

Purpose
designed to test if behavior is maintained by automatic reinforcement

How it is conducted

- Session begins with clinician exiting assessment room
- Client remains in the room
- In the assessment room, no toys or instructional instructional materials are present
- No programmed consequence for target behavior
Attention Condition

Purpose
designed to test if behavior is maintained (reinforced) by contingent social attention after behavior occurs

How it is conducted
• Clinician delivers 2-5 s of attention after target behavior
  • (if this is the function, should see increased target behavior)
  • Attention consists of VERBAL and PHYSICAL attention
  • Leisure materials are present
  • Ignore all non-target behaviors (target behavior)

Play Condition

Purpose
designed to be a general control condition

How it is conducted
• No demands are placed on the client
• Continuous access to leisure materials
• Attention is delivered frequently (~ once every 30s)
• This interaction not contingent upon target behavior (prescheduled)

Escape Condition

Purpose
designed to determine if the target behavior is maintained by escape from task demands

How it is conducted
• Involve presenting a series of instructional demands to a client
• Compliance permits removal of demand (escape)
• Non-compliance results in corrective prompts
• Occurrence of the target behavior immediately terminates the trial (escape)
Alone Condition

Purpose
This condition is designed to test for behavior maintained by automatic reinforcement.

The session begins with clinician exiting assessment room, and the client remains in the assessment room. No toys or instructional instructional materials are present, and there is no programmed consequence for target behavior.

How to Conduct the Alone Condition
1. Start the timer
2. Tell client you need to leave the room
3. Go to the observation room
Attention Condition

Purpose

This condition is designed to determine if challenging behavior is maintained by attention delivered immediately after -- or contingent upon -- its occurrence.

The attention condition involves remaining in the assessment room with the client, where leisure materials (i.e., books) are available. The clinician responds only to the target behavior by delivering social attention, and ignores all other client behavior.

How to Conduct a Session

1. Begin a session by starting the timer.

2. Direct the client towards leisure materials that are present in the room. Tell the client that he or she should play with the toys while you do some work.

3. Next, move away from the client, sit in another chair, read or do some paperwork (or pretend to do so), and completely ignore all behaviors exhibited by the client except as noted below.

4. Ignore any behavior other than the target behavior. This includes appropriate behaviors (e.g., playing with the toys, smiling at you, attempts to talk to you or to interact with you) as well as inappropriate behaviors (e.g., screaming, throwing materials, running around the room, etc).

5. If the target behavior does not occur during the session, you will ignore the client for the entire session.

6. The only time you will attend to the client is when he or she engages in the target behavior (i.e., head banging). If the client exhibits the target behavior at any time during the session, do the following:

   (a) Go over to the client and verbally express concern and disapproval. For example, you could say something like, "'Stop that, you're going to hurt yourself,' "'[Name], you shouldn't hit yourself; play with your toys,' "'[Name], I don't want you to do that; you're going to get hurt,' or something similar.

   (b) While you express concern, briefly deliver some form of physical attention. For example, touch the client's arm, place your hand on their shoulder, or physically block the target behavior, but do not physically restrain the client. The general idea is to express concern, briefly interrupt the behavior, and calm the client. Don't shout at the client and do not handle the client roughly.

7. After a target behavior occurs and you have responded as indicated in Step 6, resume ignoring the client until another target behavior occurs, or until the session is over.
Play Condition

Purpose

Designed to be a control condition that simulates the client’s ‘ideal’ environment.
No demands are placed on the client, with continuous access to leisure materials.
Attention is delivered frequently (~ once every 30s).
*This interaction is ‘prescheduled’ or not contingent upon target behavior.

How to Conduct a Play (control) Session

1. Start the timer.

2. Direct the client towards the leisure materials and say, for example, “Here are some nice toys. Why don’t you play with them for awhile?” or “Would you like to play with these toys?” as you hand one to the client.

3. At least once every 30s, deliver some form of attention to the client (e.g., tell the client that he/she is playing nicely, ask if he/she is having fun, etc.). You can also hand the client another toy, pat the client briefly on the shoulder, or smile at the client. The general idea is to provide some type of friendly, non-demanding interaction (lasting about 5s) at 30s intervals.

4. If the client attempts to interact with you appropriately (e.g., asks for something, hands you a toy, etc.), reciprocate.

5. If the client engages in any form of inappropriate behavior, including the target behavior, do not deliver attention in the following 5s.

6. If the target behaviors occur precisely at the end of a 30s interval (just as you are about to deliver attention) do not deliver attention. Instead, wait until the behavior has stopped for 5s, then deliver attention.
Escape Condition

Purpose

This condition is designed to determine if challenging behavior is maintained by escape from task demands.

Begin a session sitting at a table with the client. Using the available materials, you will present a total of ten instructional trials (e.g., "put in the bucket").

Occurrence of the target behavior immediately terminates the trial (escape); Compliance produces removal of demand (escape); Non-compliance results in a series of least-to-most corrective prompts. The clinician ignores all other client behavior (e.g., requests for help).

How to Conduct an Escape Session

1. Start the timer.

2. At the beginning of every 30 s interval (starting at 0 s), initiate an instructional trial. Each instructional trial should begin with the presentation of materials & a clear verbal directive (e.g., place shapes & bucket in front of client and state "put in the bucket").

3. The sequence to be used during each trial is:

   (a) First deliver a clear instruction to the client (e.g., "put in the bucket"). If the client performs—or initiates—the response within 5 s, deliver praise when the client has finished (e.g., say "nice job", or "that’s great").

   (b) If the client does not perform—or initiate—within 5 s, repeat the instruction & simultaneously model the response (i.e., say "put in the bucket, like this" while putting a shape in the bucket). If the client performs the response within 5 s, deliver praise.

   (c) If the client does not perform the response within 5 s of your instructional model, repeat the instruction again & simultaneously provide physical assistance (e.g., "put in the bucket" and use your hands to help the client pick up the shape and put it in the bucket). Do not deliver praise if you used physical assistance.

4. If at any time during this sequence the client engages in the target behavior, immediately terminate the trial. Remove the materials from the table, turn away from the client, and ignore the client until it is time to begin a new trial.

5. If other inappropriate behavior occurs (e.g., screaming, throwing things) continue with the sequence - do not terminate the trial if these responses occur.

6. Repeat the above sequence every 30 s and continue until the session is over.
Appendix D

Condition Quiz
Alone Condition Quiz

Name _______________________________
Date ______________________________

1. After starting your stopwatch at the beginning of the alone condition, what do you say to the client?

2. After making the statement to the client, what do you do?

3. What should you do if the client engages in the target behavior during the alone condition?
Attention Condition Quiz

Name ________________________________  
Date ________________________________

1. After starting your stopwatch at the beginning of the attention condition, what do you say to the client?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

2. After making the statement to the client, what do you do?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

3. When do you deliver attention to the client during the attention condition?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

4. When delivering attention, give one example of something you might say:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

5. When delivering attention, give one example of something you might do:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

6. What should you do if the client asks a question or requests help during the attention condition?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Play Condition Quiz

Name _______________________________
Date _____________________________

1. How often do you deliver attention to the client during the play condition?

2. Give one examples of what you might say when delivering attention during the play condition.

3. Give one examples of what you might do when delivering attention during the play condition.

4. What should you do if the client engages in the target behavior during the play condition just as you are about to deliver attention?

5. What should you do if the client asks you a question during the play condition when you are not scheduled to deliver attention?

6. What should you do if the client engages in disruptive behavior (e.g., knocks over furniture, throws objects, etc.) that is not a target behavior during the play condition?
Escape Condition Quiz

Name_______________________________
Date________________________________

1. How often should you deliver an instructional trial during the demand condition?

2. If the work task during the demand condition is putting a puzzle piece into a puzzle, what is an example of the instruction you would give to the client?

3a. During an instructional trial, if the client does not respond to your initial instruction within 5 s, what should you do?

3b. If the client does not respond to your second instruction within 5 s, what should you do?

4. What should you do if the client engages in the target behavior at any time during the instructional trial?

5. Should you praise the client during the demand condition if you had to physically guide the client to complete the task?

6. What should you do if the client asks for help completing the assigned task during the demand condition?
Appendix E

Data Sheet
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<thead>
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<th>Participant:</th>
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<td>Observer:</td>
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<tr>
<td>Primary or Reli (circle one)</td>
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<td>Date:</td>
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<tr>
<td>Session#:</td>
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<td>% Correct:</td>
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1. Start the timer
2. Tell client you need to leave the room
3. Go to the observation room

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<td>Session#:</td>
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1. Start the timer
4. Tell client you need to leave the room
5. Go to the observation room
### Attention Condition

**Participant:**

**Observer:**

**Primary or Reli (circle one):**

**Date:**

**Session#:**

**% Correct:**

1. Start the timer
   
2. Direct client to available leisure material
   
3. Tell client you have some work to do
   
4. Initiate engagement in non-client directed activity
   
5. Initiates attention delivery within 5 seconds of target behavior:

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**Notes:**

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**Participant:**

**Observer:**

**Primary or Reli (circle one):**

**Date:**

**Session#:**

**% Correct:**

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2. Direct client to available leisure material
   
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**Notes:**
### Play Condition

**Participant:**

**Observer:**

**Primary or Reli (circle one):**

**Date:**

**Session #:**

**% Correct:**

1. Start the timer
2. Direct the client to the available toys

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3. Deliver at least 2-5 s of attention
4. Withhold attention 5 s after target behavior

**Notes:**

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**Participant:**

**Observer:**

**Primary or Reli (circle one):**

**Date:**

**Session #:**

**% Correct:**

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**2. Present instructional demand**

- **Client complies:** deliver praise
- **Client does not comply:** continue prompt sequence

**3. Deliver instructional demand & model:**

- **Client complies:** deliver praise
- **Client does not comply:** continue prompt sequence

**4. Deliver instructional demand & physical:**

- **No praise delivered**

**5. Target behavior: remove demand immediately (within 5s)**

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Notes:

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- **Client does not comply:** continue prompt sequence

**3. Deliver instructional demand & model:**

- **Client complies:** deliver praise
- **Client does not comply:** continue prompt sequence

**4. Deliver instructional demand & physical:**

- **No praise delivered**

**5. Target behavior: remove demand immediately (within 5s)**

Notes:
Appendix F

Procedural Integrity
### Treatment Integrity

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<th>Property destruction (throwing material, hitting objects, etc)</th>
<th>Off-task (elope from table, non-responsive, etc)</th>
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<th>Request/Question</th>
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Appendix G

Escape Condition Procedural Integrity Sheet & Sample
Appendix H

Training 2 Power-point
Data Analysis & Function-based Treatment

Courtney Fleming, M.A.
The Ohio State University
Spring 2011

Objectives
1. Pencil & paper pre-test
2. Discuss analyzing data & decision-making to hypothesize function
3. Discuss using results to guide development of function-based intervention
4. Pencil & paper post-test

Conducting brief assessment
Purpose of FA: Identify factors that maintain challenging behavior so that function-based intervention can be developed

Conducted across different conditions & analyzed for changes in behavior during one or more conditions relative to:
- a control condition
- other test conditions
**Conditions commonly tested**

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<th>Condition</th>
<th>Tests for behavior maintained by</th>
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<tbody>
<tr>
<td>Alone</td>
<td>automatic reinforcement (no social reinforcement)</td>
</tr>
<tr>
<td>Escape</td>
<td>removal of demands</td>
</tr>
<tr>
<td>Attention</td>
<td>social attention</td>
</tr>
<tr>
<td>Tangible</td>
<td>access to tangible items</td>
</tr>
<tr>
<td>Play</td>
<td>control condition (for comparison with test conditions)</td>
</tr>
</tbody>
</table>

**Analyzing results**

Data are typically presented in graphs. Visual analysis looks for patterns in:

- **LEVEL** (is behavior in one or more conditions relatively higher?)
- **TREND** (are levels same or different during subsequent series?)

**Comparing behavior across conditions**

Visual analysis compares occurrence of behavior during one or more conditions relative to:

- a control condition
- or
- other test conditions
**Analysis strategies**

In some cases, visual inspection is relatively straightforward due to clearly differentiated data:

![Diagram](image1)

When differences are less clear, interpretation may be more difficult and it is necessary to run another series.

![Diagram](image2)

Another option is to identify the next highest condition and compare the two:

![Diagram](image3)

Within-session data can be further analyzed, for example a given condition can be analyzed in 15min intervals:

![Diagram](image4)

**Decision making**

- If one condition is significantly higher—differentiated—a hypothesis is generated based on that condition

![Diagram](image5)

![Diagram](image6)
If behavior remains elevated in more than one test condition, a hypothesis is generated that behavior is multiply maintained.

Ultimately, a hypothesis is confirmed by the effectiveness of the subsequent intervention.

**Function-based recommendations**

Once a hypothesis has been generated, develop intervention that provides the functional reinforcer for an appropriate alternative behavior.

For example:
- with attention-maintained aggression, attend to the person (e.g., say, "What do you need?") when they tap on your shoulder,
- with aggression maintained by escape & tangible reinforcement, provide 5 min free time with CD player for requesting a break from homework.

As each learner is unique, the specific reinforcer will vary. In both (task & intervention), the information for both assessment & intervention.

For example:
- types of attention (e.g., as the task, verbal, positive statement, telling a story, etc.);
- delivery of escape (hours of different activity, number of minutes, immediate escape after the task is complete, etc.).
Automatic reinforcement

Automatically maintained is a general term – it does not specify the functional reinforcer; rather, it is defined by what it is NOT (i.e., not a social variable).

Challenges:
• Typically, the reinforcer is not under the control of the clinician.
• Likely the reinforcer is more readily available, because the reinforcer & behavior are inseparable.

Overall, prevention is key.

Planning Intervention

Gather information to identify components of intervention likely to compete with challenging behavior.

For example:
Assessment of pre-selected items — measure both challenging behavior & engagement with item.

Progress monitoring is critical to ensure knowledge of the effectiveness of intervention components & promote responsiveness in terms of treatment changes.

Antecedent & consequent: A dual approach

One preventative strategy is to compete with (by matching) the sensation created by challenging behavior.

For example:
• Providing a “squeeze ball” to prevent self-injury (e.g., pinching, skin picking).
• Providing visually stimulating toys to compete with eye-poking.

Preventatives are often used conjunction with consequent strategies, especially when the behavior compromises safety of the client.

For example:
• Response blocking to prevent head-banging.
You're almost done!

- Paper & pencil post test
- Practical considerations when planning & conducting a Brief FA

Considerations when planning & conducting a Brief FA

Setting
Conduct assessment in natural settings
- Home (Wacker et al., 2004)
- School (Barretto et al., 2007)
- Vocational (Cihak et al., 2007)

Involve significant others, such as teachers & caregivers (Barretto et al., 2007; Wacker et al., 2004)

Procedural considerations
Generally speaking, target behavior that occurs more frequently (vs low-frequency) may be better suited to a brief format

One challenge to a brief format is the potential for “false-negative” - a failure to identify maintaining variables - either due to non-occurrence or low levels of target behavior during assessment.
Non-occurrence:
• If behavior is not observed during a series of 5-min
  sessions, running a series of 10-minute conditions may
  increase exposure to contingencies in each condition

Low-levels:
• A pair-wise assessment that stagger a test condition
  with a control (e.g., attention ≠ play, attention ≠ play)
• When low-levels are observed, a minute-by-minute
  analysis may help detect meaningful changes (e.g.,
  increased behavior at end of condition)

Wrap up
Questions
Generalization?
Social Validity forms (to be mailed)
Have a great summer!
Appendix I

Pre- & Post-Test
Pre-test

Name ____________________________ Date ____________________________

The following graphs represent data collected during brief functional analyses published in peer-reviewed journals. Within each graph, those conditions tested are either labeled individually or reported in a legend. Each data point represents the occurrence of target behavior observed during the respective condition.

Directions: Given a graph & list of behavioral functions, you will visually analyze assessment data & identify the function of behavior by circling the corresponding letter (e.g., circle “(a)” to identify behavior maintained by attention; circle “(b)” to identify behavior maintained by escape, etc).

DAVID A. WILDER et al.

1. Based upon data presented, behavior is likely maintained by:
   (a) attention
   (b) escape
   (c) automatic reinforcement
   (d) tangible reinforcement
   (e) attention & escape
   (f) attention & automatic reinforcement
   (g) attention & tangible reinforcement
   (h) escape & automatic reinforcement
   (i) escape & tangible reinforcement
   (j) tangible & automatic reinforcement
   (k) attention, tangible reinforcement, & escape

2. Based upon data presented, behavior is likely maintained by:
   (a) attention
   (b) escape
   (c) automatic reinforcement
   (d) tangible reinforcement
   (e) attention & escape
   (f) attention & automatic reinforcement
   (g) attention & tangible reinforcement
   (h) escape & automatic reinforcement
   (i) escape & tangible reinforcement
   (j) tangible & automatic reinforcement
   (k) attention, tangible reinforcement, & escape

1
3). Based upon data presented, behavior is likely maintained by:

(a) attention  
(b) escape  
(c) automatic reinforcement  
(d) tangible reinforcement  
(e) attention & escape  
(f) attention & automatic reinforcement  

(g) attention & tangible reinforcement  
(h) escape & automatic reinforcement  
(i) escape & tangible reinforcement  
(j) tangible & automatic reinforcement  
(k) attention, tangible reinforcement, & escape

4). Based upon data presented, behavior is likely maintained by:

(a) attention  
(b) escape  
(c) automatic reinforcement  
(d) tangible reinforcement  
(e) attention & escape  
(f) attention & automatic reinforcement  

(g) attention & tangible reinforcement  
(h) escape & automatic reinforcement  
(i) escape & tangible reinforcement  
(j) tangible & automatic reinforcement  
(k) attention, tangible reinforcement, & escape
5). Based upon data presented, behavior is likely maintained by:

(a) attention
(b) escape
(c) automatic reinforcement
(d) tangible reinforcement
(e) attention & escape
(f) attention & automatic reinforcement

(g) attention & tangible reinforcement
(h) escape & automatic reinforcement
(i) escape & tangible reinforcement
(j) tangible & automatic reinforcement
(k) attention, tangible reinforcement, & escape

6). Based upon data presented, behavior is likely maintained by:

(a) attention
(b) escape
(c) automatic reinforcement
(d) tangible reinforcement
(e) attention & escape
(f) attention & automatic reinforcement

(g) attention & tangible reinforcement
(h) escape & automatic reinforcement
(i) escape & tangible reinforcement
(j) tangible & automatic reinforcement
(k) attention, tangible reinforcement, & escape
7). Based upon data presented, behavior is likely maintained by:

(a) attention
(b) escape
(c) automatic reinforcement
(d) tangible reinforcement
(e) attention & escape
(f) attention & automatic reinforcement

(g) attention & tangible reinforcement
(h) escape & automatic reinforcement
(i) escape & tangible reinforcement
(j) tangible & automatic reinforcement
(k) attention, tangible reinforcement, & escape

8). Based upon data presented, behavior is likely maintained by:

(a) attention
(b) escape
(c) automatic reinforcement
(d) tangible reinforcement
(e) attention & escape
(f) attention & automatic reinforcement

(g) attention & tangible reinforcement
(h) escape & automatic reinforcement
(i) escape & tangible reinforcement
(j) tangible & automatic reinforcement
(k) attention, tangible reinforcement, & escape
7). Based upon data presented, behavior is likely maintained by:

(a) attention
(b) escape
(c) automatic reinforcement
(d) tangible reinforcement
(e) attention & escape
(f) attention & automatic reinforcement

(g) attention & tangible reinforcement
(h) escape & automatic reinforcement
(i) escape & tangible reinforcement
(j) tangible & automatic reinforcement
(k) attention, tangible reinforcement, & escape

8). Based upon data presented, behavior is likely maintained by:

(a) attention
(b) escape
(c) automatic reinforcement
(d) tangible reinforcement
(e) attention & escape
(f) attention & automatic reinforcement

(g) attention & tangible reinforcement
(h) escape & automatic reinforcement
(i) escape & tangible reinforcement
(j) tangible & automatic reinforcement
(k) attention, tangible reinforcement, & escape
9). Based upon data presented, behavior is likely maintained by:

(a) attention  
(b) escape  
(c) automatic reinforcement  
(d) tangible reinforcement  
(e) attention & escape  
(f) attention & automatic reinforcement  
(g) attention & tangible reinforcement  
(h) escape & automatic reinforcement  
(i) escape & tangible reinforcement  
(j) tangible & automatic reinforcement  
(k) attention, tangible reinforcement, & escape

10). Based upon data presented, behavior is likely maintained by:

(a) attention  
(b) escape  
(c) automatic reinforcement  
(d) tangible reinforcement  
(e) attention & escape  
(f) attention & automatic reinforcement  
(g) attention & tangible reinforcement  
(h) escape & automatic reinforcement  
(i) escape & tangible reinforcement  
(j) tangible & automatic reinforcement  
(k) attention, tangible reinforcement, & escape
11). Based upon data presented, behavior is likely maintained by:

(a) attention  (g) attention & tangible reinforcement
(b) escape  (h) escape & automatic reinforcement
(c) automatic reinforcement  (i) escape & tangible reinforcement
(d) tangible reinforcement  (j) tangible & automatic reinforcement
(e) attention & escape  (k) attention, tangible reinforcement, & escape
(f) attention & automatic reinforcement

12). Based upon data presented, behavior is likely maintained by:

(a) attention  (g) attention & tangible reinforcement
(b) escape  (h) escape & automatic reinforcement
(c) automatic reinforcement  (i) escape & tangible reinforcement
(d) tangible reinforcement  (j) tangible & automatic reinforcement
(e) attention & escape  (k) attention, tangible reinforcement, & escape
(f) attention & automatic reinforcement
Pre-test

Directions: Given a challenging behavior & the hypothesized behavioral function, you will describe (in one or two sentences) a function-based intervention that includes: 1) an alternative behavior, and 2) the selected reinforcer (e.g., “When Jonny ________ he will receive ___________”).

1. When relaxing in the recreational room at his group home, Bob engages in inappropriate touching (e.g., touching female residents) which is maintained by attention from the supervisor (e.g., verbal reprimands).

2. When working in the sheltered workshop, Jane engages in property destruction (e.g., ripping papers, throwing task bins) which is maintained by escape (e.g., sent to the break room by vocational coach).

3. When the class sits down to lunch in the cafeteria, Sara engages in aggression towards peers (e.g., hitting her neighbor at the lunch table) which is maintained by escape & access to tangibles (e.g., lunch monitor send her to gymnasium stage where the game equipment is located).

4. When she enters the group room at her after-school care provider, Jamie engages in Pica (a self-injurious behavior defined as consumption of non-food items) which is maintained by automatic reinforcement.

5. When playing with his brother, Sam engages in aggression (e.g., spits and screams) which is maintained by access to tangible reinforcement (e.g., his brother’s toy).
Appendix J

Key
Brief FA References (with assessment & intervention data)


ELIZABETH A. LYONS et al.


Brief FA References (with assessment & intervention data)

DAVID A. WILDER et al.

Appendix K

Social Validity
1. After training, I feel comfortable implementing procedures of a Brief Functional Analysis.

   strongly agree  agree  neutral  disagree  strongly disagree

2. After training, I feel more equipped with the knowledge & assessment tools to understand the function of challenging behavior.

   strongly agree  agree  neutral  disagree  strongly disagree

3. Skills gained during training are beneficial to my professional development and/or direct work with future clients.

   strongly agree  agree  neutral  disagree  strongly disagree

4. What components of the training package did you find most helpful in learning how to conduct & understand the assessment? Please circle all that apply, and include any comments:

   Video clips
   Power Point Presentation
   Hand out materials
   Quiz
   Role Play Sessions
   Video Feedback
   Data analysis
   Discussions

5. I would recommend this training to future professionals serving individuals with disabilities.

   strongly agree  agree  neutral  disagree  strongly disagree

Comments:
_____________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

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