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Training Board Certified Behavior Analysts via Telehealth to Conduct the Trial-Based Functional Analysis

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Training Board Certified Behavior Analysts via Telehealth to Conduct the Trial-Based Functional Analysis

by

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of the requirements for the degree of
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DEDICATION

This work is dedicated to my family. Mom and Dad, thank you for instilling a love for learning into me and for always encouraging me in all my endeavors. I love you both, and I hope I've made you proud! Obviously, I'll only respond to "Dr." from this day forward.

Ava and Max, thank you both for your unconditional love and patience. Having a mom in school isn't always fun, but I hope I've shown you that hard work pays off! I love you both to the moon and back!

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ABSTRACT

Although many behavior analysts recognize the value of conducting a functional analysis (FA), some report being hesitant to conduct the assessment (Oliver et al., 2015). Two potential barriers to conducting FAs include setting limitations (Roscoe et al., 2015) and lack of trained staff (Deochand et al., 2020). Researchers have addressed these limitations by developing variations of the traditional FA and demonstrating that those procedures could be taught across various populations. Perhaps the issue related to training has less to do with the ability to train FA procedures, and more to do with the accessibility of such trainings. Study 1 addressed these limitations by demonstrating that Board Certified Behavior Analysts (BCBAs) could be taught trial-based FA procedures through a remotely delivered video modeling intervention. Study 2 evaluated the generalization of these skills to the natural environment by having the BCBAs conduct the assessment with a client. Furthermore, maintenance of the procedures was demonstrated through role play with the researcher four weeks following the final FA session.

CHAPTER ONE:

INTRODUCTION

Individuals diagnosed with an intellectual or developmental disability are more likely than their typically developing peers to engage in problem behavior (Emerson et al., 2001). Commonly reported problem behaviors include self-injury, aggression (Kanne & Mazurek, 2011; Mason & Cervantes, 2014), and tantrums (Goldin et al., 2013). Engaging in such behavior may lead to peer and teacher rejection (Wood et al., 2002), high-risk violent behavior (Tremblay et al., 2004), and academic underachievement (Hinshaw, 1992). Understanding problem behavior's maintaining contingencies helps us to address it. Although correlational information about the environmental events that are contiguous to problem behavior can be informative, demonstration of experimental control over behavior (i.e., reliably setting up conditions that produce and maintain it) is the only way to confirm function (Ghaemmaghami et al., 2015). Knowing specific information about the maintaining variables allows for the efficient design of targeted function-based interventions. Implementing function-based interventions greatly improves the effectiveness of treatment related to severe problem behavior (Hurl et al., 2016; Jeong & Copeland, 2019).

Functional Analysis

The term functional analysis (FA) was first introduced by Skinner as a means to establish the experimental variables of which behavior is a function (Skinner, 1953). The broad goals, according to Skinner, include predicting and controlling behavior and establishing the "cause-

and-effect" relation between the independent and dependent variables. The "cause-and-effect", or functional relationship, is established empirically through observation and manipulation of observable events. Identifying the function of behavior provides researchers with a considerable advantage in manipulating the environment to change behavior (Pelios et al., 1999).

In the 1960's and 70's researchers reported systematically manipulating environmental variables to evaluate their influence on problem behavior (Berkson & Mason, 1963; Carr et al., 1976; Lovaas et al., 1965). However, Iwata et al. (1982/1994) advanced the field of behavior analysis by designing what would eventually be considered the "gold standard" assessment for determining the function of problem behavior (Beavers et al., 2013; Hanley et al., 2003). Researchers repeatedly exposed nine participants to four experimental conditions (i.e., academic demand, social disapproval, being alone, and unstructured play). Results demonstrated clear patterns of responding, dependent on specific stimulus conditions for six of the nine participants, and undifferentiated results for the other three participants. Even though self-injurious behavior was targeted for all subjects, patterns of responding were idiosyncratic. Results from this study provided an early indication of FA's generality. That is, FA showed that one can determine the function of behavior on an individual level. Understanding the variables that maintain problem behavior is critical to developing function-based interventions.

Limitations of Functional Analysis

Surveys conducted by Roscoe et al. (2013) and Oliver et al. (2015) reported that clinicians are more likely to rely on a combination of indirect assessments and observations than to conduct an FA. This finding is understandable, given that a survey conducted by Colombo et al. (2021) found that only 35.2% of the BCBAs and BCBA-Ds they surveyed received training related to FA more than once. However, relying on indirect assessments and observations is

troublesome when it comes to severe problem behavior because indirect assessments are "notoriously unreliable" (Hanley, 2012). This is especially true of close-ended indirect assessments such as the Motivation Assessment Scale and the Questions about Behavior Function interview tool (Hanley, 2010). In fact, research indicates that when two caregivers complete such assessments for the same individual, they often yield different results (Hanley, 2010; Iwata et al., 2013). Data collected during descriptive assessments are useful for informing an FA, they are not necessarily valid for determining function (St. Peter et al., 2005; Thompson & Iwata, 2007).

Although there is an abundance of research supporting the use of FAs to develop function-based treatments to reduce problem behavior (Carr & Durand, 1985; Ingram et al., 2005; Iwata et al., 1994; Meyer, 1999; Newcomber & Lewis, 2004; Taylor & Miller, 1997), the original model of the FA had limitations hindering it from being widely applied in all environments. Some clinicians report being hesitant to conduct FAs due to these limitations (Oliver et al., 2015). Some limitations may include risk to the client (Oliver et al., 2015), lack of trained staff (Desrochers et al., 1997), time constraints, and setting limitations (Hanley, 2010).

Addressing Functional Analysis Limitations

Researchers have addressed limitations surrounding client risk, time constraints, and environmental settings by developing variations and extensions of the session-based FA.

Risk to Client

Concerns related to client risk are valid and should be taken into consideration. Clinicians who are navigating safety concerns should consider conducting a risk-benefit analysis to determine if benefits outweigh the risks associated with conducting an FA. Deochand et al. (2020) developed an interactive FA risk assessment tool that not only assesses risk, but also

offers suggestions to mitigate such risks. Clinicians should also consider the dimensions of the target behavior when determining the most appropriate FA. For example, if the target behavior is severe and the frequency of the behavior is a concern, the latency-based FA could be an ideal option, as individual sessions are terminated immediately after target behavior occurs (Thomason-Sassi et al., 2011). If the behavior is so severe that it may cause tissue damage conducting a precursor FA may be more appropriate option (Najdowski et al., 2008; Smith & Churchhill, 2002). Researchers have found that outcomes from precursor FAs may be used to effectively infer function of more severe behavior that occurs later in the behavior response-class hierarchy (Herscovitch et al., 2009).

Some individuals have expressed concerns related to reinforcing problem behavior within the FA context for fear that this could lead to increases in problem behavior in the natural environment (Carr, 1977; Hastings & Noon, 2005; Lovaas & Simmons, 1969; Stichter, 2001). Although this concern is well documented, there doesn't seem to be strong evidence to support it as a valid reason for not conducting an FA. In fact, Shabani et al. (2013) evaluated this concern by conducting pre-FA and post-FA descriptive analyses observations in the natural environment. They reported no differences in post-FA behavior compared to pre-FA observations for three subjects, and data for the fourth being equivocal. John et al. (2019) also evaluated this concern by extending the findings of Shabani et al. to not only consider behavior immediately before and after an FA session, but also the weeks prior-to and after the completion of an FA. John et al. reported that problem behavior either decreased for some subjects during observations immediately following an FA session or remained stable to what was observed in observations immediately before an FA session. Furthermore, John et al. found that problem behavior did not

increase for any of the five subjects over time. That is, problem behavior rates were the same the week following the assessment as it was to the week prior-to the assessment.

Lack of Trained Staff

Another limitation for conducting FAs could be a lack of adequately trained staff (Crawford et al., 1992; Durand & Crimmins, 1988, Sturmey, 1994). Deochand et al. (2020) surveyed BCBA and BCBA-D's and found that of those who participated, 87.2% indicated that they lacked the prerequisite skills needed to implement FA procedures. However, researchers have demonstrated that individuals with varying backgrounds can be effectively trained to implement FA procedures (e.g., Kodak et al, 2013; Moore et al., 2002; Phillips & Mudford, 2008; Wallace et al., 2004). For example, Iwata et al. (2000) demonstrated that undergraduate students could be taught to implement common analysis conditions in less than 2 hr and Bloom et al. (2013) trained special education teachers to effectively implement the trial-based FA with high treatment fidelity. Additionally, Germansky et al. (2020) conducted a review of 36 studies demonstrating that caregivers could also implement FA procedures with high fidelity.

Perhaps, the issue related to training has less to do with the ability to train FA procedures, and more to do with the accessibility of such trainings. A survey conducted by Colombo et al. (2021) reported that only 35.2% of their respondents received training related to FA more than once. Furthermore, studies that have reported successful outcome in reference to training FA procedures typically involve the procedures being modeled, and some sort of active learning component (e.g., roleplays, feedback, or both; Iwata et al., 2000; Lambert et al., 2014; Moore et al., 2002; Pauline et al., 2020; Phillips & Mudford, 2008, Wallace et al., 2004). Yet, trainings that BCBAs typically attend are often continuing education events held in the form of a webinar, conference symposium or brief workshop, which may have little opportunities for individualized

feedback or active learning components. Even though the BCBA may gain accurate verbal behavior about how to conduct FAs during such trainings, they may not have experience practicing the skills, which may make them less likely to implement procedures independently. There is ample behavioral research to support interventions that involve active learning components such as roleplays (Nuernberger et al., 2013), feedback (Roscoe et al., 2013), and in-situ training (Miltenberger et al., 2005). However, providing trainings of this nature in person may be costly and resource intensive (Strother, 2002). One way to address these barriers may be to implement high-quality training via telehealth that involves active learning components. Delivering quality trainings via telehealth may increase accessibility, and be more cost efficient (Morrison et al., 2001).

Telehealth can best be described as using telecommunication to provide access to education, consultation, and services related to health or behavioral health (Nickelson, 1998). Multiple studies have analyzed the effectiveness of training caregivers and staff behavioral techniques through telehealth (Tomlinson et al., 2018; Unholz-Bowden et al., 2020). For example, Wacker et al. (2013) trained 20 parents with no previous experience in applied behavior analysis to successfully conduct FAs. Treatment integrity averaged over 90% across parents, and functions were determined for 18 of the 19 participants. These results suggest that parents can be effectively trained to implement assessment procedures via telehealth. Similarly, Suess et al. (2014) trained three parents to conduct FA procedures, and then trained them how to implement an FCT procedure with their child. Results from this study showed that all caregivers implemented the assessment and intervention with acceptable fidelity, and that all children showed a substantial reduction in problem behavior. Hay-Hansson and Eldevik (2013) trained two groups of school staff to implement discrete trial teaching with children with ASD. One

group of staff received in-person training, and the other group was trained via telehealth. Hay-Hansson and Edevik reported no significant differences between the groups, and that both groups improved significantly post-training. Alnemary et al. (2015) successfully trained four special education teachers to implement FA procedures from across the world. The special education teachers were in Saudi Arabia and did not have previous experience with functional behavior assessments. The researchers conducted telehealth sessions from California via Skpye. The teachers were trained in a group format that included roleplays, video models, and feedback. The results from this study showed that all participants mastered at least two conditions, and one mastered all four. Unfortunately, the study was conducted at the end of a school year and the researchers did not have time to continue working with the teachers. However, the teacher who met mastery did show generalization of the procedures by conducting a series of conditions with a student who engaged in problem behavior. The teachers who participated in this study reported learning useful skills and that they would recommend telehealth training to their colleagues. These examples provide support for the use of telehealth in the field of ABA to train behavior-change agents to conduct procedures with high treatment fidelity.

Time Constraints and Environmental Settings

The session-based FA described by Iwata et al. (1994) may be considered a time-consuming assessment in comparison to a one-page questionnaire. Iwata et al. summarized data for 152 FAs and reported the average time to complete those assessments was 6.5 hrs. To address time constraints, Northup et al. (1991) developed the brief FA. Northup et al. reduced the assessment time to 90 min. This assessment consisted of 5- to 10-min sessions. Results from Northup et al. demonstrated that the 90-min assessment effectively identified contingencies maintaining problem behavior. However, it should be noted that Derby et al. (1992) conducted

the brief FA with 79 participants and found that only 63% of the participants engaged in problem behavior during the assessment. Although the researchers were able to determine function for most participants who engaged in problem behavior during the assessment, the brief-FA may be best suited for those who engage in high-frequency behavior.

Yet, another commonly reported barrier to conducting FAs is not having access to a space where environmental variables can be appropriately controlled. In situations where setting limitations are of concern the trial-based FA may be an appropriate assessment (Iwata & Dozier, 2008). The trial-based FA is performed in discrete trials, manipulating the antecedent and consequent events to identify contingencies that maintain the target behavior (Bloom et al., 2011; LaRue et al., 2010). Each trial is marked with the occurrence or nonoccurrence of problem behavior, and the session is terminated upon the occurrence of the target behavior. Sigafoos and Saggers (1995) originally designed this assessment to be conducted in the classroom environment. The Bloom et al. (2011) version was comprised of 20 trials per condition, with each trial consisting of three 2-min segments.[1] Both LaRue et al. (2010) and Bloom et al. (2011) reported good correspondence between the traditional FA and the trial-based FA. Of the five participants in LaRue et al., exact correspondence was reported for four, and partial correspondence for one. Bloom et al. (2011) reported exact correspondence for six of their ten participants, and partial correspondence for one. Although the trial-based FA may address some of the limitations of the traditional FA, this assessment variation is not necessarily faster. Bloom et al. (2011) reported that the trial-based FA took four to six calendar days to complete because trials were embedded into the participants regularly scheduled school activities. Additionally,

[1] It should be noted that Bloom et al. (2011) included two test conditions to examine the effect of the test and control sequence, not because two test segments were recommended.

with 20 trials per condition and 6-min trials, the average time to conduct the assessment was 4 hr and 31 min. So, although the typical duration of the trial-based FA is shorter in comparison to the session-based FA, it still requires several calendar days to conduct. It should also be noted that although Bloom et al. (2011) included 20 trials per condition, with each trial consisting of three 2-min segments, the researchers suggested that fewer trials and segments would likely yield similar results and shorten the assessment duration.

Bloom et al. (2013) reduced the number of trials to ten per condition and trial duration to 4 min (two 2-min segments) and demonstrated that effective function-based interventions could be developed based upon the shorter assessment. However, as a reminder, correspondence between the traditional FA and the trial-based FA was not perfect. This may be because the trial-based FA relies on antecedent control, as there is only one opportunity to contact the consequence before the trial ends while the traditional FA relies on antecedent and consequent control as subjects have multiple opportunities during each session to encounter the contingencies. So, although the Bloom et al. (2013) trial-based FA may be an ideal option when assessments must be conducted in the classroom environment, a different approach may be better in controlled settings when discriminative stimuli can be incorporated, and trials can be conducted in specific sequences allowing for an increase in stimulus control. Gonzalez et al. (2018) designed a trial-based FA model that may be more appropriate for those with access to a more controlled environment.

Gonzalez et al. (2018) compared the trial-based FA (using a modified structure) and session-based FA conducted in controlled settings to determine if one approach was more efficient than the other. Gonzalez et al. modified the trial-based FA procedures (Bloom et al., 2013) by conducting the trials in blocks. Three blocks of each condition were conducted. Each

block consisted of three trials, with each trial consisting of two 2-min segments (i.e., control and test, or two test segments for the ignore condition). Conducting the trials in blocks allowed for both antecedents and consequences to influence behavior, therefore drawing on the strength of the session-based FA while minimizing the occurrence of problem behavior. The researchers also conducted the assessment in a controlled setting and wore different colored shirts during each condition to increase the likelihood of stimulus control (Conners et al., 2000). The researchers reported that the trial-based FA was more efficient in identifying the function of problem behavior than the session-based FA. In fact, the trial-based FAs were completed in 32.8% less assessment time, 22.22% less meeting days, and 15.38% less calendar days than the session-based FAs. The average time spent in assessment for the trial-based FA was 99 min, and 199 min for the session-based FA. Additionally, overall correspondence was 85% and individual function correspondence was 90%. This was a substantial increase from Bloom et al. (2011), when trials were embedded into the participant's regularly scheduled school activities.

As previously stated, the traditional format of the trial-based FA (Bloom et al., 2013) may be the most appropriate assessment for naturalistic or classroom environments. However, given the high correspondence results reported between the session-based FA and the trial-based FA (Gonzalez et al., 2018), along with the promising decrease in assessment time this modified structure may be a more appropriate to train clinicians who have access to a controlled setting.

Therefore, the purpose of this study was twofold. The purpose of Study 1 was to demonstrate that BCBAs could be trained to conduct trial-based FA procedures effectively with a remotely delivered video modeling intervention. The purpose of Study 2 was to evaluate if the skills learned in Study 1 would generalize to the natural environment by having the BCBAs conduct the assessment with a client who engaged in problem behavior

CHAPTER 2:

METHOD: STUDY 1

Subjects and Setting

Six BCBAs were recruited to participate in Study 1 (see Table 1). Meg was a 25-year-old white woman who resided in Florida and had been a BCBA for 2 years. Jo as a 29-year-old white woman who resided in Florida and had been a BCBA for 5 years. Beth was a 27-year-old woman female who resided in Illinois and had been a BCBA for 4 years. Amy was a 32-year-old Hispanic woman who resided in Colorado and had been a BCBA for 3.5 years. Hannah was a 30-year-old Hispanic woman who resided in California and had been a BCBA for 4 years. Grace was a 36-year-old white woman who had been a BCBA for 9 years. Except for Jo, all BCBAs provided services in the clinic and home settings. Jo provided services at an inpatient facility for individuals diagnosed with an intellectual or developmental disability. Participants were recruited from ABA clinics across the United States through flyers. Inclusionary criteria included currently providing behavior analytic services to a client who engaged in problem behavior, holding BCBA credential, and not having experience implementing trial-based FA procedures or collecting data during a trial-based FA. Sessions were conducted using the virtual platform, Microsoft Teams® and were recorded.

Materials

Materials for Study 1 included questionnaires, video models, and an electronic device that transmitted video and audio (e.g., laptop) to conduct telehealth sessions with the researcher.

Additionally, all participants were mailed a package that contained data sheets, a timer, writing utensil, playdoh, a toy car, and four colored t-shirts (i.e., yellow, red, blue, green).

Questionnaires

Prior to participating, subjects were asked to complete an informational questionnaire (Appendix A). Additionally, potential subjects were asked to complete a pre-screening questionnaire describing their experience with the trial-based FA procedures (Appendix B). If a potential subject would have indicated either serving as a therapist or collecting data during a trial-based FA, they would have been excluded from the study. However, none of the subjects recruited had these experiences (see Table 2).

Anonymous social validity data were collected throughout this study using. The BCBAs were emailed a Qualtrics link and asked to complete the surveys electronically. An initial social validity questionnaire in reference to conducting FAs was implemented prior to Study 1 (Appendix C) and then an additional questionnaire (Appendix D) was implemented after Study 1 in reference to our specific intervention. See Tables 3 and 4 for a summary of these results.

Scripts and Data Sheets

Scripts from Kunnavatana et al. (2013) were modified and used by the researcher during roleplays with the participants to ensure consistency across roleplays (see Appendix E). Modifications to the scripts included varying the topography of the target behavior (i.e., tearing paper, self-biting, banging on table, hand-to-head, banging on table, elopement, name calling, and screaming) as well as the time (20 – 115 s) in which the target behavior occurred across trials and conditions. Prior to each research session, the researcher used an online electronic generator (i.e., random.org) to determine which problem behaviors to engage in and at what points during each segment.

Task analyses for each condition were used to assess the procedural fidelity of the BCBAs' FA implementation (see Appendix F). Each task analysis included both the test and control segments for the conditions. Data sheets were provided for the BCBAs to record trial data during baseline, video modeling (Appendix G) and the block structure phase (Appendix H).

Video Models

The video models were brief (6 min or less per condition) and depicted a therapist correctly implementing each condition. Models in each video included an adult who played the part of a therapist and a child who played the part of a client who engaged in problem behavior. Each video showed the therapist correctly completing each step in the task analyses described above for one of the four conditions. They also displayed on-screen descriptions of the correct behaviors as well as a label depicting the control and test segments.

Response Measurement

The dependent variable was the BCBA's treatment integrity presented as percentage of steps performed correctly during each type of trial (i.e., ignore, attention, tangible, escape) of the trial-based FA. For each trial, we recorded whether each step in the task analysis was performed correctly or incorrectly. The percent of correct steps was calculated by dividing the number of correct steps by the total number of steps in each condition and multiplying the score by 100.

Assessing Reliability of the Observation System

A BCBA-D trained in the trial-based FA procedures collected data for 34% of trials for Meg, 40% for Jo, 37% for Beth, 36% for Amy, 38% for Hannah, and 40% for Grace across phases and conditions to assess interobserver agreement (IOA) as a proxy for reliability of the data observation system. An agreement was defined as both observers agreeing on whether a step on the procedural fidelity checklist was performed correctly or incorrectly. A disagreement was

defined as the observers disagreeing on whether a step on the procedural fidelity checklist was performed correctly or incorrectly. Total count IOA was calculated by dividing the total number of agreements by the total number of agreements plus disagreements; the score was then multiplied by 100. See Table 5 for a summary of Study 1 IOA results.

Additionally, the same BCBA-D collected data on the researcher's treatment integrity using a fidelity checklist (Appendix I) for 34% of Meg's sessions, 40% of Jo's sessions, 37% of Beth's sessions, 36% of Amy's sessions, 38% of Hannah's sessions, and 40% of Grace's sessions across conditions and phases. The researcher implemented the procedures with 100% fidelity.

Experimental Design

A multiple baseline across subjects was to train the BCBAs via telehealth to conduct the trial-based FA using video modeling.

Procedures

Trial-Based Functional Analysis

All participants were taught to conduct the ignore, attention, tangible, and escape conditions of the trial-based FA as described in Bloom et al. (2011). Each condition of the trial-based FA was divided into two segments (i.e., control and test, or two tests for the ignore condition). The control segment was conducted first, followed by a test segment for all conditions (except ignore). Attention, tangible, and escape segments could last up to 2 min if problem behavior does not occur, however they may be much shorter, as they are terminated contingent on the occurrence of the target behavior. Each ignore segment lasted 2 min regardless of whether the target behavior occurred or not. The BCBA was responsible for selecting the appropriate materials for each trial, conducting the procedures, and collecting data.

Ignore. The ignore trials consisted of two 2 min test segments. The BCBA was expected not to provide any consequences or attention for any behavior, and to restrict access to any leisure items. Each test segment ended after 2 min elapsed.

Attention. During the control segment, the BCBA was expected to provide the client with a moderately preferred item and engage in reciprocal play. The BCBA was expected to provide continuous attention in the form of verbal statements (e.g., "I have a toy like this at my house") and respond to any questions. Additionally, the BCBA was expected to avoid placing demands, including asking questions. The BCBA was expected to move to the test segment if the client engaged in the target behavior or when 2 min elapsed. At the beginning of the test segment, the BCBA was expected to tell the client that she had work to do and remove attention and turning away. The BCBA was expected to ignore any attempts from the client to regain attention unless the client engaged in the target problem behavior. If the client engaged in the target problem behavior, the BCBA was expected to provide attention in the form of a mild reprimand (e.g., "Don't do that!") and end the trial. If the target behavior did not occur, the BCBA was expected to end the segment once 2 min elapsed.

Tangible. Throughout the tangible trial, the BCBA was expected to provide attention every 30 s and respond to any conversation initiated by the client. At the start of the control trial, the BCBA was expected to provide the client with a highly preferred item. The BCBA was expected to move to the test segment if the client engaged in the target behavior or when 2 min elapsed. At the beginning of the test segment, the BCBA was expected to take the highly preferred item from the client and place it so it was visible, but not accessible, to the client. The BCBA was expected to ignore any requests for the item and any non-target problem behavior. Contingent on the target behavior, the BCBA was expected to provide access to the preferred

item and immediately end the trial. If the target behavior did not occur, the BCBA was expected to end the segment once 2 min elapsed.

Escape. During the escape trial, the BCBA was expected to restrict access to any leisure items. During the control segment the BCBA was expected to refrain from placing demands. They were expected to refrain from initiating any conversation but acknowledge any questions or comments the client initiated. The BCBA was expected to move to the test segment if the client engaged in the target behavior or when 2 min elapsed. At the beginning of the test segment, the BCBA was expected to present task demands (e.g., touch your head"). The BCBA was expected to use a three-step prompt hierarchy of verbal, model, and physical prompts to gain compliance with the task. The BCBA was expected to ignore any non-target behavior. Contingent on the target behavior, the BCBA was expected to remove the task by stating "You don't have to" before ending the trial. If the target behavior did not occur, the BCBA was expected to end the segment once 2 min elapsed.

Experimental Phases

Baseline

The participating BCBAs were emailed Bloom et al. (2011) 48 hr before their first baseline session. The BCBAs received 5 min before each baseline session to review the procedures. If the BCBA asked the researchers any questions, the researcher directed the BCBA to the article and informed the BCBA that they could not answer any questions about the procedures. A minimum of three series (i.e., ignore, attention, tangible, escape) of conditions were conducted per BCBA.

Video Modeling

During the video modeling phase, the BCBAs were shown brief (6 min or less) condition-specific videos. The BCBAs were permitted to rewind, pause, and re-watch the videos as they wished. After viewing each condition-specific video, the BCBAs were asked to demonstrate the procedures with a researcher acting as a client using the roleplay scripts. The BCBAs did not receive feedback on their performance in these roleplays. If they asked questions, the researcher directed them to the video model. Each trial in the roleplay was scored as a separate session. A minimum of three series of conditions (i.e., ignore, attention, tangible, escape) were conducted. A condition was considered mastered when the BCBA conducted the condition with 100% treatment integrity across three consecutive sessions.

Block Structure Training

Once mastery was met across conditions, the block structure was taught using a didactic training and the same video models from the video modeling phase. The didactic presentation was a brief PowerPoint that included instructions for how to implement the trial-based FA procedures using the block structure and the rationale for the block structure. After the didactic presentation, the BCBAs viewed the condition-specific video model. The BCBAs were permitted to pause and rewind if they choose to. If the BCBAs asked questions regarding the FA procedures or the block structure, they were redirected to the presentation and video model. Each block consisted of three trials of a singular condition. For example, during the attention block, the attention trial was conducted three times in a row before moving onto the next condition block. Blocks were conducted in the same fixed sequence used during the video modeling phase (ignore, attention, tangible, escape). The didactic training and video model were presented prior to the block, rather than before each trial. After the presentation, the blocks were roleplayed just

as they were in baseline and video modeling phases with the researcher. The condition-specific script was read before each block, not between individual trials. Thus, the BCBAs were expected to watch the presentation and corresponding video model, listen to the script, gather the appropriate materials, collect data, and conduct entire block without breaks in between the trials. Data were collected until the BCBA conducted each condition block with 100% fidelity.

Table 1. Participant (BCBAs) Information.

BCBA	Age	Sex	Ethnicity/Race	Years Credentialed	Years in ABA	Location
Meg	25	Female	White	2	7.5	Florida
Jo	29	Female	White	5	8	Florida
Beth	27	Female	White	4	6	Illinois
Amy	32	Female	Hispanic	3.5	8	Colorado
Hannah	30	Female	Hispanic	4	6	California
Grace	36	Female	White	9	11	Virginia

Table 2. Study 1 Participant (BCBA) Pre-Screening Questionnaire.

	Participant					
	Meg	Jo	Beth	Amy	Hannah	Grace
Have you read Toward a Functional Analysis of Self-Injury by Iwata et al. (1982/1994)?	Yes	Yes	Yes	Yes	Yes	Yes
Have you attended a lecture or information session on functional analysis?	Yes	Yes	Yes	Yes	Yes	Yes
Have you observed a functional analysis?	Yes	Yes	Yes	No	No	Yes
Have you taken data during a functional analysis?	Yes	Yes	No	No	No	Yes
Have you ever served as a therapist in a functional analysis?	Yes	Yes	No	No	No	Yes
Are you familiar with trial-based functional analysis procedures?	No	No	No	No	No	No
Have you read A Discrete-trial Approach to the Functional Analysis of Aggressive Behavior in Two Boys with Autism by Sigafoos and Saggers (1995)?	No	No	No	No	No	No
Have you read Classroom Application of a Trial-based Functional Analysis by Bloom et al. (2011)?	No	No	No	No	No	No
Have you read any other literature on trial-based functional analyses?	No	No	No	No	No	No

Table 2 (continued) Study 1 Participant (BCBA) Pre-Screening Questionnaire

Have you observed a trial-based functional analysis?	No	No	No	No	No	No
Have you taken data during a trial-based functional analysis?	No	No	No	No	No	No
Have you served as a therapist in a trial-based functional analysis?	No	No	No	No	No	No

Table 3. Pre-Study FA Social Validity

Survey Question	Number of Responses				
	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I believe that conducting an FA is the most effective way to determine the function of behavior					6
I believe that indirect assessments, such as interview tools (e.g., FAST) are just as helpful as FA at determining the function of behavior	2	4			
I believe that direct assessments, such as observations are just as helpful as FA at determining the function of behavior			1	4	1
I believe FAs should be conducted when behavior is severe				3	3
I am confident in my abilities to conduct FA procedures independently	1	3	2		
I believe that FAs are difficult to implement				2	4
I believe FAs are too time consuming				3	3
I believe that FAs are dangerous to the client	1	1	4		

Table 4. Study 1 Social Validity

Survey Question	Number of Responses				
	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I enjoyed the use of video modeling and roleplays in this study					6
I feel as though my skills in conducting trial-based functional analysis improved by participating in this study					6
The video modeling intervention was simple to understand					6
The video modeling intervention did not take too much time				1	5
I would use trial-based functional analysis in my clinical practice					6
I would recommend using video modeling as a learning method to my colleagues					6

Table 4 (continued) Study 1 Social Validity

I enjoyed the telehealth aspect of this study	6
I am more confident in my ability to conduct a trial-based functional analysis than I was before this study	6

Table 5. Study 1 IOA Results

	Interobserver Agreement					
	Baseline		Video Modeling		Block Structure	
Subject	Mean	Range	Mean	Range	Mean	Range
Meg	95%	82 – 100%	95%	82 – 100%	97%	91 – 100%
Jo	97%	83 – 100%	98%	94 – 100%	98%	92 – 100%
Beth	96%	92 – 100%	98%	96 – 100%	97%	91 – 100%
Amy	98%	96 – 100%	97%	90 – 100%	98%	92 – 100%
Hannah	99%	97 – 100%	98%	88 – 100%	97%	91 – 100%
Grace	98%	96 – 100%	97%	94 – 100%	98%	92 – 100%

CHAPTER THREE:

METHOD: STUDY 2

Subjects and Setting

Six dyads (BCBA and a client) participated in Study 2. The BCBAs were the same individuals who participated in study 1. The BCBA conducted the trial-based FA face-to-face with one of their own clients (see Table 6) who engaged in problem behavior using the block structure described in Study 1. The BCBAs conducted the assessment in the environment where their client received ABA services. Meg was Nathaniel's supervising BCBA. Nathaniel was an 8-year-old boy diagnosed with ASD. He received services at an ABA clinic and communicated vocally using complete sentences. Jo was Fred's supervising BCBA. Fred was a 16-year-old boy diagnosed with ASD residing at an inpatient facility for individuals diagnosed with an intellectual or developmental disability. Fred communicated using short (1 – 3) word phrases vocally (e.g., "I want tablet"). Beth was Laurie's supervising BCBA. Laurie was an 11-year-old boy diagnosed with ASD. Laurie received ABA services at his home, and engaged in limited vocal communication (e.g., "no," "mine," "hug"). Amy was Ned's supervising BCBA. Ned was an 8-year-old boy diagnosed with ASD who received ABA services at his home. Ned communicated vocally, using complete sentences. Hannah was Brooke's supervising BCBA. Brooke was a 6-year-old boy diagnosed with ASD. Brooke was non-vocal and communicated using picture cards. Grace was Robert's supervising BCBA. Robert was a 7-year-old boy

diagnosed with ASD who communicated using an augmentative and alternative communication device.

The researcher attended sessions using the virtual platform Microsoft Teams®. The researcher did not intervene during the assessment, and all trial-based FA sessions were recorded for data collection purposes.

Materials

Materials for Study 2 included questionnaires, data sheets, timer, writing utensil, colored t-shirts, preference assessment handout, a highly and moderately preferred leisure item, and an electronic device that transmitted video and audio (e.g., laptop) so the researcher could observe the assessment.

Questionnaires

All client caregivers were asked to complete a demographic questionnaire (see Appendix J). In addition, the researcher conducted the functional analysis screening tool (FAST; Iwata et al., 2013) with the BCBA to identify potential topographies and intensity of the target behavior (to determine if protective equipment was required), environmental situations in which problem behavior was more likely to occur, and potential contingencies maintaining the problem behavior. Social validity data were also collected after the competition of Study 2. The BCBAs were sent a Qualtrics link via email and asked to complete two surveys anonymously. One survey was in reference to participating in the study (Appendix L), and the other was the same FA survey (Appendix C) that was completed prior to participating in the study. See Tables 7 and 8 for a summary of the results from these surveys.

Response Measurement

Data were collected on the BCBAs' treatment integrity presented as percentage of steps performed correctly during each type of trial (i.e., ignore, attention, tangible, escape). For each trial, data were collected on whether each step in the task analysis was performed correctly or incorrectly. The percent of correct steps was calculated by dividing the number of correct steps by the total number of steps in each condition and multiplying the score by 100.

Data for each client were collected on the occurrence of, and latency to the target behavior during control and test segments. Latency data were also converted to rate across trial blocks (see Equation 1; Concepcion et al., 2019). The BCBAs selected and operationally defined the behavior they would assess during the trial-based FA. Meg targeted false statements for Nathaniel. This was defined as responding to a question, or extending conversation with an untrue statement (e.g., "an alligator bit off my arm last night!"). Jo targeted a precursor to aggression for Fred, which was defined as a high-pitched vocalization. The topography of Fred's aggression was so severe that it was not safe for Jo to target aggression while implementing the assessment independently. The residential facility expressed concerns and requested that we target the high-pitched vocalization instead. The high-pitched vocalization was chosen as the precursor because Fred consistently engaged in the behavior prior to engaging in aggression. Amy targeted aggression for Laurie, which was defined as hitting, kicking, or scratching another person. Amy targeted elopement with Ned, which was defined as walking more than 36 in away from the instructional space. Hannah also targeted elopement for Brooke, which was also defined as walking 36 in from the instructional space. Grace targeted disrobement for Robert, which was defined as removing any piece of clothing.

The latencies of problem behavior in each segment (and the total duration of ignore segments) were added to determine the assessment duration for each client. The average assessment was 109 min (range, 72 – 169 min).

The BCBAs served as the primary data collectors during the trial-based FA for their client's behavior, using the same data sheets used in Study 1 during the block structure phase (Appendix H).

Assessing Reliability of the Observation System

To assess the reliability of the observation system the primary researcher collected data for 33% of generalization trials. IOA for occurrence of problem behavior was calculated by dividing the number of segments in which both the BCBA and the primary researcher agreed on the occurrence or nonoccurrence of problem behavior by the total number of segments and multiplying the result by 100%.

IOA for latency of problem behavior was calculated by dividing the latency with the shortest duration by the latency with longest duration per segment and multiplying the result by 100%.

IOA of the BCBAs' treatment integrity by the BCBA-D who assisted with IOA in Study 1 for 33% of generalization and maintenance trials across conditions using a fidelity checklist (see Appendix F). See Table 10 for a summary of the IOA and treatment integrity results for the generalization and maintenance phases.

Pre-Assessment Meeting

Prior to conducting the trial-based FA with their client, the BCBAs met with the primary researcher. The BCBAs operationally defined the behavior that would be targeted and completed the FAST (Iwata et al., 2013; see Figure 2 for results). The BCBAs were also responsible for

determining if conducting the ignore condition was clinically relevant for their client. For example, if the target behavior required the presence of another individual (e.g., aggression), the ignore condition was eliminated. The primary researcher provided all BCBAs with an multiple stimulus without replacement (MSWO; DeLeon, 1996) handout and data sheet (Appendix K) so that they could independently conduct the assessment prior to the trial-based FA. Highly preferred items were used during the tangible blocks, and moderately preferred items were used during the attention blocks.

Trial-Based FA

The BCBAs were expected to conduct the trial-based FA with a client within 30 days of training. If a BCBA was unable to conduct the assessment within 30 days, an additional training of the block structure was conducted to ensure the BCBA contacted the training within 30 days of the client assessment. This only happened for one BCBA. Jo's client resided at a residential facility and therefore, she did not have daily contact with the client's caregiver. Collecting consent took longer than anticipated, and so an additional series of block training was conducted.

The BCBAs independently conducted the trial-based FA with their own client using the block structure. The researcher attended sessions virtually on Microsoft Teams® and graphed the behavioral data in real time. After completing three blocks per condition, the researcher showed the BCBA the graphed data, and BCBA determined (through visual analysis) if there was a clear function, or if they should continue conducting sessions. The researcher did not provide any feedback to the BCBA.

All clients were exposed to the attention, tangible, and escape conditions. See Study 1 Methods for detailed descriptions. Clients were not exposed to the ignore condition if the target behavior required the presence of another individual. When the ignore condition was deemed

clinically irrelevant for a client, the BCBA demonstrated competence of the procedures for that condition through roleplay with the researcher prior to the client assessment.

Maintenance

Maintenance of the trial-based FA procedures were assessed with each BCBA four weeks after the completion of the client assessment. Maintenance of the procedures was assessed through roleplay with the researcher. The BCBA was expected to conduct one series of the trial-based FA using the block structure. If treatment fidelity dropped below 90%, a booster session comprised of the didactic presentation and video models used during the block training would have been conducted. However, to date, all participating BCBAs implemented the procedures at or above 90% during maintenance sessions.

Table 6. Participant (Client) Information

Client	Age	Gender	Ethnicity/ Race	Diagnosis	Problem Behavior	Communication Modality	FA Setting	Assessment Duration
Nathaniel	8	Boy	White	ASD	False statements	Vocal	Clinic	93 min
Fred	16	Boy	White	ASD	Aggression	Vocal	Inpatient	90 min
Laurie	11	Boy	White	ASD	Aggression Precursor	Vocal	Home	169 min
Ned	8	Boy	Hispanic	ASD	Elopement	Vocal	Home	133 min
Brooke	6	Boy	White	ASD	Elopement	Picture Cards	Clinic	98 min
Robert	7	Boy	Hispanic	ASD	Disrobing	AAC Device	Home	72 min

Table 7. Study 2 Social Validity

Survey Question	Number of Responses				
	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I enjoyed participating in this study					6
I enjoyed the use of video modeling and roleplays in this study					6

Table 7 (continued) Study 2 Social Validity

I feel as though my skills in conducting the trial-based functional analysis improved by participating in this study	6
The video modeling intervention was simple to understand	6
The video modeling intervention did not take too much too time	6
I would use the trial-based functional analysis in my clinical practice	6
I would recommend using video modeling as a learning method to my colleagues	6
I enjoyed the telehealth aspect of this study	6
I am more confident in my ability to conduct a trial-based functional analysis than I was before this study	6

Table 8. Post-Study FA Social Validity

Survey Question	Number of Responses				
	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I believe that conducting an FA is the most effective way to determine the function of behavior					6
I believe that indirect assessments, such as interview tools (e.g., FAST) are just as helpful as FA at determining the function of behavior	5	1			
I believe that direct assessments, such as observations are just as helpful as FA at determining the function of behavior	6				
I believe FAs should be conducted when behavior is severe					6
I am confident in my abilities to conduct FA procedures independently				1	5
I believe that FAs are difficult to implement	2	4			
I believe FAs are too time consuming	6				
I believe that FAs are dangerous to the client	5	1			

Table 9. Study 2 IOA

	Interobserver Agreement							
	Generalization						Maintenance	
	Treatment Fidelity		Occurrence of PB		Latency to PB		Treatment Fidelity	
Subject	Mean	Range	Mean	Range	Mean	Range	Mean	Range
Meg	98%	96 – 100%	99%	98 – 100%	97%	95 – 100%	99%	98 – 100%
Jo	99%	97 – 100%	98%	97 – 100%	98%	97 – 100%	N/A	N/A
Beth	97%	96 – 100%	99%	98 – 100%	99%	96 – 100%	99%	97 – 100%
Amy	96%	92 – 100%	98%	97 – 100%	97%	96 – 100%	N/A	N/A
Hannah	97%	96 – 100%	98%	97 – 100%	98%	95 – 100%	99%	97 – 100%
Grace	98%	97 – 100%	99%	97 – 100%	98%	96 – 100%	99%	96 – 100%

CHAPTER FOUR:

RESULTS

Figure 1 depicts training, generalization, and maintenance data displayed on two multiple baselines across BCBAs. Meg's data are displayed on the top panel of the left multiple baseline. Meg engaged in low levels of correct responding during baseline, but once the video modeling intervention was implemented, a change in level was observed across conditions. Meg met mastery criteria for the ignore condition after three trials, mastery criteria for the attention condition after five trials, and mastery for the tangible and escape conditions after six trials. Meg implemented the trial-based FA procedures with 100% treatment fidelity across conditions during the block structure phase. The ignore condition was deemed clinically irrelevant for Meg's client, therefore the ignore block was assessed with the researcher during the generalization phase. Meg's treatment fidelity was 100% across conditions during generalization. Four weeks after the client assessment, maintenance was assessed through roleplay with the primary researcher. Meg implemented the procedures with 100% treatment fidelity during the ignore and tangible blocks, and an average of 97% during the attention block and escape blocks.

Jo's data are displayed on the middle panel of the left multiple baseline. Jo engaged in low levels of correct responding during baseline. Once video modeling was introduced, an immediate change in level was observed across conditions. The ignore and attention conditions were mastered in three trials, and the tangible and escape conditions were mastered in five trials. Jo met mastery criteria immediately during the block structure phase across conditions.

However, consent was not collected for Jo's client within 30 days, so an additional series of the blocks were conducted. Jo implemented the trial-based FA procedures with 100% treatment fidelity across conditions during the second series of blocks as well. The ignore condition was considered clinically relevant for Jo's client as the target behavior was a precursor to aggression. Therefore, the ignore condition was assessed with the researcher during the generalization phase. Jo implemented the procedures with 100% treatment fidelity for the ignore condition, 99% for the attention and escape conditions, and 96% for the tangible condition. Maintenance data will be collected with Jo once four weeks have elapsed since the client assessment.

Beth's data are displayed on the bottom panel of the left multiple baseline. Beth engaged in low levels of correct responding across the attention, tangible, and escape conditions and moderate levels of correct responding across ignore trials during baseline. Once the video modeling intervention was introduced, Beth mastered the ignore procedures after three trials, the attention, and tangible procedures after five trials, and the escape procedures after six trials. Beth's client also engaged in aggression so the ignore condition was excluded from his assessment. Therefore, the ignore condition was assessed with the researcher during generalization. Beth implemented the trail-based fa procedures with 100% fidelity across the ignore, tangible, and escape conditions, 99% fidelity for the attention conditions. During maintenance, Beth implemented the procedures with 97% fidelity for the ignore condition, and 100% fidelity across the attention, tangible, and escape conditions.

Amy's data are displayed on the top panel of the right multiple baseline. Amy engaged in low to moderate (i.e., ignore) levels of correct responding during baseline. Once the video modeling intervention was introduced, Amy met mastery criteria for the ignore procedures after three trials, the escape procedures after four trials, and the attention and tangible procedures after

five trials. Amy immediately met mastery criteria during the block structure phase for all conditions. During generalization, Amy implemented the procedures during the ignore and attention blocks with 100%

Hannah's data are displayed on the middle panel of the right multiple baseline. Hannah engaged in low levels of correct responding during baseline. Once the video modeling intervention was introduced Hannah's fidelity improved. Hannah mastered the escape procedures after three trials, the ignore and tangible procedures after four trials, and the attention procedures after six trials. Hannah demonstrated 100% fidelity across conditions during the block structure phase. During generalization, Hannah implemented the ignore, attention, and tangible procedures with 100% fidelity and the escape procedures with 99% fidelity across blocks. During the maintenance phase Hannah implemented the ignore, attention, and tangible procedures with 100% fidelity, and the escape procedures with 95% fidelity.

Grace's data are displayed on the bottom panel of the right multiple baseline. Grace engaged in low levels of correct responding during baseline. Once video modeling was introduced, an immediate change in level was observed across conditions. Grace met mastery criteria for the ignore condition after three trials, and mastery criteria for the attention, tangible, and escape conditions after four trials. Grace engaged in 100% correct responding across conditions during the block structure phase. During generalization, Grace implemented the ignore procedures with 88% fidelity, the attention condition with 88% fidelity, the tangible condition with 90% fidelity, and the escape condition with 89% fidelity across blocks.

Figure 2 shows results from the BCBA-informed FAST for all client participants. Results from the FAST were used gather information about the topography, frequency, and hypothetical function of the target behavior. Results from the FAST for Nathaniel, Fred, Laurie, and Ned

suggested that problem behavior could be maintained by social reinforcement contingencies. FAST results for Brooke and Robert were undifferentiated, which could suggest that problem behavior was maintained by automatic reinforcement.

Figure 3 shows trial-based FA data for Nathaniel. The top panel shows percentage of blocks in which problem behavior occurred across conditions. White bars are control blocks, and black bars are test blocks. Data are displayed in latency on middle panel, and rate on the bottom panel. Nathaniel engaged in false statements across all tangible test segments, as well as during one attention and tangible control segment. There is clear differentiation between the tangible test and control segments, indicating that false statements were maintained by access to tangibles.

Figure 4 shows trial-based FA data for Fred. The top panel shows percentage of blocks in which problem behavior occurred across conditions. White bars are control blocks, and black bars are test blocks. The data are displayed in latency on the middle panel, and rate on the bottom panel. Fred engaged in the aggression precursor across all escape test trials, as well as one attention control segment, tangible control segment, and attention test segment. There is clear differentiation between the escape test and control segments, indicating that the target behavior was maintained by escape from demands.

Figure 5 shows data for Laurie. The data are displayed in latency on the top panel, and rate on the bottom panel. It should be noted that Laurie did not engage in the target behavior during the first two series of blocks during the assessment. His BCBA was surprised because his therapist had expressed concerns due to him engaging in aggression more frequently. After the first two series of blocks, the BCBA made the decision to continue the assessment the next day

after Laurie's therapy session. The target behavior was observed throughout the remaining attention trials, and a clear function was determined.

Figure 6 shows trial-based FA data for Ned. The top panel shows percentage of blocks in which problem behavior occurred across conditions. White bars are control blocks, and black bars are test blocks. The data are displayed in latency on the middle panel, and rate on the bottom panel. Ned only engaged in elopement across escape test trials. These data indicate that Ned engaged in elopement to escape demands.

Figure 7 shows trial-based FA data for Brooke. The top panel shows percentage of blocks in which problem behavior occurred across conditions. White bars are control blocks, and black bars are test blocks. The data are displayed in latency on the middle panel, and rate on the bottom panel. Aside from the Escape test trails, Brooke engaged in elopement across segments and conditions. Responding occurred regardless of the presence or absence of social contingencies, other than being asked to complete demands. Brooke engaging in the target behavior during the escape control combined with the undifferentiated responding indicates that elopement was automatically maintained.

Figure 8 shows data for Robert. The top panel shows percentage of blocks in which problem behavior occurred across conditions. White bars are control blocks, and black bars are test blocks. The data are displayed in latency on the middle panel, and rate on the bottom panel. Robert engaged in disrobing across segments and conditions. This indicates that elopement was maintained by automatic reinforcement.

CHAPTER FIVE:

DISCUSSION

The results of this study demonstrated that BCBAs could be trained to conduct the assessment procedures using a remotely delivered video modeling procedure, and that those skills would generalize to the natural environment with high treatment fidelity. We had initially planned for a feedback phase, in which behavior-specific feedback would have been provided for consistent errors across trials during the video modeling and block structure phase. However, all the BCBAs met the mastery criteria with video modeling alone, and therefore this phase was not conducted. One reason why feedback may not have been necessary for our participants, is that they were all individuals who have passed the Behavior Analyst Certification Board's exam to become a credentialed behavior analyst. Therefore, these individuals were expected to have a general knowledge of behavior principles and entered the study with some level of understanding in reference to FA procedures. Although we did not provide any feedback throughout the study, we did engage in roleplays across the training phases. These roleplays allowed the BCBAs to practice the skills, which may have aided in skill acquisition. Future research should extend our findings by developing a training that eliminates the trainer completely. It would be interesting to know if an intervention comprised of video modeling with embedded active responding would be enough to acquire the skills. For example, if the learner watched the video model, and then responded to a series of scenarios and was provided feedback. If effective, a training of this nature would eliminate the need for a trainer to be involved while increasing accessibility.

This study extended trial-based FA literature by training BCBAs to conduct the assessment. Most trial-based FA literature has focused on training teachers (Bloom et al., 2011; Bloom et al., 2013), residential staff (Lambert et al., 2014), and caregivers (Gerow et al., 2018) to implement the procedures. It should be noted that BCBAs were chosen to participate in this study in an effort of demonstrating that a remotely delivered video modeling intervention could make trainings of this nature more accessible. By having BCBAs conduct the assessment, it meant that the assessment could implemented using the more time-efficient block structure that Gonzalez et al. (2019) introduced. If teachers or parents had been the participants in this study, it may have been more appropriate to train them to conduct the assessment using the original format of the trial-based FA because the trials are embedded into regularly scheduled activities. Although the original trial-based FA format may take longer (duration and across days) to conduct, it is still a useful option for school settings where the client cannot be removed from the environment.

This study extended current trial-based FA research by training BCBAs to conduct the assessment in blocks like Gonzalez et al. (2019), but our participants conducted the assessment in the setting in which their client received ABA services (e.g., home, residential facility, clinic). Our results demonstrated that a clear function could be determined across client participants regardless of setting. However, Brooke's results warrant further consideration. Targeting elopement during the standard FA can be challenging due to the nature of the behavior. For example, the individual must be retrieved before they can engage in the behavior again, which introduces confounds such as therapist attention and demands (Lambert et al., 2017). The trial-based FA may be a more appropriate assessment because data are collected on latency to the behavior, rather than frequency. However, it is possible that when data are undifferentiated

across conditions, we may not be capturing the entire picture. For example, Brooke engaged in elopement across control and test conditions, except for the escape test condition. These data suggest that elopement may have been maintained automatic reinforcement. For example, we did not allow Brooke to elope beyond the threshold of the door, therefore we are unsure of where or what he may have been eloping to access. One way to address this would have been to arrange the FA in a manner similar to Neidert et al. (2013). Neidert et al. conducted trial-based FAs with two participants. The participants were allowed to elope from the room during the ignore condition (while being monitored). The researchers observed where the participant went, and what they eloped to for 5 min. This arrangement allowed them to determine that elopement was maintained by multiple sources of reinforcement for two participants. However, identifying the specific source of automatic reinforcement was outside of the scope of this study.

Additionally, implementing the trial-based FA procedures in a block structure may have reduced assessment duration for some clients, while still allowing the individual to contact the reinforcing contingency more than once. The average assessment duration was 109 (range, 72 – 169) min. For example, the average assessment duration for clients exposed to all conditions (i.e., Ned, Brooke, Robert) was 101 min. In comparison, the duration of the standard FA would have been 150 min, assuming that a clear function would have been observed within three series of conditions. Demonstrating that problem behavior could be assessed thoroughly and efficiently may ease some clinicians' concerns related to time constraints, and in turn make them more likely to conduct FAs when behavior is severe. Future research should continue to examine ways to reduce assessment duration. One way to reduce assessment duration would be to evaluate if the ignore condition is necessary for all clients prior to conducting the assessment. We omitted the ignore condition when the target behavior required the presence of another individual but

conducted the condition for all other topographies of behavior. Clinicians could consider conducting a screening procedure for automatically maintained behavior like Querim et al. (2013). Querim et al. implemented a 5-min alone condition prior to conducting an FA for 30 individuals who engaged in problem behavior. This screening procedure accurately predicted that problem behavior was maintained by automatic reinforcement for 21 of 22 cases, and by positive reinforcement for 7 of 8 cases. If we had done this for Ned, his assessment duration would have reduced by 36 min. Eliminating unnecessary FA conditions leads to more time efficient assessments which may increase social validity for both BCBAs and caregivers.

Social validity data were collected anonymously throughout this study. The surveys were comprised of 5-point Likert-like scale questions (1 = strongly disagree, 5 = strongly agree). All the BCBAs who participated in this study reported "strongly agreeing" that FAs are the most effective way to determine the function of behavior prior to the study. However, only four of the six BCBAs had ever observed an FA, and only three had ever collected data during an FA. None of the BCBAs who participated conducted FAs routinely. When asked why FAs were not a part of their clinical routines, the most common responses were related to time and lack of knowledge. Results from the post-study questionnaire indicated a significant change in confidence level for implementing FA procedures across participants. Additionally, all BCBAs reported that they either agreed or strongly agreed that FAs were too time consuming and difficult to implement prior to participating. However, all BCBAs reported strongly disagreeing with both statements post-training. All participants reported strongly agreeing that the video modeling intervention was easy to understand, that they would recommend the intervention to a colleague, and that they would use the trial-based FA in their clinical practice. The social validity data support that the issue related to BCBAs being hesitant to conduct FAs because of lack of

training has more to do with accessibility, rather than the skills being too complex. Based on our recruitment experience, BCBAs were eager to have the opportunity to learn how to conduct the trial-based FA. We sent our flyer to three local behavior agencies who shared it with their staff, and within two days we had six BCBAs from across the country enrolled, and several on a waitlist. Given the interest level, it could be beneficial to develop a training that includes the video models, but also allows BCBAs to earn continuing education units.

The COVID-19 pandemic turned the world upside down in 2020 when so many were instructed to shelter in place. As a result, many behavior analysts were unable to provide in-person services. The shift to providing services via telehealth occurred with little to no warning and behavior analysts found themselves learning to navigate the virtual world of service provision. Although behavior analysts have started shifting back to providing in-person services, there is a lot of value in providing trainings via telehealth. Making effective trainings available via telehealth increases accessibility to individuals in remote areas. The results from this study support video modeling's usefulness as a tool for remote learning by demonstrating that the BCBAs who participated not only acquired the assessment skills, but that they generalized to the natural environment and then maintained. These findings are important because they open the doors to new opportunities for training in and dissemination of behavior analysis. In addition, our study presents a telehealth-based training that can improve access to an efficient and precise assessment of behavior function, thus improving services for individuals who engage in challenging behavior.

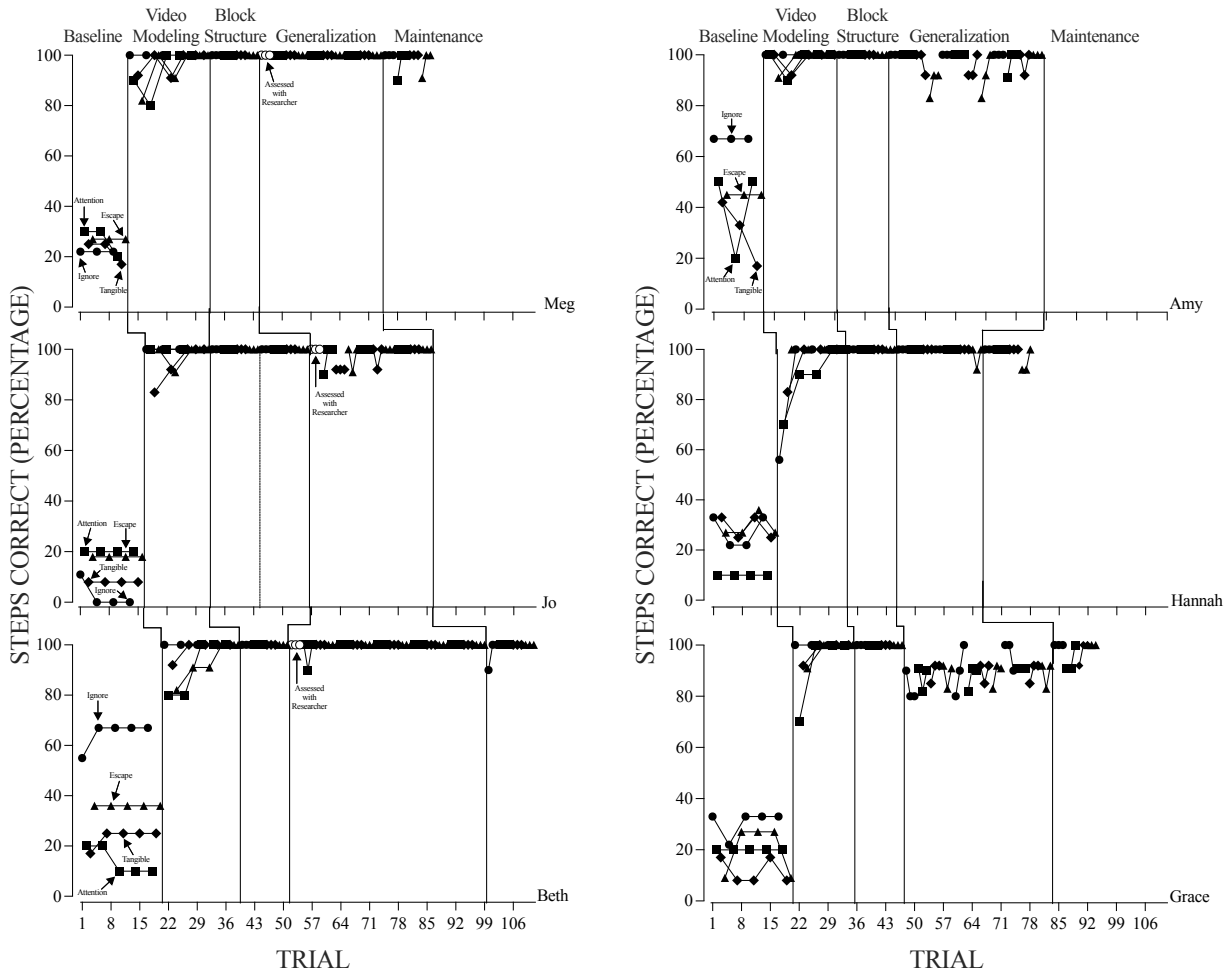

Figure 1. BCBA treatment integrity. Treatment integrity data for Meg, Jo, and Beth are on the left multiple baseline Treatment integrity data for Amy, Hannah, and Grace are on the right side of the figure. The circles represent the ignore condition, squares represent the attention condition, diamonds represent the tangible condition, and triangles represent the escape condition.

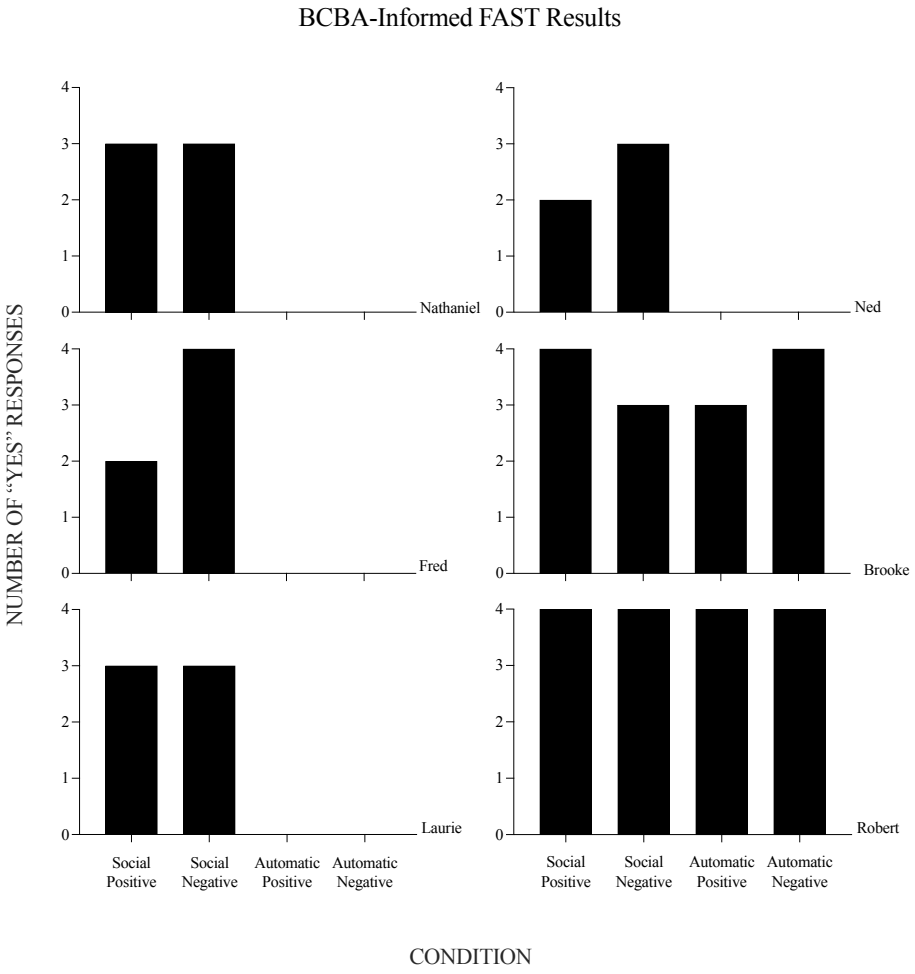

Figure 2. BCBA-informed FAST results

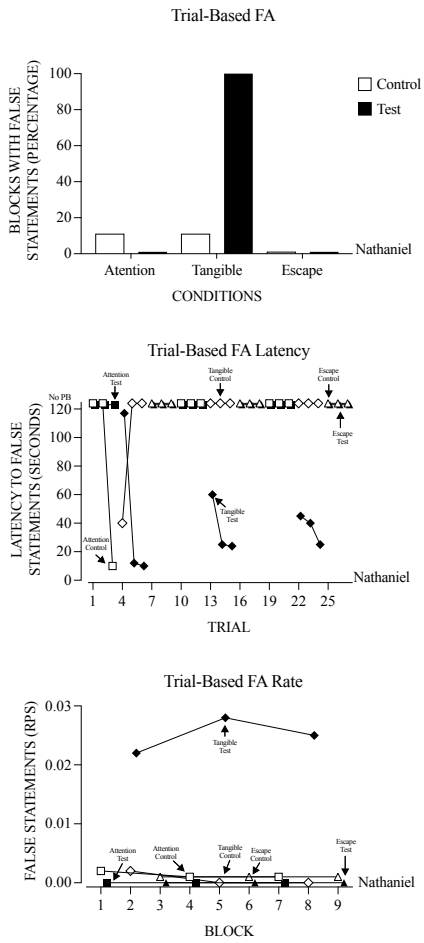

Figure 3. Trial-based FA results for Nathaniel. Percentage of blocks with the target behavior across blocks (top panel), latency to false statements (top panel), rate (rps) of false statements (bottom panel) during the trial-based FA. Open symbols represent control segments, and closed symbols represent test segments. The circles represent the ignore condition, squares represent the attention condition, diamonds represent the tangible condition, and triangles represent the escape condition.

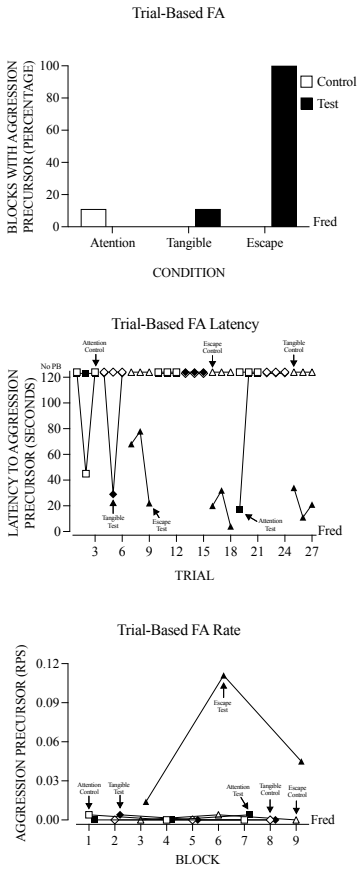

Figure 4. Trial-based FA results for Fred. Percentage of blocks with the target behavior across blocks (top panel), latency to aggression precursor (top panel), rate (rps) of aggression precursor (bottom panel) during the trial-based FA. Open symbols represent control segments, and closed symbols represent test segments. The circles represent the ignore condition, squares represent the attention condition, diamonds represent the tangible condition, and triangles represent the escape condition.

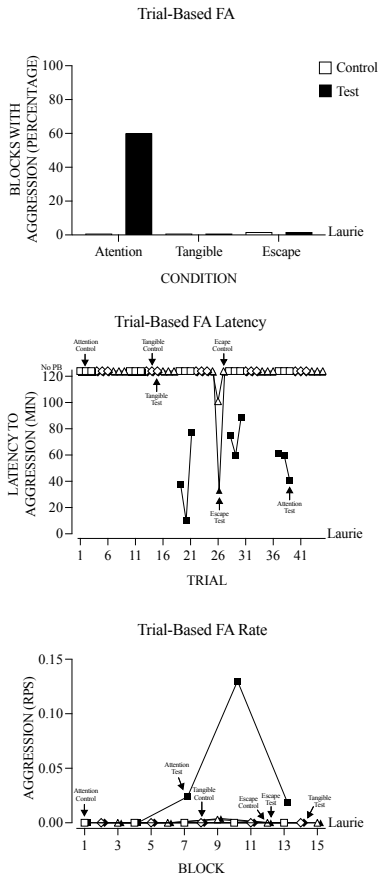

Figure 5. Trial-based FA results for Laurie. Percentage of blocks with the target behavior across blocks (top panel), latency to aggression (middle panel), rate (rps) of elopement (bottom panel) during the trial-based FA. Open symbols represent control segments, and closed symbols represent test segments. The circles represent the ignore condition, squares represent the attention condition, diamonds represent the tangible condition, and triangles represent the escape condition.

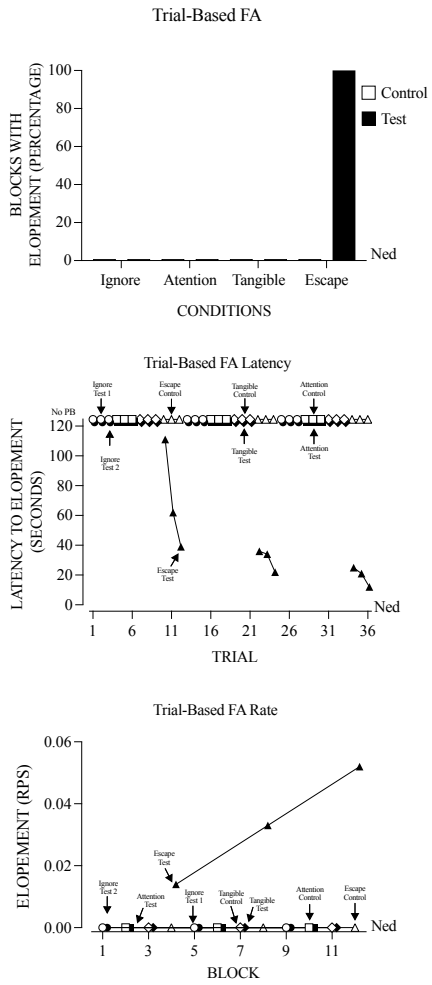

Figure 6. Trial-based FA results for Ned. Percentage of blocks with the target behavior across blocks (top panel), latency to elopement (middle panel), rate (rps) of elopement (bottom panel) during the trial-based FA. Open symbols represent control segments, and closed symbols represent test segments. The circles represent the ignore condition, squares represent the attention condition, diamonds represent the tangible condition, and triangles represent the escape condition.

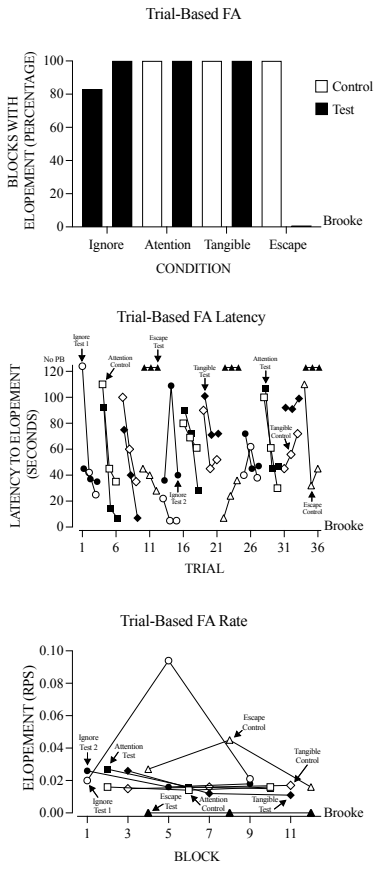

Figure 7. Trial-based FA results for Brooke. Percentage of blocks with the target behavior across blocks (top panel), latency to elopement (top panel), rate (rps) of elopement (bottom panel) during the trial-based FA. Open symbols represent control segments, and closed symbols represent test segments. The circles represent the ignore condition, squares represent the attention condition, diamonds represent the tangible condition, and triangles represent the escape condition.

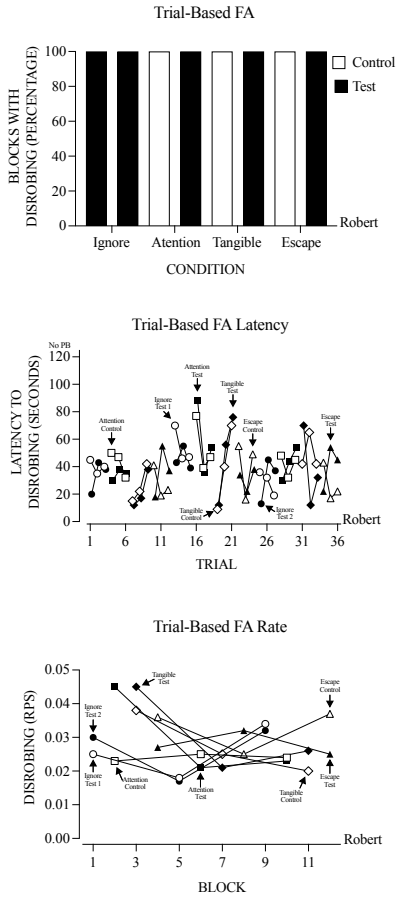

Figure 8. Trial-based FA results for Robert. Percentage of blocks with disrobing across blocks (top panel), latency to disrobing (middle panel), rate (rps) of disrobing (bottom panel) during the trial-based FA. Open symbols represent control segments, and closed symbols represent test segments. The circles represent the ignore condition, squares represent the attention condition, diamonds represent the tangible condition, and triangles represent the escape condition.

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APPENDICIES

Appendix A: Board Certified Behavior Analyst Questionnaire

BCBA Questionnaire

Participant Name:

Directions: Please complete the following demographic and job related questions. Please note that if there are any questions that you'd prefer not to respond to, you can simply leave them blank. Thank you for your participation!

1) Participant Age _____

2) Gender
   - o Woman
   - o Man
   - o Transgender _____
   - o Nonbinary/ Non-conforming

3) Marital Status
   - o Single (never married)
   - o Married, or in a domestic relationship
   - o Widowed
   - o Divorced
   - o Separated

4) Are you of Hispanic, Latino, or Spanish origin?
   - o Yes
   - o No

5) How do you identify?
   - o American Indian/ Native Alaskan
   - o Asian
   - o Native Hawaiian/ Pacific Islander
   - o Black or African American
   - o White
   - o Other _____

6) Highest degree held
   - o Master's degree
   - o PhD

7) What year did you graduate with your graduate degree? _____

8) What BACB credential do you hold?
   - o BCBA
   - o BCBA-D

9) How long have you been in the field of ABA _____ Years? How long have you been a BCBA(D)? _____

10) Do you supervise individuals seeking BACB credentials? If so, how long have you been providing supervision? How many supervisees do you currently have?
   - o Yes, ____ months/ years, _____ supervisees
   - o No, I do not provide supervision

11) Have you ever had formal training on functional analysis procedures?
   - o Yes
   - o No

12) If so, what kind of training have you received? Select all that apply.
   - o Graduate level coursework
   - o FA Workshop
   - o Webinar/ Seminar
   - o One-on-one training
   - o Other _____
   - o N/A

13) Did your training involve any active learning components, such as roleplays or feedback?
   - o No
   - o Yes (Please describe) _____
   - o N/A

14) Have you ever conducted an FA?
   - o Yes
   - o No

15) If so, do you conduct FAs regularly?
   - o Yes
   - o No
   - o N/A

16) If you responded "no" please describe why FAs are not a part of your clinical routine below.

Appendix B: Pre-Screen Questionnaire

BCBA Pre-Screening Questionnaire	Please Circle Your Response	
Have you read Toward a Functional Analysis of Self-Injury by Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994)?	Yes	No
Have you attended a lecture or information session on functional analysis?	Yes	No
Have you observed a functional analysis?	Yes	No
Have you taken data during a functional analysis?	Yes	No
Have you ever served as a therapist in a functional analysis?	Yes	No
Are you familiar with trial-based functional analysis procedures?	Yes	No
Have you read A Discrete-trial Approach to the Functional Analysis of Aggressive Behavior in Two Boys with Autism by Sigafoos and Saggers (1995)?	Yes	No
Have you read Classroom Application of a Trial-based Functional Analysis by Bloom et al., (2011)?	Yes	No
Have you read any other literature on trial-based functional analyses?	Yes	No
Have you observed a trial-based functional analysis?	Yes	No
Have you taken data during a trial-based functional analysis?	Yes	No
Have you served as a therapist in a trial-based functional analysis?	Yes	No

Appendix C: Functional Analysis Social Validity Questionnaire

Functional Analysis Social Validity Questionnaire				
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I believe that conducting an FA is the most effective way to determine the function of behavior.				
1	2	3	4	5
I believe that indirect assessments, such as interview tools (e.g., FAST) are just as helpful as FA at determining the function of behavior.				
1	2	3	4	5
I believe that direct assessments, such as observations are just as helpful as FA at determining the function of behavior.				
1	2	3	4	5
I believe FAs should be conducted when behavior is severe.				
1	2	3	4	5
I am confident in my abilities to conduct FA procedures independently.				
1	2	3	4	5
I believe that FAs are difficult to implement.				
1	2	3	4	5
I believe FAs are too time consuming.				
1	2	3	4	5
I believe that FAs are dangerous to the client.				
1	2	3	4	5

Appendix D: Study 1 Social Validity

Social Validity Questionnaire: Study 1

Strongly Disagree — Strongly Agree

I enjoyed participating in this study.				
1	2	3	4	5
I enjoyed the use of video modeling and roleplays in this study.				
1	2	3	4	5
I feel as though my skills in conducting trial-based functional analysis improved by participating in this study				
1	2	3	4	5
The video modeling intervention was simple to understand.				
1	2	3	4	5
The video modeling intervention did not take too much time.				
1	2	3	4	5
I would use trial-based functional analysis in my clinical practice.				
1	2	3	4	5
I would recommend using video modeling as a learning method to my colleagues.				
1	2	3	4	5
I enjoyed the telehealth aspect of this study.				
1	2	3	4	5
I am more confident in my ability to conduct a trial-based functional analysis than I was before this study.				
1	2	3	4	5

Appendix E: Role-play Scripts

<u>Ignore</u>

Materials: Timer, data sheet, writing utensil

Roleplay:

> "In this roleplay, I will be acting as the client, and you will be conducting the trial-based functional analysis. The target behavior is _____ , which is defined as_____.
>
> **Baseline and VM:** For the next few minutes you will be conducting an ignore trial with consecutive test segments. You have a timer for you to use during the roleplay. When I say start, please start your timer and begin the trial. 1, 2, 3, Start."
>
> **Block Structure:** Now you're going to conduct an ignore block with consecutive test trials. You have a timer for you to use during the roleplay. When I say start, please start your timer and begin the ignore block. 1, 2, 3, Start."

Test 1

1. The BCBA should move away from the client so that he/she is seated alone without materials (or work).
2. **Client should engage in PB ____** (0-10) **times during segment.**
3. There should be no consequences for PB.
4. The segment should be 2 min total.

Test 2

1. The BCBA should stay away from the client so that he/she is seated alone without materials (or work).
2. **Client should engage in PB ____** (0-10) **times during segment.**
3. There should be no consequences for PB.
4. The segment should be 2 min total.

Block Structure: Repeat trials two more times

Appendix E (continued): Role-play Scripts

Attention

Materials: Playdoh, data sheet, writing utensil, and timer

Roleplay:

> "In this roleplay, I will be acting as the client, and you will be conducting the trial-based functional analysis. The target behavior is _____, which is defined as _____.
>
> **Baseline and VM:** For the next few minutes you will be conducting an attention trial with both the control and test segments. You have a timer for you to use during the roleplay. When I say start, please start your timer and begin the trial. 1, 2, 3, Start."
>
> **Block Structure:** Now you're going to conduct an attention block with consecutive escape trials. You have a timer for you to use during the roleplay. When I say start, please start your timer and begin the attention block. 1, 2, 3, Start."

Control

1. The BCBA should provide attention to the client throughout the segment, but not ask the client to do any work.
2. **The client should engage in PB ___ s** (20 – 115 s) **into the segment.**
3. There should be no consequences for problem behavior, but the segment should end once the client engages in the target problem behavior.

Test

1. The BCBA should turn away from the client and/or state "I have to work."
2. The BCBA should ignore the client throughout the segment unless addressing the target problem behavior and not ask the client to do any work.
3. **Client should engage in the PB after ___s** (20 – 115 s)**.**
4. Contingent on the target problem behavior, the Therapist should turn to client, make statement of concern, then stop the trial.

Block Structure: Repeat trials two more times.

Appendix E (continued): Role-play Scripts

Tangible

Materials: Toy cars, data sheet, writing utensil, and timer

Roleplay:

> "In this roleplay, I will be acting as the client, and you will be conducting the trial-based functional analysis. The target behavior is _____, which is defined _____. You have determined that toy cars are highly preferred.
>
> **Baseline and VM:** For the next few minutes you will be conducting tangible trial with both the control and test segments. You have a timer for you to use during the roleplay. When I say start, please start your timer and begin the trial. 1, 2, 3, Start."
>
> **Block Structure:** Now you're going to conduct tangible block with consecutive tangible trials. You have a timer for you to use during the roleplay. When I say start, please start your timer and begin the escape block. 1, 2, 3, Start."

Control

1. The BCBA should allow client to play with the preferred item for the duration of the segment and not ask the client to do any work.
2. **Client should engage in PB ____ s** (20 – 115 s) **into the segment.**
3. There should be no consequences for PB, but the segment should end once the client has engaged in PB.

Test

1. The BCBA should remove the preferred item and keep it from client's reach unless PB, and the client should not be asked to do any work.
2. **Client should engage in self-biting after ___s** (20 – 115 s)**.**
3. The Therapist should immediately return preferred item, and then end condition.

Block Structure: Repeat trials two more times.

Appendix E (continued): Role-play Scripts

Escape

Materials: Data sheet, writing utensil, paper, and timer

Roleplay:

> "In this roleplay, I will be acting as the client, and you will be conducting the trial-based functional analysis. The target behavior is _____, which is defined as _____. Currently, the client is working on following one-step instructions. For example, touch your nose or clap your hands.
>
> **Baseline and VM:** For the next few minutes you will be conducting an escape trial with both the control and test segments. You have a timer for you to use during the roleplay. When I say start, please start your timer and begin the trial. 1, 2, 3, Start."
>
> **Block Structure:** Now you're going to conduct an escape block with consecutive escape trials. You have a timer for you to use during the roleplay. When I say start, please start your timer and begin the escape block. 1, 2, 3, Start."

Control

1. During the control segment, no instructions should be delivered to the client and the client should not have access to materials.
2. **BCBA should engage in PB ___ s (**20 – 115 s) **into the segment.**
3. There should be no consequences for PB, but the segment should end once the client engages in PB.

Test

1. The BCBA should begin placing demands "Touch your ___".
2. **Client should not engage in PB.**
3. The BCBA should provide model prompt then physical prompt.
4. The BCBA should continue placing demands.
5. **Client should engage in PB at ___ s** (20 – 115 s)**.**
6. The BCBA should immediately give the client a break.

Block Structure: Repeat trials two more times.

Appendix F: Procedural Fidelity Checklists

Ignore			
Step	**Yes**	**No**	**N/A**
BCBA put on the yellow shirt prior to starting the trial			
BCBA did not interact with the client			
BCBA did not allow access to any materials			
BCBA did not provide a consequence if client engaged in target problem behavior			
BCBA did not end test segment before 2 min elapsed			
BCBA did not interact with the client			
BCBA did not allow access to any materials			
BCBA did not provide a consequence if client engaged in target problem behavior			
BCBA did not end test segment before 2 min elapsed **Block Trials 1 & 2:** Moved to next trail within 5 s			
BCBA collected data that corresponded with researcher's data			
CORRECT STEPS:			
% OF CORRECT STEPS:			

Appendix F (continued): Procedural Fidelity Checklist

Attention				
Segment	**Step**	**Yes**	**No**	**N/A**
	BCBA put on the red shirt prior to starting the trial			
Control	BCBA provided continuous, contextually appropriate (e.g., responded to questions), attention (no more than 10 s between interactions) to the client until the client engaged in target problem behavior or until 2 min elapsed			
	BCBA ignored non-target problem behavior			
	BCBA did not present demands or questions			
	BCBA allowed access to moderately preferred items			
Test	BCBA turned away from client and stopped providing attention (and did not issue any demands) within 5 s of target problem behavior or after 2 min elapsed in control segment			
	BCBA allowed access to moderately preferred items			
	BCBA ignored client until the client engaged in target problem behavior or 2 min elapsed			
	If target problem behavior occurred, BCBA made statement of concern within 5 s			
	BCBA ended the trial after statement of concern or after 2 min elapsed **Block Trials 1 & 2:** Moved to next trail within 5 s			
Data	BCBA collected data that corresponded with researcher's data			
	CORRECT STEPS:			
	% OF CORRECT STEPS:			

Appendix F (continued): Procedural Fidelity Checklist

Tangible				
Segment	**Step**	**Yes**	**No**	**N/A**
	BCBA put on blue shirt prior to starting the trial.			
Control	BCBA allowed client to interact with all available materials and made highly preferred items available until the client engaged in target problem behavior or until 2 min elapsed			
	BCBA delivered attention at least once every 30 s and never withheld attention if the client initiated conversation			
	BCBA did not present demands or questions			
	BCBA ignored non-target problem behavior during control segment			
Test	BCBA removed materials within 5 s of target problem behavior or after 2 min elapsed in control segment			
	BCBA delivered attention at least once every 30 s and never withheld attention if the client initiated conversation			
	BCBA did not present demands or questions.			
	BCBA ignored non-target problem behavior during test segment			
	BCBA kept materials out of client's reach for 2 min unless client engaged in target problem behavior			
	If the client engaged in target problem behavior, BCBA returned materials to client within 5 s			
	BCBA ended the trial after materials were returned or after 2 min elapsed **Block Trials 1 & 2:** Moved to next trail within 5 s			
Data	BCBA collected data that corresponded with researcher's data			
	CORRECT STEPS:			
	% OF CORRECT STEPS:			

Appendix F (continued): Procedural Fidelity Checklist

Escape				
Segment	**Step**	**Yes**	**No**	**N/A**
	BCBA put on the green shirt prior to starting the trial			
Control	BCBA did not present demands or questions			
	BCBA responded appropriately if the client initiated conversation			
	BCBA did not allow access to highly or moderately preferred leisure materials			
	BCBA ignored non-target problem behavior			
Test	BCBA delivered a demand within 5 s of target problem behavior or after 2 min elapsed in control segment			
	BCBA provided instruction and prompts (including model and physical, if relevant) without delays over 5 s between demands, prompts, or ongoing work			
	BCBA did not allow access to highly or moderately preferred leisure materials			
	Therapist ignored non-target problem behavior			
	If the client engaged in target problem behavior, BCBA removed materials and gave the client a break within 5 s			
	BCBA ended the trial after providing a break or after 2 min elapsed **Block Trials 1 & 2:** Moved to next trail within 5 s			
Data	BCBA collected data that corresponded with researcher's data			
	CORRECT STEPS:			
	% OF CORRECT STEPS:			

Appendix G: Baseline and Video Modeling Data Sheet

Name: Date:		
Trial-Based FA Data Sheet		
Condition	Segment 1	Segment 2

Appendix H: Block Structure Data Sheet

Name: Date: **Block Structure Trial-Based FA Data Sheet**		
Ignore Block	Test 1	Test 2
Trial 1	PB Time: N/A	PB Time: N/A
Trial 2	PB Time: N/A	PB Time: N/A
Trial 3	PB Time: N/A	PB Time: N/A
Attention Block	Control	Test
Trial 1	PB Time: N/A	PB Time: N/A
Trial 2	PB Time: N/A	PB Time: N/A
Trial 3	PB Time: N/A	PB Time: N/A
Tangible Block	Control	Test
Trial 1	PB Time: N/A	PB Time: N/A
Trial 2	PB Time: N/A	PB Time: N/A
Trial 3	PB Time: N/A	PB Time: N/A
Escape Block	Control	Test
Trial 1	PB Time: N/A	PB Time: N/A
Trial 2	PB Time: N/A	PB Time: N/A
Trial 3	PB Time: N/A	PB Time: N/A

Appendix I: Treatment Integrity Checklists

Baseline: Ignore	**YES**	**NO**
1. Participant had access to Bloom et al. article at least 24 hr before session		
2. Participant given 5 minutes before session to review article		
3. Researcher provided all necessary materials (i.e., timer, leisure items, data sheets)		
4. Researcher did not answer questions posed by participant		
5. Researcher read explanation paragraph from the roleplay script to participant		
6. Researcher engaged in non-target problem behavior during roleplay		
7. Therapist engaged in target problem behavior		
8. Data were recorded on participant's performance		

Appendix I (continued): Treatment Integrity Checklists

Baseline: Attention	**YES**	**NO**
1. Participant had access to Bloom et al article at least 24hr before session		
2. Participant given 5 minutes before session to review article		
3. Researcher provided all necessary materials (i.e., timer, leisure items, data sheets) to participant before roleplay session starts		
4. Researcher did not answer questions posed by participant		
5. Researcher read explanation paragraph from the roleplay script to participant before starting the session		
6. Researcher engaged in non-target problem behavior in test and control segment		
7. Researcher engaged in target problem behavior in test and / or control segment		
8. Data were collected on participant's performance		

Appendix I (continued): Treatment Integrity Checklists

Baseline: Tangible	**YES**	**NO**
1. Participant had access to Bloom et al. article at least 24 hr before session		
2. Participant given 5 minutes before session to review article		
3. Researcher provided all necessary materials (i.e., timer, leisure items, data sheets)		
4. Researcher did not answer questions posed by participant		
5. Researcher read explanation paragraph from the roleplay script to participant		
6. Researcher engaged in non-target problem behavior during roleplay		
7. Researcher initiated conversation with participant during roleplay		
8. Researcher engaged in target problem behavior in test and / or control segment		

Appendix I (continued): Treatment Integrity Checklists

Baseline: Escape	**YES**	**NO**
1. Participant had access to Bloom et al article at least 24 hr before session		
2. Participant given 5 minutes before session to review article		
3. Researcher provided all necessary materials (i.e., timer, leisure items, data sheets)		
4. Researcher did not answer questions posed by participant		
5. Researcher read explanation paragraph from the roleplay script to participant		
6. Researcher initiated conversation during roleplay		
7. Researcher engaged in non-target problem behavior in roleplay		
8. Researcher engaged in target problem behavior in test and / or control segment		
9. Data were collected on participant's performance		

Appendix I (continued): Treatment Integrity Checklists

VM & BS: Ignore	**YES**	**NO**
1. Participant had access to Bloom et al. article at least 24 hr before session		
2. Participant given 5 minutes before session to review article		
3. Researcher provided all necessary materials (i.e., timer, leisure items, data sheets)		
4. Researcher did not answer questions posed by participant		
5. Researcher opened and played the ignore video model		
6. Researcher did not provide feedback to the participant		
7. Researcher read explanation paragraph from the roleplay script to participant		
8. Researcher engaged in non-target problem behavior during roleplay		
9. Researcher engaged in target problem behavior during one or both test segments		
10. Data were recorded on participant's performance		

Appendix I (continued): Treatment Integrity Checklists

VM & BS: Attention	**YES**	**NO**
1. Participant had access to Bloom et al. article at least 24 hr before session		
2. Participant given 5 minutes before session to review article		
3. Researcher provided all necessary materials (i.e., timer, leisure items, data sheets)		
4. Researcher did not answer questions posed by participant		
5. Researcher opened and played the attention video model		
6. Researcher did not provide feedback to the participant		
7. Researcher read explanation paragraph from the roleplay script to participant		
8. Researcher engaged in non-target problem behavior during roleplay		
9. Researcher engaged in target problem behavior in test and / or control segment		
10. Data were recorded on participant's performance		

Appendix I (continued): Treatment Integrity Checklists

VM & BS: Tangible	**YES**	**NO**
1. Participant had access to Bloom et al. article at least 24 hr before session		
2. Participant given 5 minutes before session to review article		
3. Researcher provided all necessary materials (i.e., timer, leisure items, data sheets)		
4. Researcher did not answer questions posed by participant		
5. Researcher opened and played the tangible video model		
6. Researcher did not provide feedback to the participant		
7. Researcher read explanation paragraph from the roleplay script to participant		
8. Researcher engaged in non-target problem behavior during roleplay		
9. Researcher initiated conversation with participant during roleplay		
10. Researcher engaged in target problem behavior in test and / or control segment		
11. Researcher requested high preferred item during test segment		
12. Data were taken on the participant's performance		

Appendix I (continued): Treatment Integrity Checklists

VM & BS: Escape	**YES**	**NO**
1. Participant had access to Bloom et al. article at least 24 hr before session		
2. Participant given 5-10 minutes before session to review article		
3. Researcher provided all necessary materials (i.e, timer, leisure items, data sheets)		
4. Researcher did not answer questions posed by participant		
5. Researcher opened and played the escape video model		
6. Researcher did not provide feedback to the participant		
7. Researcher read explanation paragraph from the roleplay script to participant		
8. Researcher initiated conversation during roleplay		
9. Researcher engaged in non-target problem behavior in roleplay		
10. Researcher engaged in target problem behavior in test and / or control segment		
11. Data were collected on participant's performance		

Appendix J: Client Questionnaire

Child Questionnaire

Participant Name:

Directions: Please complete the following questions about your child. Please note that if there are any questions that you'd prefer not to respond to, you can simply leave them blank. Thank you for your participation!

1) Child's Age ____ grade _____

2) Gender
   - o Girl
   - o Boy
   - o Transgender _____
   - o Nonbinary/ non-conforming

3) Is your child of Hispanic, Latino, or Spanish origin?
   - o Yes
   - o No

4) How does your child identify?
   - o Indigenous American / Native Alaskan
   - o Asian
   - o Native Hawaiian/ Pacific Islander
   - o Black or African American
   - o White
   - o Other _____

5) Does your child have an intellectual or developmental disability diagnosis?
   - o No
   - o Yes, Diagnosis: _____

6) If yes, how old was your child when they received that diagnosis? _____

7) Is your child currently taking any medications regularly?
   - o No
   - o Yes _____

8) How long has your child been receiving ABA services? _____ years _____months.

9) In what setting does your child receive ABA services? Please check all that apply.
   - o Home
   - o School
   - o Clinic
   - o Other _____

10) Aside from ABA, does your child receive any of the following services? If so, for how long?
   - o No
   - o Speech _____
   - o Occupational therapy _____
   - o Physical therapy _____

11) Does your child attend school?
   - o No
   - o Yes P

   Please describe the type of school setting your child attends below.

12) What language(s) are spoken in the home?

13) My child most often communicates using:
   - o Picture cards
   - o Signs
   - o AAC device
   - o Vocal

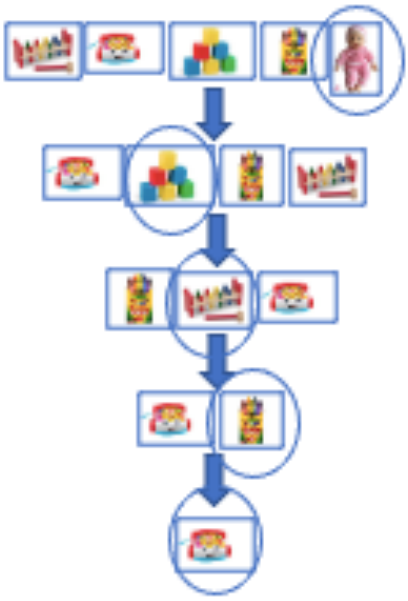
14) Please describe your child's communication skills below.

Appendix K: MSWO Handout and Data Sheet

Multiple Stimulus Without Replacement Preference Assessment

Prior to conducting the assessment, you'll want to collect 5 preferred (based on observation or caregiver report) toys.

1. Sit across from the child.
2. Place all items in a straight line within the child's reach, in order by assigned letter.
3. Instruct the child to "Pick one."
4. If the child reaches for more than one item, block access to both items, and repeat the task direction, "Pick one."
5. Allow the child to play with the toy for 30 s. Block access to the remaining stimuli during this interim.
6. While the child is playing with the toy, move the leftmost item over to the rightmost position.
7. Remove the chosen toy after 30 s and put it out of sight.
8. Repeat steps 4-7 until there are no items left in the array, or until the child refuses to make any further selections



Sample Data Sheet
Item A: Hammer Toy
Item B: Phone
Item C: Blocks
Item D: Crayons
Item E: Doll

Item Selected	Placement of Item Selected
1. Doll	X X X X X
2. Blocks	X X X X
3. Hammer Toy	X X X
4. Crayons	X X
5. Phone	X

You'll conduct the MSWO three times, so there will be a hierarchy. For each item in your array, add up the trial numbers at which the item was selected during each session. For example, if a child chooses the doll first across three sessions, you will add the trial numbers (1 + 1 + 1) for a total of 3. If a child chooses the blocks third, fourth, and fifth across three sessions, you will add the trial numbers (3 + 4 + 5) for a total of 12. Items with the *lowest* totals are the child's **highest preferred items**, and items with the *highest* totals are the child's **lowest preferred items**. Thus, in this example, the doll is *more preferred* than the phone. Any items that are not chosen by the child in a session should be assigned the highest available number (e.g., the total number of items). So, if there are five items, and two are not chosen, the number 5 should be assigned to both.

Appendix K (continued): MSWO Handout and Data Sheet

MSWO Data Sheet

Item A: ______________________
Item B: ______________________
Item C: ______________________
Item D: ______________________
Item E: ______________________

Date:		
Child name:		
Trial #	**Item selected**	**Placement of item selected**
1		x x x x x
2		x x x x
3		x x x
4		x x
5		x

Date:		
Child name:		
Trial #	**Item selected**	**Placement of item selected**
1		x x x x x
2		x x x x
3		x x x
4		x x
5		x

Date:		
Child name:		
Trial #	**Item selected**	**Placement of item selected**
1		x x x x x
2		x x x x
3		x x x
4		x x
5		x

Sum of trial #s for A: ________________
Sum of trial #s for B: ________________
Sum of trial #s for C: ________________
Sum of trial #s for D: ________________
Sum of trial #s for E: ________________

Appendix L: Study 2 Social Validity Questionnaire

Social Validity Questionnaire: Study 2

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I enjoyed participating in this study.				
1	2	3	4	5
I enjoyed the use of video modeling and roleplays in this study.				
1	2	3	4	5
I feel as though my skills in conducting trial-based functional analysis improved by participating in this study				
1	2	3	4	5
The video modeling intervention was simple to understand.				
1	2	3	4	5
The video modeling intervention did not take too much time.				
1	2	3	4	5
I would use trial-based functional analysis in my clinical practice.				
1	2	3	4	5
I would recommend using video modeling as a learning method to my colleagues.				
1	2	3	4	5
I enjoyed the telehealth aspect of this study.				
1	2	3	4	5
I am more confident in my ability to conduct a trial-based functional analysis than I was before this study.				
1	2	3	4	5
What did you like about the video modeling intervention?				
How could the video modeling intervention be improved?				
What did you like about participating in this study via telehealth?				
What did you not like about participating in this study via telehealth?				
Do you have any additional feedback you'd like to share?				