

Rollins College

## Rollins Scholarship Online

---

Thesis Projects

Master's in Applied Behavior Analysis and  
Clinical Science

---

Spring 5-13-2023

### Determining the Utilization of Trial-Based Functional Analyses in a Clinical Setting

Cayla Thomas  
cjthomas@rollins.edu

Follow this and additional works at: [https://scholarship.rollins.edu/mabacs\\_thesis](https://scholarship.rollins.edu/mabacs_thesis)



Part of the [Applied Behavior Analysis Commons](#)

---

#### Recommended Citation

Thomas, Cayla, "Determining the Utilization of Trial-Based Functional Analyses in a Clinical Setting" (2023). *Thesis Projects*. 41.

[https://scholarship.rollins.edu/mabacs\\_thesis/41](https://scholarship.rollins.edu/mabacs_thesis/41)

This Open Access is brought to you for free and open access by the Master's in Applied Behavior Analysis and Clinical Science at Rollins Scholarship Online. It has been accepted for inclusion in Thesis Projects by an authorized administrator of Rollins Scholarship Online. For more information, please contact [rwalton@rollins.edu](mailto:rwalton@rollins.edu).

**Determining the Utilization of Trial-Based Functional Analyses in a Clinical Setting**

A Thesis Proposal  
By  
**Cayla J. Thomas**

Submitted to the Faculty of the Department of Health Professions  
at Rollins College in Partial Fulfillment  
of the Requirements for the Degree of

MASTER OF ARTS IN APPLIED BEHAVIOR ANALYSIS AND CLINICAL SCIENCE

April 2023  
Winter Park, FL

Copyright 2023

Cayla Thomas

All Rights Reserved

### **Acknowledgements**

I would like to thank my advisor, Dr. Kara Wunderlich. Thank you for mentoring me these past three years. I have learned so much from you including the importance of conducting experimental analysis as part of the functional behavior assessment. Thank you for your patience, dedication, feedback, and encouragement. I will always remember, “it’s fine, everything is fine.” I would also like to thank my committee members, Chandler Pelfrey, MA, BCBA, and Dr. Stephanie Trauschke. Thank you for your guidance, expertise, and advice in this journey! Thank you to my fellow classmate and friend Pierce Taylor for assisting with data collection and supporting me on my journey not only with thesis but throughout graduate school.

Thank you to my husband, Corey Thomas, you have supported me and the children throughout this process. Thank you for always encouraging me and supporting me to chase after and achieve my wildest dreams. I know I can take on anything with you by my side. Thank you to my children Adawanna, Jude, and Sylas for your patience with me on the nights and weekends I had to do schoolwork. You three are my why, and the reason I push myself to be better every day. Finally, thank you to my parents, brother, and grandparents. You all have been extended support when I need it most.

**Table of Contents**

ABSTRACT.....	5
INTRODUCTION.....	6
METHOD.....	11
Subjects and Setting.....	11
Procedure.....	14
RESULTS.....	18
Trial-Based Functional Analysis.....	18
Intervention.....	19
Survey.....	20
DISCUSSION.....	20
REFERENCES.....	27
FIGURE 1.....	31
FIGURE 2.....	32
FIGURE 3.....	33
TABLE 1.....	34
TABLE 2.....	35
APPENDIX A: Procedural Fidelity Checklists TBFAs.....	36
APPENDIX B: Demographics and Pre-Screen Questionnaire.....	41
APPENDIX C: TBFA Social Validity Survey.....	43
APPENDIX D: Treatment Fidelity.....	46

### **Abstract**

The functional analysis (FA) methodology is the gold standard of functional assessments to inform function-based interventions in applied behavior analysis. Behavior analysts report underuse of the FA methodology in clinical practice due to lack of time and resources and safety concerns. The trial-based FA (TBFA) is a brief form of the FA that is conducted in the natural environment and to date has mainly been conducted in classrooms. When compared with a standard FA, TBFAs take less consecutive time to complete, there are fewer instances of maladaptive behavior, data collection is simpler, and data analysis requires less expertise. The current study conducted TBFAs in a clinic setting and assessed social validity with behavior analysts. Results show that TBFAs identified a function maintaining problem behavior for 3/3 participants and function-based intervention was effective at reducing problem behavior. Results of social validity surveys show TBFAs combat some common concerns such as time and behavior analysts report intended use of TBFAs in the future. Together, this information expands the literature on TBFAs to a clinic setting and shows the feasibility and usability of TBFAs in clinical practice to inform function-based interventions.

*Keywords:* experimental analysis, functional analysis, trial-based functional analysis

### **Determining the Utilization of Trial-Based Functional Analyses in a Clinical Setting**

Functional analysis (FA) methodology was developed by Iwata et al. (1982/1994) and is considered the gold standard to determine the function of maladaptive behaviors to inform function-based interventions. Prior to the use of FAs, interventions were implemented to target reduction for maladaptive behaviors without valid information as to why the behavior was occurring to begin with, leading to behavior modification. It was the development of the FA that opened the door to providing ethical, function-based treatment to clients. As Iwata et al. (1994) said in their seminal paper on FAs, “We can no longer afford [to conduct clinical research in which the baseline data provide information regarding behavior in a single invariant situation, or] to make treatment decisions based on a ‘best guess’ as to what might constitute the most effective means of intervention (p. 208).” After 30 years, however, the FA methodology is not standard in everyday clinical practice and FAs are often not utilized by behavior analysts (Oliver et al., 2015).

There are a few reasons clinicians may avoid conducting an FA such as safety concerns, length of time to complete, and lack of a specific skill set or expertise to conduct an FA as it’s a complex procedure (LaRue, 2010). Other barriers surrounding the use of FAs in clinical practice include difficulty in convincing caregivers the importance and obtaining consent and the misconception that FAs cannot be used for severe problem behavior or address low rates of behavior (Hanley, 2012). There are solutions to each of these barriers when conducting a standard FA, but still behavior analysts often do not conduct FAs as part of the functional assessment prior to designing interventions for reduction of maladaptive behaviors (Oliver et al., 2015; Roscoe et al., 2015).

To ascertain the use of FAs in clinical practice, Oliver et al. (2015) conducted a web-based survey of behavior analysts and less than half of respondents reported using FAs in practice; most respondents chose “never” or “almost never” when asked about their use of FAs in clinical practice. Instead, most behavior analysts reported using descriptive or informant assessments (Oliver et al., 2015). Descriptive assessments, such as indirect assessments in the form of interviewing caregivers, can inform the conditions in an FA but should not be the sole base for intervention design as they can be unreliable and invalid (Hanley, 2012). Descriptive assessments yield information about the behavior and the environment but do not inform functional relations between the two (Thompson & Iwata, 2001; Marion et al., 2003). Further, descriptive assessments and functional analyses often do not correspond which could lead to failed interventions when interventions are based on descriptive assessments alone (Mace & Lalli, 1991; St. Peter et al., 2005; Pence et al., 2009). Common barriers cited to conducting FAs included lack of time, space, and materials, and 24% of respondents reported company policies that prohibit the use of FAs (Oliver et al., 2015). Roscoe et al. (2015) conducted a survey of behavior analysts and found that 68% of respondents agreed FAs are the most reliable and informative method of assessment, however, only 35% reported using them in practice. Behavior analysts reported lack of time and space as most common barriers to conducting an FA (Roscoe et al., 2015).

There are several different variations of FAs that have been created to get around some of the barriers mentioned above. One variation, the trial-based FA (TBFA) has been proven effective as a brief experimental assessment and continued research is warranted (Sigafos & Sagers, 1995; Bloom et al., 2011). Like FAs, TBFA's set up antecedents using EOs and provide



consequences contingent on problem behavior which sets them apart from descriptive assessments and makes TBFAs an experimental analysis and more valid when compared with descriptive assessments. Common features of TBFAs include the sessions occur in the natural environment, sessions do not occur consecutively, and the use of discontinuous measurement of behavior (Ruiz et al., 2017). While the standard FA will continue to be the gold standard, the TBFA can offer practitioners in a clinical setting a way to do an experimental analysis that is more valid when compared with descriptive or informant assessments. The use of TBFAs in clinics could provide clients with ethical, function-based interventions.

The first to describe the procedures used in TBFAs was Sigafoos & Sagers (1995). The experimenters had teachers conduct TBFAs in the natural setting of the classroom to determine the function of maladaptive behaviors for two participants. Trials ended with the first occurrence of behavior or at 1 min. The experimenters determined the function of behavior which informed effective function-based interventions for both participants (Sigafoos & Sagers, 1995).

To validate the use of TBFAs, research has been conducted to compare the outcomes of standard FAs with TBFAs and results are consistent in that standard FAs and TBFAs correspond in most cases (Wallace & Knights, 2003; LaRue, 2010; Hodges, 2018). Bloom et al., (2011) modified the procedures in Sigafoos & Sagers (1995) by conducting the control segment of the trial before the test segment to limit carryover and conducting longer trials at 2 min each. There was correspondence in 6/10 cases between the TBFA and the standard FA and partial correspondence in a 7<sup>th</sup> case. For the two participants where there was no correspondence, conditions were modified in TBFAs, and the instances of no correspondence were explained.

The results suggest TBFAs could be an effective assessment when standard FA cannot be conducted (Bloom et al., 2011).

Further, function-based interventions aimed at reducing maladaptive behavior based on results of TBFAs have been demonstrated to be effective (Lambert et al., 2012; Bloom et al., 2013; Hodges, 2018; Andersen & Hansen, 2022). Bloom et al. (2013) trained teachers to conduct TBFAs and implemented function-based interventions based on results from TBFAs. There were five functions identified with TBFAs and all five function-based interventions decreased maladaptive behavior and increased appropriate replacement behavior (Bloom et al., 2013). Andersen & Hansen (2022) found function-based interventions informed by TBFAs to be effective for 80% of participants.

Most of the research on TBFAs has been done in a classroom setting (Lloyd et al., 2015; Bloom et al., 2011, Bloom et al., 2013; Sigafos & Sagers, 1995). There is little to no empirical research on TBFAs done in a clinic setting. TBFAs would have similar benefits in a clinic setting as they do in the classroom setting such as taking less preparation, less consecutive time, fewer occurrences of maladaptive behavior, data collection is simpler, data analysis requires less expertise, trials are conducted in the natural environment, and Board Certified Behavior Analysts (BCBAs), Board Certified Assistant Behavior Analysts (BCaBAs), and Registered Behavior Technicians (RBTs) could be trained to conduct TBFA trials just as teachers are trained.

One barrier reported by BCBAs is not having enough time to conduct a full standard FA (Oliver et al., 2015). Insurance companies only provide reimbursement for a limited number of billable hours for assessment and most of the billable hours are used for conducting descriptive assessments, skills assessments, and writing the behavior intervention plan. This does not leave

enough billable hours to conduct a standard FA. TBFAs may take a similar amount of time as a standard FA overall to complete, but it does not have to be done consecutively (Bloom et al., 2011). LaRue (2010) found TBFAs to take 85% less time to complete than standard FAs. Andersen & Hansen (2022) reported TBFAs took 71% less time to complete when compared with standard FAs. TBFAs can be conducted over the course of 2-3 days, while implementing other assessments or programs for skill acquisition, and/or while pairing with the client.

Another concern with a standard FA is maladaptive behavior is repeatedly reinforced and may strengthen the behavior as well as lead to increased safety concerns. There may be lower levels of problem behavior in TBFAs when compared to standard FAs because each trial is terminated after the first occurrence of behavior (Sigafoos & Saggars, 1995). The standard FA may be too complex and require a specific skillset to implement that many BCBA's have not been extensively trained on. Another benefit with fewer occurrences of behavior is data collection and analysis are easier when compared with a standard FA (LaRue, 2010). Further, teachers and staff at residential settings have been trained to conduct TBFAs and conducted them with high fidelity (Lambert et al., 2013; Bloom et al., 2013). In a clinic, RBTs conduct direct assessments (e.g., ABC data collection) and could be trained to conduct TBFAs which would yield more valid results than ABC data collection. TBFAs could be implemented regularly especially if there was a suspected change in function.

Finally, standard FAs require a special observation room with a controlled environment which many clinics do not have access to. TBFAs take place in the natural setting. An added benefit of conducting brief assessments in the natural environment is accounting for any

idiosyncratic variables that may be present in the environment that may not be present in the analog condition of a standard FA (Sigafos & Sagers, 1995).

The purpose of this study is to conduct TBFAs using the method described by Bloom et al. (2011) in a clinic setting and implement function-based interventions to determine the utilization of TBFAs in clinics. In addition, this study will assess social validity of behavior analysts' reports on common concerns with standard FAs versus TBFAs and whether they plan to include TBFAs in functional behavior assessments in the future.

## **Method**

### **Subjects and Setting**

The study took place at clinics providing ABA services to clients with developmental disabilities. There were three participants. Ray is a 3-year-old boy diagnosed with autism spectrum disorder (ASD) who engages in tantrums in the form of whining, crying, and dropping, as well as eye-poking. He uses PECs to communicate three to five wants and needs. He emits spontaneous sounds but not under stimulus control. Mark is a 7-year-old boy diagnosed with ASD. He has minimal verbal communication. He can communicate using short phrases and often requires prompts to use phrases. He engages in self-injurious behavior, screaming, and scripting. Angel is a 9-year-old boy diagnosed with attention deficit hyperactivity disorder (ADHD) and oppositional defiant disorder (ODD). He uses full sentences to communicate. He engages in tantrums that include property destruction, aggression in the form of pushing, shoving, and hitting, and elopement. All the participants' BCBA's participated in the study. BCBA 1 is a female between the ages of 25-36 years old who has been a BCBA for 1-5 years. BCBA 2 is

a male between the ages of 25-36 years old who has been a BCBA for 1-5 years. BCBA 3 is a female between the ages of 35-45 years old who has been a BCBA for 10-15 years.

TBFAs, baseline, and intervention were conducted by trained BCBAs, Board Certified Assistant Behavior Analysts (BCaBAs), and RBTs. BCBAs were present for 25%-40% of TBFA sessions. Participants in the study had already gone through initial intake. Participants had prior indirect and direct assessments conducted (e.g., F.A.S.T and ABC data). Participants had begun treatment and interventions were in place. Participants were selected based on BCBA recommendation because the participant had a target behavior that was not responding to intervention, there was only a slight reduction in target behavior, and/or the BCBA thought an experimental analysis would be appropriate and/or helpful.

### ***Response Measurement***

The TBFA for Ray was conducted on tantrums defined as any instance of dropping to the ground and whining or crying. Tantrum was counted as an occurrence within 5 s of when the participant dropped and whined and/or cried. Instances where dropping occurred without the presence of whining or crying were not counted and vice versa. The TBFA for Mark was conducted on screaming, defined as any instance where Mark made a sound that is above the noise level of the room. This included both screams while scripting and screams outside of scripting. The TBFA for Angel was conducted on any occurrence of the following: throwing items or materials, pushing another person or materials off the table, shoving, and pounding the table. These were common precursors as described by staff that work with Angel and observed by researchers prior to beginning the TBFA. If Angel engaged in any one of these behaviors independently or in combination with another it was counted as an occurrence.

Ray was the only participant who received an intervention using a latency evaluation reversal design with noncontingent access to tangibles. A data sheet and a timer on an iPhone were used for data collection. The occurrence or nonoccurrence of the target behavior during each segment of the TBFA trial was recorded. Latency data was also recorded on the time from the start of the trial to the first instance of target behavior.

### ***Interobserver Agreement (IOA)***

For an average of 35% (range, 30-40%) of TBFA trials, a second data collector was present and interobserver agreement (IOA) was calculated. For TBFA trials, when both observers recorded an occurrence or nonoccurrence of the target behavior it was counted as an agreement. The number of trials with agreements was divided by total number of trials and the number was converted to a percentage. For all three participants, IOA was 100% agreement for TBFA trials. For Ray's baseline and intervention, a latency evaluation was conducted, and IOA was calculated by having both observers record the occurrence or nonoccurrence of behavior and the latency. The total number of sessions with agreements was divided by the total number of sessions and the number was converted to a percentage. Latency was counted as an agreement if both observers recorded latency within 5 s. For 85% of baseline and intervention sessions, a second observer was present, and IOA was 100%.

### ***Procedural Fidelity/Treatment Integrity***

For TBFA trials, procedural fidelity was measured using a checklist to ensure antecedents and consequences were implemented correctly. For Ray, procedural fidelity was collected for 27% of TBFA trials with a mean reliability of 93% (range, 80%-100%). For Mark, procedural fidelity was collected for 23% of TBFA trials with a mean reliability of 97% (range, 83%-100%). For

Angel, procedural fidelity was collected for 30% of sessions with a mean reliability of 99% (range, 89%-100%). For Ray's baseline and intervention sessions, treatment integrity was measured using a checklist for 30% of sessions and was 100%.

## **Procedure**

### ***Trial-Based FAs***

Trials were conducted throughout the participants' regular scheduled session (e.g., during their 6-hr day at a clinic) and there were 10 trials for each condition. Angel had 13 trials of each of the following: escape, attention, and tangible. Trials were conducted in the natural environment of the clinic (e.g., escape trials were conducted during DTT, attention trials were conducted during free time, and tangible trials were conducted when the participant was engaged with a highly preferred item). BCBA's were present for 25-40% of trials to observe TBFA procedures.

Attention and escape conditions were conducted with all participants. A no-interaction condition and a tangible condition were only added on a case-by-case basis where there was reason to suspect an automatic or tangible function. Ray's BCBA and RBTs that regularly worked with him reported the behavior happens often when preferred items are removed or there is denied access to preferred items and activities and warranted adding a tangible condition. Mark's screaming was reported to happen often with no clear antecedent so an ignore condition was added. A synthesized tangible and attention condition was added for Angel after there was low responding overall in TBFA with differentiation in both the attention and tangible conditions.

The order of trials took place in no specified or predetermined order but instead was based on availability (i.e., in the natural setting when the opportunity arises for a demand trial during DTT). The primary researcher decided when an appropriate time was to begin a specified trial. In general, the participant was calm (e.g., not engaging in target behaviors) for at least 2 min before a trial began. Trials were not conducted consecutively except for one instance. In Angel's attention condition, three attention trials were conducted consecutively as a "block".

During control segments of a trial the relevant EOs were absent and problem behavior did not produce social consequences. During test segments of a trial the relevant EOs were present and problem behavior produced consequences. If trials were interrupted or had interference from another client at the clinic or another clinician, the trial ended, and no data was used from that trial. The primary researcher decided when a trial would be excluded due to an interruption or other confounding variable. Trials consisted of a 2 min control segment followed by a 2 min test segment. The segment ended either at 2 min or the first occurrence of behavior. The no-interaction condition did not end on first occurrence of behavior and problem behavior did not produce social consequences.

### ***Conditions***

**Attention.** Moderately preferred items were used based off familiar therapist knowledge and/or previous preference assessments. During the control segment, the therapist provided continuous attention. During the test segment, the therapist said, "I have work to do" and turned away. If problem behavior occurred the therapist turned towards the participant and provided preferred attention (e.g., preferred attention for Angel consisted of tickles, singing, and hugs).



**Demand/Escape.** During the control segment, the therapist turned away from the participant and sat at least two feet away from the participant. There were no demands placed and no materials present. During the test segment, the therapist moved closer to the client and placed a demand. If target behavior occurred during the test segment, the therapist removed the task and said, “okay, you don’t have to do it.” If the participant did not engage in target behavior or respond to the demand, the therapist prompted the correct response using least-to-most prompting. If the participant complied with the demand, the therapist provided another demand and continued this until the segment ended.

**Tangible.** During the control segment, the child had access to a highly preferred tangible item that they had access to at the clinic and the therapist provided attention every 30 s. During the test segment, the therapist removed the item and continued to provide attention every 30 s. If the client engaged in target behavior, the therapist delivered the tangible item to the client. Highly preferred items were used based off familiar therapist knowledge and previous indirect assessments and/or preference assessments.

**No-Interaction.** The therapist sat more than 3 ft away for the no-interaction condition. There were no task materials present and trials did not end with occurrence of behavior (i.e., no-interaction for 4 min regardless of target behavior occurrence). Target behavior did not produce social consequences.

**Attention and Tangible.** During the control segment, the therapist provided continuous attention and a highly preferred tangible item. During the test segment, the therapist said, “I have work to do” and turned away and removed the tangible item. If problem behavior

occurred the therapist turned towards the participant and provided preferred attention (e.g., preferred attention for Angel consisted of tickles, singing, and hugs) and the tangible item.

### ***Data Analysis***

Data collected during TBFA was turned into a percentage. To do this, the number of trials with target behavior was divided by the total number of trials for the condition. The data was then graphed for control and test segments for each condition in a double bar graph. Visual analysis was used, and when there was differentiation between the control and the test bar (i.e., there was fewer percentage of trials with problem behavior in the control when compared with the test) a function was identified. Alternatively, if there was no clear differentiation and there was responding in several conditions and segments, the results were analyzed for automatic function.

### ***Function-Based Intervention***

A function-based intervention was implemented based on identified function in TBFA and in consultation with the client's BCBA for Ray. Ray's intervention was noncontingent access (NCA) to tangible items. A latency evaluation in a reversal ABAB design was conducted. The latency from beginning of session to target behavior was recorded for baseline and intervention sessions. Sessions ended at 5 min or the first occurrence of target behavior. The baseline condition was conducted the same as the test segment of the tangible condition for the TBFA. Intervention sessions consisted of continuous access to a preferred tangible item for 5 min. Data was collected using a paper and pencil. After consultation with Mark's BCBA, there was no intervention implemented with Mark at this time due to the automatic function of screaming

and the determination screaming is not hindering Mark's ability to learn and access reinforcers in his environment at this time.

### ***Social Validity Survey***

Behavior analysts completed a demographic and pre-screen questionnaire on their knowledge and application of FAs and TBFAs in their practice thus far (John, 2022; see Appendix B). After observing and participating in this study, behavior analysts filled out a post survey to assess social validity on FA versus TBFA application in clinic setting (see Appendix C).

## **Results**

### **Trial-Based Functional Analyses**

TBFAs identified a function for all three participants. Figure 1 shows TBFA results for all 3 participants. For Ray, there were 0% of trials with tantrums in the control for the tangible condition, and 60% of trials with tantrums in the test. There were 0% of trials with tantrums in the control for the demand condition, and 20% of trials with tantrums in the test. Because of the significant differentiation in the control and test segments in the tangible condition, a tangible function was identified. The total assessment time for Ray was 110 min.

For Mark, each condition had trials with screaming except for the test segment of the attention condition. There is no differentiation in the percent of trials with screaming in the control versus the test segments for the demand condition. The ignore condition had 30% of trials with screaming. The control segment of the attention condition had screaming in 20% of trials while the test segment had screaming in 0% of trials. There is responding throughout conditions and an automatic function was identified. The total assessment time for Mark was 115 min.

For Angel, the attention condition and the tangible condition had 0% of trials with problem behavior in the control segment and 23% of trials with problem behavior in the test segment. Both the control and test segments of the demand condition had 10% of trials with problem behavior. Another condition was added to test for synthesized attention and tangible function since there was low responding in all conditions. The synthesized attention and tangible condition had 0% of trials with problem behavior in the control and 70% of trials with problem behavior in the test. A synthesized attention and tangible function was identified. The total assessment time for Angel was 176 min.

None of the trials of the TBFAs were thrown out due to interference from other clinicians or clients. No additional resources were required to conduct the TBFAs that the clinics did not already have on site. All 3 BCBA's provided consent for their client to participate in the study without hesitation or questions on safety. For Angel, the participant with aggression and property destruction, precursors were used for the TBFA, and there were zero instances of aggression or high intensity problem behavior during the TBFA. The BCBA's did not have questions on the graphs or analysis of the data.

### **Intervention**

Figure 2 shows a reversal ABAB latency evaluation for noncontingent access (NCA) to tangibles intervention for Ray. During the first baseline phase latency to first tantrum ranged from 5–40 s. During intervention there were zero instances of tantrums, and the latency is recorded as 300 s to represent no problem behavior for the duration of the 5 min sessions. The second baseline phase latency to first tantrum ranged from 2–240 s. The second intervention phase had zero occurrences of tantrums.

## Survey

Table 1 shows the results from the Pre-screen Questionnaire survey. All 3 BCBA's reported "no" to conducting a TBFA before. Table 2 shows the results from the Social Validity survey after the BCBA's had seen the TBFA procedure and outcomes with their clients. All 3 BCBA's reported TBFAs to be feasible for the clinic setting and reported with the right training they would use TBFAs regularly in clinical practice.

Figure 3 shows a bar graph with percentage of "somewhat agree" and "strongly agree" responses to common concerns when conducting experimental assessments and compares standard FA with TBFA responses. When reporting on whether they have enough time to complete a standard FA, 0% of BCBA's agreed they had enough time whereas 100% of BCBA's agreed they have enough time to complete a TBFA. When reporting on concerns of safety, 33% of BCBA's reported concerns about safety with a standard FA, and 0% of BCBA's reported concerns about safety with a TBFA. When reporting on whether there is an area of the clinic to conduct the experimental assessment, 67% of BCBA's agreed they had an area to conduct a standard FA, and 100% of BCBA's agreed they had an area to conduct a TBFA.

## Discussion

The results from the TBFAs were conclusive in all three participants (i.e., a function was identified). The results from Ray's TBFA showed a clear tangible function. The NCA intervention was effective at reducing tantrums. For this intervention to generalize, the next step in Ray's treatment would be to thin the schedule of NCA from a continuous schedule to a fixed-time schedule (e.g., FT 2 min). Mark's TBFA showed varied responding across conditions consistent with an automatic function. Finally, the results from Angel's TBFA show a function for attention

and tangible, and more specifically the synthesized contingencies of attention and tangible together maintaining problem behavior. These results show that TBFAs are an effective experimental analysis in the clinic setting for identifying the function of and treating problem behavior. This expands previous research on TBFAs in a classroom setting to a clinic setting and shows they are feasible in a new setting.

BCBAs reported time, safety, billing, and consent as concerns in previous research on conducting standard FAs in clinical practice (Oliver et al., 2015). Although the time spent on assessment was about 1.5-3 hr for TBFAs, the time did not need to be consecutive and could be dispersed throughout the participants regularly scheduled daily treatment at the clinic. The BCBAs who participated in this study had no questions on how to bill for the assessment and no stated safety concerns. Out of the three participants' caregivers that were asked to provide consent, all three provided consent with no further questions on the assessment. Out of the three BCBAs 100% agreed they had time to conduct a TBFA and 0% agreed they had time to conduct a standard FA. All three BCBAs also agreed TBFAs to be feasible for the clinic setting and stated they would be likely to utilize them in the future. These results provide evidence that directly ameliorates some of the concerns raise by practitioners in Oliver et al. (2015) and Roscoe et al. (2015) with respect to why FAs are not being conducted frequently (e.g., lack of time and safety concerns). The implication of these results are that TBFAs may be more likely to be utilized by BCBAs in clinical practice more often than standard FAs as an experimental assessment procedure as they combat some of the major concerns with standard FAs (e.g., time).

This study found TBFA to be flexible and easy to modify to set up individualized conditions to test for as in with the synthesized contingency for tangible and attention with Angel. In addition, Angel's operational definition of target behavior for TBFA included common precursor behaviors so as to further implement safety measures. Future research could evaluate precursor TBFA.

For Angel's TBFA three attention trials were ran consecutively (i.e., back-to-back) and had occurrences of problem behavior in each test segment. This was a procedural error in that this study was not meant to examine TBFA conducted consecutively. However, this error provided a possible implication for future research. Running the trials consecutively allowed Angel to meet the contingency of attention contingent on problem behavior a few times in a row. When attention was withdrawn for the test condition, problem behavior happened within 4-29 s. Gonzalez et al. (2018) conducted TBFA in a block structure where three trials of a condition were conducted consecutively which allowed for antecedent and consequential control rather than relying on primarily antecedents as TBFA typically do. More research is needed on conducting block TBFA as differentiation between conditions may be more salient when conducted consecutively versus conducted dispersed with different conditions and with longer separation between trials. The block structure may also reduce overall time to conduct TBFA since there is less down time between trials. The block structure TBFA conducted by Gonzalez et al. (2018) was done in a stark environment, like standard FA, therefore, further research on the block structure in the natural environment of the clinic is warranted.

More research on TBFA in clinics will tell whether TBFA may be more suited for some behaviors rather than others. For example, it may take longer for behavior to "build up". A

client may be okay with demands for 2 min and never meet the contingency of getting a break contingent on problem behavior. However, 10 min of demands may include a behavior that gets reinforced, creating higher rates of behavior and more differentiation. FAs are still the gold standard and the TBFA would not replace FAs in clinics but are considered an experimental analysis and would be a more valid assessment when compared with descriptive assessments (e.g., ABC data collection). Running more trials of the TBFA may also help to combat this along with doing block trials (e.g., it may take 15 trials for the client to even meet the contingency and once they do, the next 5 trials could all have an occurrence of target behavior). It may be necessary to do more than 10 trials of a condition and/or to do consecutive/block trials as described by Gonzalez et al. (2018).

In standard FAs, usually, different colored t-shirts are worn so that conditions may be differentiated and more salient (Beavers et al., 2013). One limitation of this study is that there were no colors used to differentiate between conditions. Salient SDs could be especially important for TBFAs since TBFAs rely almost solely on antecedents. Future research could use a necklace with flip cards of different colors and flip to a certain color that corresponds with a particular condition (e.g., blue for attention condition). This could help with quicker differentiation and more responding in TBFAs.

The participants in this research study were not “new” clients at their respective clinic and had behavior interventions (e.g., extinction) happening at the same time as the TBFA. Therefore, it’s possible the participant did not respond or engage in target behavior since there was already extinction in place other times of day. For example, when Ray had a tangible item taken away from him and began tantrum, it took him a couple of minutes to even realize the



therapist was providing the item back immediately contingent on tantrum, because other times throughout the day in the clinic setting, he is not provided the item back for tantrum. In the case of Angel, he had an extinction/time out procedure that if he engaged in property destruction, elopement, or aggression he then had to go to a room with no items for 5 min. Therefore, it may have taken him longer to realize if he engaged in the behavior, he would be reinforced contingent on problem behavior and avoiding the alone time could have been a factor in low rates of responding in the TBFA. BCBA's in clinical practice would typically conduct a TBFA during functional behavior assessment at the initial assessment and in the beginning of treatment before interventions are in place. This may result in more responding in the TBFA conditions.

Another limitation of this study was the presence of moderately preferred items in some of the control segments of the demand trials. When the control ended, the moderately preferred item was removed before the test segment which could have been a confounding variable. However, these trials did not correlate to trials with problem behavior and did not affect the data represented here as percentage of trials with problem behavior.

Limitations of the BCBA social validity survey conducted as part of this research include a small sample size and the use of a subjective measure of behavior. BCBA self-reporting could be influenced by several factors (e.g., selecting an answer that will receive the most social positive reinforcement). Instead, collecting baseline frequency data on how many experimental analyses a BCBA conducts and/or using permanent product data of behavior plans from the past year would give a more precise/objective baseline measurement for assessment practices. Then, after TBFA training, collect frequency data on the number of experimental analyses (i.e.,

TBFAs) a BCBA conducts. This would show whether BCBAs are utilizing TBFAs more often after training when compared with prior to training. Another limitation of the social validity survey is the wording of some of the items on the Likert Scale. For FAs, the statement on billing is “I know how to bill for a standard FA”, and for TBFAs the statement on billing is “I am concerned about billing for a TBFA”. The difference in wording did not allow for a direct comparison between these two items.

Future research could focus on continuing to replicate TBFA research in a clinic setting. The more replications there are, the more empirically validated the utilization of TBFAs in the clinic setting will be. In addition, more clinicians will be able to find articles on TBFAs in clinics when they do a JABA search on assessments. They may miss TBFAs altogether if they do not search for it specifically and may only show up with “school-based” assessments since current research on TBFAs is primarily in the school setting.

Future research could examine training RBTs to conduct TBFAs. Current training research on TBFAs involves training teachers to conduct TBFAs in classrooms (Bloom et al., 2013). This study had an RBT that regularly worked with Angel conduct several trials of attention as well as the synthesized attention and tangible conditions with supervision from the Board Certified Assitant Behavior Analyst (BCaBA) and/or primary researcher. RBTs are already trained in applied behavior analysis and are familiar with ABC data collection and other descriptive assessment methods. If RBTs were trained to conduct TBFAs and were able to easily collect data on the occurrence or nonoccurrence of target behavior, then this data could be utilized by the BCBA to make function-based treatment decisions. This could be done throughout the RBT’s session and the BCBA would not need to be present for each trial. This

would also increase the feasibility and utilization for BCBA's to implement experimental analyses in the clinic setting.

In addition to training RBTs, BCBA's should be trained to conduct TBFA's, and different methods and modalities of training should be examined (e.g., telehealth, BST, in-person, pyramidal training). John (2022) found telehealth to be a successful modality for training BCBA's to conduct TBFA's and skills generalized to the natural environment. Fidelity checklists could be utilized to see at what percent fidelity the BCBA implements the TBFA after different methods of training to determine which method is most successful to train BCBA's and subsequently RBTs on TBFA's.

This study provides evidence TBFA's are effective in a clinic setting. Underuse of standard FA to inform function-based interventions is a systemic problem in the field of ABA and TBFA's offer a solution to implementing experimental analysis of problem behavior in a clinic setting. There is opportunity to include experimental analysis in a feasible way in the clinic setting with a more widespread use of TBFA's.

### References

- Andersen, A. S., & Hansen, B. A. (2022). An evaluation of trial-based functional analyses of inappropriate mealtime behavior. *Journal of Applied Behavior Analysis, 55*(1), 264-289.  
<https://doi-org.ezproxy.rollins.edu/10.1002/jaba.888>
- Beavers, G. A., Iwata, B. A., & Lerman, D. C., (2013). Thirty years of research on functional analysis of problem behavior. *Journal of Applied Behavior Analysis, 46*(1), 1-21.  
<https://doi-org.ezproxy.rollins.edu/10.1002/jaba.30>
- Bloom, S. E., Iwata, B. A., Fritz, J. N., Roscoe, E. M., & Carreau, A. B. (2011). Classroom application of a trial-based functional analysis. *Journal of Applied Behavior Analysis, 44*(1), 19-31. doi: 10.1901/jaba.2011.44-19
- Bloom, S. E., Lambert, J. M., Dayton, E., & Samaha, A. L. (2013). Teacher-conducted trial-based functional analyses as the basis for intervention. *Journal of Applied Behavior Analysis, 46*(1), 208-218. doi: 10.1002/jaba.21
- Gonzalez, S. M. (2018). Evaluating the efficiency and correspondence of trial-based and session-based functional analyses in controlled settings. *USF Graduate Theses and Dissertations*  
<https://digitalcommons.usf.edu/etd/8114>
- Hanley, G. P. (2012). Functional assessment of problem behavior: Dispelling myths, overcoming implementation obstacles, and developing new lore. *Behavior Analysis in Practice, 5*(1), 54-72. doi: 10.1007/BF03391818
- Hodges, A., Gerow, S., Davis, T. N., Radhakrishnan, S., Feind, A., OGuinn, N., & Prawira, C. (2018). An initial evaluation of trial-based functional analyses of inappropriate mealtime behavior. *Journal of Developmental Physical Disabilities, 30*, 391-408.

<https://doi.org/10.1007/s10882-018-9592-2>

Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1994). Toward a functional analysis of self-injury. *Journal of Applied Behavior Analysis, 27*, 197-209.

doi: 10.1901/jaba.1994.27-197

John, K. S. (2022). Training board certified behavior analysts via telehealth to conduct the trial-based functional analysis. *USF Graduate Theses and Dissertations*.

<https://digitalcommons.usf.edu/etd/9382>

Lambert, J. M., Bloom, S. E., & Irvin, J. (2012). Trial-based functional analysis and functional communication training in an early childhood setting. *Journal of Applied Behavior Analysis, 42*(3), 579-584. doi: 10.1901/jaba.2012.45-579

doi: 10.1901/jaba.2012.45-579

Lambert, J. M., Bloom, S. E., & Kunnavatana, S. S. (2013). Training residential staff to conduct trial-based functional analyses. *Journal of Applied Behavior Analysis, 46*(1), 296-300. doi:

10.1002/jaba.17

LaRue, R. H., Lenard, K., Weiss, M. J., Bamond, M., Palmieri, M., & Kelley, M. E. (2010).

Comparison of traditional and trial-based methodologies for conducting functional analysis. *Research in Developmental Disabilities, 31*, 480-487.

<https://doi.org/10.1016/j.ridd.2009.10.020>

Lloyd, B. P., Wehby, J. H., Weaver, E. S., Goldman, S. E., Harvey, M. N., Sherlock, D. R. (2015).

Implementation and validation of trial-based functional analyses in public elementary school settings. *Journal of Behavioral Education, 24*, 167-195.

<http://dx.doi.org.ezproxy.rollins.edu:2048/10.1007/s10864-014-9217-5>

Mace, F.C., & Lalli, J. S. (1991). Linking descriptive and experimental analyses in the treatment

of bizarre speech. *Journal of Applied Behavior Analysis*, 24, 553-562.

doi: 10.1901/jaba.1991.24-553

Marion, S. D., Touchette, P. E., & Sandman, C. A. (2003). Sequential analysis reveals a unique structure for self-injurious behavior. *American Journal on Mental Retardation*, 108, 301-313.

Oliver, A. C., Pratt, L. A., Normand, M. P. (2015). A survey of functional behavior assessment methods used by behavior analysts in practice. *Journal of Applied Behavior Analysis*, 48(4), 817-829. <https://doi-org.ezproxy.rollins.edu/10.1002/jaba.256>

Pence, S. T., Roscoe, E. M., Bourret, J. C., & Ahearn, W. H. (2009). Relative contributions of three descriptive methods: Implications for behavioral assessment. *Journal of Applied Behavior Analysis*, 42, 425-446. doi: 10.1901/jaba.2009.42-425

Rispoli, M., Ninci, J., Neely, L., Zaini, S. (2014). A systematic review of trial-based functional analysis of challenging behavior. *Journal of Developmental Physical Disabilities*, 26, 271-283. doi: 10.1007/s10882-013-9363-z

Roscoe, E. M., Phillips, K. M., Kelly, M. A., Farber, R., & Dube, W. V. (2015). A statewide survey assessing practitioners' use and perceived utility of functional assessment. *Journal of Applied Behavior Analysis*, 48(4), 833-844.  
<https://doi-org.ezproxy.rollins.edu/10.1002/jaba.259>

Ruiz, S. & Kubina, R. M. Jr. (2017). Impact of trial-based functional analysis on challenging behavior and training: A review of the literature. *Behavior Analysis: Research and Practice*, 17(4), 347-356. doi:10.1037/bar0000079

Sigafoos, J. & Sagers, E. (1995). A discrete-trial approach to the functional analysis of

aggressive behaviour in two boys with autism. *Australia and New Zealand Journal of Developmental Disabilities*, 20(4), 287-297. doi: 10.1080/07263869500035621

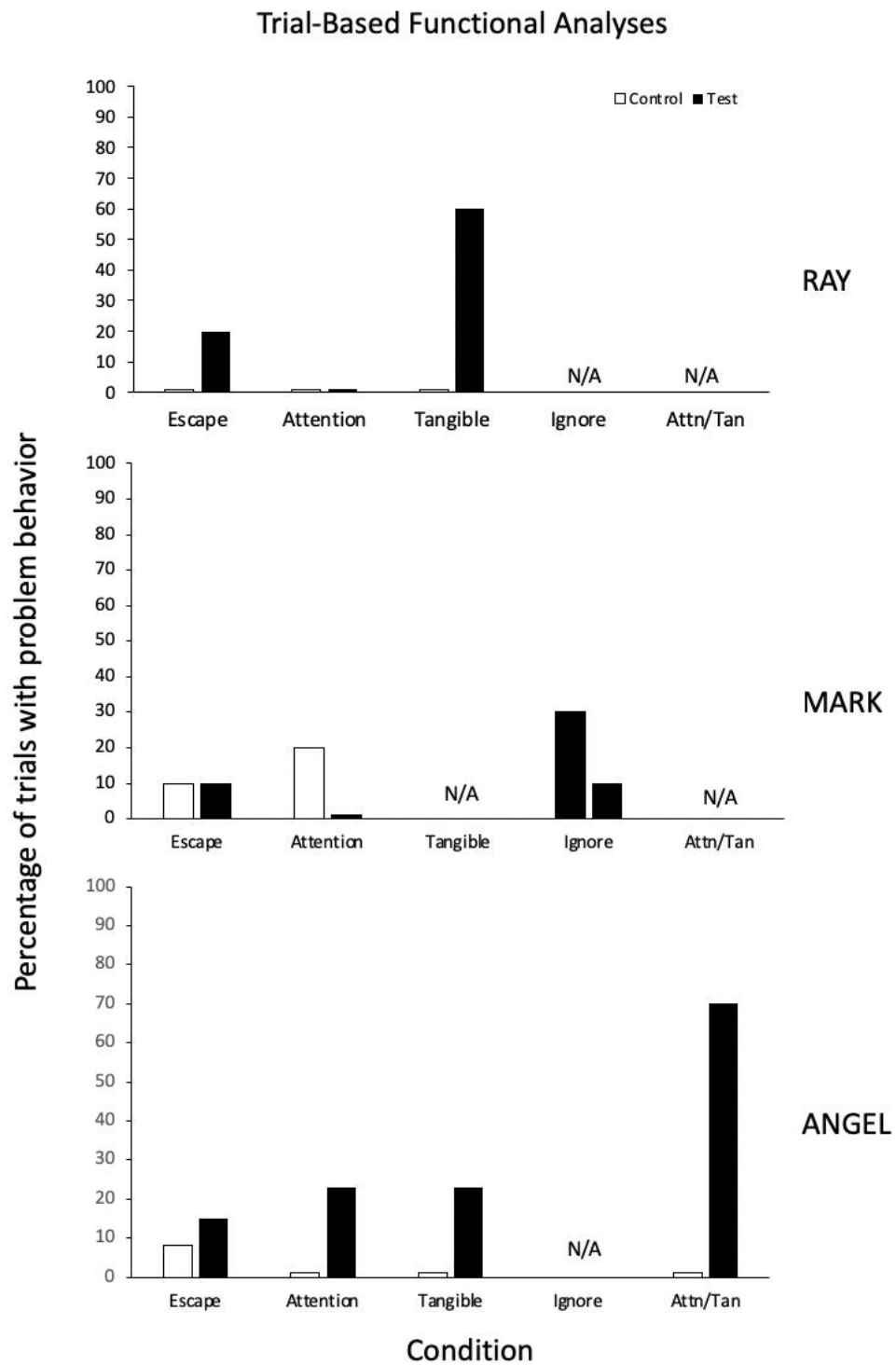
St. Peter, C. C., Vollmer, T. R., Bourret, J. C., Borrero, C. S. W., & Sloman, K. N. (2005). On the role of attention in naturally occurring matching relations. *Journal of Applied Behavior Analysis*, 38, 429-443. doi: 10.1901/jaba.2005.172-04

Thompson, R.H., & Iwata, B. A. (2001). A descriptive analysis of social consequences following problem behavior. *Journal of Applied Behavior Analysis*, 34, 169-178.  
doi: 10.1901/jaba.2001.34-169

Wallace, M. D., & Knights, D. J. (2003). An evaluation of a brief functional analysis format within a vocational setting. *Journal of Applied Behavior Analysis*, 36, 125-128.  
doi: 10.1901/jaba.2003.36-125

**Figure 1**

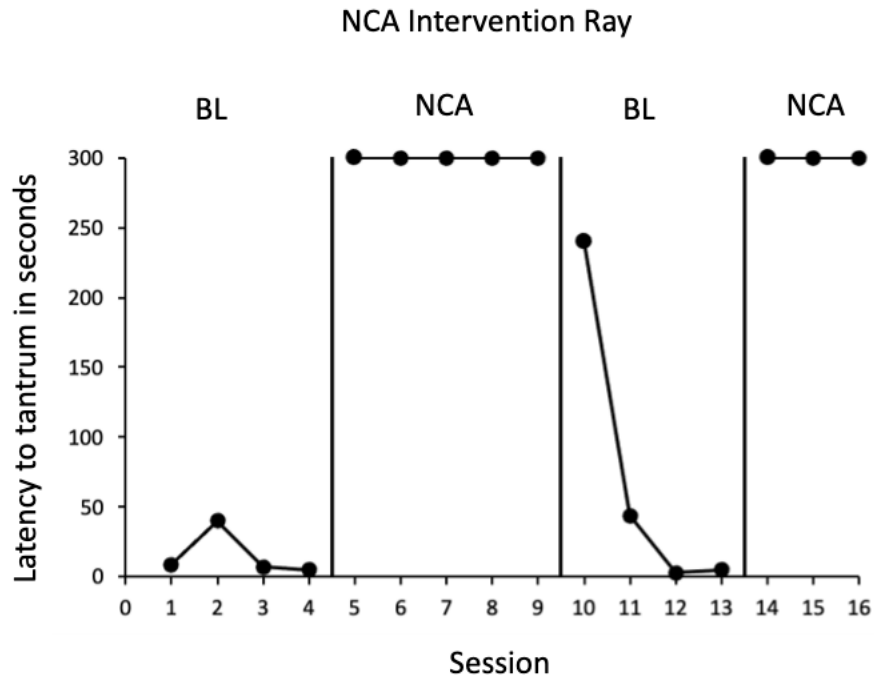
*Trial-Based Functional Analyses Results for Ray, Mark, and Angel*





**Figure 2**

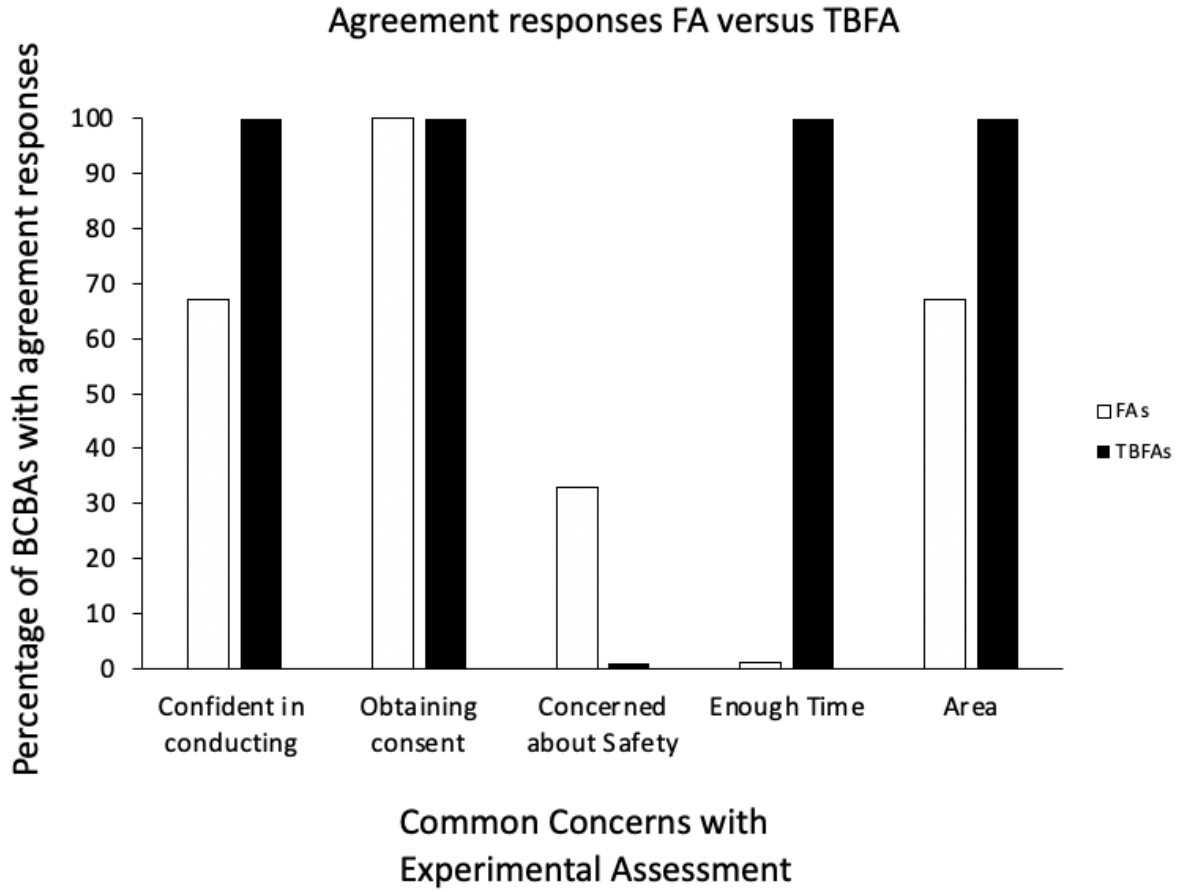
*Latency Evaluation of Noncontingent Access (NCA) Intervention for Ray*



*Note. 300 s represents no problem behavior for the duration of the 5 min session*

**Figure 3**

*Percentage of Somewhat Agree and Strongly Agree responses by BCBAs from social validity survey regarding standard FAs versus TBFAs*



**Table 1***BCBA Pre-Screen Questionnaire Results*

	Participant		
	BCBA 1	BCBA 2	BCBA 3
Have you read Iwata et al. (1984/1994) Toward a Functional Analysis of Self-Injury?	YES	NO	YES
How long did you spend learning about Functional Analyses (FAs) in your Master's program?	3-5 wks	1 class	3-5 wks
Have you attended CEUs, lectures, or information Sessions on FAs?	YES	NO	YES
Have you observed an FA?	YES	YES	YES
Have you taken data during an FA?	YES	YES	YES
Have you acted as a therapist in an FA?	YES	YES	YES
Have you conducted an FA (e.g., set up conditions, trained others, and analyzed data)?	YES	YES	NO
If so, how many times in your career have you conducted an FA?	5-10 times	1 time	N/A
Have you read Bloom et al. (2011) Classroom Applications of Trial-Based Functional Analyses?	NO	NO	NO
Are you familiar with trial-based functional analysis (TBFA) procedures?	YES	NO	YES
Have you observed a TBFA?	NO	NO	YES
Have you taken data during a TBFA?	NO	NO	NO
Have you acted as the therapist in a TBFA?	NO	NO	NO
Have you conducted a TBFA (e.g., set up conditions, trained others, and analyzed data)?	NO	NO	NO

**Table 2***Social Validity Survey Results*

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
FA most valid			1	2	
DA & IA most valid		2	1		
FA, DA, IA equal		1	1		1
DA & IA more helpful than FA	1	2			
Confident in conducting FAs			1	1	1
Comfortable obtaining consent FA					3
Know how to bill insurance FA	1				2
Concerned Safety FA	1		1	1	
I have time to conduct FA		3			
Area to conduct FA in clinic	1			2	
Knowledge TBFA expanded				1	2
Comfortable obtaining consent TBFA				1	2
Concerned billing insurance TBFA	1	1		1	
Concerned Safety TBFA	1	1	1		
I have time to conduct TBFA				2	1
Area to conduct TBFA in clinic				1	2
TBFA feasible for clinic					3
Confident in conducting TBFA					3
Use TBFAs regularly in the future				1	2
Train others TBFA					3

**Appendix A: Procedural Fidelity Checklists**

IGNORE CONDITION	YES	NO	N/A	NOTES
Therapist did not interact with the participant				
Therapist sat more than 3 feet away from the participant				
Therapist removed materials from the participant’s area				
Therapist did not provide consequence for target behavior				
Therapist did not stop the timer until 4 min elapsed				
Therapist recorded instances of target behavior				
Therapist recorded time to first target behavior if target behavior occurred				
Correct Steps:				
Percent of Correct Steps:				

ATTENTION CONDITION	YES	NO	N/A	NOTES
In the control segment, therapist provided continuous attention to the client in the form of talking and playing for the duration of the 2-min or until the first instance of target behavior occurred				
Moderately preferred items were available to the participant in both the control and the test				
No demands were placed in either the control or the test				
Therapist stopped the timer and restarted it when the control segment ended and the test segment began				
Therapist stopped the timer at the first occurrence of behavior or at 2-min for both the control and the test segments				
Therapist began test segment within 5 seconds of control segment ending and turned away from the client and said "I have some work to do"				
Therapist provided attention to the client if target behavior occurred within 5-sec				
Therapist ignored client if there was no occurrence of target behavior				
Therapist recorded instances of target behavior				
Therapist recorded time to first target behavior if target behavior occurred				
Correct Steps:  Percent of Correct Steps:				

DEMAND CONDITION	YES	NO	N/A	NOTES
During the control segment, the therapist sat more than 3 feet away from the client				
During the control segment, the therapist ignored the client				
Therapist ensured all moderately preferred and highly preferred items were removed from the area				
During the test segment, the therapist provided attention the client every 10-seconds				
During the test segment, the therapist moved closer to the participant and placed a simple demand (e.g., “do the worksheet”) within 5-sec				
During the test segment, the therapist provided relevant consequence for target behavior (e.g., “okay, you don’t have to do it”) within 5-sec of target behavior				
Therapist stopped the timer and restarted it when the control segment ended and the test segment began				
Therapist stopped the timer at the first occurrence of behavior or at 2-min for both the control and the test segments				
Therapist prompted the participant if there was no response using least-to-most prompting				
Therapist continued to place demands throughout 2-min test segment if there was no occurrence of target behavior				
Therapist recorded instances of target behavior				
Therapist recorded time to first target behavior if target behavior occurred				
Correct Steps:				
Percent of Correct Steps:				

TANGIBLE CONDITION	YES	NO	N/A	NOTES
During the control segment, client had access to highly preferred item				
During the control segment, the therapist provided high-quality attention at least every 30-seconds				
During the control segment, no consequence was provided for target behavior				
During the test segment, the therapist removed the highly preferred item and placed it in sight but out of reach of the client				
During the test segment, the therapist provided high-quality attention at least every 30-seconds				
During the test segment, the therapist provided highly preferred item to client within 5 seconds contingent on problem behavior				
Therapist stopped the timer and restarted it when the control segment ended, and the test segment began				
Therapist stopped the timer at the first occurrence of behavior or at 2-min for both the control and the test segments				
Therapist recorded instances of target behavior				
Therapist recorded time to first target behavior (latency) if target behavior occurred				
Correct Steps:				
Percent of Correct Steps:				



TANGIBLE/ATTN CONDITION	YES	NO	N/A	NOTES
During the control segment, client had access to highly preferred item				
During the control segment, therapist provided continuous high-quality attention				
During the control segment, no consequence was provided for target behavior				
During the test segment, the therapist removed the highly preferred item and placed it in sight but out of reach of the client				
During the test segment, the therapist told the client "I have work to do" and ignored the client				
During the test segment, the therapist provided highly preferred item AND attention to client within 5 seconds contingent on problem behavior				
Therapist stopped the timer and restarted it when the control segment ended, and the test segment began				
Therapist stopped the timer at the first occurrence of behavior or at 2-min for both the control and the test segments				
Therapist recorded instances of target behavior				
Therapist recorded time to first target behavior (latency) if target behavior occurred				
Correct Steps:				
Percent of Correct Steps:				

**Appendix B: BCBA Demographic Information Questionnaire & Pre-screen Questions**

Please complete the following demographic and job-related questions. If there are any for which you do not want to respond, leave them blank.

1. Age range:
  - a. 20-25
  - b. 26-35
  - c. 35-45
  - d. 45-55
  - e. 55-65
  
2. Gender:
  - a. Woman
  - b. Man
  - c. Transgender
  - d. Non-binary/Non-conforming
  
3. How do you identify?
  - a. White
  - b. Black or African American
  - c. Native Hawaiian/Pacific Islander
  - d. Asian
  - e. American Indian
  - f. Hispanic/Latino/Spanish origin
  - g. Other \_\_\_\_\_
  
4. How long have you been in the field of ABA?
  - a. 1-5 years
  - b. 6-10 years
  - c. 10-15 years
  - d. 15+ years
  
5. How long have you been a BCBA?
  - a. 1-5 years
  - b. 6-10 years
  - c. 10-15 years
  - d. 15+ years

Have you read Iwata et al. (1984/1994) Toward a Functional Analysis of Self-Injury?

Yes No

How long did you spend learning about FAs in your Master's program?

Less than 1 class 1 class 1-2 weeks 3-5 weeks

Have you attended CEUs, lectures, or information sessions on FAs?

Yes No

Have you observed an FA?

Yes No

Have you taken data during an FA?

Yes No

Have you acted as the therapist in an FA?

Yes No

Have you conducted an FA (e.g., set up the conditions, trained others, and analyzed the data)?

Yes No

If so, how many times in your career have you conducted an FA?

1 time 2-5 times 5-10 times More than 10 times

Are you familiar with trial-based functional analysis (TBFA) procedures?

Yes No

Have you read Classroom Applications of Trial-Based Functional Analyses by Bloom et al. 2011?

Yes No

Are you familiar with trial-based functional analysis (TBFA) procedures?

Yes No

Have you observed a TBFA?

Yes No

Have you taken data during a TBFA?

Yes No

Have you acted as the therapist in a TBFA?

Yes No

Have you conducted a TBFA (e.g., set up conditions, trained others, and analyzed data)?

Yes No

**Appendix C: TBFA Social Validity Survey**

For the following questions, use this rating scale

*Strongly Disagree – 1*

*Somewhat Disagree – 2*

*Neither Agree nor Disagree - 3*

*Somewhat Agree – 4*

*Strongly Agree – 5*

I believe conducting a standard Functional Analysis (FA) provides the *most* valid information on the function of behavior when compared with other functional assessments

1      2      3      4      5

I believe conducting indirect assessments (e.g., FAST) and direct assessments (e.g., ABC data) provide the *most* valid information to determine function of behavior when compared with other functional assessments.

1      2      3      4      5

I believe that other forms of functional assessment such as indirect assessments (e.g., FAST) and direct assessments (e.g., ABC data) are just as helpful in determining function of behavior as the standard FA

1      2      3      4      5

I believe indirect assessments (e.g., FAST) and direct assessments (e.g., ABC data) are more helpful in determining function of behavior than standard FA.

1      2      3      4      5

I am confident in my ability to conduct FAs independently

1      2      3      4      5

I feel comfortable obtaining consent from parents and caregivers to conduct FAs

1      2      3      4      5

I know how to bill insurance for a standard FA

1      2      3      4      5

I am concerned about the safety of my client and the therapist performing a standard FA

1 2 3 4 5

I have enough time to perform a standard FA

1 2 3 4 5

I have an area at my clinic that works to conduct a standard FA

1 2 3 4 5

My knowledge of trial-based functional analyses (TBFAs) expanded during this study

1 2 3 4 5

I would feel comfortable obtaining consent from parents and caregivers to conduct a TBFA

1 2 3 4 5

I am concerned about billing insurance for a TBFA

1 2 3 4 5

I am concerned about the safety of my client and the therapist performing a TBFA

1 2 3 4 5

I have enough time to conduct a TBFA

1 2 3 4 5

I have an area at my clinic that works to conduct a TBFA

1 2 3 4 5

The TBFA procedure seems feasible to implement in my clinic setting

1 2 3 4 5

With the right training, I am confident I could implement a TBFA with my client

1 2 3 4 5

With the right training, I would use TBFA in clinical practice regularly

1      2      3      4      5

With enough practice, I am confident I could train others to implement a TBFA

1      2      3      4      5

Please answer the following question with a short answer:

1. How would you like training on TBFA for yourself and other practitioners at your clinic (e.g., pre-recorded videos, live telehealth training, in person training)?

**Appendix D: Treatment Fidelity Checklist – NCA Intervention Ray**

NCA Tangible Treatment Fidelity	YES	NO	N/A	NOTES
During baseline, therapist provided tangible item to client for 2-min prior to beginning the baseline session				
During baseline, therapist started a stopwatch at the beginning of baseline session and removed the tangible item within 5 s				
During baseline, if the client engaged in target behavior within 5-min the therapist stopped the timer and provided the tangible item back to the client				
During baseline, the therapist recorded latency data in seconds if target behavior happened				
During intervention, the therapist provided the tangible item to the client at the beginning of the session and set a timer for 5-min				
During intervention, if the target behavior occurred the therapist stopped the timer and recorded latency data				
Correct Steps:				
Percent of Correct Steps:				