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Evaluating the Effectiveness, Feasibility, and Treatment Acceptability of a Culturally Adapted Version of Discriminated Functional Communication with Afro-Caribbean Families

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by

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DEDICATION

This thesis is dedicated to my family, friends, and colleagues for their tremendous support during the completion of this project**.** This project is also dedicated to the ongoing development of cultural competency within Applied Behavior Analysis.

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ABSTRACT

The majority of behavioral analytic interventions reflect European-American values. One useful intervention is discriminated functional communication training (DFCT), which may be implemented to increase the generalizability of functional communication training (FCT). However, the discriminative stimuli used during DFCT may not adequately reflect what is commonly used in various cultures. Thus, the purpose of the current study was to evaluate the effectiveness, feasibility (in the form of training parents to implement), and treatment acceptability of a culturally adapted version of DFCT with Afro-Caribbean families. Three children with ASD along with their mothers participated in the study. Results showed that culturally adapting DFCT was as effective as the traditional procedure in obtaining discriminated manding for 2 of 3 participants. An alternate DFCT procedure used with the third participant was also effective. Also, it was feasible to train parents to implement the intervention. Social validity measures indicated the study incorporated cultural values, and beliefs, and produced favorable effects on replacing problem behavior with discriminated manding that was culturally relevant.

INTRODUCTION

The demographics of families in the United States are changing and are becoming more culturally and ethnically diverse than previous years (McEachern & Kenny, 2002). Because behavior analytic principles were developed on a foundation of European-American cultural values (Peterson & Ishii-Jordan, 1994), the majority of the interventions used to reflect those values. As a result, some of the interventions being implemented with culturally diverse groups may not be contextually fit (i.e., taking into consideration different values, preferences, and practices of the client's culture) (Fong, Catagnus, Brodhead, Quigley, & Field, 2016). To address that issue, behavior analysts may consider making an increased effort to respond to the diversity of their clients from culturally distinct backgrounds. This effort may include adapting interventions to make them culturally and contextually applicable to different ethnic groups, perhaps resulting in a breakdown of barriers that may impede providing effective service to diverse clients (Fong et al., 2016).

One common intervention is functional communication training (FCT). FCT is implemented by teaching an individual an appropriate, alternative response to replace a problem behavior. The alternative response results in obtaining the same reinforcer that was maintaining the problem behavior (Carr & Durand, 1985; Tiger, Hanley, & Bruzek, 2008). During the implementation of FCT, the reinforcer for the problem behavior is withheld through a process called extinction, and a functional response is taught to the individual, which is reinforced instead (e.g., Fisher, Greer, Fuhrman, & Querim, 2015; Tiger et al., 2008). Tiger et al. (2008)

stated that in order to increase the generalizability of FCT, it should be done in the individual's natural environment. Additionally, Moes and Frea (2002) state that success will only occur if information from the family's context (i.e., cultural belief) is taken into account. If information from the family's context is not taken into account, various factors may hinder the implementation process that may set the stage for the reemergence of problem behavior (Hagopian, Boelter, & Jarmolowicz, 2011). One of these factors is not reinforcing each occurrence of the response.

When an individual is being taught to use FCT, his/her behavior is being reinforced on a continuous schedule of reinforcement (Tiger et al., 2008). Essentially, they learn that each time they make an appropriate response; their behavior will be reinforced. Consequently, a limitation of FCT is that it can lead to excessive manding, or unintended extinction in the natural environment where reinforcement will not always be available, or in some cases delayed (Tiger et al., 2008). Another limitation of FCT is that a child may mand at inappropriate times. A child may mand for items when their caregiver is busy and unable to attend to the child's needs. Consequently, this type of scenario may be challenging for the caregiver, and can set the stage for the resurgence of problem behavior (see Shahan & Sweeney, 2011, for a model of resurgence). A way to combat these limitations is by using multiple schedules to thin the schedule of reinforcement available for that child (Hanley, Iwata, & Thompson, 2001).

Ferster and Skinner (1957) define multiple schedules as using different stimuli for two or more alternating schedules of reinforcement. The problem behavior is placed on extinction during the different schedules (Hanley et al., 2001). The end goal of using multiple schedules is to decrease and increase the reinforcement and extinction components respectively (Hagopian et al., 2011). Fisher, Thompson, and Kuhn (1998) conducted discrimination training with two

children using cards as discriminative stimuli (S^D), indicating that preferred toys and staff attention were available. These cards were alternated with the removal of the cards for 30 s each for 10-min sessions. The individuals' responses were reinforced on a fixed-ratio (FR) 1 schedule. During the intervention, all problem behaviors were placed on extinction. The results showed that by differentially reinforcing communication, the problem behaviors decreased and remained at near zero levels due to the addition of an S^D. An advantage of this process was that children did not mand during times when the caregiver was unlikely to deliver the reinforcer.

Betz, Fisher, Roane, Mintz, and Owen (2013) conducted a component analysis of the Hanley et al. (2001) procedure of schedule thinning to not only replicate their findings but to also train their participants to exclusively emit functional communicative responses in the presence of the S^D. The results demonstrated that once discriminative control of the functional responses was established under a dense schedule (i.e., multiple FCT 60/60), it was feasible to rapidly shift to a lean schedule (i.e., multiple FCT 60/240) and still maintain the positive effects of sustaining problem behavior at near zero levels.

Hagopian et al. (2011) recommended that individuals be trained in different settings or use natural signals (e.g., an adult speaking to another adult) rather than artificial stimuli (e.g., different colored cards) in order to increase the generalizability of multiple schedules. Natural signals refer to naturally occurring stimuli that may act as an S^D so that the child's responding comes under control of stimuli associated with when their parent/caregiver is available to provide reinforcement, and also decrease the likelihood of them engaging in a communicative response when reinforcement is less likely (Hagopian et al., 2011). Kuhn, Chirighin, and Zelenka (2010) used a multiple-schedule arrangement in the natural setting to teach two individuals with developmental disabilities to engage in discriminated manding for attention during staff's non-

busy activities (i.e., cooking, writing, talking). Results demonstrated that both children manded for attention mostly when attention was available. They were also able to generalize to novel activities not included in the training. Leon, Hausman, Kahng, and Becraft (2010) extended Kuhn et al. (2010) findings by teaching one participant to identify caregiver's overt behaviors as S^Ds for when their response (saying "excuse me") would be reinforced. Results demonstrated that the discriminated functional response generalized across novel settings, situations, and experimenters.

It is possible that these S^Ds may vary across cultures, and so the likelihood that an intervention may be used could depend on the degree to which the taught S^Ds are culturally relevant. For instance, when teaching appropriate social behaviors to clients from different cultural backgrounds, it may be important to consider what caregivers consider as acceptable. Different topographies of a response are deemed appropriate depending on the cultural background of the clients. For example, Perepa (2014) administered semi-structured interviews to families from different ethnic communities who had children diagnosed with autism spectrum disorder. Of the 16 Afro-Caribbean caregivers interviewed, only 39% saw initiating conversations, requesting, commenting when interacting with adults and people in authority, and also using gestures such as pointing as appropriate social behavior. One can see the implications that these cultural perspectives may have on the effectiveness of discriminated functional communication training (DFCT). Thus, the purpose of this study is to evaluate the effectiveness, feasibility (in the form of training parents to implement), and treatment acceptability of a culturally adapted version of DFCT with Afro-Caribbean families.

METHOD

Participants, Setting, and Materials

Three parent-child dyads were recruited from the local community using informational flyers. The flyers described the study, the specific criteria for participation, and the researcher's contact information. The first three participants who met the following criteria were selected to participate: (a) a child with a diagnosis of a developmental or intellectual disability whose age was between the 2 and 18 years old; (c) engaged in problem behavior maintained by social positive and negative consequences as indicated by the Functional Analysis Screening Tool (FAST, see Appendix C; Iwata, DeLeon, & Roscoe, 2013) and subsequent functional analysis (FA); and (d) come from an Afro-Caribbean ethnic background. Informed consent was obtained from all participants before they participated in the study. All participants were given pseudonyms.

Patrick was a 4-year-old male diagnosed with autism from a Jamaican ethnic background. Patrick and his mother were born in the United States. His mother was raised in New York by Jamaican-born parents. Patrick communicated vocally using simple sentences, but would often repeat scripts from commercials. He was able to follow multiple-steps instructions. Jason was a 4-year-old male diagnosed with autism from a Trinidadian ethnic background. Jason was born in the United States whereas his mother was born and raised in Trinidad. He was able to follow one-step instructions. At the beginning of the study, he did not have an identified mode of communication as he would infrequently communicate his wants and needs by either using body

gestures or grabbing items. After a discussion with his mother, his mode of communication was identified to be vocal. Shane was a 7-year-old male diagnosed with autism from a Grenadian ethnic background. Shane's mother was born and raised in Grenada while Shane was born in the United States. Like Jason, he did not have a primary mode of communication as he requested his wants and needs by either using manual signs or picture cards. His mother also reported that he usually reaches or grabs his desired item and was able to follow one-step instructions. After a discussion with his mother, manual signs was chosen as his mode of communication.

Sessions for the study took place at either the families' home or a research room on the University of South Florida's campus. The research rooms were equipped with a table and two chairs, handheld devices for data collection, and relevant materials for the different conditions of the FA and treatment sessions, whereas the families' home contained additional furniture that was not used throughout the study. For each child participant, the highly and moderately preferred items from the preference assessments were used during the tangible and attention conditions during the FA respectively while all items from the array were present during the play condition of the FA. For Patrick, his toys consisted of a tablet and a toy train, which were used during subsequent phases of the study. During the DFCT phase, red and green cards measuring 9x12 inches were used as signals for Jason and Patrick. A token board measuring 11.75x10.5 inches along with Velcro-lined stars was used for Shane.

Response Measurement and Reliability

Data were collected on the children's target problem behaviors, and functional communication responses, and on the parents' implementation of the DFCT procedures. Patrick's target behavior of tantrums was defined as crying with or without tears and screaming

in a high-pitched voice. Percentage of intervals was used to record his problem behavior. Jason's target behavior of property destruction was defined as swiping materials or items from their original position, and throwing items (not towards people), and was recorded using a frequency

measure. Shane's behavior of aggression was defined as any attempt or actual pulling of hair, scratching, hitting, and kicking others. His behavior was recorded using a frequency measure.

Functional communication responses were determined based on discussions with the participants' mothers, and a rate measure was used for all participants. Patrick's alternative response was "I want toys please" while Jason's alternative response was "attention please." The manual sign "break" was selected for Shane, which was defined as making two fists and making a back and forth movement to appear as if he was breaking something in two. This sign was chosen as opposed to another manual sign due to Shane's motor limitations.

A percentage of correct steps measure was used during the parent-training phase of the study. Parents were taught the DFCT procedure developed for their child based on responses from the Survey for Afro-Caribbean Individuals (see Appendix A). Four trained research assistants collected data and reliability scores using a mobile application, Countee (Version 1.0.4; Peic & Hernandez, 2016), and pen and paper.

Inter-observer agreement. Two trained research assistants independently observed and collected data. Inter-observer agreement (IOA) was calculated using partial agreement within intervals for all participants' FCRs, and Jason and Shane's problem behaviors. The IOA was calculated by dividing each session into 10-s intervals then dividing the smaller number of responses in each interval by the larger number of responses, then multiplying by 100. The average agreement across all intervals was then calculated. Point-by-point agreement was used

for Patrick's problem behavior. This method was calculated by dividing the number of intervals agreed by two observers divided by the sum of intervals agreed, and intervals disagreed then multiplied by 100.

IOA was collected for 36% of all sessions within Phase 2 (FA), 33% of all sessions within Phase 3 (FCT), 35% of all sessions within Phase 4 (DFCT), and 66% of all sessions within Phase 6 (Parent-implementation) for Jason. For Shane, IOA was collected for 35% of all sessions within Phase 2 (FA), 31% of all sessions within Phase 3 (FCT), 76% of all sessions within Phase 4 (DFCT), and 66% of all sessions within Phase 6 (Parent-implementation). For Patrick, IOA was collected for 30% of all sessions within Phase 2 (FA), 38% of all sessions within Phase 3 (FCT), 33% of all sessions within Phase 4 (DFCT), and 100% of all sessions within Phase 6 (Parent-implementation).

For Jason, IOA for the FA: 98.2% (range: 93.4-100%), FCT: 99% (range: 95.1-100%) and 95.7% (range: 85.2-100%) for problem behavior and independent FCRs respectively, DFCT: 99.6% (range: 98.4-100%), 98.4% (range: 95.1-100%), and 97.9% (range: 91.8-100%) for problem behavior, independent FCRs during the S^D, and independent FCRs during the S-delta respectively, and parent-implementation: 100%, 92.8% (range: 93.6-91.9%), and 100% for problem behavior, independent FCRs during the S^D, and independent FCRs during the S-delta respectively.

For Shane, IOA for the FA: 98.5% (range: 92.6-100%), FCT: 100% and 96.7% (range: 86.9-100%) for problem behavior and independent FCRs respectively, DFCT: 99.3% (range: 96.7-100%), and 98.1% (range: 93.4-100%) for problem behavior, and independent FCRs during the upside of the token board respectively, and parent-implementation: 100%, and 96.8% (range:

93.6-100%) for problem behavior, and independent FCRs during the upside of the token board respectively.

For Patrick, IOA for the FA: 97.3% (range: 92-100%), FCT: 95% (range: 90-100%) and 98.9% (range: 96.7-100%) for problem behavior and independent FCRs respectively, DFCT: 100%, 98.4% (range: 96.7-100%), and 100% for problem behavior, independent FCRs during the S^D, and independent FCRs during the S-delta respectively, and parent-implementation: 91.3% (range: 87- 96.7%), 100%, and 100% for problem behavior, independent FCRs during the S^D, and independent FCRs during the S-delta respectively.

Treatment Integrity. Treatment integrity was collected on the therapists' correct implementation of study procedures, and on the parents' correct implementation of the DFCT procedures (see Appendices E-G). Treatment integrity was collected for 32% of all sessions within Phases 2 through 4 (FA, FCT, and DFCT), and 100% of all sessions within Phase 6 (Parent-implementation) for Jason. For Shane, treatment integrity was collected for 29% of all sessions within Phase 2 through 4 (FA, FCT, and DFCT), and 100% of all sessions within Phase 6 (Parent-implementation). For Patrick, treatment integrity was collected for 73% of all sessions within Phase 2 through 4 (FA, FCT, DFCT), 100% of all sessions within Phase 6 (Parent-implementation). During the FA, treatment integrity scores for Jason, Shane, and Patrick were 96.2% (range: 83-100%), 100% and 100% respectively. During the FCT, DFCT and Parent-implementation phases, treatment integrity scores were 100% for all three participants.

Experimental Design and Procedure

A noncurrent multiple baseline across individuals design was used. The research design included six phases: (1) FAST and Survey, (2) FA, (3) FCT, (4) DFCT, (5) Parent-training, and (6) Parent-implementation.

Phase 1: FAST and Survey. The FAST was administered to the parents by the principal investigator during their first meeting. The results of FAST indicated that all of the participants' problem behaviors might have been influenced by social contingencies. Following the completion of the FAST, the Survey for Afro-Caribbean Individuals (see Appendix A) was administered to ascertain the different S^Ds and S-delta stimuli that were culturally relevant to be used during Phases 4, 5, and 6. The Survey for Afro-Caribbean Individuals was developed by the first author, a Jamaican born and raised BCaBA based on informal discussions with Afro-Caribbean parents. Parents of the participants completed the open-ended Survey for Afro-Caribbean Individuals and answered questions about how they let their child know when they are available or unavailable, what behavior their child should engage in if they needed to interact their parent when they were busy, and how their child know it is appropriate to approach their parent when they are engaged in another task. The principal investigator also used the meeting to identify operational definitions of the problem behavior that were targeted during the study, and the functional communication responses that were taught to the participants.

Phase 2: FA. The traditional FA as designed by Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994) was conducted for all participants to determine the function of their problem behavior. The five conditions that were tested include: ignore, attention, play, tangible, and escape. A divided attention condition was conducted with Patrick (Fahmie, Iwata, Harper, and Querim, 2013), as the interview with his mother suggested that he engaged in problem behavior once attention was divided between two adults. Each condition of the FAs lasted 10 min and was conducted as follows:

***Ignore*.** The participant was in the room with a therapist but without access to any preferred items, attention or demands. Problem behavior resulted in no programmed

consequences.

Attention. The therapist was seated next to the participant and instructed them that she had work to do and turned away from the participant. Problem behavior resulted in the therapist responding with statements such as, "Don't do that. You will hurt yourself."

Divided Attention. During this condition, the therapist sat next to a confederate and told the participant, "I have to talk to my friend, and you can do whatever you want." Contingent on problem behavior, the therapist would stop conversing with the confederate, turn to the participant and state, "Don't do that. You will hurt yourself."

Play. During this condition, the therapist was seated in the room with the participant while they had free access to their highly preferred items along with attention from the therapist every 30 s. No demands were presented to the participant, and problem behavior resulted in no consequences.

Tangible. The participants had access to their highly preferred items for approximately 60 s immediately prior to the session. A tablet and miniature train were identified as highly preferred for Patrick, a toy car and tablet were identified as highly preferred for Jason and Shane respectively. Once 60 s elapsed, the session began when the therapist removed the toy by saying "no more toys" during the first instance. For Patrick, the therapist removed the toy and stated, "my turn" as mom reported this statement was a possible antecedent for problem behavior. Contingent on problem behavior, the therapist returned their highly preferred item for 30 s.

Escape. Tasks considered aversive to the participants were presented using a three-step prompting hierarchy consisting of sequential verbal, gestural and physical prompts. No verbal praise was provided contingent on compliance to the verbal and gestural prompts. Contingent on problem behavior, the therapist stated, "Okay, you don't have to," during the first instance and

removed all demands and materials for 30 s. Once 30 s elapsed, tasks were presented once more.

Baseline. Baseline included the test condition of the FA associated with the functional reinforcer for problem behavior. Functional communication responses (FCR) were not reinforced.

Phase 3: FCT. During the FCT phase, access to the functional reinforcer as determined by the results of the FA was withheld prior to the beginning of sessions, and the participant was prompted to request the item (e.g., "If you want (reinforcer), say/sign '(reinforcer) please.'" This was done using an increasing prompt delay across sessions for all participants. The first session was completed with 0 s time delay for the prompt, followed by the second session with a 1-s delay. For subsequent sessions, the time delay for the prompt was increased by 50% and rounded to the nearest whole number. A verbal prompt was used for both Patrick and Jason, whereas a physical prompt was used for Shane. The prompting procedures were used until the participants met the mastery criteria. Patrick was taught to request his toys, which he received for 30 s, Jason was taught to request attention, which he received for approximately 10 s, and Shane was taught to request a break, which he received for 30 s. Sessions lasted 10 min, and all problem behaviors were placed on extinction. Mastery criteria were achieved by the participants emitting the FCR independently 100% of the time for three consecutive sessions and engaging in problem behavior at or below a 90% reduction from baseline levels for three consecutive sessions.

Phase 4: DFCT. The DFCT procedure was used to teach discrimination between periods of extinction and the availability of reinforcement using traditional and culturally adapted signals. This was done using a multiple schedule procedure for Patrick and Jason. An alternative procedure was used to teach Shane discriminated manding as Campos, Leon, Sleiman, and Urcuyo (2017) reported that a multiple schedule procedure alone was not effective in

discriminated manding for behaviors maintained by negative reinforcement. For sessions with Patrick and Jason, the S^D and S-delta were alternated during each 10-min session. An FCT rule was presented before each session (e.g., when the green card is present you can ask for attention, when the red card is present no attention will be provided). Sessions began with the presentation of the S^D, after the first communication response, the S-delta was presented. If there was no communication response once the S^D was presented, it was in place for 20% of the average inter-response time for problem behavior in baseline before switching to the S-delta. The duration of the S-delta was calculated by 20% less of the average inter-response time for problem behavior in baseline. Once the participant emitted the FCR in the presence of the S^D, they received the functional reinforcer (i.e., attention or access to tangible items as determined by the FA). If the participant emitted the FCR in the presence of the S-delta, the reinforcer was withheld. Problem behavior was placed on extinction.

Traditional Signal. For both Patrick and Jason, a green and red card served as the S^D and the S-delta stimuli respectively during this condition.

Cultural Signal. Based on results of the Survey for Afro-Caribbean Individuals and conversations with their parent, the cultural signals were chosen for each participant (see Table 1). Patrick's signals comprised of a green card with the verbal prompt "yes" for the S^D, and a red card with the verbal prompt "no" for the S-delta. These signals were chosen because mom reported that when he can no longer have access to toys, she prefers to be very direct in telling him no instead of providing an explanation or telling him to wait a while. Jason's cultural signals comprised of a thumb up for the S^D, and a thumb down for the S-delta. These signals were chosen because mom reported that she was already using these signals with her other children to signal when she was available or unavailable.

An addition of a within-session verbal prompt for Jason was implemented at session 43 because his discrimination index indicated weak discrimination. The verbal prompt of "attention" and "no attention" were stated once the green/thumb up or red/thumb down signals were presented. Mastery criteria were achieved by three consecutive sessions of Patrick and Jason emitting more FCRs in the presence of the S^D than the S-delta, which calculated by visual discrimination, and three consecutive sessions with problem behavior at or below a 90% reduction from baseline levels.

After discussions with Shane's mother, a token board procedure was developed to teach Shane to complete x number of tasks before a break was provided using the token board as the discriminative signal. The token board up with empty token slots signaled that reinforcement was not available. Once the work criterion was met and the token slot designated as the signal for reinforcement was filled, that filled token spot signaled that reinforcement was available. Once Shane engaged in the FCR, the token board was flipped over and removed from the work area to signal his break, which lasted for 30 s. The reason for the work requirement was based on his mother's report about growing up in an Afro-Caribbean household, where requests for a break before a task is done is often ignored as emphasis is placed on working for longer periods with infrequent breaks. She expressed that Shane has to complete some of his work before receiving a break, and if he requested a break before he was finished, she would not provide the break.

Before sessions with Shane, a rule was presented (e.g., first complete 1 task then you can get a break by signing break). Task that he already knew were used throughout this phase. If Shane did not request a break within 10 s of completing the work criterion, the FCR was prompted. Requests for a break or turning the board over before completing the required number of responses were ignored. Once he completed the task independently, the therapist provided

praise by saying "good job" and placed the token on the board. Tokens were only provided for independent responses, and only vocal praise was provided for prompted responses. A least-to-most prompting procedure was used if he completed the task incorrectly or refused to complete the task within 3 s of the prompt. Additionally, no vocal feedback was provided (e.g., "wrong", or "incorrect"). The response requirement increased for subsequent sessions based on a FR1 schedule then thinned to a terminal schedule of VR7 with problem behavior being at the 90% reduction from baseline levels.

Phase 5: Parent-Training. Once the participants achieved the mastery criteria at the end of Phase 4 (3 consecutive sessions emitting more FCRs in the presence of the S^D than the S-delta for Patrick and Jason, and 3 consecutive sessions of a terminal schedule VR7 for Shane with problem behavior at or below a 90% reduction from baseline levels for all participants), the parent was trained using behavior skills training (i.e., instructions, modeling, rehearsal and feedback) to implement the DFCT procedures with research assistants. Sessions were 5 min. Patrick and Jason's mothers were first trained on the traditional version of DFCT followed by the culturally adapted version. Since the culturally adapted DFCT procedure was similar to the traditional version except with the signals used, a probe was conducted to assess the accuracy of the procedures done by the parents in order to determine the need for BST for the cultural version. Correct responses were calculated by dividing the correct responses by the sum of the incorrect and correct responses during each session and converted to a percentage. Once the mastery criterion of three consecutive sessions with 100% of the steps implemented correctly was met during post-training, the principal investigator assessed the parent's preference by asking which procedure they preferred. Once their choice was made, the parents implemented the chosen procedure with their child.

Phase 6: Parent-Implementation. This phase was assessed in 5-min in-situ sessions. No feedback was provided to the parent during this phase. Correct responses were calculated similarly to the method used in Phase 5. Mastery criterion was achieved once the parent conducted three consecutive sessions with 100% of the steps implemented correctly and problem behavior at the 80% reduction from baseline levels.

Caregiver Report. At the conclusion of the study, parents had a week to complete the Caregiver Report developed by the first author, which was used as a social validity measure (see Appendix B). The Caregiver Report was a combination of a Likert-type questionnaire and open-ended questions that compared the traditional and culturally adapted procedures with regards to treatment acceptability. The report also assessed if topics such as cultural beliefs, values, and appropriate social behaviors were addressed during Phase 4. Patrick's and Jason's mothers completed the first part of the report twice for each version of DFCT and completed the second part of the report based on their choice. Shane's mother only completed the report once because her choice was already included from the beginning of the study.

RESULTS

Figure 1 depicts the results from the traditional FA for each participant. Patrick had elevated rates of responding during the tangible and escape conditions. However, for the purpose of the study, the tangible function of his tantrums was treated. Jason's FA indicated an attention and escape function for his property destruction. However, only the attention function was treated during the study. A pairwise comparison between the play and escape conditions was done for Shane because there was a decline in responding during the initial FA. His results confirmed that his aggression was maintained by escape from demands.

Figure 2 depicts the rate of FCRs emitted by each participant across the different phases. Baseline data was pulled from the test conditions of their respective FAs. During baseline, Patrick did not emit any FCRs. During FCT, there was a gradual increase in FCRs, which was thinned throughout the DFCT and parent-implementation phases. Patrick responded more during both the traditional and culturally adapted S^Ds than S-deltas. During the parent-implementation phase, his mother chose to implement the culturally adapted DFCT procedure first, then switched to the traditional, but switched back to the culturally adapted version. Throughout this phase, discriminated manding continued to be effective for Patrick.

During baseline, Jason did not emit any FCRs. Data were not collected on FCRs for the first 2 sessions due to a data collection error. Throughout the FCT phase, there was an increase in FCRs, which was thinned during the DFCT and parent-implementation phases. Due to a lack of discriminated manding during both the traditional and culturally adapted signals, a verbal prompt

within sessions was added at session 43. Once this change was implemented, Jason began to show discriminated manding for both the traditional and culturally adapted signals. Once he met criterion, his mother chose to implement the culturally adapted DFCT procedure, where Jason continued to demonstrate discriminated manding.

During baseline for Shane, he did not emit any FCRs. Although data were not formally collected on FCRs for sessions one through eight due to a data collection error, the data collectors reported not observing any FCRs. During the initial implementation of FCT, Shane did not engage in independent responding until session 37. The data points between the asterisks on the graph indicate procedural changes made during teaching. First, the increasing prompt delay did not increase from 62 s until session 41. Also, Shane was moved to a different area in the room to allow the fading of the prompter and better delivery of tasks. Sessions were moved because the area he was in before had a couch that he would frequently lie on, making it difficult to fade physical prompts. Initially, the prompter prompted the FCR from in front, but moved to behind Shane to encourage independent responding. In addition to fading the view of the prompter, the prompter faded her physical prompt from full physical to only touching his elbow to shadowing until independent responding was observed. During the DFCT phase, the schedule of reinforcement followed the following pattern: FR1, FR2, VR2, VR3, VR4, VR5, VR6, VR7. At the terminal schedule, the minimum to maximum range of problems completed by Shane was 2-10. The maximum was determined based on conversations with Shane's mother. Once Shane met criterion, his mother implemented the procedure and Shane continued to engage in independent manding.

Figure 3 demonstrates the occurrences of problem behavior across all phases except parent training for all participants. Patrick engaged in high levels of problem behavior during

baseline. There was variable responding during the initial implementation of FCT, but eventually declined to zero levels. However, during the parent-implementation phase, Patrick exhibited an extinction burst with his mother. This may be because of her history of reinforcement for tantrums, which she was no longer providing. His crying and screaming increased in intensity and duration during this phase. His problem behavior eventually declined to lower rates.

During baseline for Jason, he engaged in high levels of property destruction, which upon the implementation of FCT there was an immediate decrease in problem behavior to zero levels. This decrease was maintained for the remainder of study with the exception of two data points. Shane's problem behavior saw an increasing trend towards the end of baseline. Once FCT was implemented, there was an immediate decrease in his level of problem behavior to zero levels with the exception of one data point. During DFCT, Shane's problem behavior initially followed an upward trend, but eventually decreased to zero levels, which was maintained throughout the parent-implementation phase of the study. Figure 4 depicts the parent-training and parent-implementation data for each particpant's parent. BST data is not depicted on the graph. The mastery criterion for BST was three consecutive sessions with 100% of the steps implemented correctly. Shane's mom consistently scored 30% during baseline, but after BST her post-training results were 100% correct for three consecutive sessions. The same was observed during the parent-implementation phase.

Patrick's mom behavior was assessed for the traditional signal first. During baseline, she scored 0% for baseline sessions. After BST training, she achieved 100% for three consecutive sessions during post-training before moving to training with the culturally adapted DFCT procedure. Since the DFCT procedures were similar with the exception of the signals used, a probe was conducted to assess Patrick's mom skill level with the cultural signals. She scored

50%. BST was conducted and she scored 100% for three consecutive sessions during post-training. She also maintained the skill and scored 100% during each session during the parent-implementation phase.

Jason's mom scored 0% during each baseline session, but scored 100% for three consecutive sessions during post-training. A probe was conducted for the culturally adapted DFCT and she scored 100%. Since she scored 100% on the probe, she was transitioned to post-training without BST where her score of 100% maintained. This score was also observed during the parent-implementation phase.

Social Validity

The Caregiver Report developed for this study, was a two-section social validity measure (see Appendix B). Questions in the first section assessed whether the mothers liked the intervention used with their sons, if they saw any improvement in their son's communication skills and problem behavior, if the study incorporated their cultural beliefs stated in the Survey for Afro-Caribbean Individuals, and if they thought their son learned socially appropriate behaviors based on their culture. Questions in the second section assessed whether they would recommend the study to others, if they were satisfied with the outcome of the study, if they will continue to use the skills learned in the study, and which DFCT procedure they preferred (i.e., the traditional or culturally adapted version).

Table 2 reflects each parent's social validity responses for the different DFCT procedures they were taught to implement with their child. Shane's mother reported that she strongly agreed to all the questions listed in the first section of the Caregiver Report, as described in the previous paragraph. She also reported she was satisfied with the outcome of the study and she would recommend the study to others. She also stated that she will continue to use the skills she learned

with her son and that her cultural values and beliefs were addressed in the study. Jason's mother also reported that she strongly agreed to all the questions listed in the first section of the report. She also reported that she was satisfied with the outcome and she would recommend the study to others. When asked if and which DFCT procedure she will continue to use, she reported she would continue to use the culturally adapted DFCT procedure. Additionally, she reported that her cultural beliefs and values were addressed during the study. Patrick's mother reported that she agreed to questions 1-3, and was neutral to questions 4-5. She reported that she was satisfied with the outcome of the study and would recommend the study to others. When asked if and which DFCT procedure she will continue to use, she reported she would continue to use the culturally adapted DFCT procedure. Patrick's mother did not provide an answer to the last question.

DISCUSSION

The purpose of the current study was to evaluate the effectiveness, feasibility (in the form of training parents to implement), and treatment acceptability of a culturally adapted version of DFCT with Afro-Caribbean families. We taught three participants FCRs to replace their problem behaviors. We also taught them to discriminate between periods of reinforcement and extinction by using traditional and culturally adapted signals as S^Ds and S-deltas. For two participants (Patrick and Jason), the traditional and culturally adapted multiple schedules were equally effective in teaching discriminated manding. With the third participant (Shane), the token board procedure was effective in teaching him to complete a range of 2-10 work problems on a terminal VR7 schedule. We were able to incorporate his mother's cultural values of Shane working longer before requesting a break by changing the contingency of providing a break on a FR schedule. Next, we taught their mothers to implement both versions of the DFCT procedures using BST with research assistants. All parents were able to implement the interventions with 100% fidelity. Following the parent-training phase, the mothers chose the DFCT procedure they preferred to implement with their son. For all participants, their mother chose to implement the culturally adapted procedures.

During Phase 1 of the study, the possible antecedents and consequences for each participant's problem behavior was reported, in addition to identifying the alternative FCRs to be used throughout the study. Additionally, the results from the Survey for Afro-Caribbean Individuals allowed us to identify the unique cultural values and beliefs of each parent, and how

they were going to be incorporated throughout the intervention phases. Phase 2 of the study identified a tangible and escape functions for Patrick's tantrums, an attention and escape functions for Jason's property destruction, and an escape function for Shane's aggression. The implementation of FCT during Phase 3 consistently reduced all participants' problem behavior to zero rates while their independent FCRs steadily increased. During Phase 4 of the study, Patrick showed an immediate differentiation between the rates of FCRs emitted during the reinforcement and extinction components of the multiple schedule (15/59). There were also zero rates of problem behavior during this phase. On the other hand, although Jason had zero rates of problem behavior, he initially demonstrated weak discrimination between the reinforcement and extinction components of the multiple schedule (7/35). Once a verbal prompt within session was incorporated, there was immediate discrimination between FCRs emitted during the reinforcement and extinction components. Shane showed consistently zero rates of problem behavior during this phase like the other participants. The initial levels of his FCRs were low until the view and touch of the prompter was faded. During Phases 5 and 6, the participants' mothers were able to learn and implement DFCT procedures, which generalized from the research assistants to their child. The parents were also able maintain the thinned schedule of reinforcement for their child's alternative response while maintaining low to zero rates of problem behavior.

The findings from the current study have partially replicated results from prior studies demonstrating the feasibility of using natural signals instead of artificial signals to establish stimulus control of FCRs (e.g., Hagopian et al., 2011; Leon et al., 2010). The thumbs up and thumbs down signals used with Jason's mother may be considered natural signals because Jason's mother was already using these particular hand signals with her other children at home.

However, that was the only "natural" signal that we used. Additionally, the findings support Moes and Frea (2002) position on the importance of incorporating contextualized information, such as cultural beliefs, when implementing behavioral interventions. As seen with the results of this study, the culturally adapted DFCT procedure was equally effective as the traditional DFCT procedure that is used by behavior analysts. This finding has not only shown that it is possible for S^Ds to vary across cultures, but that it is important to incorporate these cultural differences when developing interventions.

Also, these suggestions are in line with Fong et al. (2016) position on the importance of developing cultural awareness skills in our field. Adapting traditional behavioral interventions to incorporate families' cultural beliefs and values can reduce barriers that impede effective service to diverse clients. In order to break down the barriers that exist, behavior analysts should take into consideration that culturally diverse clients are more likely to continue using an intervention that is culturally relevant. This consideration will not only save time and money, but result in effective service that is liked by consumers. For instance, the changes made to the traditional signals were modest, but meaningful for the families. For Patrick's mother, we simply added "yes" and "no" verbal prompts to the presentations of the green and red cards, and for Jason's mother we used thumbs up and thumbs down signals that she was using with her other children. For Shane's mother, we incorporated her preference of having Shane work for longer periods without breaks instead of reinforcing his alternative response on a FR1 schedule. She reported that Shane asking for a break would not be honored in her community unless he had completed a work requirement. These relatively minor changes had meaningful impacts for each family after the study, as the parents reported in the social validity questionnaire. All parents stated that they would continue to use the culturally adapted DFCT procedures with their child.

The findings from this study also add to the literature on parent training and implementation of behavioral interventions. Parent training is crucial in increasing the possibility of generalization and the maintenance of the skills taught to their child at school or in clinic. The current study has shown it is feasible to train parents who lack knowledge in behavioral analytic procedures to implement DFCT. Although the parents in the study came from different cultural backgrounds and family dynamics, they were able to implement DFCT using BST as the teaching method.

Additionally, the results from the social validity questionnaire indicated that each parent would continue to implement the cultural adaptation with their child. Their choice has shown that once interventions are culturally relevant, consumers may be likely to accept the treatment used and follow through with the continuation of therapy at home. Their responses not only underscore the importance of training parents on the procedure, but also involving them in the selection of the interventions that will be used with their child.

Limitations of this study include the lack of comparison between the traditional and cultural adaptation of DFCT for Shane's mother because we did not implement a traditional intervention as a point of comparison with Shane. Previous research has demonstrated that it is difficult to implement multiple schedules with escape-maintained problem behavior (Campos et al, 2017). Also, there may have been a recency effect on the results of the Caregiver Report. Parents completed the report at the end of the study after they were trained on both the traditional and culturally adapted versions of DFCT. In all cases, the culturally adapted version was taught immediately prior to the report; this may have affected their preference for the procedure. Furthermore, the parents implemented their choice immediately after training, and no maintenance data was collected on their skill.

Future research should incorporate maintenance and generalization probes, in addition to assessing whether it is feasible for parents to train other caregivers in their household to implement the procedures with fidelity with their child. Additionally, it should be noted that it may be hard to separate cultural adaptations from preference. The parents in the study may have answered the questions from the Survey for Afro-Caribbean Individuals based on a combination of preference and cultural values, which would be difficult to separate, because cultural values influence preference. Thus, separating the two would not be feasible.

In conclusion, the current study has extended research on teaching parents to implement DFCT procedures. Most importantly, the findings of the study demonstrate that not only is it feasible to train parents to implement a behavioral intervention with their child, it also shows the culturally adapted intervention to be just as effective, and parents were more satisfied with the intervention once their cultural values and beliefs were taken into consideration. These findings may have important implications, which can assist behavior analysts in making an increased effort to culturally adapt interventions to match their diverse clients' needs.

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APPENDICES

Appendix A

Survey for Afro-Caribbean Individuals

Please answer the following questions to the best of your ability. Your answers are anonymous and will only be shared with the researchers in order to tailor your involvement in the study.

1. How does your child know it's appropriate to approach you when you are speaking to another adult or engaging in another task?
2. How should your child approach you?
3. How do you let your child know that you are unavailable to talk/engage with them?
4. What should your child say/do if they need to interact with you while you are busy?

Appendix B

Caregiver Report

Please rate the following statements regarding your participation in the study. Your answers are anonymous and will assist the researcher to gauge your level of satisfaction with the study.

1. I liked the intervention that was used with my child.

5	***4***	***3***	***2***	***1***
Strongly Agree	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***

2. I think my child has shown improvement in his/her communication skills.

5	***4***	***3***	***2***	***1***
Strongly Agree	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***

3. I think this intervention has helped to reduce my child's problem behavior.

5	***4***	***3***	***2***	***1***
Strongly Agree	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***

4. I think this intervention addressed my cultural beliefs that were stated in my survey responses.

5	***4***	***3***	***2***	***1***
Strongly Agree	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***

5. I think this intervention taught my child appropriate social behaviors based on our culture.

5	***4***	***3***	***2***	***1***
Strongly Agree	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***

The following questions should be answered/rated based on your overall participation.

1. I am satisfied with the outcome of the study.

5	***4***	***3***	***2***	***1***
Strongly Agree	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***

2. I think my child enjoyed participating in the study.

5	***4***	***3***	***2***	***1***
Strongly Agree	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***

3. I would recommend this study to others.

5	***4***	***3***	***2***	***1***
Strongly Agree	***Agree***	***Neutral***	***Disagree***	***Strongly Disagree***

4. Will you continue using the skills you learned with your child?
    a. Which one would you be more likely to use at home?
5. Were there any cultural beliefs/values that were not addressed during the study?

F A S T

Functional Analysis Screening Tool

Client:_____ Date:_____

Informant:_____ Interviewer:_____

To the Interviewer: The FAST identifies factors that may influence problem behaviors. Use it only for screening as part of a comprehensive functional analysis of the behavior. Administer the FAST to several individuals who interact with the client frequently. Then use the results to guide direct observation in several different situations to verify suspected behavioral functions and to identify other factors that may influence the problem behavior.

To the Informant: Complete the sections below. Then read each question carefully and answer it by circling "Yes" or "No." If you are uncertain about an answer, circle "N/A."

Informant-Client Relationship

1. Indicate your relationship to the person: ___Parent ___Instructor
   ___Therapist/Residential Staff _____(Other)
2. How long have you known the person? ____Years ____Months
3. Do you interact with the person daily? ____Yes ____No
4. In what situations do you usually interact with the person?
   ___ Meals ___ Academic training
   ___ Leisure ___ Work or vocational training
   ___ Self-care _____(Other)

Problem Behavior Information

1. Problem behavior (check and describe):
   __ Aggression _____
   __ Self-Injury _____
   __ Stereotypy _____
   __ Property destruction _____
   __ Other _____
2. Frequency: __Hourly __Daily __Weekly __Less often
3. Severity: __Mild: Disruptive but little risk to property or health
   __Moderate: Property damage or minor injury
   __Severe: Significant threat to health or safety
4. Situations in which the problem behavior is <u>most</u> likely to occur:
   Days/Times_____
   Settings/Activities _____
   Persons present _____
5. Situations in which the problem behavior is <u>least</u> likely to occur:
   Days/Times_____
   Settings/Activities _____
   Persons present _____
6. What is usually happening to the person right <u>before</u> the problem behavior occurs?_____
   _____
   _____
7. What usually happens to the person right <u>after</u> the problem behavior occurs?_____
   _____
   _____
8. Current treatments_____
   _____
   _____
   _____
   _____

1. Does the problem behavior occur when the person is not receiving attention or when caregivers are paying attention to someone else?	Yes	No	N/A
2. Does the problem behavior occur when the person's requests for preferred items or activities are denied or when these are taken away?	Yes	No	N/A
3. When the problem behavior occurs, do caregivers usually try to calm the person down or involve the person in preferred activities?	Yes	No	N/A
4. Is the person usually well behaved when (s)he is getting lots of attention or when preferred activities are freely available?	Yes	No	N/A
5. Does the person usually fuss or resist when (s)he is asked to perform a task or to participate in activities?	Yes	No	N/A
6. Does the problem behavior occur when the person is asked to perform a task or to participate in activities?	Yes	No	N/A
7. If the problem behavior occurs while tasks are being presented, is the person usually given a "break" from tasks?	Yes	No	N/A
8. Is the person usually well behaved when (s)he is not required to do anything?	Yes	No	N/A
9. Does the problem behavior occur even when no one is nearby or watching?	Yes	No	N/A
10. Does the person engage in the problem behavior even when leisure activities are available?	Yes	No	N/A
11. Does the problem behavior appear to be a form of "self-stimulation?"	Yes	No	N/A
12. Is the problem behavior <u>less</u> likely to occur when sensory stimulating activities are presented?	Yes	No	N/A
13. Is the problem behavior cyclical, occurring for several days and then stopping?	Yes	No	N/A
14. Does the person have recurring painful conditions such as ear infections or allergies? If so, list:_____	Yes	No	N/A
15. Is the problem behavior <u>more</u> likely to occur when the person is ill?	Yes	No	N/A
16. If the person is experiencing physical problems, and these are treated, does the problem behavior usually go away?	Yes	No	N/A

Scoring Summary

Circle the number of each question that was answered "Yes" and enter the number of items that were circled in the "Total" column.

Items Circled "Yes"				Total	Potential Source of Reinforcement
1	2	3	4	____	Social (attention/preferred items)
5	6	7	8	____	Social (escape from tasks/activities)
9	10	11	12	____	Automatic (sensory stimulation)
13	14	15	16	____	Automatic (pain attenuation)

Appendix D

Demographic Questionnaire for Participants

****Please answer the questions by circling the answer that best applies to you.****

1. What is the participant's gender?
   Male
   Female

2. What is the participant's age?
   _____

3. What is the participant's primary language?
   English
   Spanish
   French
   Other _____

4. What is the participant's ethnicity?
   Afro Caribbean
   Other: _____

5. What's the participant's race?
   American Indian/Alaskan Native
   Asian
   Native Hawaiian/Pacific Islander
   Black or African American
   White
   Other: _____

Appendix E

Functional Analysis Treatment Integrity Checklist

Participant: _____ Date: _____
Data Collector: _____

Ignore: Session #_____	**Yes**	**No**	**N/A**
Begin session: Client and therapist are in the room with therapist sitting away from the child			
Therapist wore correct color shirt			
No access to: • Social interaction • Toys, leisure items • Demands			
If problem behavior: No consequences			
(Correct steps/Total # of steps)*100			

Attention: Session #_____	**Yes**	**No**	**N/A**
Begin session: Client and therapist are in room with moderately preferred toy			
Therapist wore correct color shirt			
Therapist informs client "You can play with this. I'll be busy over here" (or similar statement) and engages in reading, working, etc. while not attending to client.			
If problem behavior: Therapist stops "working," approaches client, and briefly delivers attention for 10 s.			
If the problem behavior continues during the interaction, the therapist continues the interaction.			
Then, the therapist resumes being busy			
(Correct steps/Total # of steps)*100			

Play: Session # _____	**Yes**	**No**	**N/A**
Begin session: Therapist and client are in room with preferred items			
Therapist wore correct colored shirt			
At 30-second intervals, the therapist approaches the client and delivers brief attention for 5-10 seconds (brief comment, conversation), prompting and allowing free access to preferred items.			
No demands or non-preferred tasks are delivered.			
If problem behavior: Ignore briefly; then resume play			
If problem behavior occurs just before 30-second interval or during interaction: delay attention briefly.			
(Correct steps/Total # of steps)*100			

Demand: Session # _____	**Yes**	**No**	**N/A**
Begin session: Therapist and client are in room			
Therapist wore correct color shirt			
Delivers tasks using a three-step prompting sequence			
No praise provided for completing task			
If problem behavior: Remove task and provide break for 30 s; then resumes delivering tasks.			
(Correct steps/Total # of steps)*100			

Tangible: Session #_____	**Yes**	**No**	**N/A**
Begin session: Client and therapist are in room with client playing with highly preferred toy			
Therapist wore correct color shirt			
Therapist informs client "No more (name of item) and takes it away			
If problem behavior: Therapist provides item for 30 s			
Then, the therapist removes item once more			
(Correct steps/Total # of steps)*100			

Appendix F

Functional Communication Training Treatment Integrity Checklist

Participant: _____ Date: _____
Data Collector: _____

Session #_____	**Yes**	**No**	**N/A**
Begin session: Therapist waits the appropriate time delay ___ before prompting FCR			
Therapist provides ____ for 30s if participant emits FCR (Independently or prompted)			
If problem behavior: No consequences			
(Correct steps/Total # of steps)*100			

Appendix G

DFCT Treatment Integrity Checklist

Participant: _____ Date: _____

Data Collector: _____

Session #_____ Condition: _____	**Yes**	**No**	**N/A**
Therapist has relevant materials present (e.g., green/red card)			
Therapist provides rule before session			
Begin session: Therapist shows green card for _ s or until FCR emitted from participant			
Therapist presents red card for __ s and if any FCR, no consequences (i.e., no toys provided)			
If problem behavior: No consequences			
(Correct steps/Total # of steps)*100			

Appendix H

Parent-Training & Parent-Implementation Treatment Integrity Checklist

Parent's Name or #: _____ Child's Name or #: _____

Session: ___ Data Collector: _____ Date: _____				
	Steps	**Yes**	**No**	**N/A**
	Parent says rule: Either: When it's green, you can say "name of functional reinforcer,'" When it's red, "No 'no name of functional reinforcer'"			
	Parent starts timer			
GREEN Reinforcement	Parent presents signal for approximately __s			
	Parent provides functional reinforcer for __s if child says **"Identified FCR"**			
	Parent ignores all problem behavior			
RED Extinction	Parent presents signal for approximately __s and says "no 'name of functional reinforcer'"			
	Parent does not provide functional reinforcer if child says " **Identified FCR**"			
	Parent ignores all problem behavior			
	Correct Steps/Total Steps*100			

Appendix I

Figures and Tables

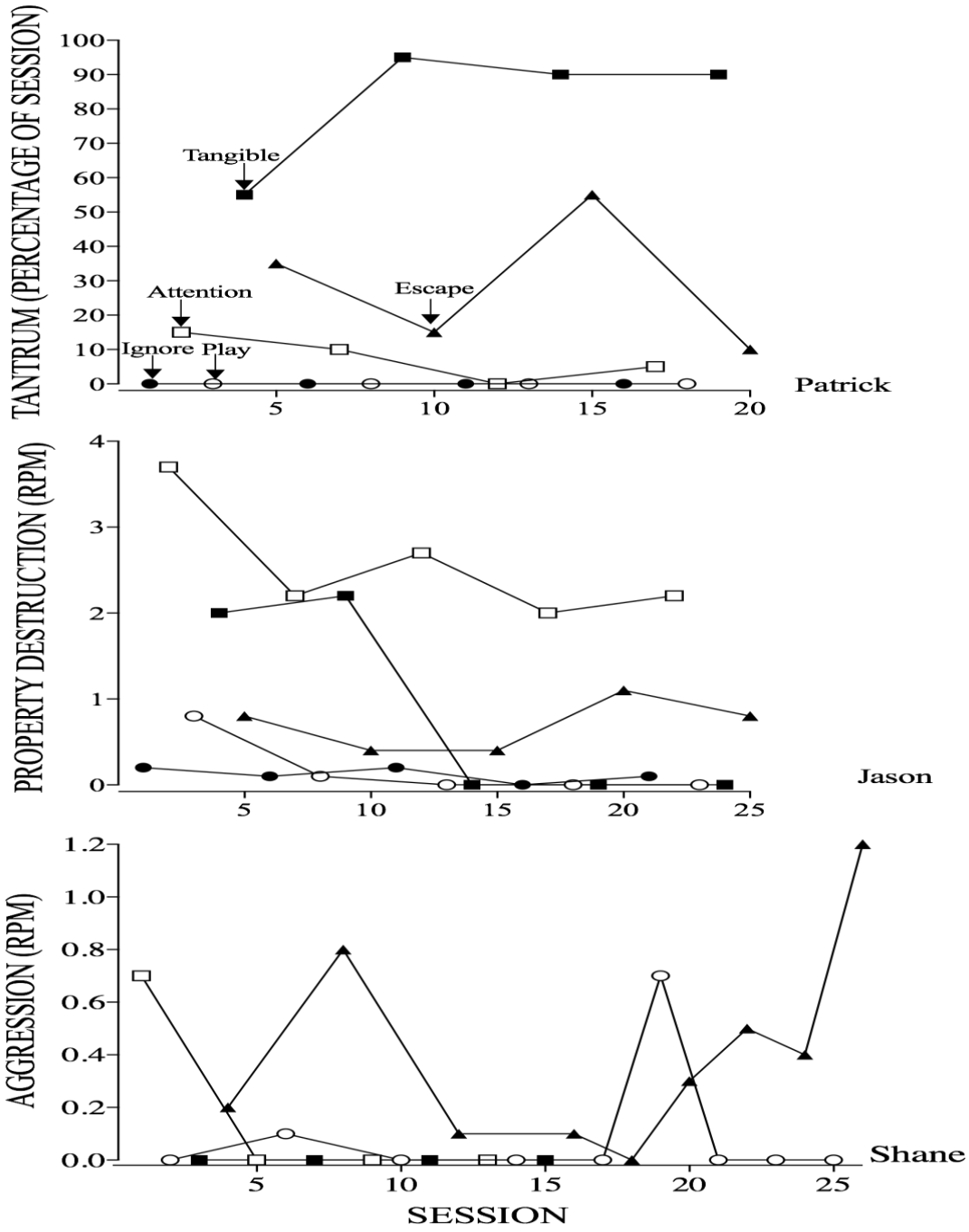

Figure 1. FA results for Patrick's tantrums, Jason's property destruction, and Shane's aggression.

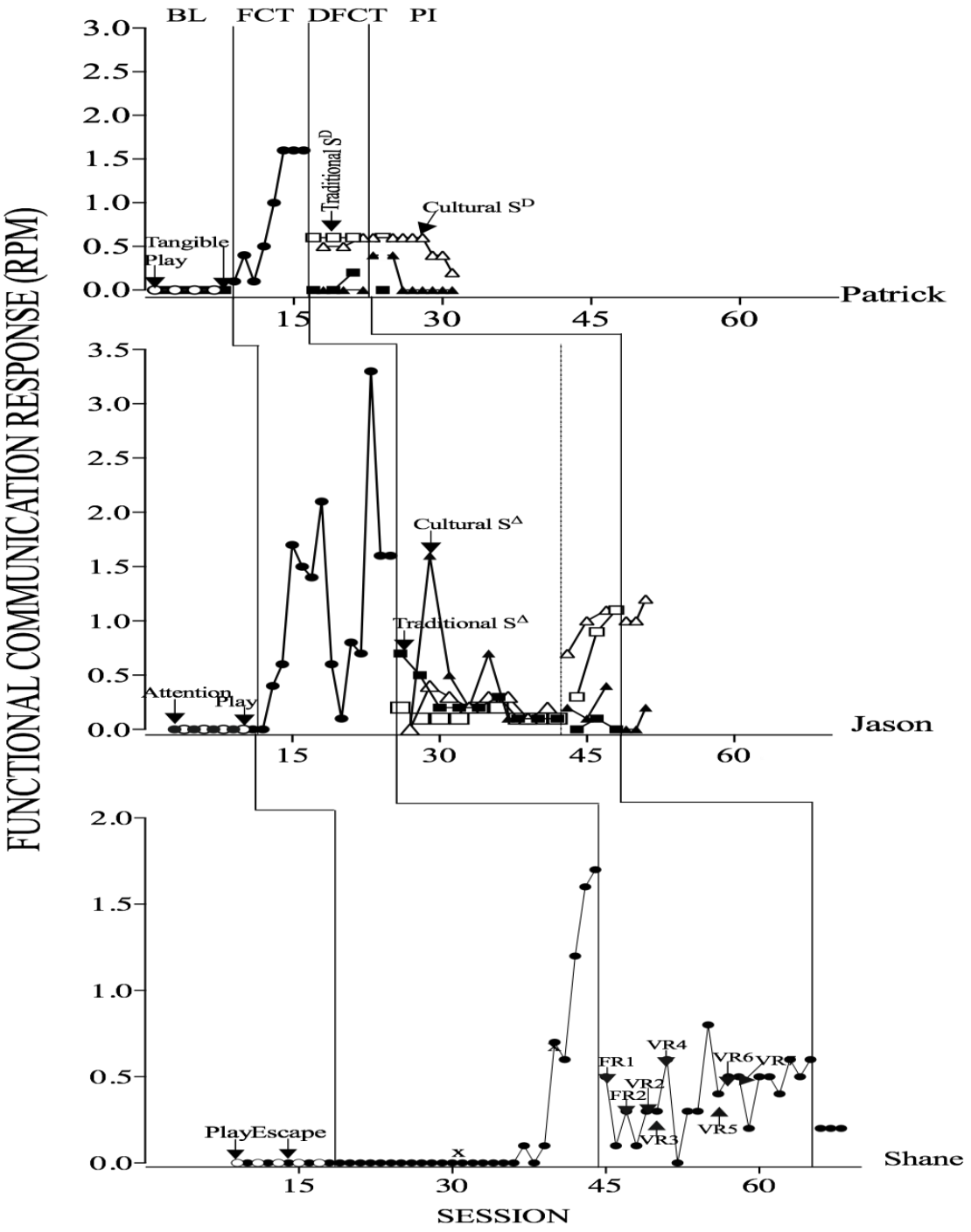

Figure 2. Responses per minute for FCRs during baseline (BL), FCT, DFCT and parent-implementation (PI) for Patrick, Jason, and Shane. During the DFCT and PI phases, data were recorded on the rate of FCRs for Patrick and Shane during the reinforcement and extinction components.

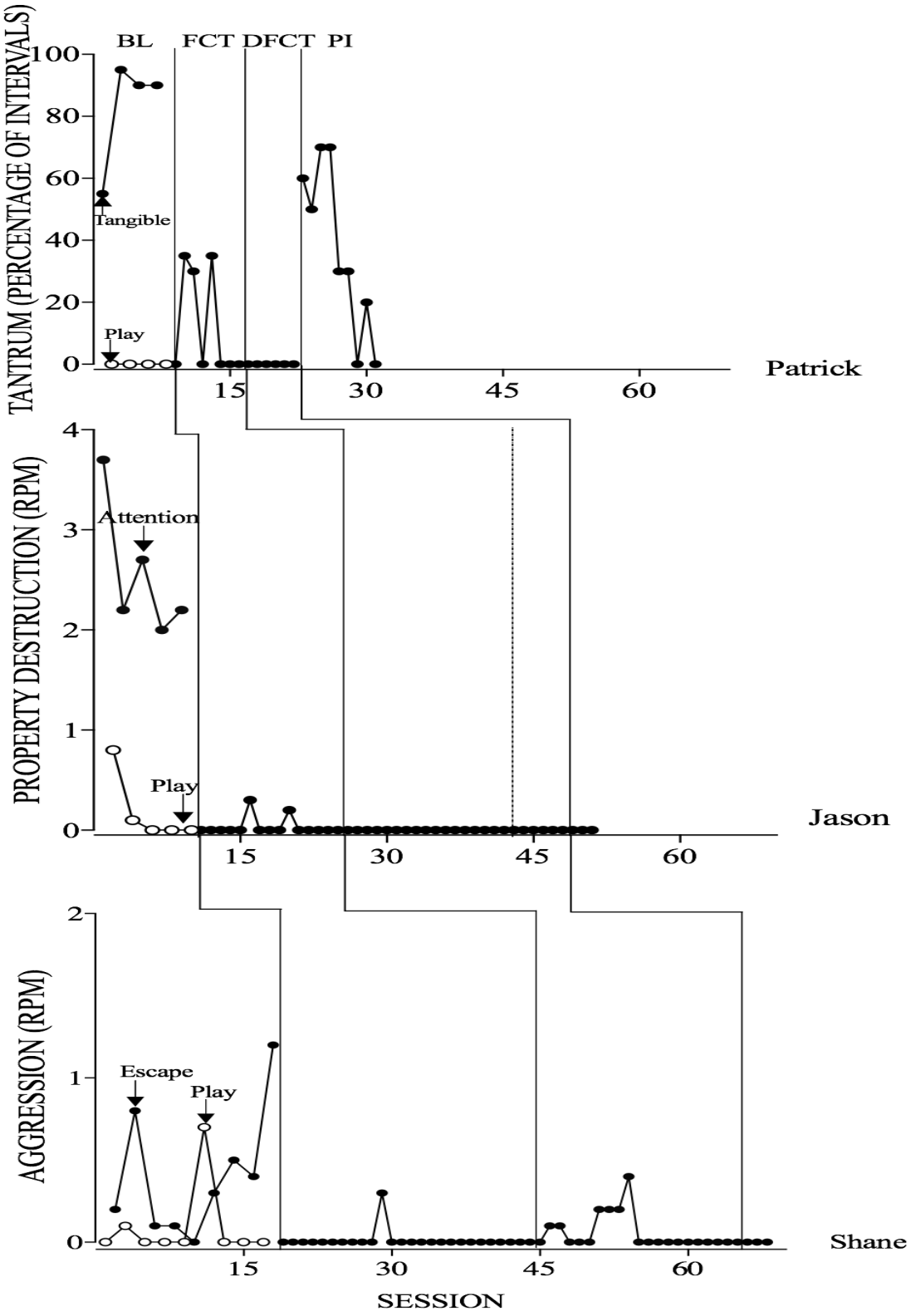

Figure 3. Problem behavior data across each phase for all participants

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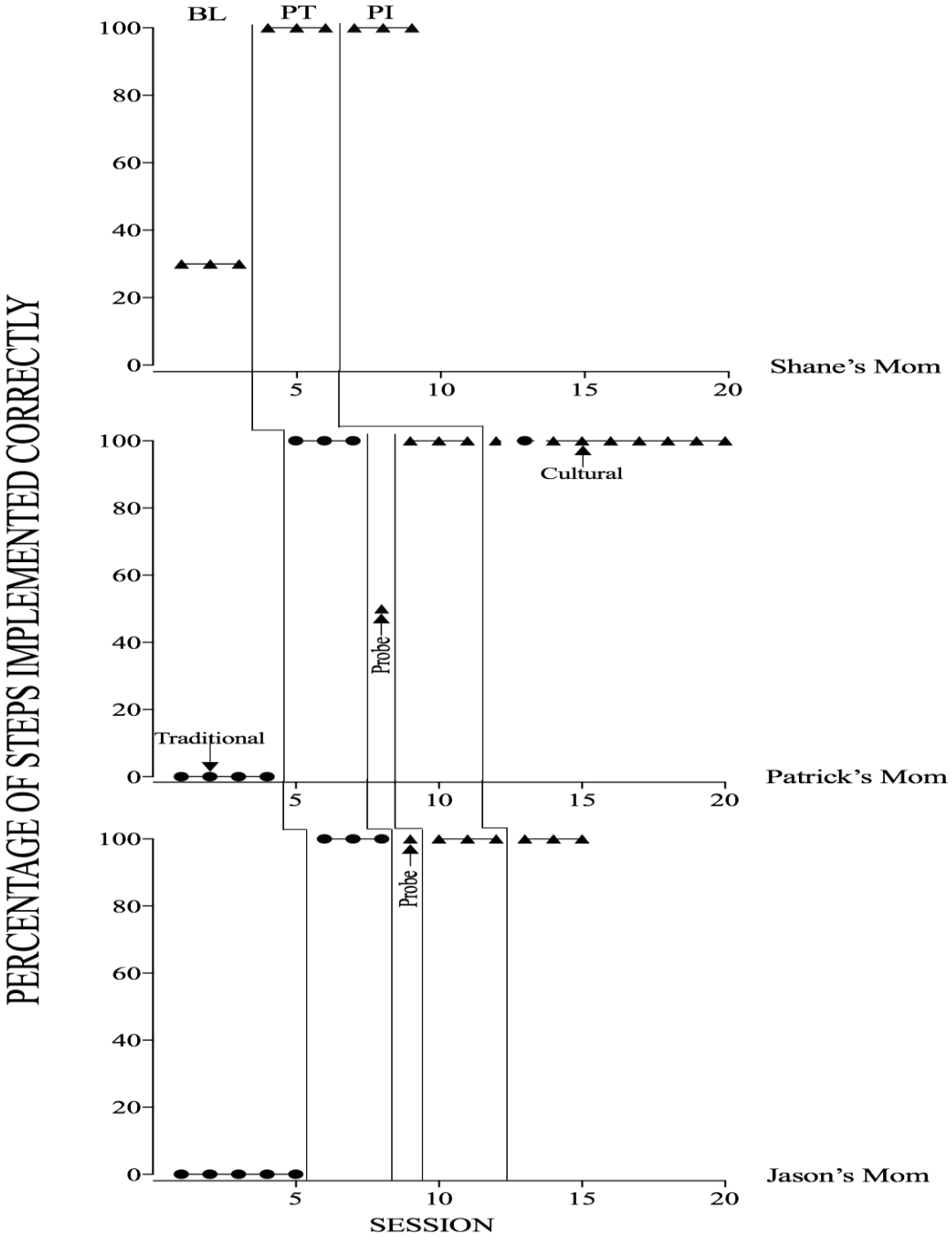

Figure 4. Percentage of steps implemented correctly during parent-training and parent-implementation phases. (N.B., Shane's mother graph is on the top panel compared to previous figures because she was done with FCT first). Also, the symbols in the parent-implementation phase indicate the selection made by the parent, whereas the placement in relation to the y-axis indicates the percentage of steps implemented correctly.

Participant	Traditional DFCT	Cultural DFCT
Patrick	Green Card/Red Card	Green Card and "Yes" vocal prompt/ Red Card and "No" vocal prompt
Jason	Green Card/Red Card	Thumbs up/Thumbs Down
Shane	n/a	Modified Token Board

Table 1. Discriminative stimuli used for each participant during the traditional and cultural adaptation of DFCT.

Questions	Patrick's Mother		Jason's Mother		Shane's Mother
	Traditional	Cultural	Traditional	Cultural	Cultural
I liked the intervention that was used with my child.	Agree	Agree	Strongly Agree	Strongly Agree	Strongly Agree
I think my child has shown improvement in his/her communication skills	Agree	Agree	Strongly Agree	Strongly Agree	Strongly Agree
I think this intervention has helped to reduce my child's problem behavior	Agree	Agree	Strongly Agree	Strongly Agree	Strongly Agree
I think this intervention addressed my cultural beliefs that were stated in my survey responses.	Neutral	Neutral	Neutral	Strongly Agree	Strongly Agree
I think this intervention taught my child appropriate social behaviors based on our culture.	Neutral	Neutral	Neutral	Strongly Agree	Strongly Agree

Table 2. Caregiver Report results comparing both versions of DFCT with Patrick's and Jason's mothers. Results for Shane's mother depict her experience with only the cultural adaptation.