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**A Comparison of Traditional and Culturally Sensitive Parent Training of Functional
Communication Training**

A Thesis
by
Adriana Rodriguez

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

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Acknowledgments

I would like to thank my parents for making the sacrifice of moving to a new country, without even knowing the language, in order to give me and my brothers a better future. To my brothers, thank you for helping me every step of the way. To my family and friends, thank you for believing I could do anything I set my mind to. To my boyfriend, Enrique Leon, thank you for supporting me through absolutely everything and giving me different perspectives when it came to my work.

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Abstract

The purpose of the present study was to evaluate the effect of culturally sensitive interventions on parent training. Behavior-analytic services were provided to 3 Latino/Latina families that included children diagnosed with developmental disabilities whose problem behaviors were maintained by social reinforcement. Children were exposed to preference assessments and a functional analysis. Parents then were trained on the implementation of Functional Communication Training (FCT) using English as well as Spanish protocols. Data were collected on the percentage of correct steps completed by the parent as well as levels of child problem behavior. Culturally sensitive intervention does not impact parent training. This study adds to the literature on applied behavior analysis and culturally sensitive interventions.

Keywords: ASD, choice, culturally sensitive intervention, functional communication training, parent training, treatment.

Introduction

The United States of America is referred to as “The Melting Pot” (McDonald, 2007, p.50). A melting pot is a country in which people with different cultural backgrounds come together as one, yet each culture keeps its own unique identity. According to the United States Census Bureau (2010), Whites constituted 72% of the total population in the U.S while the other 28% of the total population consisted of other races (e.g., Black/African Americans, Hispanics, and Asians). Furthermore, when projecting the size and composition of the U.S. population, Colby and Ortman (2015) stated that more than half of the U.S population is projected to be part of a minority group by the year 2044. The Hispanic population is one minority population in the U.S that has increased and is predicted to increase more in upcoming years (U.S. Census Bureau, 2011).

It’s important to recognize the changing demographics of each population. Each group brings its own cultural complexities, thus defining each culture’s social norms. One such example within the Hispanic family dynamic is that the father or older males have more power compared to female family members (Kemp & Rasbridge, 2004). In addition, Hispanics are a collectivistic culture. That is, cooperation among the group is more valued than individual responsibilities (Gudykunst, 1998). Another factor differentiating the Hispanic culture from other cultures is that getting a disease is viewed as more problematic than dying itself (National Alliance for Hispanic Health, 2004). Furthermore, Hispanics tend to have a larger household size than other cultures (American Community Survey, 2008), and this is due to the larger-than-average number of children in Hispanic families compared to other cultures (U.S. Census Bureau, 2008).

Hispanics also differ from other cultures in their parenting style. For example, Calzada, Huang, Animaca, Fernandez, and Brotman (2012) tested a cultural framework of Latino parenting with 467 Mexican and Dominican families. The authors collected data from self-report questionnaires provided to parents. The data included information on acculturative (i.e., adopting the cultural traits of another culture/group) status, parenting practices, cultural socialization, and children's behavioral functioning. Results indicated mothers from Mexico and the Dominican Republic are more likely to use authoritarian parenting practices to teach their kids to behave according to the parents' values (i.e., an emphasis on obedience, deference, decorum, and public behavior). On the other hand, Anglo-American parents are more likely to use authoritative parenting practice to teach their kids to behave according to their values (i.e., an emphasis on negotiation, exploration, and assertion). It has also been noted in the literature that Hispanic parents are less likely than White parents to endorse personality, relational and familial issues, or trauma as causes of children's problems (Yeh, Hough, McCabe, Lau, & Garland, 2004).

The rapid increase in the minority population, specifically the Hispanic population, entering the U.S. has made it difficult for health care providers to arrange for culturally competent health care services (Welterin & LaRue, 2007). Although there has been some initiative shown by health care providers to increase cultural awareness (Hook, Davis, Owen, & Worthington, 2013), these efforts have not been enough. The way health care providers engage with individuals from different cultures can be a problem when delivering culturally competent services (Hook, Watkins, Davis, Owen, Van Tongeren, Ramos, 2016). Consider the example of a behavior analyst who started to provide behavior-analytic services to a 5-year-old child with a developmental disability. Prior to providing services, the behavior analyst implemented an assessment to help her determine skill acquisition goals for this client. One of the client's deficits,

as shown by the assessment, consisted of the client not following an instruction to clean up after himself. As this was an age-appropriate assessment, the behavior analyst incorporated a program in the behavior plan that stated the client was going to follow instructions to clean up after himself. Once the behavior plan was presented to the parents and the goals were explained, the parents expressed their concern about spending time teaching the client to clean after himself, as this was not an important goal for the family. In this family, the girls were taught to take care of the house while the boys were taught to support their family. This is just one example of how cultural gender role differences were overlooked by a behavior analyst who was from a different culture than the family she was servicing. Another example was discussed by Fong, Catagnus, Brodhead, Quigley, and Field (2016), who described a situation in which a behavior analyst underestimated the importance of church attendance for the family he was servicing. As such, appropriate behaviors for church attendance were not targeted. Therefore, the family's values were neglected, and the analysts failed to help provide skills that would increase the quality of the family's life.

As these two examples illustrate, it is important to increase cultural awareness among all professionals, especially health care providers (Fong et al., 2016). According to Fong et al. (2016), there are two main ways in which we could increase cultural awareness among healthcare providers. First, health care providers need to be taught self-awareness of their own cultural background and how it might influence their provision of services to individuals with different cultural views. Second, health care providers need to be taught how to develop cultural awareness of clients. This would require learning important factors about their client's cultural view to assist them when providing services.

Review of Literature

Cultural Diversity and Cultural Considerations in Healthcare

Many researchers have identified challenges when providing services to clients with cultural views different from the therapist. For example, Lindsay, King, Klassen, Esses, and Stachel (2012) conducted interviews with 13 health care providers about their experiences with immigrant families who had a child with a disability. Results demonstrated many challenges were encountered by healthcare providers in terms of differences in the conceptualization of the disability in addition to language and communication difficulties, both of which inhibited efforts to build rapport with the families. Health care providers also stated it was more difficult to help the immigrant parents advocate for themselves and their children. As a whole, results indicated more training is needed when providing culturally sensitive care.

Another example was noted by Mandell and Novak (2005), who stated that culture affects parents' beliefs about the causes of their children's symptoms, selection of appropriate treatment, and prognosis of the treatment effectiveness. For example, Zuckerman et al. (2014) analyzed the drawbacks to the treatment of ASD in the Hispanic community. They conducted focus groups and interviews with 33 Hispanic parents. Results indicated Hispanic parents see mental health and disabilities overall as embarrassing and/or shameful. Results also showed that, for Hispanic fathers, having a boy with a disability is a poor reflection on the father as a man. The Hispanic community tends to have little knowledge of ASD and its prognosis (Zuckerman et al., 2014), which might be a reason for misconceptions and beliefs. By educating healthcare providers about cultural diversity and how to identify those differences, we might start to educate communities not only about ASD but also other disabilities and how they can be treated.

Applied Behavior Analysis and Culture

One field within health care that certainly could benefit from increased cultural awareness is applied behavior analysis (ABA). Practitioners of ABA implement behavior-analytic interventions to solve problems of social significance. Behavior analysts manipulate environmental variables to ensure problem behavior is decreased or appropriate behavior is increased. Therefore, professionals in the field of ABA strive to change behaviors that are socially appropriate. By understanding the importance of culture, behavior analysts can ensure the goals selected for the behavior change interventions are in line with their clients' cultural values and are considered socially significant by the parents, teachers, and anyone who is part of the child's environment.

Some objectives in the field, prior to implementing any interventions, are identifying maladaptive behaviors and their maintaining consequences. Often, behavior analysts stress the importance of finding socially appropriate replacement behaviors for their clients. However, it is important as behavior analysts that we approach each case objectively and learn what is socially appropriate and functional in each individual circumstance and setting. Therefore, as has been suggested by many other practitioners and researchers, cultural context is something that is of great importance when considering treatment options (Bryant & Njenga, 2006; Sugai & Fallon, 2012; Wood, & Eagly, 2002).

Cultural differences have been cited many times in previous research regarding how family and professional relationships are seen, how business is conducted, and how culture affects and shapes our behavior overall (Wood & Eagly, 2002). In addition, it is important for behavior analysts to abide by the Behavior Analyst Certification Board's® Professional and Ethical Compliance Code (2017) by providing individualized services (Section 4.03). This has always been a hallmark of applied behavior analysis; over 35 years ago Skinner (1981) raised the

importance of developing a knowledge of everyone's cultural values, preferences, characteristics, and circumstances. This is beneficial not only for the client him or herself but for society as well, because socially important goals for diverse populations can only be achieved when the behavior analyst is aware of the importance of cultural influences on behavior (Fong et al., 2016).

One important component of ABA when providing services to clients is selecting appropriate target behaviors. The selection of target behaviors is an expression of values (Kauffman, Conroy, Gardner, & Oswald, 2008). To select appropriate behaviors for change, behavior analysts should consider their clients' cultural values and how these values might differ from their own. For example, parental expectations of children differ across cultures (Akcinar & Baydar, 2014). A behavior analyst who is aware of these differences is less likely to expect the client to conform to the analyst's cultural values and contingencies (Fong et al., 2016).

Behavior-Analytic Procedures

Functional analysis. The importance of cultural acceptability comes into play when implementing behavior-analytic procedures. For instance, a functional analysis (FA) is a procedure used to identify the maintaining variables of behavior. In other words, conducting an FA helps behavior analysts evaluate which environmental factors are maintaining the behavior. The methodology was first introduced to the field of applied behavior analysis by Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994). The authors examined the effects of the environment on the occurrence of self-injurious behavior (SIB) for nine children with developmental disabilities. They exposed the children to a series of four conditions in a multielement design. The first condition was "social disapproval"; during this condition the child received social disapproval for engaging in problem behavior. Statements such as "don't do that" or "don't hit

yourself” were included in this condition. The second condition examined was “academic demand.” The experimenter and the child were seated at a table while the experimenter presented academic demands. The demand was terminated for 30 s contingent on the subject engaging in SIB. The third condition was “unstructured play.” During this condition no demands were implemented, the subject was provided with toys, the experimenter delivered praise every 30 s, and SIB was ignored. This condition was implemented as a control condition. The fourth condition was “alone,” in which the subject was in a room alone and without access to toys or other materials. This condition served to evaluate whether SIB was maintained by self-produced reinforcement (i.e., automatically reinforced). Results indicated SIB was maintained by social and/or automatic reinforcement contingencies.

After the initial procedure by Iwata et al. (1982/1994), several modifications of the FA have been examined (Bloom et al., 2011; Derby et al., 1992; Lerman & Iwata, 1993; Smith & Churchill, 2002). Iwata, Duncan, Zarcone, Lerman, and Shore (1994) evaluated a brief FA methodology (i.e., pairwise FA) that could be used when trying to identify maintaining variables for problem behavior. The authors compared data obtained using the typical multielement design and data obtained using the pairwise design with five subjects who engaged in SIB. Subjects’ behavior was assessed using both the multielement design and the test-control (pairwise) design. For two subjects, the same results were found with both designs (i.e., multielement and pairwise). For two other subjects, the pairwise design yield clearer results compared to the analysis using the multielement design. For another subject, results were undifferentiated with both methods. Overall, results showed a pairwise design provides a valid way of conducting FAs.

Functional communication training. One of the advantages of identifying specific maintaining variables of problem behavior is that function-based treatments can be implemented to decrease problem behavior. Functional communication training (FCT) is an example of such a function-based treatment. This is a procedure in which an individual is taught an alternative response that results in the same source of reinforcement previously identified as maintaining problem behavior (Carr & Durand, 1985). As explained by Tiger, Hanley, and Bruzek (2008), FCT consists of three stages. First, an FA is conducted to identify environmental events maintaining the maladaptive behavior. Second, a socially acceptable communicative response is trained and strengthened. Third, FCT treatment is extended across settings and caregivers.

This function-based intervention was first introduced by Carr and Durand (1985). The procedure was implemented with four subjects with developmental disabilities. First, the authors assessed specific situations in which problem behavior was more likely to occur. Then, Carr and Durand used the results of the initial assessment to select a replacement behavior. For those subjects whose problem behavior was maintained by attention, a vocal response that resulted in attention was taught. Further, for those subjects whose problem behavior was maintained by escape, an appropriate response that resulted in teacher assistance was taught. Results indicated problem behavior was reduced by teaching children a functional communication response.

Other studies have replicated the results of this initial experiment. For example, Frea and Hughes (1997) wanted to teach functional-communicative behavior to two subjects with developmental disabilities. Subjects were trained to differentiate between inappropriate communicative response (i.e., repetitive speech, lack of eye contact, and inappropriate tone of voice) and appropriate alternative responses using extinction of inappropriate responding along

with reinforcement of an alternative response. Results showed a decrease in inappropriate social behavior and an increase in the use of appropriate social behavior.

Parent training. There has been a great deal of research conducted showing the effects of parent training when providing behavior-analytic treatment (Koegel, Bimbela, & Schreibman, 1996; McConachie & Diggle, 2007; Sanders & Glynn, 1981). For instance, Meadan, Ostrosky, Zaghawan, and Yu (2009) stated it is important to collaborate with parents to enhance social and communication skills because parents spend the most time with their children compared to other adults in the child's life. There is also research showing that when parent training is provided as part of behavior-analytic interventions, the child's behavior is improved as a function of parent's performance improving (Marcus, Swanson, & Vollmer, 2001).

Marcus et al. (2001) evaluated the relation between parents' behavior and changes in the behavior of four children diagnosed with developmental disabilities. Parents were trained using seven steps (i.e., written protocols (i.e., baseline), role play, model, immediate feedback, delayed feedback, observation only, and follow up) to decrease each child's problem behavior and increase corresponding appropriate behaviors. The parents received the written protocol prior to the beginning of the experiment. During the initial condition, *baseline*, parents were asked to complete the protocol as written with no feedback given. During the training phase, the remaining six steps were implemented. During *role play*, the therapist role-played each component of the protocol with the parent acting as the child. Once the parent was comfortable with the protocol, the parent assumed the role of the therapist while the therapist acted as the child. During *modeling*, the therapist modeled the intervention with the child in the natural environment. Once the parent was comfortable conducting the intervention with the child, the parents implemented the intervention with the child. During *immediate feedback*, the therapist

provided the parent with feedback about his or her performance. During *delayed feedback*, the therapist did not provide any type of training or coaching until after each session. During *observation only*, the parent conducted the session without any feedback (i.e., immediate or delayed) from the therapist. If the data indicated parents' performance continued at high levels after five consecutive sessions, parent training was terminated. Thirty days after termination, a *follow-up* was conducted. During this step, treatment fidelity was assessed and modifications were made as needed. Results indicated improvement in parent's implementation of the protocol was correlated with improvement of child's behavior. Overall, the researchers demonstrated parents were able to implement behavior-analytic procedures related to modifying their child's target behaviors.

Despite these promising results, the success of parent-conducted behavioral procedures such as FCT depends on the ability of the parents or caregivers to integrate those interventions into the context in which problem behavior occurs (Moes & Frea, 2002). To that end, Moes and Frea (2002) evaluated specific variables pertaining to family context (e.g., family's values, culture, and social interaction). That is, they incorporated family contexts into individualizing FCT treatment packages. Three families with children with autism participated in the study. They used a multiple baseline design across participants to demonstrate experimental control. First, participants were exposed to baseline. During this phase, each child was observed during two separate household routines previously selected by the parents. No feedback was provided to the parents during this phase. Subsequently, the therapist and the parents discussed teaching appropriate means of communication as an alternative to their child's maladaptive behavior and parent training began. Parents selected their child's specific functional communication response and then were taught to implement the FCT treatment package based on one of the routines

identified during the initial interview. After the training session, the FCT phase was initiated. During this phase, one to two training sessions were conducted each week with each family. During the FCT treatment package, parents were asked to provide relevant information about the family's context (i.e., how they organized and constructed daily routines). Based on the parents' responses, modifications were made to the existing FCT protocols to ensure contextualization of FCT treatment package. Results indicated FCT can be adapted to incorporate the individual needs of families. Results also indicated adaptation to an existing FCT protocol does not compromise the efficacy of standardized behavioral intervention.

Choice. One important factor when providing behavior-analytic services (i.e., interventions, parent training, etc.) is the social validity of the intervention provided. The main goal for assessing social validity is to identify the acceptability of the intervention or program used among consumers (e.g., parents, teachers, children, etc.) of ABA (Schwartz & Bear, 1991). Often, social validity of interventions is assessed by having the participants answer a series of questions about the interventions provided. For instance, Moes and Frea (2002) asked parents to rate the sustainability of the intervention packages (i.e., standard FCT and contextualized FCT). They provided a self-report questionnaire to assess the social validity. Results showed parents preferred the contextualized FCT more than they preferred the standard FCT.

Petscher and Bailey (2006) also assessed the social validity of their intervention by asking the participants to complete a questionnaire anonymously. Participants were asked about how they felt about the treatment used, whether or not they felt the target behaviors were helpful, and how much they believed their own behavior improved. Results indicated the participants felt the treatment was helpful and useful. They also stated the target behaviors selected were important. Participants noted they were willing to participate in a similar study in the future.

Overall, the results of the social validity questionnaire showed treatment acceptability among the participants.

Although the importance of assessing the social validity of interventions is mentioned in the behavior-analytic literature (Kennedy, 1992), there are some concerns over the methods used to evaluate the acceptability of interventions (Schwartz & Bear, 1991). Reid and Parsons (1995) compared two methods (i.e., questionnaire and choice measure) of social validity found in the literature. They also evaluated staff familiarity versus unfamiliarity with the system used to monitor performance. Eighteen subjects participated in the study. Results showed choice measures are a more sensitive acceptability index than the questionnaire measure. Questionnaire results were all similar regardless of whether the subjects were familiar or unfamiliar with the monitoring process. Overall, these results showed participants acceptability of an intervention might change depending on whether they have control over (i.e., choose) the procedures or if acceptability is only measured by questionnaires.

Statement of the Problem

As the U.S populations grow (U.S. Census Bureau, 2011) and become more culturally diverse (Colby & Ortman, 2015), it is fundamental for health care providers to become aware of potential differences between their own and their clients' cultures. Culture can influence how clients' might choose interventions and can also affect how clients choose their treatment goals. For instance, Mandell and Novak (2005) stated families who believe autism is curable might be more likely to switch or add treatments, while families who believe autism is not curable might make more stable treatment decisions. At the same time, however, families who believe autism cannot be cured or improved with treatment might do little to seek treatment.

The engagement of parents in treatment depends on the context of therapy and the therapist's ability to communicate with the parents effectively. Engagement in therapy might be higher if the therapist is able to understand the client's history, culture, values, and socio-political orientation (Bernal & Flores-Ortiz, 1982). The engagement of parents in ABA treatment has been shown to contribute to intervention for children with ASD (McConachie & Diggle, 2006). Therefore, making sure the programs selected by the therapist align with the parents' values and culture could potentially be of great benefit for the success of interventions.

Although incorporating families' culture into ABA interventions is an important topic and one that has been discussed within the ABA community in recent years (Fong et al., 2016), a gap in the literature still exists. Authors such as Fong et al. (2016) have suggested behavior analysts should develop a cultural awareness of self and of their clients. However, there is not enough empirical research suggesting methods to teach behavior analysts how to develop cultural awareness or of best practices when dealing with a family from a different cultural background than the behavior analyst.

In addition, although there exists a large body of parent training research and it has been demonstrated improvement of parent's implementation of behavior-analytic interventions also improve child's behavior (Marcus et al., 2001), limited research has been done in which culture is included within parent training or when providing behavior-analytic services overall. One study on parent training (Moes & Frea, 2001) incorporated specific variables pertaining to family context (i.e., caregiver's demand, family support, and patterns of social interaction). However, the parents' behavior was not measured in this specific study. It would be of great interest to the field of behavior analysis to know if fewer trials to criterion are needed for an intervention that takes into account a family's culture versus one that does not.

Furthermore, Moes and Frea (2001) used self-report questionnaires to assess social validity with the parents. Although most researchers utilize this method as a form to evaluate social validity of interventions, it has been indicated that social validity results might change depending on whether the subjects choose between different interventions or just respond to a questionnaire (Reid & Parsons, 1995). Therefore, the purpose of this research is to extend the literature in FCT, parent training, and the effects of incorporating variables related to a family's culture into a behavior-analytic intervention. Another purpose is to assess parents' preferences by incorporating a choice phase in which parents will be asked to choose between implementing FCT in Spanish FCT or implementing FCT in English.

Method

Subjects, Setting, and Materials

Research was conducted with parents and their children. The children had been receiving ABA therapy at an early intervention clinic or in their home. Parent-child dyads were included in this study if, according to a functional analysis, the child exhibited problem behavior maintained by social reinforcement and if the parents agreed to participate in parent training for at least one hour, one day per week. Monica was 5 years old and previously had been diagnosed with autism spectrum disorder (ASD) and Fragile X syndrome. Monica and her family moved to the United States from Puerto Rico in 2015 to find ABA services. Monica's mother was able to understand and speak English; however, she had some difficulty with the latter. Chandler was 5 years old and he was diagnosed with ASD, attention deficit hyperactivity disorder (ADHD), and developmental delays. Chandler's mother moved to the United States from Mexico in 1999. Chandler's mother was able to understand very little English. The main language she spoke was Spanish. Ross was 5 years old and he was diagnosed with ASD. His family had been in United States since 2016. They moved from Puerto Rico to obtain ABA services for Ross. The mother had a hard time understanding and speaking English, her main language was Spanish.

Sessions were conducted in a room equipped with a child-sized table and chairs at the early intervention clinic where the subjects were receiving services. No other children were present during sessions. The therapist collected data using paper and pencil. Toys and academic materials varied across settings and were provided by the parents or clinic to be used during sessions.

Response Measurement, Interobserver Agreement, and Treatment Integrity

Data were collected on each parent's implementation of the FCT protocol. Each protocol (i.e., Spanish and English) was outlined step-by-step (see appendix A) to be performed during each trial. Percentages of correct implementation were calculated by dividing correct steps divided by the number of possible steps for each trial. Data were also collected on each child's problem behavior (e.g., tantrum) during the FA, *In-Situ* Training, and choice phase. Monica's tantrum was defined as crying, screaming, yelling, and/or throwing items not intended to be thrown. It also included dropping to the floor (i.e., attempting or bringing the body from a sitting or standing position to the floor), aggression (i.e., scratching, hitting, kicking staff, and/or throwing items directly at staff), and self-injury (i.e., forcefully banging head on the wall or another person, hitting head with open or closed hand, forcefully hitting chest area). Chandler's tantrum was defined as stripping (i.e., taking clothes off), self-injurious behavior (i.e., forcefully hitting any part of his body with open or close hands), and aggression (i.e., use of hands and/or feet to push, or attempt to push another individual, pinching others by bringing finger(s) and thumb together and squeezing another person's skin tightly and sharply). Ross's tantrum was defined as crying and/or screaming, aggression (i.e., hitting, using an open hand to strike another individual with enough force to create redness or bruising); biting, using of the teeth to cut into someone skin); or scratching, marking the surface of the skin by scraping the skin), and dropping to the floor, attempts to or bringing the body from a sitting or standing position to the floor).

A second observer simultaneously but independently recorded data with the primary observer to establish interobserver agreement on 30% of the trials. Exact count-per-interval interobserver agreement was calculated for all parent-child dyads. That is, we calculated the number of intervals of 100% agreement divided by the total number of intervals plus 100. Interobserver agreement for Monica's mother was 93%, for Chandler's mother was 100%, and

for Ross's mother was 78%. Interobserver agreement for Monica's, Chandler's, and Ross's problem behavior was 100%.

Treatment integrity data were collected during BST and *In-Situ* training for 30% of the trials. Using a checklist, Yes", "No", or "N/A" for each item was scored (See Appendix A for the Treatment Integrity Score Sheet). Treatment integrity was calculated by dividing the number of trials the intervention was implemented correctly by the total number of trials of implementation. Results were converted to a percentage. Treatment integrity for the mothers was 100%.

Procedure

Initial interview and direct observation. Parents were interviewed prior to the study. Parents were asked to provide information about their child's preferred items and the settings in which problem behavior occurred. Subsequently, direct observations informed by the interview were conducted to develop a hypothesis of the function of the problem behavior and design the conditions of the functional analysis (described below).

Preference assessment. A multiple-stimulus-with-replacement (MSW) preference assessment (DeLeon & Iwata, 1996) was conducted to identify items to include in the functional analysis. The items included were identified by the parents during the initial interview. During the preference assessment, all of the items were provided to the child at the same time, but the child was only able to select one from an array of five stimuli. Each trial began with the researcher asking the child to choose one item. Multiple selection attempts were blocked. Items selected by the child remained in the array for consecutive presentations. Every time the items were presented, they were placed in a different location in the array. Five trials were conducted during a session and only one session was conducted for Chandler and Ross. Two sessions were

conducted for Monica. She selected a different item for each of the trials of the first session. A second session was conducted to see if a preference was established.

Functional analysis (FA). A pairwise FA was conducted (i.e., a test-control design). Only the maintaining variable hypothesized during the first part of the study and the control was implemented. That is, for Monica and Ross it was identified, based on the initial interview, that problem behavior (i.e., tantrum) might be maintained by tangibles. In addition, for Chandler, it was identified problem behavior (i.e., tantrum) might be maintained by attention. Procedures described by Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994) were used during this phase of the protocol. Sessions were 5 minutes long with a 2-minute break in between each session. All the participants started with the test condition for the first session, and then the control condition was implemented. Conditions were implemented in an alternating treatment design.

In the *tangible* condition, the child was allowed access to the most-preferred item (determined by the MSW) for 30 s. The researcher then removed the item by saying “My turn.” Contingent on problem behavior, the researcher presented the item to the child. After 30 s, the item was removed again, and the researcher said, “My turn.” No other demands or attention was presented to the child. All other behaviors that did not meet the response criteria were ignored. As a control for this test condition, continuous access to the preferred item was provided without any consequence delivered for problem behavior.

In the *attention* condition, the researcher maintained a distance of 6 ft from the child and pretended to be occupied with paperwork. The researcher stated, “I have work to do; play with your ____”. The child was provided access to a moderately preferred item (determined by the MSW). No other demand was presented. If problem behavior occurred, the researcher

approached the child, gave a verbal reprimand (e.g., “Please don’t do that”) and placed a hand on the child’s shoulder. As a control, noncontingent attention was given and there was no a consequence delivered for problem behavior.

Experimental design. A nonconcurrent multiple-baseline-across- participants with an embedded alternating treatments design was used in the experiment to evaluate parent training effectiveness and child’s behavior.

Baseline trials and training trials were completed with a confederate. That is, another therapist acted as the child. However, during *In-Situ* training and the choice phase, each parent worked with her child. Prior to baseline sessions, the Spanish and English protocols based on the function of the child’s behavior were sent to the parent in the form of a flowchart (see Appendix B for flowchart). The percentage of correct steps was calculated by dividing the number of steps correctly completed by the total steps possible in the task analysis. The percent of correct steps was calculated the same way for all phases in the experiment. The rate of the child's problem behavior during *In-Situ* training and the choice phase was also measured. Sessions from the FA were used to provide data for the baseline condition and sessions from the *In-Situ* training and the choice phase were used to compare performance during the FCT intervention.

Baseline. During baseline, the therapist randomly selected with which protocol the mothers started the session. The therapist started each trial by saying “Show me what you remember about the (Spanish or English) protocol.” If the mother stated they didn’t remember, or they did not attempt to conduct the protocol, the trial was terminated and recorded as 0 steps completed correctly. If the mother conducted only part of the protocol (e.g., she completed three steps of the protocol), the remainder of the steps in the trial was recorded as incorrect. This procedure was repeated with each protocol in an alternating treatments manner; that is, each trial

alternated between English and Spanish. No feedback was provided to the mothers during baseline.

Behavioral skills training. At the onset of the training, the therapist reviewed how to conduct both of the protocols (i.e., English and Spanish). The therapist explained how to respond to the child while modeling each step of the protocol. The therapist answered any questions asked by the mother.

After reviewing the procedure, the therapist initiated each training trial. At the onset of the trial, the therapist said, “We are going to use the (Spanish or English) protocol. The confederate will pretend to be your child for this training. Please run the (Spanish or English protocol).” The therapist collected data on the steps completed in order to calculate the percentage of steps completed correctly. After each training trial, the therapist referred to the datasheet for that trial and provided feedback. Behavioral skill training with the confederate continued until the mother completed at least 90% of the steps correctly during at least two sessions.

During this part of the protocol, trials were contrived. That is, in some trials confederate engaged in problem behavior and in some other trials confederate engaged in appropriate behaviors. Each protocol was tailored to the child’s problem behavior. For example, if the child’s problem behavior was maintained by access to tangible, the protocol was as follows. First, the mother provided 30-s access to tangible; this was indicated by a timer. For the second step, the mother removed the tangible by saying “my turn” and taking the item from the child. Then the mother waited for 5 s, which was again indicated by a timer. If the confederate appropriately requested the item within the 5-s delay, the mother provided praise (i.e., “Good job requesting (item)”, etc.) and 30-s of access to the item was provided. If after the 5-s delay the confederate

did not respond, provided an incorrect response, or engaged in problem behavior, the parent provided a vocal prompt (i.e., “Say (item)”). After the confederate appropriately requested the item, a timer was initiated to indicate the end of the 30 s access period. After 30 s elapsed a new trial began, and the protocol was implemented again in the other language.

If the child's problem behavior was maintained by attention, the procedure was as follow. The mother provided attention for 30 s, this was indicated by a timer. The mother then removed attention by pretending to engage in an arbitrary activity. The mother waited 5 s indicated by a timer. If the confederate appropriately requested attention within the 5-s delay the mother provided praise (i.e., “Good job getting my attention”) and attention was provided for 30 s. If after the 5-s delay the confederate did not respond, provided an incorrect response, or engaged in problem behavior, the parent provided a vocal prompt (i.e., “Say excuse me”). After the confederate appropriately requested attention, a timer was initiated to indicate the end of the 30 s. After 30 s elapsed, a new trial began, and the protocol was implemented again in the other language. The mothers moved to the next phase once mastery criterion was achieved. That is, implementation of protocol was at 90% or higher for two trails of each protocol.

In-Situ training. After BST was completed, training continued, with the mothers completing the procedure mentioned above with their own children as opposed to with a confederate. The mothers were required to demonstrate both protocols (i.e., English and Spanish). During this phase, fading of the prompts started. This was included in order to give the child an opportunity to respond independently. At least two sessions of each protocol were implemented at 90% or higher prior to increasing prompt delay.

Choice. During the choice phase, the mothers were asked to pick between the Spanish protocol and the English protocol at the onset of every session. Five trials were conducted during

this phase. The mothers implemented this phase with their children. Data collection for this phase was like how data were collected for baseline, BST, and *In-Situ* training. Choice was measured by dividing how many times each protocol was selected by five total trials to turn it into a percentage.

Results

The results of the preference assessments conducted with each subject are shown in Figure 1. Monica selected a different item for each trial, indicating that all items (i.e., ball, sand, playdough, Ernie stuffed animal, and Big Bird stamp) selected for the assessment were likely to be preferred items. On the other hand, Chandler selected the toy truck for three out of five trials, demonstrating that to be a more preferred item. He also selected blocks in two out of five trials, demonstrating blocks to be moderately preferred. Chandler did not choose big Legos, tracing sheet, or the astronauts' book, indicating those items were less preferred. For Ross, animal puzzles and blocks were more preferred items. The toy truck was a moderately preferred item. The animal book and the electronic book were never selected during the session indicating those were not preferred items.

Figure 2 shows the results of the functional analysis for each subject. The rate of the problem behavior was assessed across sessions. Monica's and Ross's pairwise functional analysis was conducted with a control condition and a tangible condition. As indicated in the graphs, Monica and Ross engaged in problem behavior in the form of tantrums to gain access to preferred items. On the other hand, Chandler's problem behavior (in the form of tantrums) was maintained by attention.

Figure 3 shows the percentage of correct steps across sessions for baseline, BST, *In-Situ* training, and choice for each subject's mother. For Monica's mother (top panel), the percentage of correct FCT steps performed averaged 80% during the English condition and 100% during the Spanish condition. Although Monica's mother was able to implement both protocols with a high percentage of correct steps during baseline, the graph shows the Spanish protocol was implemented more accurately than the English protocol. However, during BST, the percentage of

correct FCT steps in both conditions (i.e., English and Spanish) was 100%. During *In-Situ* training, Monica's mother continued to correctly implement FCT steps with 100% accuracy in the English condition. However, during the Spanish condition, the percentage of correct steps decreased slightly to an average of 98%. This decrease was due to Monica manding in English during Trial 23 (i.e., a Spanish trial) and the mother not responding to her request. Since the mother did not respond to the mand, a 0 was entered for that step. Feedback was provided after the trial was terminated. The mother continued to implement both protocols 100% correctly for the remainder of the trials.

For Chandler's mother (middle panel), the percentage of correct steps during the English condition and the Spanish condition during baseline is undifferentiated. The graph shows low levels of percentage of correct steps for both conditions. However, during BST, performance in both languages (i.e., English and Spanish) was 100% correct. During *In-Situ* training, Chandler mother's percentage of correct steps decreased to an average of 87% during the English condition and an average of 74.6% during the Spanish condition for the 5-s delay. This variability in the data indicated generalization of procedures did not transfer to a more natural setting (i.e., the parent working with child). However, during the remainder of the prompt delays the percentage of correct steps increased to 100%.

Similarly, Ross's mother (bottom panel) showed a higher levels of percentage of steps completed correctly for the Spanish protocol than for the English protocol. However, during BST, correct implementation of steps increased to an average of 88% during English protocol and to 100% correct during the Spanish protocol. During *In-Situ* training, Ross's mother continued to implement the steps with 100% accuracy during both protocols (English and Spanish).

During the choice phase, the Spanish protocol was selected for three trials out of the five trials while the English protocol was selected for two trials by Monica's mother. On the other hand, Chandler's mother and Ross's mother selected English protocol for four trials while selecting the Spanish protocol for one trial.

Figure 4 demonstrates the results of FCT on the child's problem behavior. For Monica, problem behavior occurred an average of 0.44 times per min during baseline. A decrease to 0 is seen during FCT. In addition, problem behavior for Chandler occurred an average of 0.97 times per minute during baseline and a decrease is seen during FCT ($M=0.1$ times per min). Furthermore, for Ross, problem behavior occurred an average of 1.7 times per min during baseline, with a decrease to 0 during FCT.

Discussion

The present study was conducted to further investigate FCT and parent training when incorporating a variable related to a family's culture (in the form of language) to behavior-analytic interventions. Initial interviews, preference assessments, and functional analyses were conducted prior to the beginning of the experiment. Behavioral skill training was used to train parents on the use of FCT. Results indicated once the mothers were trained on implementation of protocols, they were able to correctly implement FCT. The mothers' preferences were also assessed by incorporating a choice phase in which each was asked to choose between Spanish FCT implementation and English FCT implementation. At the end of the session, mothers were asked why they chose the protocol they did. Anecdotally, Monica's mother reported feeling more comfortable implementing the Spanish protocol than implementing the English protocol. On the other hand, Chandler's mother and Ross's mother reported although they felt more comfortable implementing and learning in Spanish, their children seemed to understand English the best, fewer prompts during the English protocol were needed. The results found during this phase of the study are consistent with the literature. As mentioned before, most researchers assess social validity by asking the subjects to complete a questionnaire. However, the social validity results might change depending on whether the subjects choose between different interventions (a behavioral measure) or just respond to a self-report questionnaire at the end of the research (Reid & Parsons, 1995).

The results for each child's behavior was consistent with previous studies implementing FCT. As soon as FCT was implemented, each child's problem behavior decreased to zero levels, except for Chandler, who engaged in problem behavior in the first session of FCT. However, anecdotally, problem behavior during this session could have had occurred because child's

routine was interrupted. Overall, these results demonstrated when provided with a functional communicative response, problem behavior is less likely to occur. One strength of these results is that it shows FCT reduces child's problem behavior regardless of the language used to train communicative response.

The present study indicates language used during training might not make a difference in a mother's ability to acquire a new skill, such as implementing an FCT protocol. However, as mentioned by Fong et al. (2016), the client's language should be taken into consideration since language and concepts differ from culture to culture. That is, a word might have different meanings depending on which culture is coming from. Acknowledging and understanding these differences would make for a stronger communication between the parents and the therapists. It will also allow behavior analysts to develop skills to understand ways in which culture might affect the interventions and its components (Fong et al.).

This study has several limitations. First, the protocols were the same except that one was in Spanish and one was in English. We also used an embedded alternating treatment design. Either of these two variables could have caused a carryover effect. That is, what was learned during one of the conditions could have carried over to the next condition. Future research should evaluate other aspects of culture and/or other behavior-analytic interventions.

Second, the children of the mothers participating in the current study had been receiving services for at least one year prior to the beginning of the experiment. Perhaps conducting this research with parents starting behavior-analytic services for the first time might yield different results. Third, only mothers participated on this study; including fathers in future research might not only show us some different results but also might be beneficial for the maintenance of skills acquired by the children receiving behavior-analytic interventions. Furthermore, problem

behaviors did not occur during *In-Situ* training, therefore, mothers' behavior were undifferentiated causing a ceiling effect.

A final limitation of the current study is that we only evaluated one culture (Latino/Latina). As mentioned before, the United States is considered a melting pot because of all the different cultures present within one country. Evaluating and conducting research with other cultures can only be beneficial to the field of ABA. Mentioned earlier, in order to provide social significant interventions behavior analysts, need to understand their client's culture. Further research should continue to examine cultural variables within ABA while addressing these limitations. It is our hope the current study is only one of many more to come.

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TABLES

Problem behavior for access to **tangible**

	1. Provided 30 second access to tangible.
	2. Removed tangible from confederate. Say “my turn”.
	3. Provided 5 second delay.
	4. Provided tangible for 30 seconds if confederate appropriately requests the tangible with the 5 second delay.
	5. Provided vocal prompt (i.e., Say “item”) if incorrect responses or no responses.
	6. Provided 30 second access to item.

Problem behavior maintained by **attention**

	1. Provided attention for 30 seconds.
	2. Removed attention from confederate. Work in arbitrary task.
	3. Provided 5 second delay.
	4. Provided attention for 30 seconds if confederate appropriately requests for attention with 5 second delay.
	5. Provided vocal prompt (i.e., Say “excuse me”) if incorrect responses or no responses.
	6. Provided 30 seconds of attention.

Table 1. Task Analysis for implementation of programs

Figures

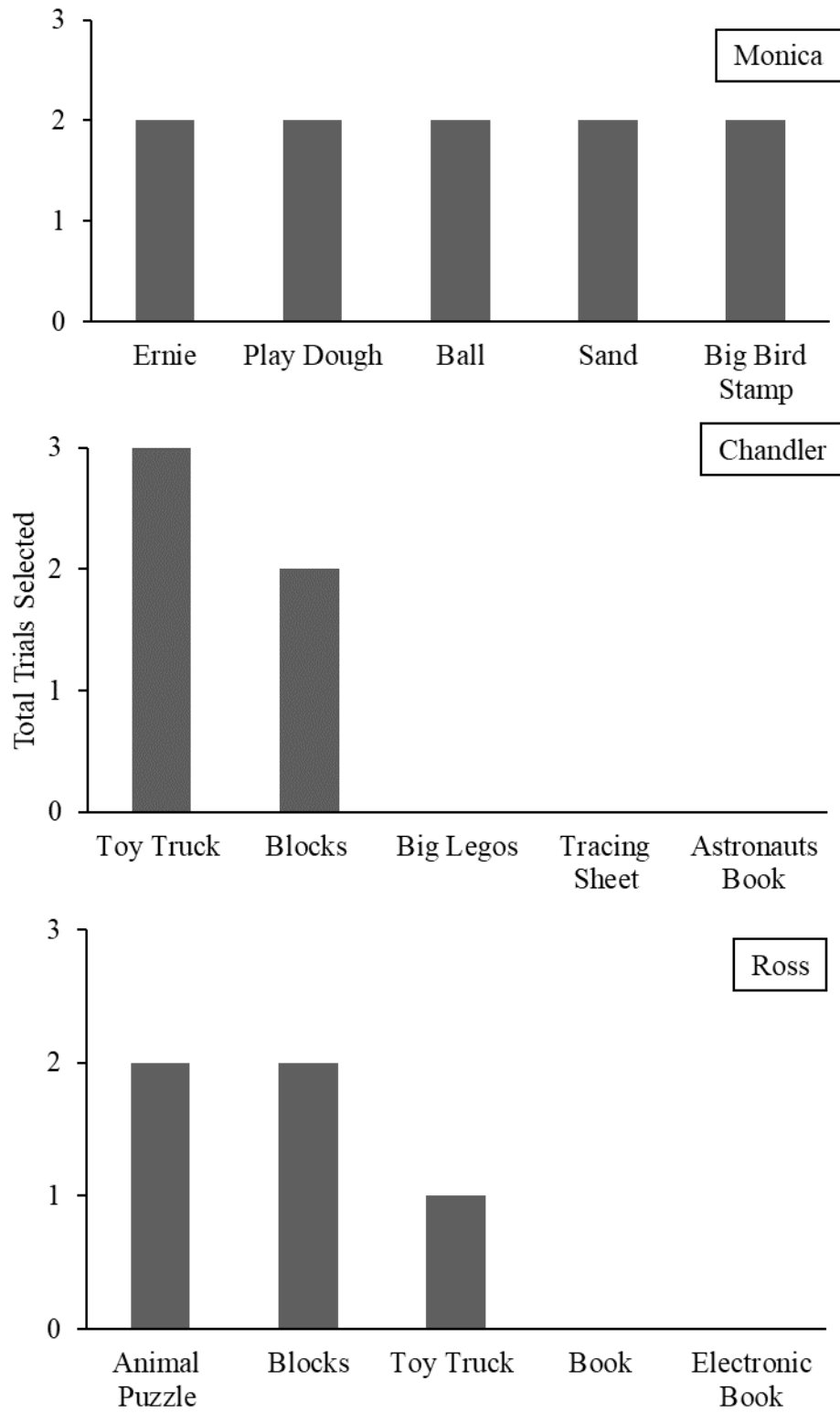


Figure 1. Multiple stimulus with replacement preference assessment results for each subject.

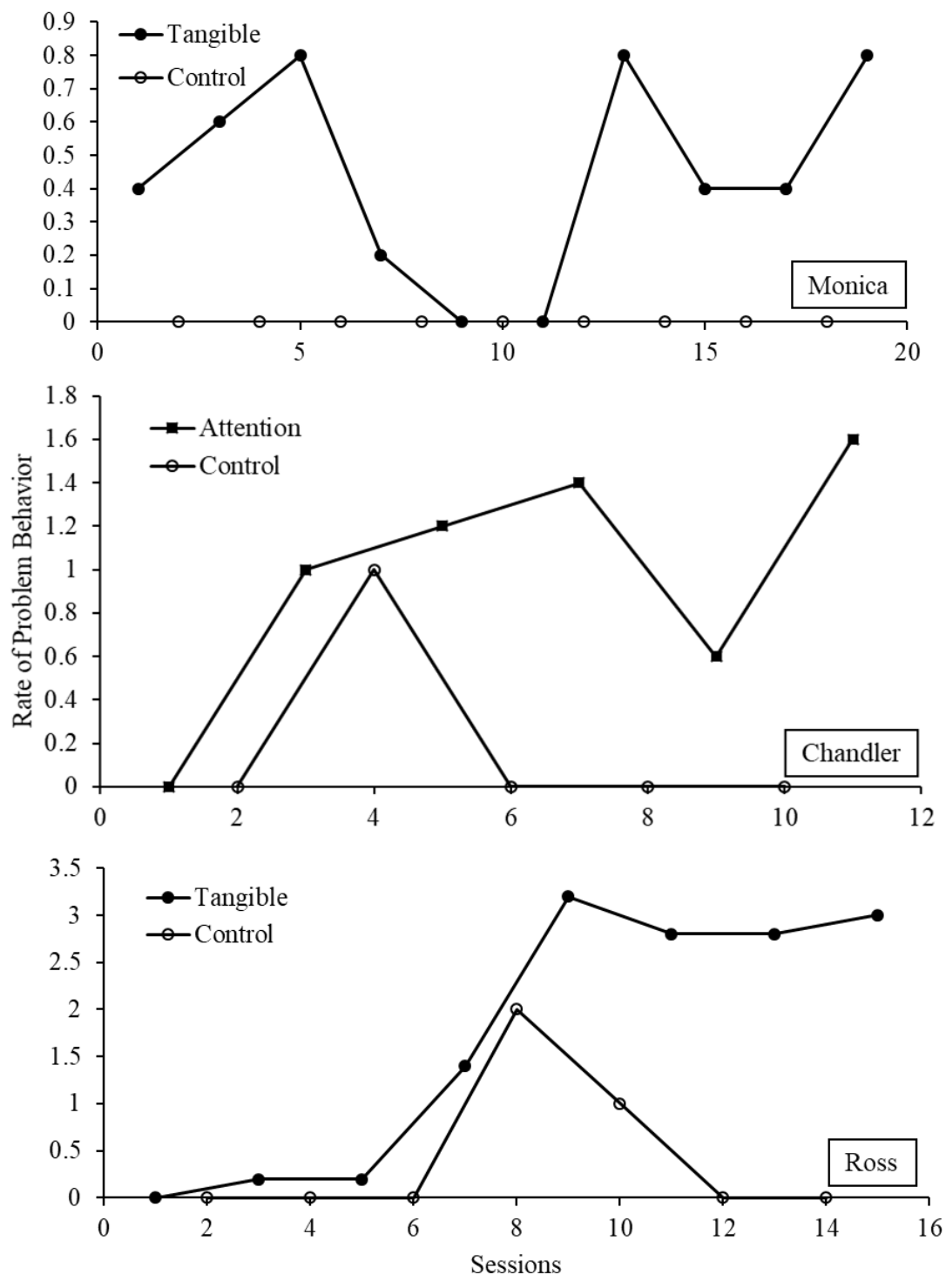


Figure 2. Functional analysis results for each child, reported as rate of problem behavior across sessions.

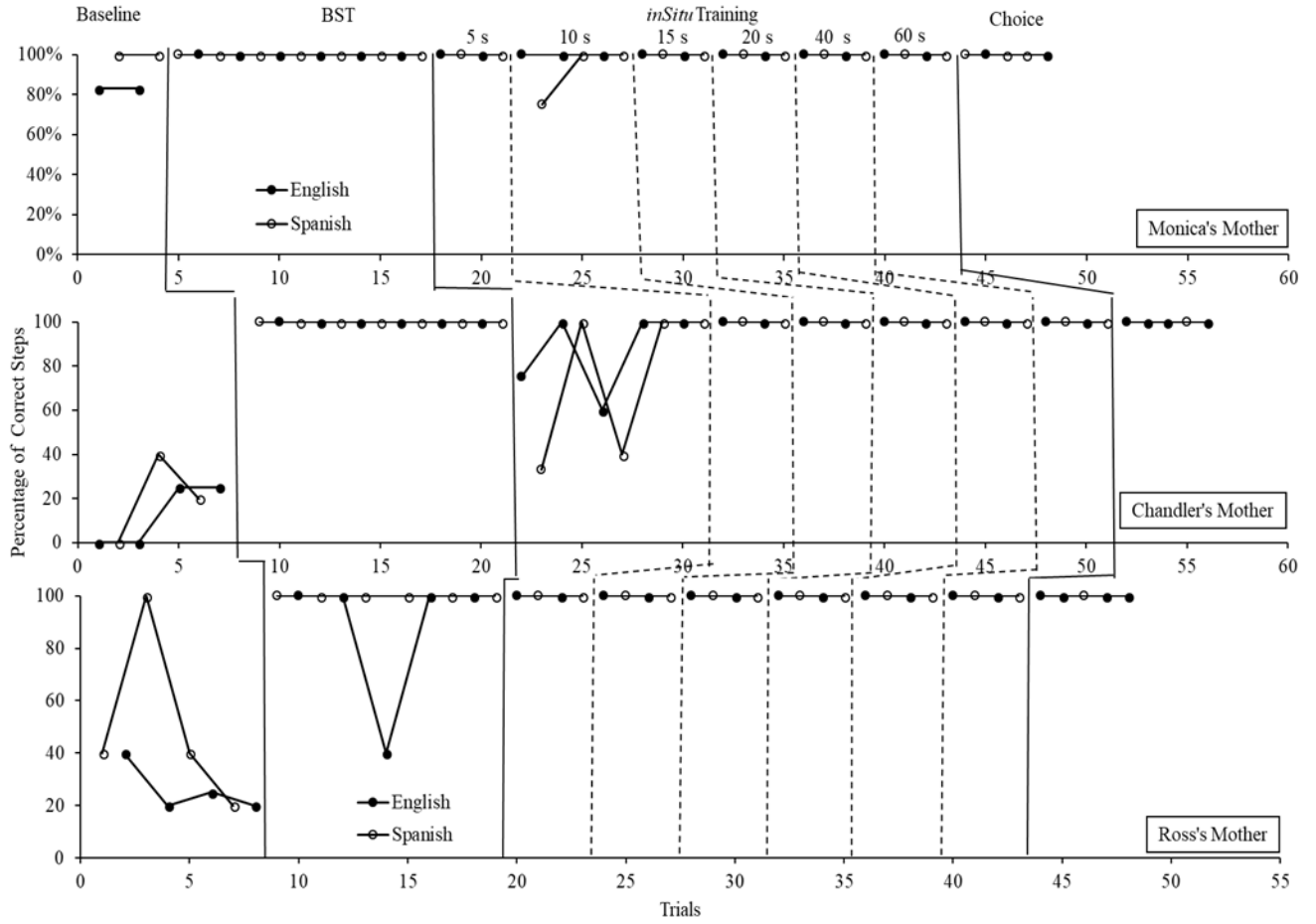


Figure 3. Percentage of correct steps in FCT implementation across trails for each child's mother.

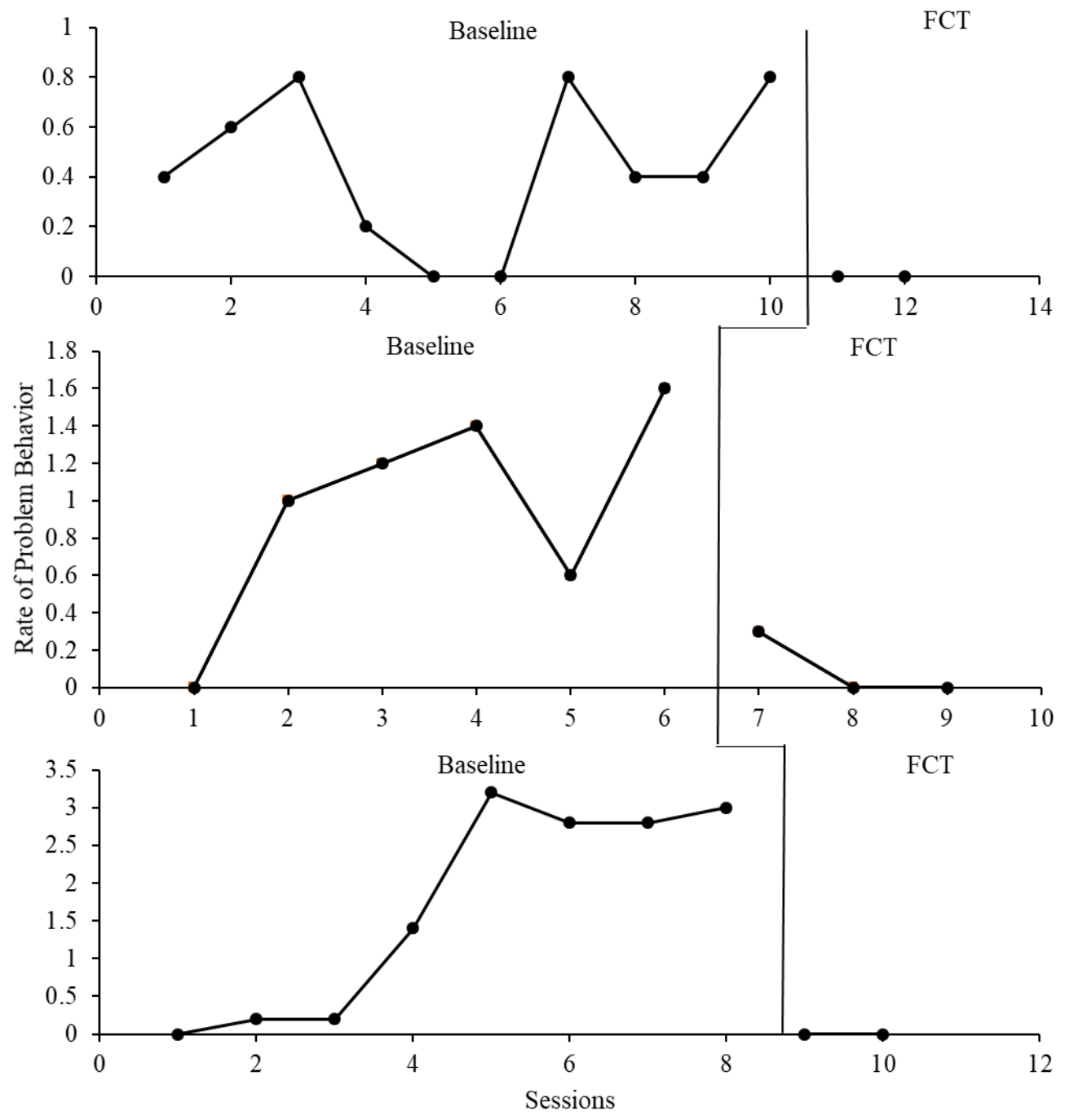


Figure 4. Rate of problem behavior across session for each subject during baseline and FCT.

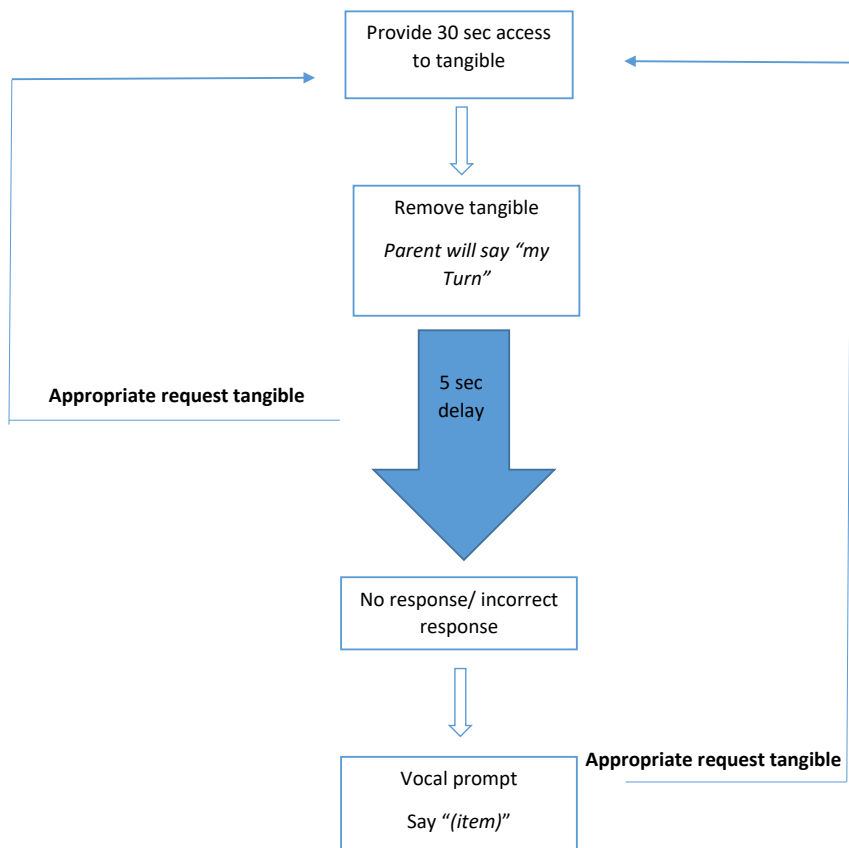
Appendix A

Treatment Integrity Score Sheet	Date:	Date:	Date:	Date:	Date:
Are the materials needed for the sessions ready? (i.e., toys, timer, etc.)	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A
Was reinforcer provided for 30 seconds?	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A
Was reinforcer removed after 30 seconds? And parent worked on arbitrary task?	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A
Was appropriate delay provided?	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A
Was functional reinforcer provided if child appropriately requested reinforcer?	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A
Were prompts used correctly?	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A
Were inappropriate behaviors ignore?	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A

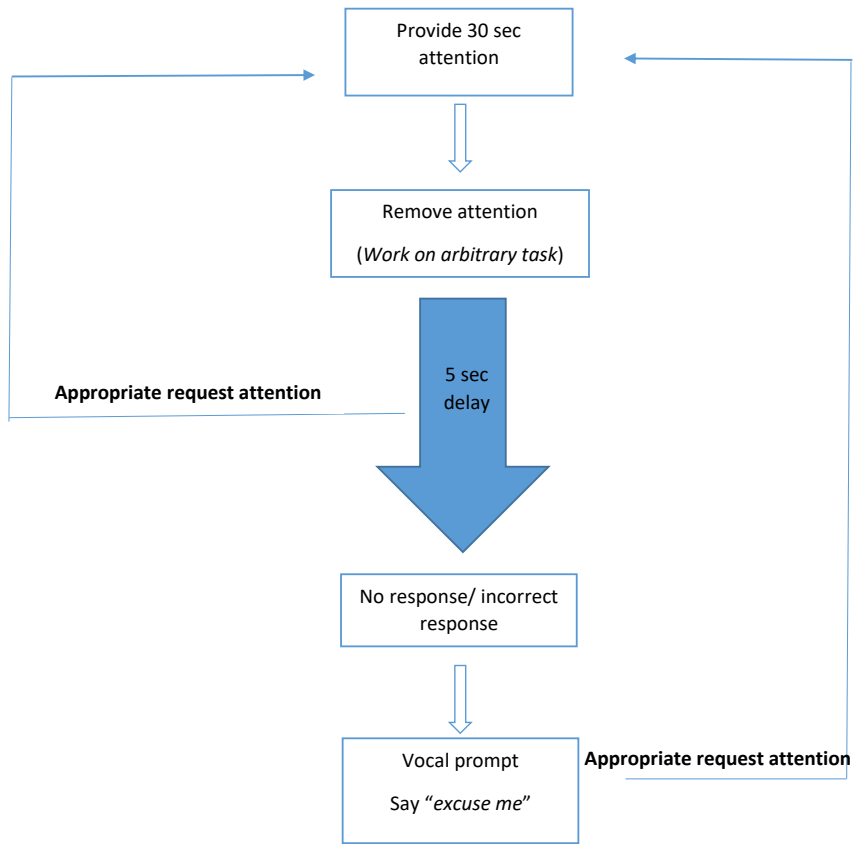
Appendix A. Record a “yes” if the specific procedure is followed, “no “ if the procedure is not followed. Record “NA” if the procedure is not needed.

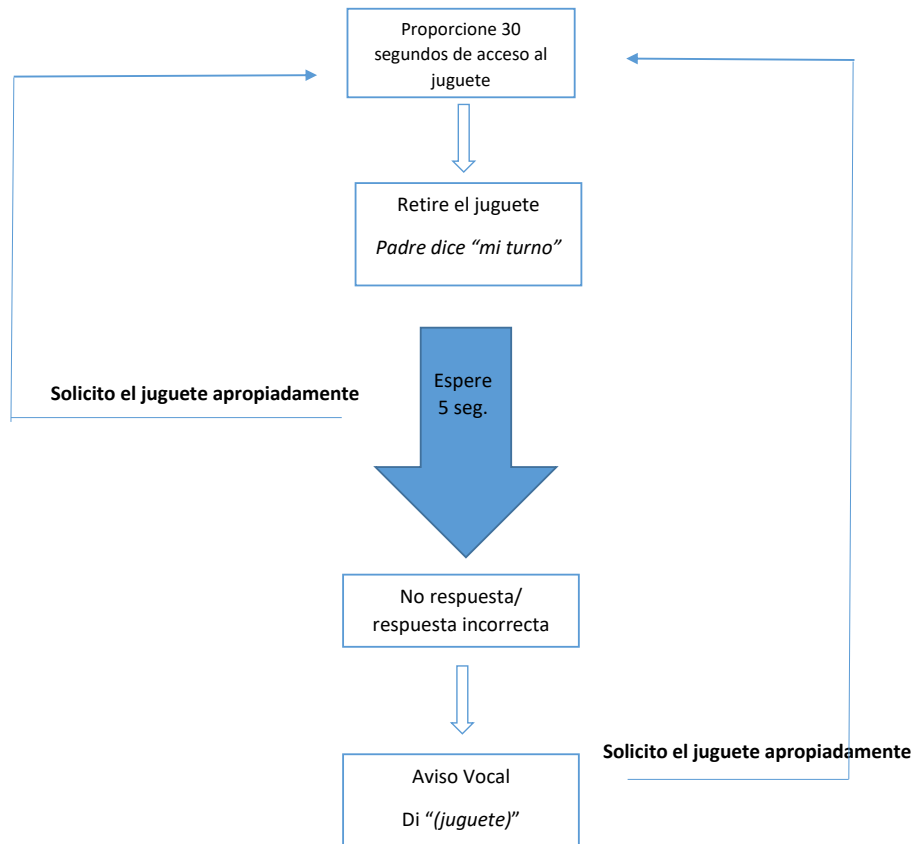
Appendix B

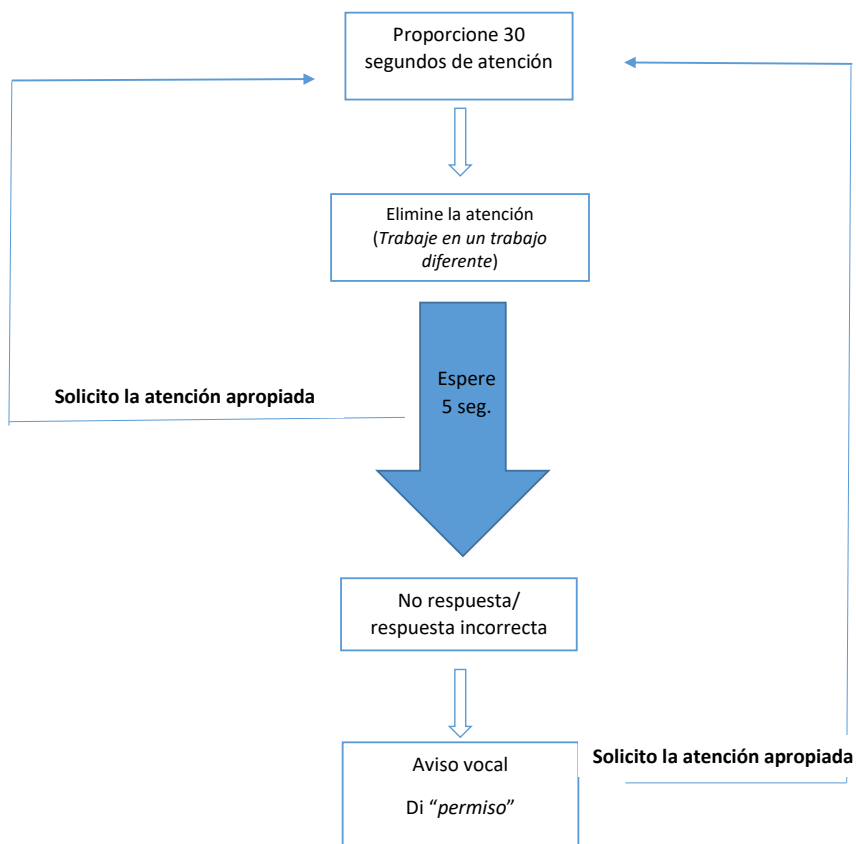
Procedures used when training FCT for **tangible** items



Procedures used when training FCT for **attention** items



Procedimientos utilizados para entrenar FCT para acceso a un **juguete**.

Procedimientos utilizados para entrenar FCT para recibir **atención**.

Appendix B. Procedures used when training FCT for tangible and attention in English and Spanish.