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Abstract

Temper tantrums among young children are common, especially those with autism spectrum disorders. Delay of gratification is an essential component of temper tantrums. Teachers and parents seek management strategies for temper tantrums that are efficient, effective and ethical. The purpose of this applied behavioral analysis research was to compare various types of functional communication training with three children in the three and a half year old age range. In Phase One, to determine the misguided goal or function of each child's temper tantrum, functional behavioral assessment was undertaken. In Phase Two, a reward menu was used to determine preferred rewards for the treatments. In Phase Three, a multiple baseline across participants design was used to reduce temper tantrums and increase appropriate communication that was identified through functional communication training (FCT). In Phase Four, fixed time delay (FD), progressive time delay with verbal praises (PDVP) and progressive time delay with visual cues (PDVC) were employed to represent three intervention conditions to teach delay of gratification. In Phase Five, parents were surveyed to determine the social validity or acceptability of the interventions with parents. Two independent observers counted frequency of temper tantrums, frequency of alternative communication behaviors, and length of wait time in each of these three children. Results showed that progressive time delay with visual cues (PDVC) increased wait time and reduced temper tantrums the most. Implications for teachers and parents working with young children prone to temper tantrums are discussed.

Educating Children with Autism Spectrum Disorders(ASDs) to Delay Gratification in the Context of Temper Tantrums

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Note: Dr. Lee is the winner of the ATE-K Distinguished Dissertation Award this year. She will present her work at the spring meeting of our Association at Kansas State University. She was assisted by Robert G. Harrington, University of Kansas. (see atekan.org for details about the spring meeting.)

Abstract

Temper tantrums among young children are common, especially those with autism spectrum disorders. Delay of gratification is an essential component of temper tantrums. Teachers and parents seek management strategies for temper tantrums that are efficient, effective and ethical. The purpose of this applied behavioral analysis research was to compare various types of functional communication training with three children in the three and a half year old age range. In Phase One, to determine the misguided goal or function of each child's temper tantrum, functional behavioral assessment was undertaken. In Phase Two, a reward menu was used to determine preferred rewards for the treatments. In Phase Three, a multiple baseline across participants design was used to reduce temper tantrums and increase appropriate communication that was identified through functional communication training (FCT). In Phase Four, fixed time delay (FD), progressive time delay with verbal praises (PDVP) and progressive time delay with visual cues (PDVC) were employed to represent three intervention conditions to teach delay of gratification. In Phase Five, parents were surveyed to determine the social validity or acceptability of the interventions with parents. Two independent observers counted frequency of temper tantrums, frequency of alternative communication behaviors, and length of wait time in each of these three children. Results showed that progressive time delay with visual cues (PDVC) increased wait time and reduced temper tantrums the most. Implications for teachers and parents working with young children prone to temper tantrums are discussed.

Introduction

One in sixty- eight children is likely to develop Autism Spectrum Disorders (ASDs) (Center for Disease Control and Prevention, 2014). Early childhood teachers and parents of children with ASDs are concerned about how to manage the associated temper tantrums (Athens & Vollmer, 2010). Teachers and parents report temper tantrums as extremely intense, escalating outbursts with loss of self-control and increase in aggression and even self-injurious behavior (Fisher, Thompson, Hagopian, Bowman, & Krug, 2000; Mireault & Trahan, 2007). Prior research has suggested that functional communication training (FCT) strategies might be useful to teach children with ASDs how reduce temper tantrums and increase wait time (Beldon, Thompson, & Luby, 2008).

Delay of gratification or the ability to wait is important in preschool and at home since young children need to learn to forego immediate gratification to gain something more desirable later (Mischel, Shoda, & Rodriguez, 1989). Toddlers who demonstrated delayed gratification abilities were better able to use self-regulatory skills in preschool (Mischel, Shoda, & Rudriguez, 1989). Further, preschool-aged children who delayed immediate rewards to receive greater reinforcers later were able to demonstrate higher levels of social competence later in life (Peake, Hebl, & Mischel, 2002).

Little research has compared three management strategies that teachers and parents could use to efficiently, effectively and ethically teach children with ASDs how to delay gratification and reduce temper tantrums. The purpose of this study was to compare fixed time delay (FD), progressive time delay with verbal praises (PDVP), and progressive time delay with visual cues (PDVC) to determine their effectiveness in reducing temper tantrums, increasing alternative replacement behaviors, and increasing delay of gratification.

Method

The experimental design combined the best of two applied behavioral analysis research designs: 1. multiple baseline across participants and, 2. multi-element design (i.e., alternating treatment design) to reduce temper tantrums. The first design examines the efficacy of FCT in reducing temper tantrums. The second design compares three treatment approaches to teach delayed gratification: Fixed Delay (FD), Progressive Time Delay with Verbal Praises (PDVP) and Progressive Time Delay with Visual Cues (PDVC).

Participants, Setting, and Procedures

Two females (3 years and 7 month old, and 3 years and 5 months old) and one male (3 years and 6 months old) diagnosed with ASDs and receiving special education and speech/language services were recruited as participants. A licensed clinical

psychologist served as the experimenter for each of the three children for the entire 16-week treatment sessions held at the pediatric unit at the University of Kansas, Medical Center (KUMC). The experimenter participated in a 45-minute training session that consisted of reviewing the session protocols, role-playing trials, and receiving performance feedback until completing all training without error.

This experiment was conducted in five phases. Figure 1 is a flowchart of the five phases of the Study. Phase One was used to determine the misguided goal or function of each child's temper tantrum. Parents were interviewed about the functions of behaviors and a functional analysis (FA) was undertaken for each participant followed by a baseline measure of the frequency of temper tantrums. In Phase Two, a Preference Assessment was undertaken to determine preferred rewards for the three treatments (i.e., FD, PDVP and PDVC). In Phase Three, FCT was used to teach the children strategies they could use themselves to delay gratification. In Phase Four, a multiple baseline across participants design was used to test three experimental conditions to reduce temper tantrums and increase appropriate communication including: fixed time delay (FD), progressive time delay with verbal praises (PDVP) and progressive time delay with visual cues (PDVC). In Phase Five, follow-up was conducted through surveys with parents to determine the social validity or acceptability of the interventions with parents.

Response Measurement, Reliability, and Procedural Fidelity

Two independent observers served as the primary data observers for the study. Both underwent a 60-minute pre-data collection video training session. Both observers independently collected frequency data based on operational definitions of target and replacement behaviors. Resulting data was expressed as a percentage of occurrence for each behavior and an index of inter-observer agreement (IOA) for each behavior was tallied. All sessions were videotaped during the study. IOA ranged from 86% to 100%. Agreement levels of at least 80% for each of the observations were considered acceptable. The integrity of the independent variables implemented in the study (i.e., procedural fidelity) was evaluated by completing procedural integrity checklists. The purpose of this procedure was to determine whether each experimental procedure (i.e., the independent variables) was conducted as planned. Fidelity was evaluated across all sessions and was 100%.

Phase 1: Functional Behavior Assessment (i.e., functional analysis [FA])

Before conducting the FA, the researcher had a brief interview with each participant's primary caregiver to identify (1) the operational definition of each participant's temper tantrums and (2) the purpose for each participant's temper tantrums. Female 1's operational definition of temper tantrums was screaming, yelling, and crying. Based on her primary caregiver's interview, it was determined her temper tantrums were maintained by the tangible condition (i.e., displaying the

problem behavior to get what she wanted). Female 2's operational definition of temper tantrums was disruptive muttering, crying, and yelling. Her primary caregiver revealed that her temper tantrums were maintained by the tangible condition also. Male 3's operational definition of temper tantrums was falling out of his chair, screaming, and ripping off clothes. His temper tantrums were also maintained by the tangible condition.

After the parent interview, next the FA was conducted. The purpose of FA was to examine the functional relationships between experimentally arranged environmental conditions and the participant's display of problem behavior. Participants were assessed within a single-subject multielement experimental design (Iwata et al., 1994). Four conditions (i.e., three experimental conditions and one control condition) were manipulated for all participants. Each condition was 5 minutes long and was conducted at least three separate times to ensure the stability of the data. Data collection for the FA phase ended when differential effects across experimental conditions were observed.

Results showed Female 1's temper tantrum behavior was maintained by the tangible condition (i.e., displaying the problem behavior to get what she wants). Female 2's temper tantrum behavior was maintained by both the tangible and demand conditions (i.e., displaying the problem behavior either to get what she wants or to escape from the required task). Male 3's temper tantrum behavior was maintained by the tangible condition, but the therapist noted that other functions might have evoked the problem behavior.

Phase 2: Stimulus Preference Assessment

The paired-stimulus preference assessment (Fisher et al., 2000) was conducted to identify a hierarchy of the preferred items. First, five to six different items were placed on the table. Each item was randomly paired with another item and the participant was asked which one they liked most. Each item was presented in different random pairings. The researcher recorded the number of times each item was picked and converted that to a percentage of selection. The item with the highest selection percentages was used as a reward during the treatment conditions that followed. Both Female 1's and Female 2's reward was Play-Doh. Male 3's reward was a fruit snack.

Phase 3: Functional Communication Training (FCT)

The goal of this first treatment phase was to test whether FCT could effectively decrease the frequency of the participants' temper tantrum behaviors. After the experimenter identified the causes (i.e., functions) of each participant's problem behavior, the communication training technique (either handing over a picture card or stating a verbal request) was individually determined for each participant. In Female 1's case, saying "My turn" was defined as an appropriate communication response. In the case of Female 2, using a picture card (showing "raise your hand") was defined

as an appropriate communication response. Male 3's appropriate communication response was using both language by saying, "More" and gesture. The therapist taught an appropriate communication skill that could be used to replace the function of the temper tantrum behavior. Once the child learned and used the appropriate communication skill, the reward was delivered immediately. Overall, the results of the FCT assessment showed that all of the three participants had acquired functional communicative responses and that their responses served as a replacement for their temper tantrum behavior. Therefore, all participants met the criterion for participating in the three delayed gratification conditions that followed.

Phase 4: Three Delay of Gratification Conditions

After the FCT phase was completed, each of the three participants was introduced to the three, delayed gratification conditions (i.e., the 50-second, fixed time delay, the 50-second, progressive time delay with verbal praises, and the 50-second, progressive time delay with visual cues). An alternating treatments design was used to compare the three treatments within a single subject. The sequence for introducing the three delayed conditions was randomized by the experimenter.

At the start of each session, each participant was allowed to play with the reward. In the 50-second, fixed time delay condition, the participant was asked to wait for 50 seconds until he or she received the reward. In the 50-second, progressive time delay with verbal praises condition, the participant was asked to wait for 50 seconds, but the therapist delivered the verbal praise ("Good waiting!") in every 5 second interval. In the 50-second, progressive time delay with visual cues condition, the participant earned a sticker to put on a sticker board for every 5 second interval. When he or she earned a total of 10 stickers, the therapist delivered the reward.

Phase 5: Social Validity Results

In Phase 5, Social Validity, the experimenter was asked to evaluate the acceptability of the three interventions for each of the three participants. In all three cases the experimenter evaluated each intervention as very acceptable for each participant but he responded that it might take a little more time to see the treatment effectiveness of the progressive time delay with visual cues condition on Female 2.

Another Social Validity check included all primary caregivers being debriefed at the end of the study regarding their satisfaction with their student's ability to delay gratification and reduce temper tantrums. Female 1's primary caregiver was pleased to see Female 1's improvements in using alternative communicative response. She was also happy to see the decline of Female 1's temper tantrum behaviors. Female

2's primary caregivers thanked the researcher and stated that her student was able to wait when requested. Similarly, Male 3's primary caregiver's response was similar, but she told the researcher that her son still needed to work on verbal communication skills and self-control. Overall, all respondents verbally concluded that Progressive Time Delay with Visual Cues (PDVC) combined with FCT improved their child's ability to delay gratification in the course of temper tantrums and helped their children gain more appropriate positive replacement skills.

Results

Female 1 Results. A high level of temper tantrum behavior was observed in the first fixed delayed condition, but the trend was gradually decreased. A moderately high level in temper tantrum behavior was observed in the first progressive delay with verbal praise condition, but the trend was gradually decreased also. Low to zero levels of temper tantrum behavior occurred during the progressive delay with visual cues condition. These results suggest Female 1's temper tantrum behavior gradually decreased when the three delayed conditions were introduced, but the condition with visual cues was the most effective intervention to teach her how to wait. In addition, Female 1 tolerated the maximum 50 seconds of waiting with the progressive delay with visual cues condition across the three settings.

Female 2 Results. The results suggested Female 2's temper tantrum behavior was shown to be near zero in the progressive delay condition with visual cues. Same result as Female 1. Female 2 also tolerated the maximum 50 seconds of waiting with the progressive delay with visual cues condition across the three settings.

Male 3 Results. The results suggested Male 3's temper tantrum behavior decreased to near zero level with the progressive delay condition with visual cues. Same results as the other two participants. Male 3 also tolerated the maximum 50 seconds of waiting with the progressive delay with visual cues condition across the three settings.

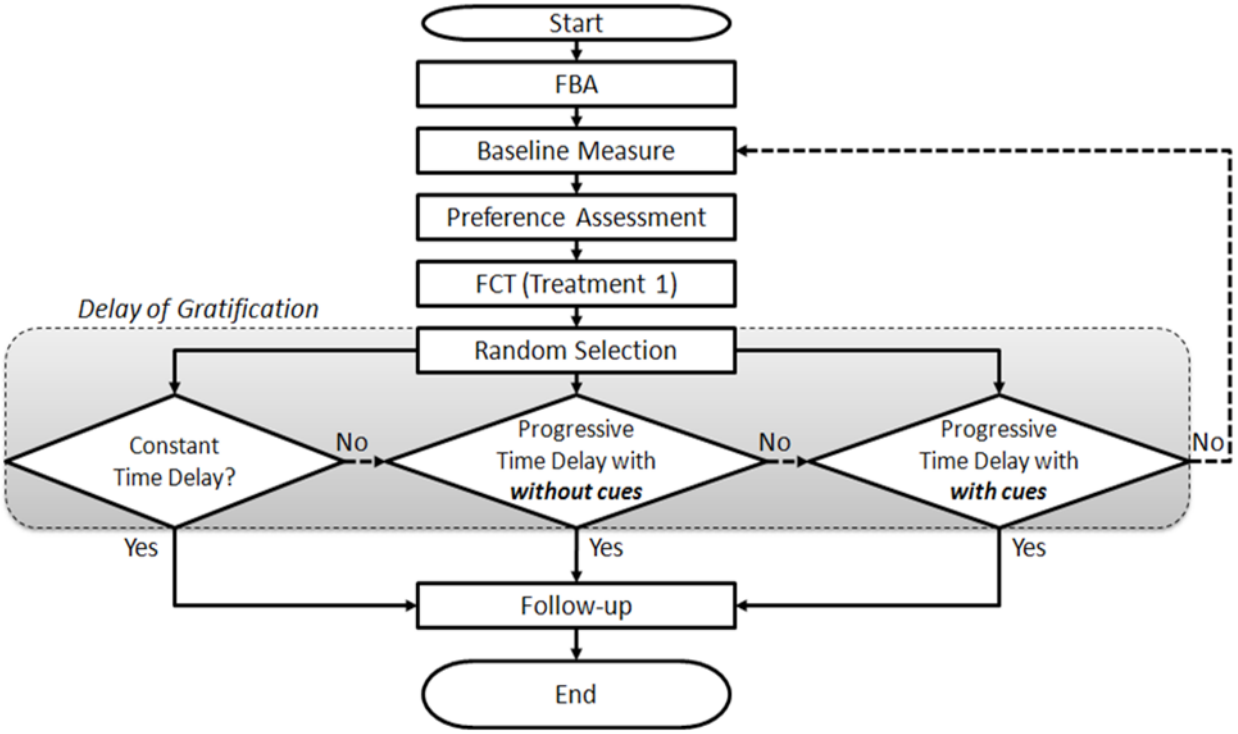
Discussion

Based on these results, it may be beneficial for special education teachers and parents to implement the progressive time delay with visual cues condition for temper tantrum behavior. The use of visual cues may be more effective than rigid instruction or non-visual cues or verbal cues if a child with ASDs is sensitive to visual stimulation. Arguing, yelling or ignoring the student with ASDs who is having a temper tantrum is clearly not the correct approach. Teachers need to understand that young children with ASDs who are having a temper tantrum are trying to get their needs met in an ineffective manner by throwing a temper tantrum. What teachers need to do first is to teach these children some appropriate function communication skills that can

help them get their needs met more socially appropriately. Second, the teacher and/or parent should also consider using a progressive delay with visual cues (PDVC) intervention. This intervention may help the child to learn delayed gratification and calm down by increasing time delay progressively over time. If combined with visual cues, the students will learn they are making progress toward a goal of a favorite choice reward provided in response for their waiting. Parents reported that PDVC is feasible to use in their homes and they are willing to continue to use it in their efforts to control their children's temper tantrums. While this study did not address teachers in early childhood classrooms this approach may well be worth their while as a starting place to manage temper tantrums in their classroom for students with ASDs and potentially for other students who are having a temper tantrum as well. More research is needed to evaluate management strategies to increase delay of gratification in a classroom because most of the time in such settings the reward is not always immediately available.

In addition, these findings should be replicated in different educational settings with other age groups to increase the generalizability of the results. Future research should address whether the progressive time delay with visual cues can promote longer wait times than 50 seconds. The study was instrumental in introducing children with ASDs, their families, and educators to the importance of teaching functional communication training combined with Progressive Delay with Visual Cues (PDVC) and a preferred reward to delay gratification of young children during temper tantrums. These techniques may be an important part of an overall plan of Positive Behavior Supports (PBS) at home and at school for young children with temper tantrums.

Figure 1. Flowchart of Four Phases of the Experimental Study



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