EFFECTS OF PERSONALIZED TOKEN BOARDS ON ON-TASK BEHAVIOR, SKILL ACQUISITION AND PROBLEM BEHAVIOR

by

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(Under the Direction of Kevin Ayres)

ABSTRACT

This study compared the use of token boards which incorporated personalized, preferred interests with generic token boards on the on-task behavior, problem behavior, and skill acquisition of a 10-year old boy with autism spectrum disorder and severe intellectual disability. An alternating treatment design embedded within a withdrawal design did not reveal any significant difference between the use of personalized token boards and the use of generic token boards. The results suggest that perseverative-based or personalized token boards may not be effective at improving on task behavior or skill acquisition, or in decreasing occurrences of problem behavior, in some children.

INDEX WORDS: Token Economies, Perseverative Interests, Skill Acquisition,

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CHAPTER 1

INTRODUCTION

Token economies have historically been used across a wide range of individuals to address a variety of behaviors. This includes the use of token economies incorporation in classroom management strategies, as well as their use in increasing appropriate academic behaviors (Kazdin & Boozin, 1972). Additionally, token economies have frequently been used with individuals with autism spectrum disorder and/or intellectual disability (Kazdin & Boozin, 1972). At their core, token economy interventions typically involve the earning and exchanging of physical "tokens" for preferred items and activities (Carnett et al., 2014). These items and activities can range from toys, preferred edibles, or access to games and technology, among other things. Because the tokens within a token economy represent generalized conditioned reinforcers, they can be advantageous when primary or other preferred reinforcers are not immediately available (Charlop-Christy & Haymes, 1998).

Previous research into token economies has examined concepts including response cost, pairing tokens with praise or adult attention, and the effectiveness of various schedules of reinforcement within token economies (Carnett et al., 2014). Token economies have also been used to increase on-task behavior of children with autism spectrum disorders (Mangus, Henderson, & French, 1986). In a study evaluating the use of peer-tutors and token economies, Mangus et al. (1986), employed a reversal design to examine the use of generic token reinforcers on balance beam performance. During treatment conditions, peer-tutors dropped a token into a clear plastic cup when the student was continuously walking on a balance beam (Mangus et al.,

1986). Tokens could be exchanged for edible reinforcers when the students met criterion (acquired 5 tokens). The results of Mangus et al. (1986) indicated that 4 out of the 5 subjects improved their balance beam performance in at least one condition in which the token economy system was used.

Previously, a small handful of studies have examined the quality of the tokens themselves, after observing their customized use in applied settings (Charlop-Christy & Haymes, 1998). Charlop-Christy and Haymes (1998) noted that many teachers and clinicians had abandoned the older practice of using poker chips or other neutral stimuli and had instead begun customizing tokens based on their students' and clients' interests. In their study, Charlop-Christy and Haymes (1998) collected data on percent correct of task responses and the occurrence of identified inappropriate behaviors during sessions. At the end of the study, they asserted that each of their participants increased correct responding when objects of obsessions were used as tokens. Charlop-Christy and Haymes (1998) also stated that there was a decrease in engagement in inappropriate behavior when objects of obsessions were used as tokens. However, the graphs provided in this study did not yield evidence to sufficiently support their statements. In a more recent study conducted by Carnett et al., (2014), the authors intended to replicate the Charlop-Chirsty and Haymes (1998) study, once again using perseverative interests and objects of obsessions in token economies. Carnett et al., (2014), measured on-task behavior and occurrences of problem behavior and concluded that perseverative based tokens were more effective at increasing on-task behavior and decreasing problem behavior than tokens that lacked a perseverative interest. However, their claim was not entirely substantiated by the data provided in their respective graphs, due to overlapping data between conditions.

Earlier research conducted by Charlop-Christy and Haymes (1996) examined the use of obsessions, or perseverative interests, contingent on the absence of problematic or challenging behavior, in an effort to decrease said behavior. In their study, Charlop-Christy and Haymes (1996) used obsessions with and without mild reductive procedures, to determine which treatment package was most effective at reducing challenging behavior in children with autism spectrum disorders. Instead of evaluating the use of perseverative interests within token economies, Charlop-Christy and Haymes (1996) utilized a multielement design to compare the use of obsessions alone, the use of obsessions with mild reductive procedures, such as verbal reprimands, and the use of food reinforcers with mild reductive procedures. A baseline condition consisting of a traditional differential reinforcement of other behavior (DRO) procedure with edible reinforcers was used prior to the start of the three treatment conditions. Charlop-Christy and Haymes (1996) reported that each treatment condition was more successful than the original baseline procedures; however, the use of obsessions as a reinforcer combined with mild reductive procedures was considered to be the most effective. The graphs provided for the four participants in their study showed a decrease in the intervals in which problem behavior occurred following the introduction of treatment procedures; however, overlap between conditions remained for multiple participants.

The current study sought to expand on previous research examining the incorporation of perseverative interests in token economies. The purpose of the study was to further examine the effectiveness, or lack thereof, of token economies based on perseverative and preferred interests in increasing on-task behavior and skill acquisition and decreasing occurrences of problem behavior in a child diagnosed with severe intellectual disability and autism spectrum disorder.

CHAPTER 2

METHOD

Participant

Alex, a ten-year old male with severe intellectual disability and autism spectrum disorder participated in this study. Alex was also diagnosed with a speech/language impairment. Alex could request preferred items, activities and refuse nonpreferred items and activities vocally. Alex was also able to expressively identify items when presented with academic demands in the classroom. He had a history of attending to token economies and his personalized token board in the classroom. At the beginning of the study, the classroom staff utilized a token economy as part of Alex's behavior protocol. Criterion for inclusion in this study included a learning history with token economies and edible reinforcers, as well as the ability for the student's problem behavior to be managed safely by one staff member. Participating staff members held at minimum a bachelor's degree and worked with Alex in a one-on-one capacity.

Setting and Materials

All sessions took place during the regular school day at Alex's elementary school. Sessions were either conducted in the student's special education classroom with dividers present or in a teacher workroom across the hall. Two sessions were conducted outside in a courtyard because the previous spaces were unavailable that day. Each session required the use of an iPad or computer to present skill acquisition targets, a timer, and a recording device. The recording device was used to collect primary data and interobserver agreement on the sessions. Each session across conditions also required the presence of edible reinforcers, based on the student's

previous selections within the classroom. During the intervention conditions, the use of two token boards was required. One token board, which was considered "personalized", consisted of a photo of a staff member's vehicle, with pictures of the same staff member representing the tokens. The other token board, which was considered "generic" consisted of a white background with white squares representing the tokens.

Dependent Variables and Measurement

The primary dependent variable in this study was on-task behavior. On-task behavior was defined as the student's head oriented in the direction of the instructor leading or assisting the student, or the instructional materials. To be considered "on-task" the student also had to be seated in his chair and refrain from omitting any vocalizations not directly related to the material present. The primary dependent variable was measured using partial interval recording collected from video footage of the session. Each session was divided into 10 second intervals. If the student was not on-task, according to the criteria above, at any point during the interval, the entire interval was recorded as off-task. At the end of the session, the percent of intervals Alex was on-task was divided by the total number of intervals in the session to determine the percent of the session he was on-task. The secondary dependent variables were problem behavior and skill acquisition. Problem behavior included aggression, disruption, and elopement. Aggression was defined as biting; pinching; an open- or closed-handed strike to another person from a distance of 6 inches or more; contact with any part of the leg or head from a distance of 6 inches or more; hair pulling; throwing an object within a 3 foot radius of another person. Disruption was defined as pushing, throwing or kicking an object more than six inches or touching an object from a distance of 6 inches in 2 seconds or less. Elopement was defined as being more than one foot away from the designated area without permission from a staff member. If Alex engaged in

attempts of aggression, disruption or elopement that were successfully blocked, they were included in the measurement for this study. Problem behavior was measured using rate. The total count of each behavior within a session was divided by the length of the session in minutes to calculate rate. Skill acquisition was measured by percent of targets mastered. Mastery criteria was defined as the student correctly vocally identifying the target presented in 5 seconds or less across three consecutive data sessions. A response was marked incorrect if Alex gave the wrong name for the animal or his delay in responding exceeded 5 seconds.

Reliability

Interobserver agreement (IOA) data were collected by a second member of the classroom staff throughout the course of the study. Interobserver agreement was collected during 25% of sessions across conditions. The secondary observer recorded on-task behavior, skill acquisition, and problem behavior independently of the primary data collector in the study. IOA for the primary dependent variable was calculated using point-by-point interval agreement. The calculation was attained by totaling the agreements, based on interval, for each session, and dividing the number of agreements by the number of agreements plus the number of disagreements. Interobserver agreement in this study ranged from 75% to 95.8% with a mean of 90.4% across all sessions. IOA for the occurrence of problem behavior was calculated using the total-count method. The calculation was attained by totaling the smallest number of occurrences of problem behavior for a session divided by the largest number of occurrences of problem behavior for the session. Interobserver agreement for problem behavior was 100% across all sessions. IOA for skill acquisition was calculated using the trial-by-trial method. The calculation was attained by dividing the number of trials in which both observers agreed on the score

provided for each response divided by the total number of scored trials in each session. Interobserver agreement for skill acquisition was 100% across sessions.

Procedure

Skill acquisition probe and preference assessment. Prior to the intervention portion of this study, a skill acquisition probe and a preference assessment were conducted with Alex. In the skill acquisition probe, Alex was presented with 100 photos of animals that were believed to be unknown. The photographs were shown on a computer screen in the same setting that the remainder of the study took place. The therapist providing the discriminative stimulus "What animal?" and recorded Alex's verbal response as correct or incorrect, based on the same criterion used for skill acquisition later in the study. No corrective feedback was provided if Alex gave an incorrect answer. After three probe sessions were conducted, animals were selected as targets. Animals were selected as potential skill acquisition targets if Alex could not correctly name the animal across the three sessions. From the skill acquisition probe, 10 targets were selected for each condition in the study.

A multiple stimulus without replacement (MSWO) preference assessment was conducted prior to the baseline and intervention conditions to determine the highest preferred personalized token board. In the MSWO, the student was presented with an array of five token boards. Three token boards included tokens and a background relevant to Alex's interests in the classroom, including preferred staff members and edibles. Two token boards were generic and had no personalized background or icons. The therapist presented each token board to the student and instructed him to "pick one". After the first selection was made, and Alex was allowed 30 seconds of access to the token board, that token board was removed, and the process was repeated until the student had selected each available token board. This procedure was repeated

three times. The token board that was selected first across sessions was used in the study as the student's personalized token board. The token board that was selected as last across sessions was used as the generic token board. During the study, each session lasted 4 minutes, beginning once Alex selected an edible reinforcer to earn. The session began with the therapist beginning a timer, followed by the discriminative stimulus "What animal?". The session concluded at the end of the 4-minute timer. For all sessions, verbal prompting was used if Alex engaged in occurrences of noncompliance or problem behavior. The therapist continued to provide the verbal prompts until Alex was seated and working, and problem behavior had ceased.

Baseline. During baseline, Alex's on-task behavior, skill acquisition, and occurrences of problem behavior were assessed without the use of token boards. Sessions were conducted with the author in a room across the hall or in Alex's special education classroom. At the beginning of each session, Alex was presented with a variety of edibles and asked to pick something to work for. If he requested an item or attention from a person that was not available, he was prompted to pick an edible item present. After Alex selected his desired reinforcer, the therapist began the timer for the session. Each session lasted 4 minutes. Once the timer had begun, the therapist presented Alex with 10 photographs of unknown animals on a computer or an iPad, as identified by the skill acquisition probe. The order in which the photographs were presented were randomized before every new session. When each animal was presented, the therapist verbally provided the discriminative stimulus "What animal?" to Alex and awaited his response before moving to the next animal. Verbal praise was delivered on an FR1 schedule for responding. Error correction was provided for incorrect responding. After a probe was completed for each photograph of an animal within the session, the therapist conducted teaching trials using simultaneous prompting. The therapist provided the same discriminative stimulus during the

teaching trials as during the probe and immediately provided the correct answer. Verbal praise was provided on an FR1 schedule for the teaching trials as well. Teaching trials, and the session, concluded when the timer ended. Alex was then provided with the previously selected edible item, allowed to consume the item, and returned to his classroom routine. One baseline session was conducted per school day.

Token Board. During the initial token board condition, Alex's on-task behavior, skill acquisition, and occurrences of problem behavior were assessed with the use of two token boards: generic and personalized. The type of token boards differed between the generic and preferred token board session. The "personalized" token board, which consisted of a photo of a staff member's vehicle and a photograph of the staff member as tokens, was used during the personalized sessions. The "generic" token board, which consisted of a white background and white, square tokens, was used during the generic token board sessions. 10 animals that had previously been identified as unknown to Alex were used for generic token board sessions and 10 different animals that had also been identified as unknown were used in personalized token board sessions, Sessions were conducted with the author in a room across the hall or in Alex's special education classroom. At the beginning of each session, Alex was presented with a variety of edibles and asked to pick something to work for. If he requested an item or attention from a person that was not available, he was prompted to pick an edible item present. After Alex selected his desired reinforcer, the therapist began the timer for the session. Each session lasted 4 minutes. Once the timer began, the therapist presented Alex with 10 photographs of unknown animals, on a computer or an iPad, as identified by the skill acquisition probe. The order in which animals were presented was randomized prior to the beginning of each session. When each animal was presented, the therapist verbally provided the discriminative stimulus "What

animal?" to Alex and awaited his response before moving to the next animal. Tokens, paired with verbal praise, were provided on an FR1 schedule for responding. If Alex provided an incorrect response, the therapist provided verbal error correction before presenting the token. Edible items were provided on an FR10 schedule, after Alex had "earned" every token on the board. After a probe was completed for each photograph of an animal within the session, the therapist conducted teaching trials using simultaneous prompting. The therapist provided the same discriminative stimulus during the teaching trials as during the probe and immediately provided the correct answer. Verbal praise and tokens were provided on an FR1 schedule for the teaching trials as well. Edible items were provided on an FR10 schedule during the teaching trials. Teaching trials, and the session, concluded when the timer ended. One "personalized" token board session and one "generic" token board session were conducted each school day. The order of the sessions conducted were randomly generated by the therapist prior to each day data collection occurred.

Token Boards and Preferred Staff. After the second baseline condition was conducted, a modified token board condition was conducted with a new preferred staff member. This staff member was frequently requested by Alex and was not present in any of the previous baseline or token board conditions. Alex's on-task behavior, skill acquisition, and occurrences of problem behavior were assessed with the use of two token boards in this condition as well. The type of token boards was the only difference between the generic and preferred token board session. Sessions were conducted with the author in a room across the hall or in Alex's special education classroom. One session was conducted in a courtyard outside of the classroom, due to other rooms in the school building being unavailable. At the beginning of each session, Alex was presented with a variety of edibles and asked to pick something to work for. In this session, the

new staff member allowed Alex to request the edible items present, or a hug from her or another staff member. If he requested an edible item that was not available, he was directed to pick a different item. After Alex selected his desired reinforcer, the therapist began the timer for the session. Each session lasted 4 minutes. Once the timer had begun, the therapist presented Alex with 10 photographs of unknown animals, on a computer or an iPad, as identified by the skill acquisition probe. The photographs used in this condition were the same as the photographs used in the earlier personalized and generic token board conditions, respectively. The order in which the photographs of animals were presented was randomized prior to each session. When each animal was presented, the therapist verbal provided the discriminative stimulus "What animal?" to Alex and awaited his response before moving to the next animal. Tokens, paired with verbal praise, were provided on an FR1 schedule for responding. If Alex provided an incorrect response, the therapist provided verbal error correction before presenting the token. Edible items were provided on an FR10 schedule, after Alex had "earned" every token on the board. After a probe was completed for each photograph of an animal within the session, the therapist conducted teaching trials using simultaneous prompting. The therapist provided the same discriminative stimulus during the teaching trials as during the probe and immediately provided the correct answer. Verbal praise and tokens were provided on an FR1 schedule for the teaching trials as well. Edible items were provided on an FR10 schedule during the teaching trials. Teaching trials, and the session, concluded when the timer ended. One "personalized" token board session and one "generic" token board session were conducted each school day. The order the sessions were conducted was randomly generated by the therapist prior to each day data collection occurred.

Experimental Design

An alternating treatment design was embedded within a withdrawal design to evaluate the effects of personalized token boards on on-task behavior, skill acquisition, and problem behavior in this study. As previously mentioned, the conditions in the withdrawal design included a baseline condition, a token board condition, and a token board condition with a preferred staff member. Baseline was conducted first, followed by the token boards condition. Baseline was then reimplemented again and the study concluded with the token board with a preferred staff member condition. Within the token board condition and the token board with the preferred staff member condition, sessions alternated randomly between personalized and generic token boards. Conditions changed once data were determined to be stable or a trend could be determined and at least three data points were collected for each condition.

Procedural Fidelity

Procedural fidelity was collected by a member of the special education staff during 29% of baseline sessions and 38% of token board sessions. Procedural fidelity was 100% during the baseline sessions evaluated. During all conditions, procedural fidelity measures verified that the implementor was beginning the timer at the start of the session, instructing the student to sit down, asking the student to select an item to work for and providing error correction and verbal praise for correction responding on an FR1 schedule. During the baseline condition, procedural fidelity measures verified that the therapist provided the selected edible at the end of the session. During the token board conditions, the procedural fidelity measures verified that tokens were paired with verbal praise and provided on an FR1 schedule contingent on responding. The procedural fidelity measures also verified that edibles were provided on an FR10 by the therapist during the token board condition. A procedural fidelity checklist for the respective condition was

used to record the accuracy of the therapist's implementation of the intervention. Procedural fidelity ranged from 83% to 100% across conditions, with a mean of 98%.

CHAPTER 3

RESULTS

On-Task Behavior. The data analyzed for the primary independent variable concerned the percent of intervals during which Alex was on-task, as defined by the experimenter (See Figure 1). The percent of intervals in which Alex was on-task ranged from 20% to 54% during the initial baseline condition. The mean of on-task behavior during the initial baseline condition was 40%. The percent of intervals during a session in which Alex was on-task in the initial personalized token board condition ranged from 0% on-task to 67% on-task, with a mean of 30% on-task. The percent of intervals during a session in which Alex was on-task during the initial generalized token board condition ranged from 8% on-task to 58% on-task, with a mean of 38% on-task. During the return to baseline condition, Alex was on-task for approximately 41% of the intervals (M = 41%, range 21-54%). During the implementation of the personalized token board with a new, preferred staff member, Alex was on-task for 48% of the intervals (M = 48%, range 25-63%). Finally, when the generic token board was used with a new, preferred staff member, Alex was on-task for a mean of 61%, with on-task behavior ranging from 38% to 79%.

Problem Behavior. Figure 2 shows the rate of problem behavior that Alex engaged in during each condition. During the initial and second baseline condition, Alex engaged in zero instances of problem behavior, resulting in a rate of zero instances of problem behavior per minute. In the initial token board condition, Alex engaged in zero instances of problem behavior when the generic token board was in use. In the initial token board condition with the personalized token board, Alex engaged in two instances of problem behavior, resulting in a rate

of 0.5 instances of problem behavior per minute. During the final token board condition with a new, preferred staff member, Alex engaged in zero instances of problem behavior in the personalized and generic conditions. Overall, there were no significant differences in problem behavior in any of the conditions, regardless of whether or not a token board was in use.

Skill Acquisition. Figure 3 shows the percent of skill acquisition targets mastered in each condition. Alex did not meet mastery criterion for any targets during either baseline condition or during either presentation of the generic token boards. During the initial personalized token board condition, Alex met mastery criterion for 10% of the targets in that condition. He continued this into the personalized token board with a new, preferred staff member condition and mastered 20% of the targets

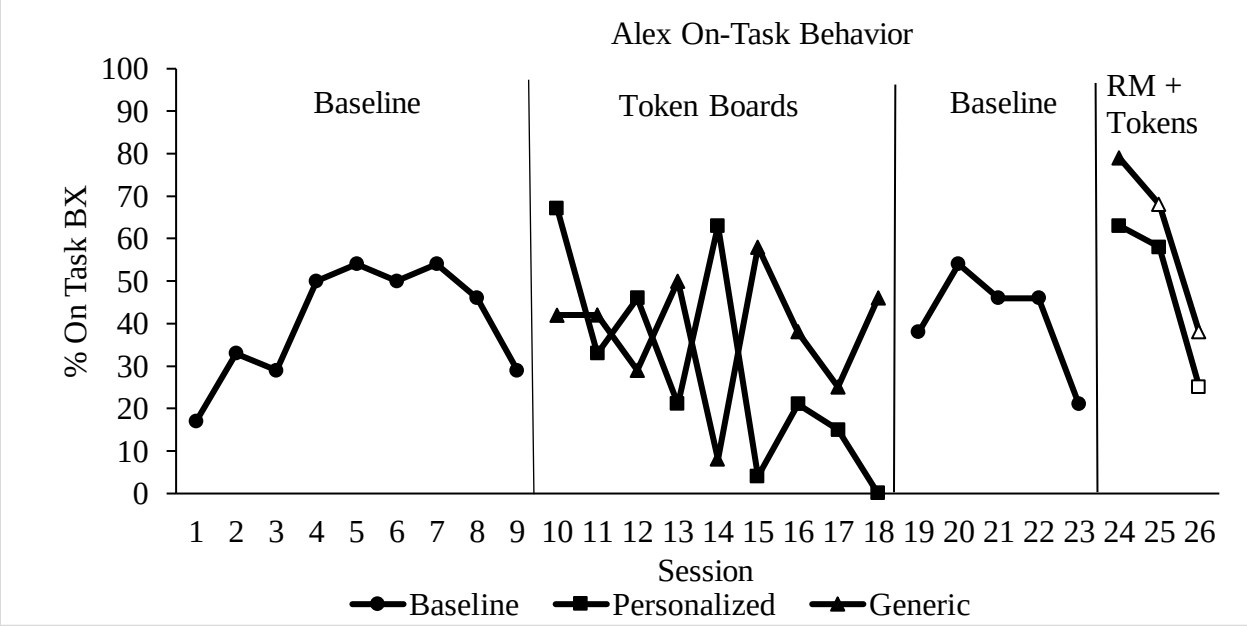


Figure 1. On-task behavior. This figure shows the percent of intervals Alex was on-task. Open shapes represent sessions that exceeded, or were terminated before the 4-minute-mark.

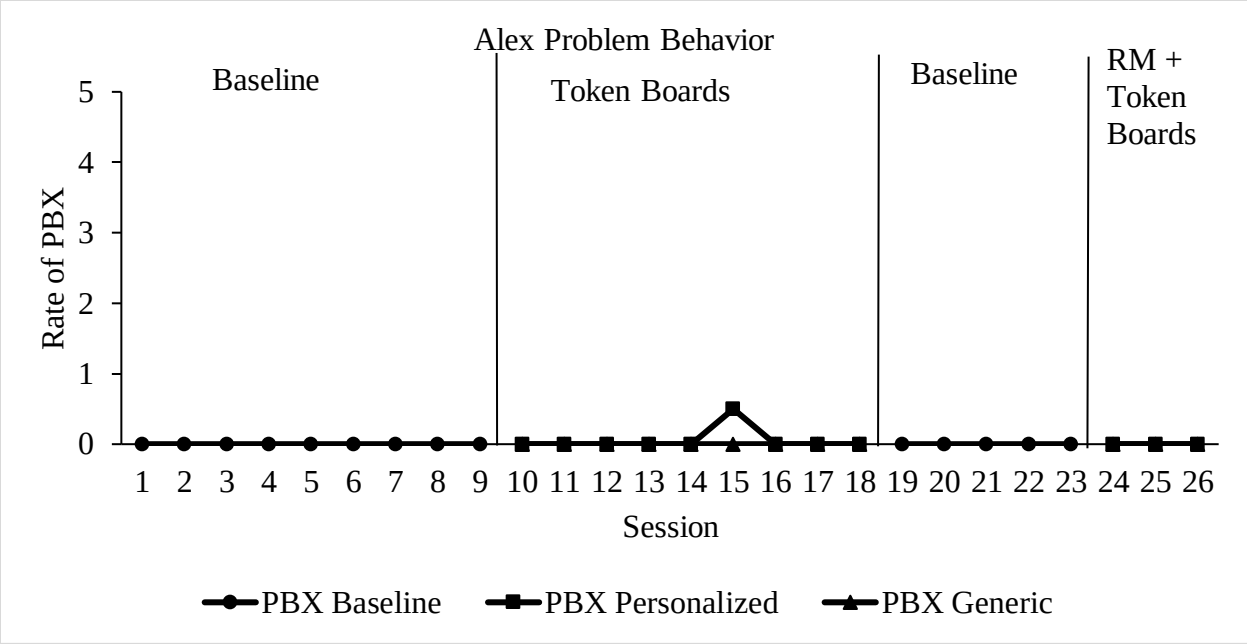


Figure 2. Problem behavior. This figure shows the rate of problem behavior Alex engaged in.

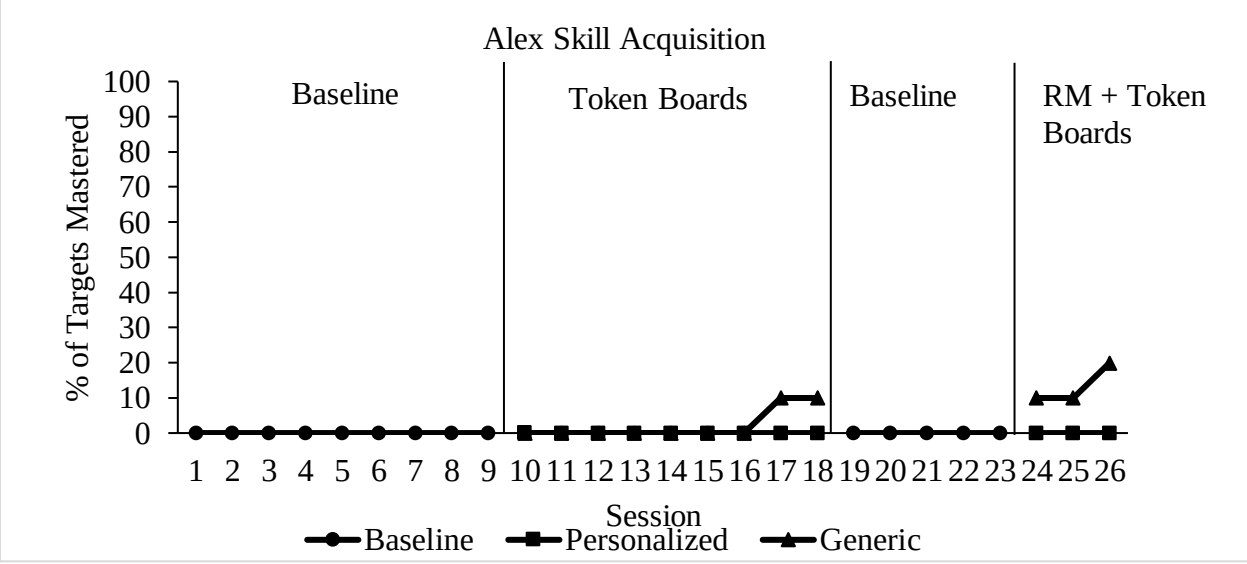


Figure 3. Skill acquisition. This figure shows the percent of targets mastered.

CHAPTER 4

DISCUSSION

The results of this study failed to demonstrate a significant relationship between token boards with generic or personalized interests and higher rates of on-task behavior. As a result, this study did not support the earlier findings of Charlop-Christy and Haymes (1998) or Cartnett et al. (2014). Results for these previous studies suggest a relationship between higher levels of on-task behavior and personalized token boards, as well as higher rates of task completion and lower rates of challenging behaviors in individuals diagnosed with autism spectrum disorder. Across the course of the study, baseline sessions consistently had a higher mean of on-task behavior then did the initial token board conditions. The only exception to this was the final condition, where a new, preferred staff member replaced the author in conducting the sessions. With the new staff member, the personalized token board condition had a mean on-task behavior of 48%, and the generic token board condition had a mean on-task behavior of 61%. Due to the downward trend in the final token board condition, it is likely that the introduction of a new therapist to collect data and run the intervention sessions confounded the data and resulted in the initial increase in on-task behavior. Had this not occurred, the final token board condition would have likely resembled the previous sessions, where no real differentiation occurred between token board conditions and baseline conditions in regards to on-task behavior.

Additionally, this study did not see a lower level of problem behavior in any of the token board conditions. The only instance in which Alex engaged in problem behavior occurred during the initial personalized token board condition. However, his engagement in problem behavior

during that particular session also followed a bout of problem behavior on the school bus, in the cafeteria, and in the classroom prior to the personalized token board session. His engagement in high levels of problem behavior that morning makes it difficult to tell whether the engagement in problem behavior during the personalized token board session was a result of carry-over from earlier that morning.

Across all of the conditions, the differences in skill acquisition were also minor and not definitive. Alex only met mastery criterion for 20% of the targets during the personalized token board sessions, and this was after introducing the confounding variable of a new, preferred staff member. During the initial token board sessions, Alex met mastery criterion for 10% of the targets, which was the equivalent of accurately identifying 1 animal across 3 consecutive sessions. The animal was "Llama". Alex previously had an interest in llamas, but failed to correctly identify a picture of a llama during the skill acquisition probe sessions, so "Llama" was included in this study.

Limitations

One limitation of the current study was its use of one participant. Because Alex was the only participant, results of this study are unlikely to generalize beyond his individual experience with personalized token economies. Additionally, the use of one participant could have exposed this study to an attrition threat, had Alex been withdrawn as a participant or otherwise unable to continue with the study.

A second limitation in this study was the inconsistencies with procedural fidelity in the final token board condition with the new, preferred staff member. Numerous sessions in the last condition did not reach the 4-minute requirement set forth in earlier sessions. This could have

impacted the higher percent of on-task behavior in those sessions, as well as impacted the likelihood that Alex would engage in problem behavior.

A third limitation of this study was the use of edible reinforcers with Alex. Prior to this study, Alex had a learning history of selecting staff attention (hugs, verbal praise) instead of food items when he exchanged his tokens. This was not done throughout most of the study, due to the difficulty with controlling magnitude and quality of attention from staff, as well as to maintain consistency with a second participant, who did not complete the study. During the final condition, the new, preferred staff member could have introduced a confounding variable to the data by allowing Alex to earn hugs from staff members instead of selecting available edible items.

Future Research

Despite limitations within this study, future research may be warranted regarding the use of perseverative interests and personalized token boards within token economies. Future research should assess the use of generic token economies paired with food reinforcers and generic token economies paired with physical and verbal attention. Future research could also focus on the component of student choice in token economies and involving the student in the process of selecting their own token board. Future research could continue to examine the use of personalized token boards in classroom settings, perhaps with a larger number of students than participated in this study. Future research should focus on skill acquisition, with a generalization component, as well as any changes in engagement in problem behavior and on-task behavior.

REFERENCES

Carnett, A., Raulston, T., Lang, R., Tostanoski, A., Lee, A., Sigafoos, J., & Machalicek, W. (2014). Effects of a Perseverative Interest-Based Token Economy on Challenging and On-Task Behavior in a Child with Autism. *Journal of Behavioral Education, 23*(3), 368-377.

Charlop-Christy, M. H., & Haymes, L. K. (1996). Using obsessions as reinforcers with and without mild reductive procedures to decrease inappropriate behaviors of children with autism. *Journal of Autism and Developmental Disorders, 26*(5), 527-546.

Charlop-Christy, M. H., & Haymes, L. K. (1998). Using Objects of Obsession as Token Reinforcers for Children with Autism. *Journal of Autism and Developmental Disorders,* 28(3), 189-198.

Kazdin, A. E., & Bootzin, R. R. (1972). The token economy: An evaluative review. *Journal of Applied Behavior Analysis, 5*(3), 343-372.

Mangus, B., Henderson, H., & French, R. (1986). Implementation of a Token Economy by Peer Tutors to Increase On-Task Physical Activity Time of Autistic Children. *Perceptual and Motor Skills, 63*(1), 97-98.

APPENDICES

APPENDIX A

Procedural Fidelity Data Sheets

Procedural Fidelity Checklist: Token Board Condition

Student Initials:_____

Therapist Names: _____ _____

Session #	Teacher begins timer at the start of the session.	Teacher concludes session when timer ends	Therapist sits student at the table and asks them to pick something to work for	Therapist provides edibles on an FR 10 schedule	Therapist provides tokens paired with verbal praise for responding on an FR 1 schedule	Therapist provides error correction after each target in probe sessions	Initials
	Y N	Y N	Y N	Y N	Y N	Y N	
	Y N	Y N	Y N	Y N	Y N	Y N	
	Y N	Y N	Y N	Y N	Y N	Y N	
	Y N	Y N	Y N	Y N	Y N	Y N	
	Y N	Y N	Y N	Y N	Y N	Y N	
	Y N	Y N	Y N	Y N	Y N	Y N	

Procedural Fidelity Checklist: Baseline

Student Initials:_____

Therapist Name: _____

Session # & Date	Teacher begins timer at the start of the work session.	Teacher concludes session when timer ends	Therapist sits student at the table and asks them to pick something to work for	Therapist provides selected edible at the end of the session	Therapist provides verbal praise for responding on an FR 1 Schedule	Therapist provides error correction after each target in probe sessions	Initials
	Y N	Y N	Y N	Y N	Y N	Y N	
	Y N	Y N	Y N	Y N	Y N	Y N	
	Y N	Y N	Y N	Y N	Y N	Y N	
	Y N	Y N	Y N	Y N	Y N	Y N	
	Y N	Y N	Y N	Y N	Y N	Y N	
	Y N	Y N	Y N	Y N	Y N	Y N	
	Y N	Y N	Y N	Y N	Y N	Y N	

APPENDIX B

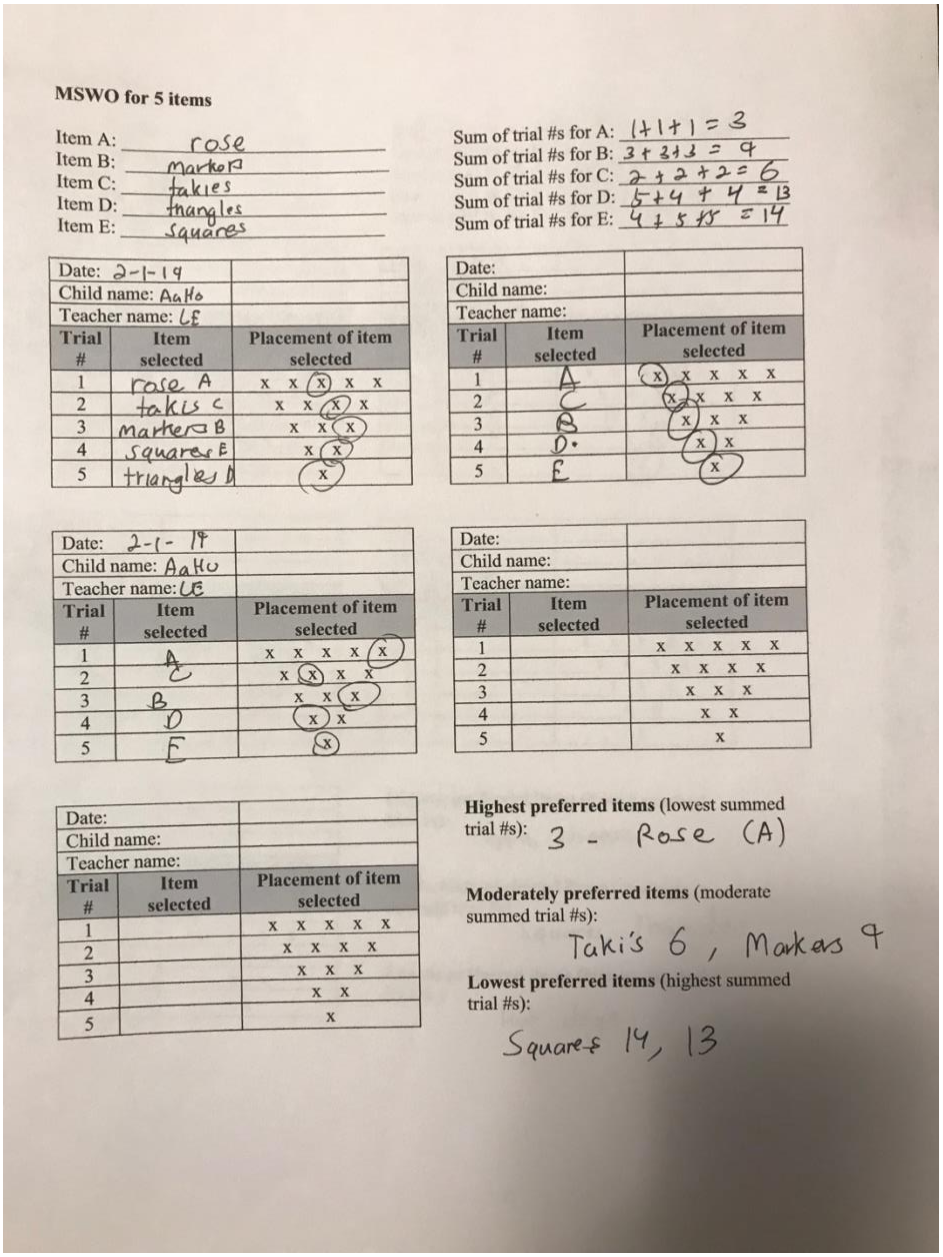
Data Sheet

Time:	On-Task +/-	AGG +/-	DIS +/-	ELOPE +/-	SIB +/-	Target Name:	+/-
0-:10							
:11-:20							
:21-:30							
:31-:40							
:41-:50							
:51-1:00							
1:01-1:10							
1:11-1:20							
1:21-1:30							
1:31-1:40							
1:41-1:50							
1:51-2:00							
2:01-2:10							
2:11-2:20							
2:21-2:30							
2:31-2:40							
2:41-2:50							
2:51-3:00							
3:01-3:10							
3:11-3:20							

3:21-3:30							
3:31-3:40							
3:41-3:50							
3:51-4:00							

APPENDIX C

MSWO Data Sheet



MSWO for 5 items

Item A: rose
Item B: markers
Item C: takies
Item D: thangles
Item E: squares

Sum of trial #s for A: 1+1+1 = 3
Sum of trial #s for B: 3+3+3 = 9
Sum of trial #s for C: 2+2+2+2 = 6
Sum of trial #s for D: 5+4+4 = 13
Sum of trial #s for E: 4+5+5 = 14

Date: 2-1-19	
Child name: AaHo	
Teacher name: LE	

Trial #	Item selected	Placement of item selected
1	rose A	x x (x) x x
2	takis C	x x (x) x
3	markers B	x x (x)
4	squares E	x (x)
5	triangles D	(x)

Date:	
Child name:	
Teacher name:	

Trial #	Item selected	Placement of item selected
1	A	(x) x x x x
2	C	(x) x x x
3	B	(x) x x
4	D	(x) x
5	E	(x)

Date: 2-1-19	
Child name: AaHo	
Teacher name: LE	

Trial #	Item selected	Placement of item selected
1	A	x x x x (x)
2	C	x (x) x x
3	B	x x (x)
4	D	(x) x
5	E	(x)

Date:	
Child name:	
Teacher name:	

Trial #	Item selected	Placement of item selected
1		x x x x x
2		x x x x
3		x x x
4		x x
5		x

Date:	
Child name:	
Teacher name:	

Trial #	Item selected	Placement of item selected
1		x x x x x
2		x x x x
3		x x x
4		x x
5		x

Highest preferred items (lowest summed trial #s): 3 - Rose (A)

Moderately preferred items (moderate summed trial #s):
Takis 6, Markers 9

Lowest preferred items (highest summed trial #s):
Squares 14, 13