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An examination of a break card intervention with and without a token economy for a child with autism

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Abstract

The purpose of the present study was to evaluate the effects of a break card intervention on a sixth grade student with Autism Spectrum Disorder (ASD) when presented with an academic demand. A single subject, ABCD single design was used to evaluate our outcomes. The study was divided up into three conditions in an attempt to develop a functional relationship between our intervention and our participant's behaviors. Our results indicated when the break card was modified the third time and a token reinforcement program was put in place, large reductions in inappropriate behavior were found. The reasons for switching break card intervention strategies were outlined.

Keywords: Break, Break Card, Work, Working Towards, Noncontingent Escape, Autism, ASD, Single Case Research, Token Economy

Introduction

Autism has been typically defined as a disorder of neural development characterized by impaired social interaction, verbal and non-verbal communication, and restricted and repetitive behavior (Heward, 2013; B. Williams & R. Williams, 2011). The diagnostic criterion for ASD is based on five characteristics. The first area includes a persistent deficit in social communication and social interaction across different settings. The second characteristic includes restricted, repetitive patterns of behaviors, interests, or activities. The third criterion states that symptoms must be present during early development. Furthermore, the fourth area states that symptoms must cause significant impairment in social and occupational areas of functioning. The fifth criterion states that these symptoms cannot be better explained by an intellectual disability or developmental delay.

Many people with autism often struggle to display academic grains, due to distracting and repetitive behaviors (B. Williams & R. Williams, 2011). However, employing a break card system can greatly impact that successful functioning of students with ASD (Bondy, & Frost, 2003; Bregman, Zager, & Gerdtz, 2005; DeLeon, Neidert, Anders, & Rodriguez, 2001). Often, students with autism have the knowledge to complete the work, but have a difficult time overcoming the demand of work. The break card system allows students to use noncontingent escape to decrease inappropriate behaviors when a demand for work is given (Cihak & Gama, 2008). This use of escape is quite appropriate and often helps students with ASD to regulate their own behaviors. This is a vital skill that individuals with autism may need throughout their life. As a person with autism joins the work force, they will need a way to regulate and control their behaviors to function appropriately in a variety of social or work settings (Shattuck, Narendorf, Cooper, Sterzing, Wagner, & Taylor, 2012).

Due to the evidence base that supports employing a break card intervention with students with ASD (Heward, 2013; B. Williams & R. Williams, 2012), it was chosen as our intervention for a sixth grade student with ASD. She often was unable to control her inappropriate behaviors in a classroom setting, and the classroom teacher recommended that we needed to try to develop a way for this student to regulate her behavior. Without the ability to regulate behavior, the participant may well be unable to successfully transition to middle school.

Since a token economy has been widely implemented with a wide range of students (Doll, McLaughlin, & Barretto, 2014; Kazdin, 1977; Kazdin, 1982; McLaughlin & R. Williams, 1988), we decided if our participant's behaviors were not under the control of

the break card and consequences, we would implement such a system using stickers. The use of a single case research design allows such additions to an intervention (Kazdin, 2011).

The purpose of the study below was to evaluate the effects of a break card intervention on a sixth grade student with ASD in a self-contained designed instruction classroom. We wanted to teach her a functional skill that she would be able to use in a wide range of school and community settings. The final purpose was to add and evaluate the use of a token economy to our break card procedure.

Method

Participant and Setting

The participant for this study was a 12-year-old female in her sixth grade year at an urban elementary school. She was enrolled in a self-contained, designed instruction classroom. She was diagnosed on the Autism Spectrum Disorder (ASD) and was delayed in many academic areas, such as math, reading, spelling, and writing. The participant has had an IEP for the entirety of her school career. Her social functioning is impacted by her aggression, frequent self-talk, and lack of interest in relating to her peers.

The participant's official diagnosis was autism. The participant spent the entire day in a self-contained, designed instruction (DI) classroom with 12 other students. The participant had difficulty with any type of routine change. The first author had to develop a rapport with the student for a month before the study took place. For math story problems, the participant's academic level was at a 1st grade level. For math computation, the participant was at a 2nd grade level. For reading word recognition, the participant was at a 3rd grade level. For reading comprehension, the participant was at a 1st/2nd grade level. For writing, the participant was at a 1st grade level. The last time the participant was assessed she was 9. Her three-year reevaluation occurred right after the study took place. This is the most recent evaluation information available. At age 9, the participant's average nonverbal IQ was 76. At age 9, the participant was also evaluated using the *Vineland Adaptive Behavior Scale* (Sparrow, Cicchetti, & Balla, 2005). She obtained had a score out of 223. For communication, the participant scored a 56. For daily living skills, the participant scored a 57 and for socialization, our participant scored a 61. The participant's average adaptive behavior composite score was 56. The participant was chosen for this student because of her low adaptive behavior composite score and need for behavioral intervention. A break card intervention was chosen to aide in the participant's appropriate escape from a task to avoid engaging in inappropriate behaviors (DeLeon, Neidert, Anders, & Rodriguez, 2001).

The study took place in a self-contained, designed instruction, special education classroom and in an adjacent empty classroom. The elementary school was located in a large urban elementary school in the Pacific Northwest. The special education room focused on reading, math, and social skills for students with a wide range of moderate to severe disabilities. These included ASD, intellectual disabilities, and other health impairments (OHI). About half the students were placed in general education classrooms for lunch and special convocations or events. However, due to her behaviors, our participant was not mainstreamed for any of the school day. Typically 8-12

students were present each day, working on individual and group assignments. The room was typically loud due to a variety of students working with different teachers at one time. There were also a few students with behaviors that often resulted in loud outbursts. Typically, there were one certified teacher, two instructional aides, and one student teacher present in the classroom at all times. The study took place Monday through Friday from 10:00 to 11:00 a.m. during math instruction. Data were also collected in an empty classroom next to the DI classroom. This study was conducted by the first author who was completing her teacher certification and her edTPA in special education from a local private university (McLaughlin, B. Williams, R. Williams, Peck, Derby, Bjordahl, & Weber, 1999).

Materials

The materials used for this study included a break card, a work card, a working towards card, pictures of break options, stars that were given for good behavior, an academic demand, and data collection sheets. Her current level of academic performance was also determined by the classroom special education teacher. She determined the academic demand was at the participant's level and was at an appropriate frustration level.

Dependent Variable

The target behavior of this study was to minimize the amount of inappropriate behaviors when presented with an academic demand. An inappropriate behavior was defined as any off task behavior that should not be occurring during an academic demand. This included hitting, yelling, self-talk not associated with the academic demand, and refusal to perform the task. This was recorded with a simple event recording system. Data collection took place during a 10-minute interval. This time span was chosen as it provided an adequate measure of our participant's behaviors. Each time an inappropriate behavior was displayed, the first author wrote a tally. At the end of the 10 minutes, the amount of tallies was recorded. The first author also tallied the number of appropriate breaks taken. These data were collected using a frequency count. The first author hypothesized that the participant would be unable to function appropriately during an academic demand.

The authors were testing the hypothesis that the participant would function more appropriately when presented with a demand if she had a way to momentarily and appropriately escape the task. The data collection sheet kept track of both baseline and intervention data, which showed the overall progress of the study. At the end of data collection, the number of inappropriate behaviors was added together per session and the number of appropriate breaks were combined at the end of each session.

The second measure was the percent of overlapping data points between baseline and the various experimental conditions. This procedure has been suggested by Scruggs and colleagues to evaluate the effects of interventions (Scruggs & Mastropieri, 2013; Scruggs, Mastropieri, & Casto, 1987). We also examined the percent of overlapping data points for adjacent conditions (e. g. break card 1 vs. break card 2).

Experimental Design

A single subject, ABCD single case design (Kazdin, 2011; McLaughlin, 1983) was used to evaluate the effectiveness

of a break card intervention on a twelve year old girl with Autism. Three sessions of baseline and 12 sessions of intervention were completed. Break card A included break and work cards. The participant was given the option to take a break whenever she began to feel frustrated. When she selected the break card, she received a one minute break. After the break, the participant was asked to touch the work card and say, "I am ready to work please". Then she would receive a sticker to add to her work card as a reward for calmly coming back to work. Break card B modified the break card system by incorporating specific break options with the same work card procedure. Break card C changed the break card system to a "working towards..." set up with intermittent reinforcement to earn a break. The student was able to choose a break option and earn stars to receive a break.

Baseline: During baseline, the participant's frequency of inappropriate behaviors was recorded within a 10 minute period when presented with an academic demand. The participant was not offered a break during baseline. The academic material was previously mastered, which made it possible to accurately record inappropriate behaviors that occur when the participant was given an undesirable, academic task. The first author prompted the student to continue to work during the baseline sessions. Contingent praise was given to the participant when she was appropriately working on the task. At the end of the session, the student was given verbal praise and a sticker for completing work. The number of inappropriate behaviors was counted and recorded. This was in effect for three sessions.

Break card interventions A, B, and C: During Break Card A of this stage of the study, the first author presented the participant with a break and work card. The first author explained to the participant that she was able to take a break whenever she began to get frustrated and no longer wanted to work. Then the first author told the participant

that the break would last for one minute and upon returning from work she would be able to put a sticker on her work card.

During Break Card B, the first author presented the participant with a break and work card. The first author also presented four specific, previously reinforcing break options (music, book, iPad, and snack). When the participant chose a break, she would point to the break option she wanted. This procedure was put in place to make choosing a break less overwhelming for the participant.

During break card C, the first author changed the break card procedure by adding a token reward system and having the student chose what she was "working towards..." from the previous break options (Reed & Martens, 2011). The participant placed a sticker on the "working towards..." card when she calmly came back to work after her one-minute break. The participant had an adverse reaction to the word break, which is why a new wording and set up procedure was implemented.

Results

Baseline: Baseline data were conducted across a 10-minute time span for three sessions. The results for baseline for inappropriate behaviors are displayed in Figure 1. During baseline, the participant had an average of 22.6 inappropriate behaviors in a 10-minute time span, with a range of 16 to 23 inappropriate behaviors.

Break Card A: The results for Break Card A for inappropriate behaviors can be seen in Figure 1. During Break Card A, our participant reduced her number of inappropriate behaviors. Our participant averaged 13.3 inappropriate behaviors in a 10 minute time span with a range of 10 to 16 behaviors. After three sessions, the first author was not satisfied with the progress of our participant. The first author decided to modify the break card system to try and further reduce inappropriate behaviors.

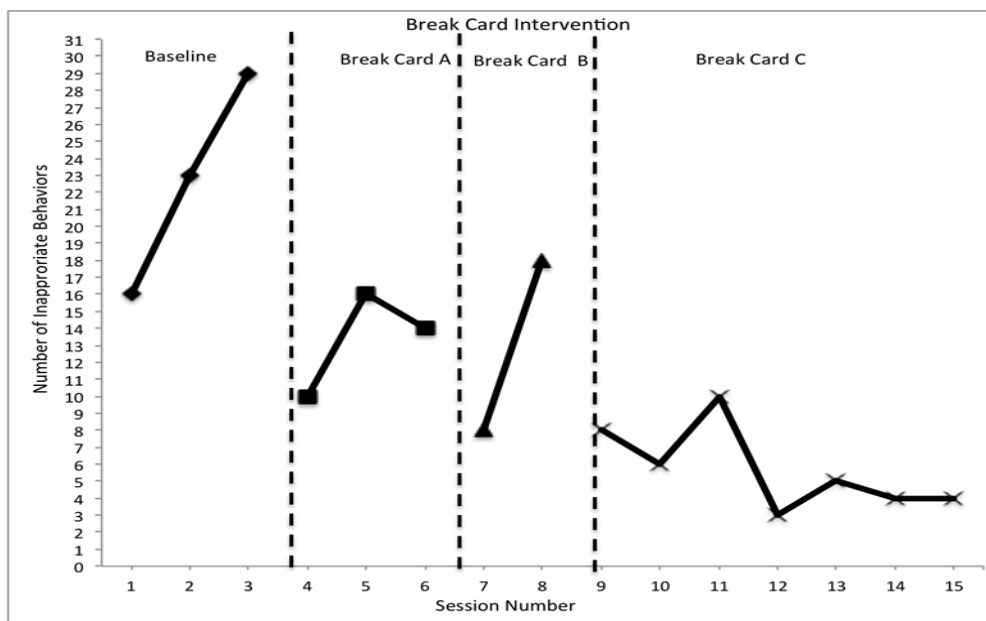


Fig 1: Results of number of inappropriate behaviors across a 10-minute time span during baseline, and three break card conditions

Break Card B: During this condition, the participant had an average of 13.0 inappropriate behaviors with a range of

8 to 18 (See Figure 1). This condition only lasted for 2 sessions. The participant reached 18 inappropriate

behaviors in a 10-minute time span, which was the highest frequency of behaviors since baseline. The first author decided to change the break system because it was not proving effective for the participant.

Break Card C: As shown in Figure 1, the results for break card C, the inappropriate behaviors of our participant declined. Our participant had an average frequency of 4.6 inappropriate behaviors (range 1 to 3). Since the goal of this study was to minimize inappropriate behaviors to 5 or less in a 10-minute time span, in this condition, our participant reduced her inappropriate behaviors at 5 or less for 4 consecutive sessions.

Percent of Non-overlapping Data Points (PND)

The percent of non-overlapping data points between baseline and break card A was 100%. The PND for break card A vs. B was 0.0%. The PND for Break card B and Break Card C with its token economy was 100%. The comparison for baseline and Break Card C was also 100%.

Discussion

Overall with the various changes that were added to our intervention, it proved to be successful. The first author modified the break card process until it was effective for the student. Break Card A required the participant to be in control of her own breaks. The participant was able to choose a break at any point during academic instruction. The participant was reluctant to choose a break during Break Card A. When prompted to take a break, the participant's inappropriate behavior increased. The participant often said, "I can't take a break; I must work". However, her behaviors continued to escalate throughout the session. These reoccurring events prompted the first author to modify the break cards in the hopes of making them less overwhelming for the participant.

In Break Card B, the participant was still able to choose a break whenever she wanted to. However, this time the participant had four break options that were previously reinforcing for her. The breaks included reading a book, listening to music, playing on the iPad, and eating a snack. The first author implemented specific break options to make it less overwhelming to choose a break. The participant's behavior went down slightly during the first session with this modification. However, the participant's frequency of inappropriate behaviors went up to the highest it had been since baseline in the second session of Break Card B. The first author observed that the participant had a negative reaction to the word "break". The first author concluded that this break system was not adequately serving the participant.

In Break Card C, the first author created a token reward system with the same choice of reinforcing break options (Reed & Martens, 2011). The participant was asked to choose what she wanted to "work towards" before the academic demand was presented. Then the first author asked the student how many stars she needed to receive the desired break time. Once the participant answered "5" the academic demand was presented. No stars were taken away for inappropriate behavior. Once the participant earned 5 stars, the first author presented the participant with the desired break option. Break Card C was successful based on the visual cues, specific reinforcing break options, and concept of earning a break versus just being given a break.

The practicality of this case report was quite high. It was easy to carry out and easy to transport. The cost of this study is very low. The first author spent less than \$5.00 creating the working towards card and break options. The first author did not need to pay for the iPad being used as one of the previously reinforcing break options because they were provided to her by the classroom teacher. After the study was completed, the first author observed the student in a new setting using the working towards card with a new teacher. The concept generalized and the participant's behavior maintained at a low rate.

The participant responded well to encouragement as long as her behaviors were not escalating. She loved high fives and stickers, which made it very easy to reward her appropriate behaviors. When her inappropriate behaviors were escalating, it was best to sit quietly and wait until she calmed down. Then the first author would speak in a calm voice and try to resume work. The quiet workroom was very beneficial for the participant's focus. In case of satiation with the current break card options, the first author could perform another preference assessment and change the break options.

If this study were to continue, the first author would try and reduce the participant's inappropriate behaviors to zero. The first author would also collect data and explicitly work on generalization across different settings and people. This would be a vital tool to bring to middle school when the participant graduates. It is also a very important skill for when the participant enters the work force. She will be able to understand a casual relationship between working hard and reinforcement. This will help the participant learn how to have delayed reinforcement and continue to work hard without inappropriate behaviors.

These findings concluded that the participant was successful using a break card system. Challenging academic work was completed using the break card system with a minimum number of inappropriate behaviors. The first author recommends that the classroom teachers continue to use the working towards card in a variety of settings with different people. The first author also recommends that all the materials be transferred to middle school with the participant. This will keep some consistency in the participant's academic career as she moves up to middle school. The classroom teacher plans on continuing the intervention with the participant. The classroom teacher is also going to debrief the new middle school teacher with the procedures before the participant goes to middle school. Overall, this intervention was very successful. The participant can still lower inappropriate behaviors to zero and the break card system will allow her to be successful.

Using PND was also able to determine with that compared to baseline, all three break card conditions were highly effective (Scruggs & Mastropieri, 1987). Only the comparison between Break Card A and B was not effective. In addition, there were only two data points in this comparison for Break Card B. Therefore, caution is urged here. Finally, the present case report provides another example as to the efficacy of teaching behavioral skills to education candidates in special education (McLaughlin et al., 1999). In this case report the use of functional analysis procedures using a break card rather than an academic intervention was examined.

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