

The Effects of Social Stories and a Token Economy on Decreasing Inappropriate Peer Interactions with a Middle School Student

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One of the many challenges that children with learning disabilities (LD) experience, apart from academics, is severe deficits in the areas of social skills and peer relations. The learning of social skills and appropriate ways to interact with peers are crucial for school-aged children with learning disabilities. Without these skills, it can be difficult for these children to maintain meaningful relationships as well as interact with peers in the classroom. The purpose of this study was to decrease inappropriate peer interactions in a middle school student with learning disabilities using simultaneous intervention delivery of social stories and a token economy. From previous studies, the use of social stories and token economies have both been shown to decrease inappropriate behaviors and increase appropriate behavior. Based on these studies, it was hypothesized that implementation of a token economy combined with social stories would be successful at decreasing inappropriate peer interactions. The participant was a 13-year-old boy with LD enrolled in a middle school in the Pacific Northwest. The researcher used a multiple baseline across settings design and implemented the two interventions simultaneously. The researcher found that the simultaneous use of social stories and a token economy was successful in decreasing inappropriate peer interactions in a middle school student with learning disabilities.

Keywords: Learning Disabilities, Social Stories, Social Skills, Token Economy, Peer Interactions

INTRODUCTION

Social skills and social competencies are crucial for a child's development of relationships with their peers. Many times, those who fail to develop appropriate social skills are at risk for negative outcomes including peer rejection, loneliness, criminality and poor academic performance (Gresham, Mai, & Cook, 2006). Developing appropriate social skills are often difficult for children with intellectual disability and specific learning disabilities.

Children with Learning Disabilities (LD) tend to have average levels of cognitive ability but do not achieve in reading, writing, and math at a level that would be expected for their age or cognitive ability (Milligan, Phillips, & Morgan, 2016). One

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of the many significant challenges that children with LD experience, apart from academics, is severe deficits in the areas of social skills and peer relations. This can make participating in school activities and inclusive classrooms difficult for children with LD. In a meta-analysis of social skills research, Forness and Kavale (1996) found that 75% of children with Learning Disabilities have lower levels of social competence than typically developing peers.

Social competence calls upon a complex set of skills and competencies, including age-appropriate social skills, regulation of behaviors and emotions, perspective-taking abilities, and an understanding of the social environment (Baumeister, DeWall, Ciarocco, & Twenge, 2005). The ability to possess these complex skills in a school setting is crucial for children with learning disabilities to be successful and maintain positive relationships with their peers.

There are a variety of researched interventions that successfully teach appropriate social skills to children with disabilities. One of the most researched strategies in recent years is the use of the Social Story. Social stories are short stories prepared in a systematic format and written according to certain rules. The stories objectively define a skill, event, or situation in order to explain a social situation, teach social skills, and enable children to appropriately respond in social situations that they may face (GI, 2017). Some of the many skills taught with implementation of social stories include greetings, conversation skills, appropriate interactions among peers, understanding emotions, and social and play skills.

Norris and Dattilo (1999) examined the relationship between a social story intervention and social interactions among a student in an inclusive school setting. The participant involved in the study had average cognitive skills but demonstrated a low rate of peer interactions with a high rate of inappropriate interactions during baseline. The intervention carried out by Norris and Dattilo (1999) included having the participant read aloud the social story and the teacher responding to any questions regarding the story. The intervention also implemented a brainstorming procedure to identify other appropriate behavior. The findings of the study showed a decrease in rates of inappropriate interactions, but the level of appropriate peer interactions did not significantly change due to intervention.

Although effective alone, many studies have often combined implementation of social stories with other instructional methods such as prompting, reinforcement, and self-evaluation (Chan and O'Reilly, 2008). One of the primary goals of the implementation of social skills intervention is a decrease in undesirable behaviors and an increase in desirable behaviors. Although social stories have been identified as an effective treatment for the teaching of social skills and replacement behaviors, studies show that use of reinforcement to further increase appropriate social skills and/or decrease the use of inappropriate social skills is even more effective (Chan and O'Reilly, 2008).

One of the most effective and data-based ways to improve classroom behaviors is to implement a token economy (Doll, McLaughlin, & Barretto, 2013; Higgins, Williams, & McLaughlin, 2001). Token economy interventions involve delivery of tangibles or tokens, contingent on the presence or absence of target behaviors and then providing opportunity for exchange (Carnett et. al., 2014; McLaughlin & Williams, 1988). The exchange takes place when "cashing in" a preset number of tokens,

for backup reinforcers. Many variations of the token economy have been implemented with several populations, including children with learning disabilities (Doll et al., 2013).

Previous research has shown that behaviors can be established, decreased and/or maintained using some form of the token economy (Hackenberg, 2009). Higgins et al. (2001) studied the effectiveness of a token reinforcement program in decreasing inappropriate behaviors of a child with learning disabilities. The researchers delivered tokens to the child contingent upon the absence of three different problem behaviors at the end of each minute. Some of the backup reinforcers available to the participant included academic games, computer time, and leisure reading. The token economy implemented by the researchers was effective in reducing all three inappropriate behaviors in the participant under study.

Overall, learning social skills and appropriate ways to interact with peers are crucial for school-aged children with learning disabilities. The lack of these skills can interfere with academics and meaningful relationships. The uses of social stories and token economies have both been shown to decrease inappropriate behaviors and increase appropriate behavior. The purpose of the present study was to implement the two interventions simultaneously to reduce inappropriate peer interactions in a middle school student with learning disabilities.

METHOD

Participant

The participant in this study was a 13-year-old boy who attended a middle school in the Pacific Northwest. The participant had been enrolled in this particular middle school for six weeks prior to the start of the study. He previously had attended another middle school in the Pacific Northwest where he was diagnosed with Learning Disability and Health Impairment making him eligible for special education services. He had severe speech delays as well as an extremely low IQ. The areas of deficit included math, reading, written language, communication, behavior and adaptive skills.

The participant attended school five days a week from 8:10am until 2:30pm. He was placed in an extended resource classroom for primary subjects and was included in general education classes for Physical Education, Drama and Lunch. Throughout the study, the researcher worked with the participant on decreasing inappropriate peer interactions across various settings in his school. This participant was chosen to participate in the study due to being new to the school and a need for an intervention involving social skills.

Setting

There were multiple settings in which the study took place. These settings included three class periods in which the participant was included in general education. These class periods were P.E., Drama, and Lunch. The first setting, P.E., took place in a gymnasium with 20 to 25 other middle-school children and two male teachers. This class lasted for 50 minutes and consisted of a warm-up activity, usually

laps around the gymnasium and a structured group activity. The participant's para-educator and the researcher both were present in this setting.

The second setting, Drama, took place directly following P.E. and included 20 other children and one male teacher. The participant's para-educator was also present during this period. The class consisted of structured group activities as well as unstructured free time that included group discussion and time for skits to be recited.

The third setting for study was lunch period. This period involved over one hundred students in the cafeteria. The participant waited in line to get his lunch and then would sit at a table consisting of ten to twelve peers to eat his lunch. There was time at the end of lunch period where unstructured free time was offered before the bell would ring to signal the end of the period.

The sessions were conducted by the researcher during P.E. and Drama, then by the para-educator during lunch. The para-educator was trained to take baseline data in the absence of the researcher as well as carry out intervention procedures.

Materials

The materials used for this study included social stories, a token board, and various reinforcers. The reinforcers included sporting cards, coins for the participant's classroom store, and candy. The token board was a 5x7 laminated piece of paper, with the words "I am working for" and a blank space next to it, at the top. Below the phrase "I am working for" were five spaces with velcro for the tokens to be placed. On the back of the board the three pictures of the reinforcers (sporting cards, coins, candy) were placed along with the five tokens.


The first social story consisted of 10 pictures, five of which were children displaying appropriate peer interactions and five displaying inappropriate peer interactions. The appropriate peer interactions included pictures of children giving each other high fives or pats on the back and arm. The inappropriate peer interactions pictures displayed children pretending to punch one another, a child putting another in a headlock, and others pushing one another. The second social story was a social story taken and adapted from a custom website (see Figure 1). Both were presented to the participant before each session in which the intervention was conducted.

During each session, a data sheet and pencil were used by the researcher in order to keep a frequency count of the number of target behaviors that occurred in each setting.



Dependent Variable

The behavior intended for change in this study was inappropriate peer interactions during general education classes. Inappropriate peer interactions were defined as physical touching of a peer with hands or feet without being asked to do so. This did not include high fives, taps on the shoulder, or other appropriate interactions. The definition also included "pretend fighting", which was defined as movement of arms or legs in the direction of peer with intent to punch, kick or slap. The dependent variable remained the same during all settings.



Sometimes I put my hands on friends. |





This is **not** a good choice. People do not like it.





Sometimes I can give a high five. That's okay.



I may touch an arm. That's okay.



Sometimes I can pat a back. That's okay.



I will not put my hands on my friends.




Figure 1. Social story.

Measurement

During baseline and intervention, the researcher used a frequency count to measure the occurrences of the target behavior. Each time an occurrence of the target behavior was exhibited by the participant, the researcher put a tally mark under the column on the data sheet titled "Target Behavior" next to the appropriate date and setting.

Interobserver Agreement

Interobserver agreement (IOA) checks were conducted for fifteen out of fifteen sessions, or 100% of the sessions. IOA data was collected in vivo and in the same manner that intervention data was collected by the researcher. IOA checks were conducted simultaneously but independently and recorded on identical data sheets used by the researcher. Criteria for agreement were both the researcher and para-educator having the same number of inappropriate peer interactions tallied at the end of each session. Disagreement criteria did not have any difference in the total number of inappropriate peer interactions at the end of each session. The formula used to calculate IOA was the number of agreements divided by the number of agreements plus the number of disagreements, multiplied by 100. The total percentage of IOA reliability was 100%.

Experimental Design

The experimental design used in this study was a single-subject, multiple baseline across settings design (Kazdin, 2010). The study consisted of a baseline phase and treatment phase for each setting. All three settings were in baseline at the same time until the first setting (P.E.) showed stable baseline numbers and then intervention was put into place. During the process of intervention during P.E., Drama and Lunch were kept in baseline until there was a steady and noticeable decrease in the target behavior. Once a decrease in target behavior was established, a probe was done in the next setting to make sure baseline data was consistent. If baseline data was consistent, then intervention would be implemented. The same process was in effect for the third setting as well.

The researcher took baseline data and implemented intervention three sessions a week on Monday, Wednesday and Friday. The para-educator conducted baseline sessions on Tuesday and Thursday for all settings. The para-educator also conducted intervention and probes during lunch period for all sessions.

Procedures

Baseline. During baseline, typical classroom procedures were in place in each setting. The participant was reinforced for expected behavior by his para-educator but not for the specific target behavior. The para-educator occasionally prompted the participant to stop engaging in inappropriate behavior, but his inappropriate behavior was usually consequted by withholding of reinforcement (e.g., tally marks that could be turned in for pennies for the school store). The researcher observed and recorded the frequency of inappropriate peer interactions under these circumstances in each setting.

Social Stories. During intervention sessions, two social stories were presented to the participant, prior to each of the three class periods. The first social story was presented to the participant in the form of photos displaying inappropriate peer interactions and appropriate peer interactions. The participant was presented with a photo and the question of: "Is this appropriate or inappropriate behavior?" The participant would then give his answer and comments. The researcher would present the question: "Why?" The participant would then answer in some form: "It's appropriate because they are giving each other high fives!" The next social story was in story

format and was read to the participant. This process usually lasted between five and seven minutes. Upon completion of the social stories the participant was prompted on how to earn tokens. He was told: "We earn tokens by interacting appropriately with our peers, by giving high fives, pats on the back, or telling them 'No thank you' or 'I need some space' when needed. We do not earn tokens when we kick, pinch, or slap our peers or when we pretend to do those things." The participant was then signaled to choose a reinforcer to work for and place on his token board.

Token economy. After the participant had chosen the reinforcement he wished to work for and placed the reinforcer on the token board, he went to class as directed. The token economy was implemented immediately after the participant was in his designated setting. The researcher sat towards the middle of the gymnasium for P.E. and the classroom for Drama. The para-educator usually sat within a close distance to the participant during lunch.

There were two ways the participant could earn tokens. First, the participant could earn tokens for each instance of appropriate peer interaction (e.g., high fives, pats on the shoulder, saying "No" or a form of word to cue space, instead of touching). These behaviors were reinforced with a token on the token board. The researcher was usually the one to place the token on the board due to encouraging the participant to actively continue with classroom expectations. The researcher would then cue the participant that he had received a token for a high five, etc.

The second way the participant could earn tokens was if he went ten minutes without any engagement in inappropriate peer interactions. If at any time during those ten minutes the participant displayed target behavior, the timer was then restarted to the full ten minutes. If, at the end of the ten minutes, the participant had zero instances of target behavior, he would receive a token. Frequency data was taken continuously across all settings during interventions sessions by the researcher and para-educator.

RESULTS

The frequency of inappropriate peer interactions exhibited by the participant during both baseline and intervention for all three settings is shown in Figure 2. The mean number of inappropriate peer interactions during baseline for the first setting, P.E., was 5.4 per session (range: 2-9). When Social Stories and the Token Economy was introduced into the first setting, beginning on Session 8, there was a significant decrease in the amount of inappropriate peer interactions displayed by the participant during P.E. The mean number of inappropriate peer interactions decreased from 5.4 to 1 (range: 1-3) per session during implementation of intervention. The mean number of inappropriate peer interactions during baseline for the second setting, Drama, was 6.1 (range: 3-8) per session. Baseline data collection continued in the second setting until stability occurred during intervention for P.E., the first setting and then intervention began. When the intervention was applied to Drama, there was also a large decrease in inappropriate interactions displayed by the participant. The mean number of inappropriate peer interactions decreased from 6.1 per session to 0 (range: 0-0). The last setting, Lunch, baseline data collection continued until the previous setting, Drama, appeared stable across intervention procedures. The mean number of inappropriate peer interactions during baseline for Lunch, was 2 (range:

1-4) per session. Intervention was applied after stable intervention numbers appeared in the second setting and inappropriate peer interactions decreased during Lunch from 2 per session to 0 (range: 0-0).

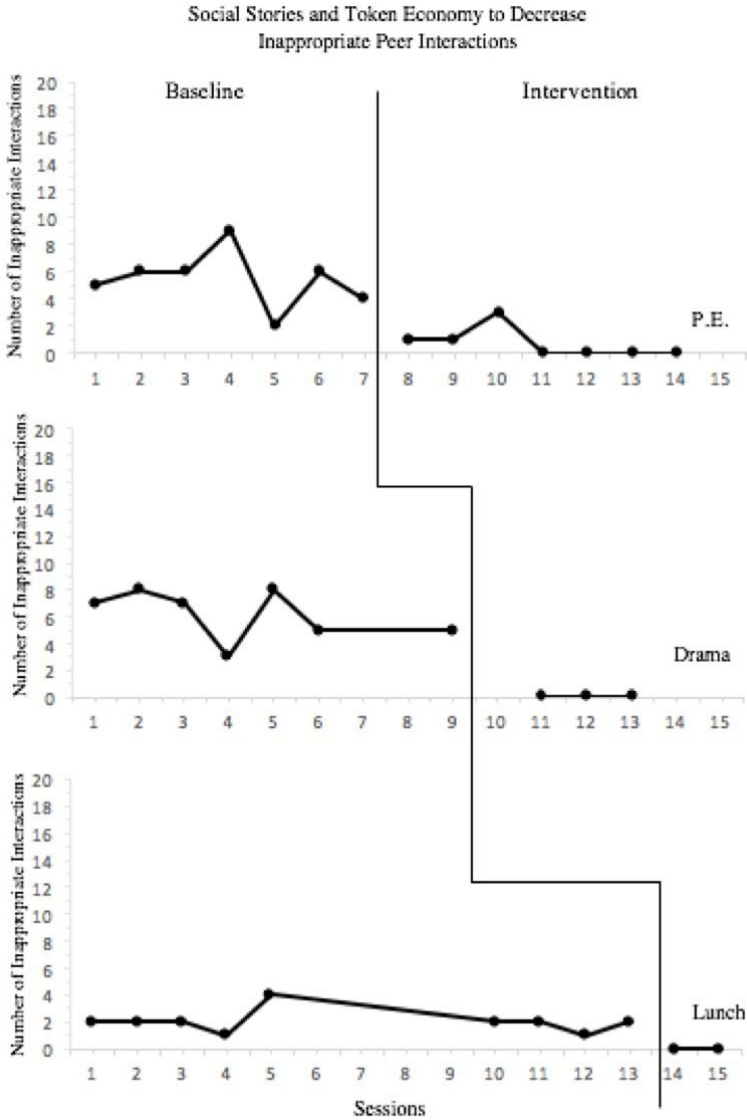


Figure 2. Frequency of inappropriate peer interactions for baseline and intervention across three settings.

DISCUSSION

The use of social stories and a token economy on reducing inappropriate peer interactions across school settings had positive effects for the participant. The participant showed significant decreases in inappropriate peer interactions across settings over the duration of the study. Almost immediately, the participant showed a decrease in using inappropriate peer interactions when intervention was applied during the first setting, P.E. The participant showed consistently higher levels of inappropriate interactions during baseline across all three settings. When both the social story and token economy were introduced, the levels of inappropriate peer interactions displayed by the participant decreased across all three settings.

During all three settings, baseline and intervention were completed by the researcher. There were no overlapping data points between the baseline and the social story and token economy intervention across all three settings. Due to the percent of overlapping data points determining the effect size between baseline and intervention, this would indicate the intervention was highly effective for reducing inappropriate peer interactions (Scruggs & Mastropieri, 2001, 2013, Scruggs, Mastropieri, & Casto, 1987).

As mentioned by Chan and O'Reilly (2008), the use of social stories when combined with other instructional methods, such as prompting, reinforcement, and self-evaluations, can be very effective. In this study, during intervention, the participant was presented with the social story as well as a token economy. The token economy allowed the participant to choose from three reinforcing items. The participant consistently chose the same reinforcer, hockey cards, every time the token economy was implemented across all three settings. The researcher found that hockey cards were the most reinforcing to the participant and when combined with social stories decreased the target behavior across all three settings. This supports previous research by Chan and O'Reilly (2008), that when combined with reinforcement, social stories can be an effective way to decrease unwanted behaviors.

The use of social stories combined with a token economy was an appropriate method of intervention for the participant in the study. Although the participant was unable to read the social story independently, the use of pictures throughout the story helped the participant to visually recognize appropriate behaviors and inappropriate behaviors. By the conclusion of the study, the participant was going through the story making remarks to each picture as "bad" or "good." The participant was also very motivated by the reinforcers used with implementation of the token economy. During intervention, the participant would consistently check in with the researcher to look at his hockey cards. At the end of each class period that intervention was implemented in, the participant would approach the researcher for his reinforcement. The participant was very engaged and motivated throughout each intervention session.

Another strength of the study was that although the use of social stories combined with a token economy decreased inappropriate peer interactions across settings, it also appeared to have increased appropriate interactions between the participant and his peers. During the first setting, P.E., the participant would give high fives to his peers and immediately look at the researcher. This was a signal of the participant understanding the social stories as well as replacement behaviors taking place due to the intervention itself.

One of the weaknesses of the study was the lack of control the researcher had over the environment across all three settings. For example, during a baseline session in the first setting, P.E., the class was instructed to go to the cafeteria to watch a basketball game on the television. This made it difficult to get accurate baseline data for that particular session in that setting. Another example occurred when the participant was instructed by the classroom teacher to carry around a piece of paper for the class period. This made it difficult for the researcher to depict accurate baseline data based on the participant's hands being occupied and not having opportunity to engage in inappropriate peer interactions, such as hitting or touching others. However, during this session the participant had zero rates of behavior. Due to the low levels of target behavior during this particular period, the researcher decided to recommend a fidget toy to the teacher for the participant during certain class periods upon completion of the study.

Another challenge presented in the implementation of this study was the inability to control the responses from the participant's peers. For example, many times, the participant would attempt to appropriately interact with a peer and the peer would walk away or engage in an inappropriate behavior. Several times the participant would hold up his hand to high five a peer and the peer would ignore or walk away without completing the interaction. Other times, the participant would hold up his hand to high five and the peer would pretend to punch or hit the participant. The participant would often imitate this behavior of his peers, causing inappropriate peer interaction to occur, although the participant may have had other intentions.

Overall, there was a decrease in inappropriate peer interactions across all three settings as shown in Figure 2. The participant showed high interest in receiving the reinforcement obtained from the token economy as well as the one-on-one attention across all settings. The teachers and para-educators involved in the classroom during the duration of the study also indicated that the participant showed noticeably lower rates of behavior while the researcher was present. The classroom teacher also indicated to the researcher that they will continue to use both the social story and token economy after completion of the study.

Further research related to this study might investigate the effectiveness of thinning schedules of reinforcement during intervention. For example, the participant in the present study had to reach five tokens in order to receive reinforcement for a particular period. Future studies could potentially thin the reinforcement schedule to six, eight, and then ten tokens. Thinning the schedule over time would demonstrate stronger correlations between the participant's ability to engage in appropriate replacement behaviors as a result of decreased levels of inappropriate peer interactions.

Another direction future studies could take, and wasn't particularly taken during this study due to time restraints, would be to track both levels of appropriate and inappropriate peer interactions during both baseline and intervention. To increase levels of appropriate interactions, reinforcement could be adapted to include sharing or looking at hockey cards (or reinforcement of choice) with a group of peers.

The present research also provides a replication (Jasny, Chin, Chong, & Vignieri, 2011) of the efficacy of implementing token reward programs in schools. Token systems have been widely implemented and adapted by various school person-

nel to improve students academic as well as social behaviors (e. g. Doll et al., 2013; McLaughlin & Williams, 1988).

Results from this study ultimately support previous research in showing that social stories and token economies are effective when used in classroom settings due to the ease of implementation as well as seeing quick results in the form of replacement behaviors. These results also relate to previous research by Hackenberg (2009), in that behaviors can be established, decreased and/or maintained using some form of the token economy.

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