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Effects of a Token Economy System within the Context of Cooperative Games on Social Behaviors of Adolescents with Emotional and Behavioral Disorders

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A single subject A-B_1-BC_1-B_2-BC_2 design was used to examine effects of a cooperative games and token economy program on pro-social (statements of encouragement, statements of praise, statements of appreciation, hand shakes, or high fives) and anti-social behaviors (swearing, threatening physical harm, calling peers names, hitting or pushing) of three adolescents with emotional and behavioral disorders. Results are reported as group means. With the introduction of cooperative games, behaviors remained stable and unchanged. When a token economy system was introduced there was an immediate increase in the number of pro-social behaviors. Results for pro-social behaviors were replicated across conditions. Anti-social behaviors remained virtually non-existent throughout the study. Limitations and implications for research and practice are discussed.

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Adolescents with emotional or behavioral disorders (E/BD) typically lack adequate social skills (Walker, Colvin, & Ramsey, 1995). These adolescents' problems with social behaviors are manifested in the form of aggression, acting out behaviors (i.e., not following directions), complacence, and noncompliance across a variety of contexts (Coie, Underwood, & Lochman, 1991; Phillips, Schwean, & Saklofske, 1997). Although social skills teaching strategies have been developed and implemented for adolescents with E/BD with mixed results (e.g., Evans, Axelrod, & Sapia, 2000; Loy & Dattilo, 2000; Mathur, Kavale, Quinn, Forness, & Rutherford, 1998; Moote, Smyth, & Wodarski, 1999; Quinn, Kavale, Mathur, Rutherford, & Forness, 1999), practitioners have traditionally considered these programs to be effective (Berliner, 1992).

Studies have demonstrated that individuals who lack effective social skills are more apt to have difficulties succeeding in school (Hughes & Sullivan, 1988), have low self-esteem (Elliott & Gresham, 1993), experience peer rejection and social maladjustment (Farmer & Hallowell, 1994), become delinquent (Asher & Wheeler, 1985; Elliott & Gresham, 1993), and engage in alcohol and substance abuse (Wodarski & Feit, 1995). In addition, Swaggart (1998) concluded that adolescents with E/BD engaged in more off-task than on-task behaviors, were inattentive, uninvolved, impulsive, and distractible. Adolescents with E/BD tend to demonstrate behavior patterns that are problematic for successful interaction with society in settings requiring social skills (Farmer & Hollowell, 1994; Schonert-Reichl, 1993; Steinberg & Knitzer, 1992). There is "Perhaps no greater challenge faces the clinical and educational communities than to help troubled adolescents learn to cope with their angry feelings in a socially appropriate manner" (Kellner & Bry, 1999, p. 645). Since many adolescents with E/BD lack social skills (Walker et al., 1995), social skills are necessary for daily functioning (Hansen, Nangle, & Meyer, 1998), and previous social skills programs have demonstrated mixed results (Moote et al., 1999; Quinn et al., 1999), additional research examining strategies designed to promote social skills with youth with E/BD are needed.

Cooperative Games

Cooperative learning activities such as "warp speed" (passing a small ball around a circle that requires participants to work together) and "group knot" (standing in a circle and attempting to untangle the knot created by grasping another person's hands to allow participants to demonstrate teamwork and cooperation skills) can provide the context for social skills to be encouraged and developed. According to Cartledge and Cochran (1993), individuals with E/BD are especially in need of "... activities that contribute to and reinforce interpersonal social skills" (p. 10) such as cooperative games.

One benefit of cooperative learning activities is the positive effects they can have on people who commonly experience failure (Harris & Covington, 1993). Rutherford, Mathur, and Quinn (1998) demonstrated that adolescents with E/BD could be taught social skills in a cooperative learning context that included face-to-face interactions and group processing.

Cooperative games are a specific type of cooperative learning activity designed to increase personal interaction, promote cooperation with others rather than competition, and to foster a sense of teamwork while attempting to achieve a common goal (Carlson, 1999; Orlick, 1981). "Cooperative games address the motivations of children for game and sport. They de-emphasize winning and competition, are not aggressive, and are invested in fun experiences" (Carlson, 1999, p. 232). The focus of cooperative games on achieving goals

rather than defeating an opponent can lead to positive experiences for individuals who participate (Roberts & Treasure, 1992). Ramsey and Rank (1997) observed that cooperative games can promote socialization such as sharing, taking turns, and helping others and stated, "[r]esearch on the use of cooperative games has shown increased personal self-esteem, decreased aggressive behaviors, increased cooperation, and enhanced positive socialization. In each case, cooperative games allowed youth to build social skills and self-images that permitted them to progress as effective contributing members of society" (p. 35).

According to Loy and Dattilo (2000), it does not appear that presentation of a positive context to develop social skills, such as that created by cooperative games, is sufficient for accelerating social skills. Using an alternating treatments design, Loy and Dattilo compared effects of free play, cooperative games, and competitive games, on social interactions of a boy with Asperger's Syndrome. Although cooperative games were found to be the "best treatment" evidenced by high frequencies of positive interactions, these games were also associated with an increase in negative social interactions. Therefore, Loy and Dattilo (p. 208) stated that "Although cooperative games provided a context for positive social interactions, structuring such a context so that negative interactions are discouraged and positive ones are promoted is advised."

In a similar study McKenney and Dattilo (2001) used a single subject multiple baseline across behaviors design to observe pro-social and anti-social behaviors of five adolescents during a sport context intervention. Throughout the study participants were observed for 20-minute basketball scrimmages and pro-social and anti-social behaviors were recorded. The intervention involved social skills instruction where the researcher taught the participants specific pro-social skills. With intervention initiation, immediate increases in pro-social behaviors were observed; however, during follow-up, pro-social behaviors declined toward baseline levels. The authors proposed that "Perhaps the effectiveness of interventions similar to the one implemented in this study may be enhanced if . . . activities designed to decrease anti-social behaviors are included" (p. 138). One way to structure a context, as suggested by Loy and Dattilo (2000), and to increase pro-social behaviors and decrease anti-social behaviors, as suggested by McKenney and Dattilo, is to implement a token economy system.

Token Economy

A token economy is "an exchange system that provides individuals whose behavior is being changed with near-immediate feedback cues on the appropriateness of their behavior" (Bauer & Shea, 1999, p. 225). Tokens, otherwise known as "exchangeables," are reinforcers that people earn for accomplishing a target behavior for a pre-determined period of time (Rusch, Rose, & Greenwood, 1988). These tokens hold no real value except that they can be exchanged for a tangible reinforcer or privilege reinforcer (e.g., candy, clothing, trading cards, and television viewing time). Miltenberger (1997) defined a reinforcer as "a stimulus or event that will increase the future probability of a behavior when it is delivered contingent on the occurrence of the behavior" (p. 566). If a particular stimulus or event does not result in an increase in a target behavior, the stimulus is not considered to be a reinforcer (Maag, 1999).

Steps in Developing a Token Economy

Identify target behaviors. The first step in establishing a token economy is to identify the behavior to be changed, otherwise known as defining the "target" behavior (Martin & Pear, 1999). According to Miltenberger (1997), a target behavior is the specific behavior that is to be modified through reinforcement in the token economy. For an action to be identified as a target behavior it must be observable, measurable, and changeable (Flick, 2000).

Identify tokens. The second step in developing a token economy is to identify the tokens to be used. Miltenberger (1997) stipulated that the tokens must be tangible, be provided immediately, and be easily dispensable and accumulated. The tokens must also be appropriate for the age of participants (Maag, 1999).

Establish backup reinforcers. The third step in establishing a token economy is to determine items for which participants will exchange their tokens, ("backup" reinforcers) (Miller, 1997; Maag, 1999). "Backup" reinforcers should only be available when participants engage in the target behavior and should be meaningful to participants.

Establish rate of token presentation. Another step in development of a token economy system is establishing the rate of presentation of tokens when participants are to exchange tokens for backup reinforcers and how often this exchange occurs (Miltenberger, 1997). Participants received and lost tokens on a continuous schedule every time they engaged in one of the pro-social or anti-social behaviors (De Martini-Scully, Bray, & Kehle, 2000; Maag, 1999). Removal of tokens was included in the design in concordance with suggestions by McKenney and Dattilo (2001) that social skill interventions include a component "designed to decrease anti-social behaviors" (p. 138).

Establish rate of token exchange. Variation exists in the literature concerning when and how often the exchange of tokens for backup reinforcers should occur. Cyclical trends relating to target behaviors may occur due to when participants are allowed to exchange tokens. Morisse, Batra, Hess, Silverman, and Corrigan (1996) developed a system where participants exchanged tokens for backup reinforcers twice a day, while Reese, Sherman, and Sheldon (1998) created a system where an exchange occurred every time a participant earned ten tokens. Swain and McLaughlin (1998) and Truchlicka, McLaughlin, and Swain (1998) constructed an exchange program for participants where "points were exchanged in blocks of 100 on an intermittent schedule, averaging five days, for any of or a combination of four back-up reinforcers" (p. 13). These steps in developing a token economy have been documented in the literature: establishing back-up reinforcers (Pestle, Card, & Menditto, 1998), identifying tokens (Hupp & Reitman, 1999), and identifying target behaviors (LePage, 1999).

Relevant Studies of Token Economies

Pestle et al. (1998) examined effects of a social learning program on appropriate behaviors of three women and three men (ages 37–57) diagnosed with schizophrenia. A Certified Therapeutic Recreation Specialist conducted activity groups (40 min/sessions, 3 × wk) and participants received two tokens for attendance and two tokens for participation. Tokens were exchanged for items from the hospital store, off campus outings, and later sleep times. Group time consisted of the social learning program used during physical (volleyball, kickball, and soccer) and non-physical (trivia, arts and crafts, and board games) activities. The authors reported that "structured recreational activities produced more appropriate behavior . . . " (p. 38). While this study examined effects of a social learning program on appropriate behaviors in a leisure context, it did not examine inappropriate behaviors.

In a similar study, Hupp and Reitman (1999) used a combined multi-component skills and behavioral management program to improve sports skills and sportsmanship in three youth (8–11) with E/BD. A multiple baseline across participants' design was used to examine effects of the training component and an A–B design to evaluate the behavior modification sportsmanship component. During the sportsmanship phase, participants were awarded "B-ball bucks" for engaging in positive behaviors defined as "verbal praise and encouragement directed toward another player or coach, non-directive positive statements, and physical signs of encouragement" (Hupp

& Reitman, p. 42). There was no contingency for negative behavior. The authors found that the token system immediately increased participants' positive behaviors and improved their dribbling, but shot-making performance was not improved. While a token economy system was used as the primary intervention during part of this study, due to time constraints the authors were unable to use a reversal design that could have allowed for identification of stronger connections between behaviors and intervention.

In addition, Franco, Galanter, Castañeda, and Patterson (1995) combined a token economy and self-help approaches to influence behaviors of adults with dual diagnoses who resided in an acute care ward. The token economy was conducted in conjunction with therapeutic group meetings and recreational activities. While no statistical information was presented, Franco et al. stated that according to staff documentation "as the token economy became an integral part of the ward routine, violence on the ward declined substantially, and at the same time, patient participation in group activities doubled in less than a month" (p. 228). The authors stated that the token economy system was removed for one week and inappropriate behaviors dramatically increased. Since little data were reported, it is not possible to determine what accounted for behavior changes. The authors suggested that before programs such as this are instituted, more studies must be conducted to evaluate the impact of token economies on social skills.

Reese et al. (1998) used a reversal single-subject design to examine effects of program designed to reduce disruptive behaviors of a man (age 26) with severe to moderate mental retardation and autism who demonstrated most disruptive behaviors during his free time. Using a differential reinforcement schedule of other behaviors (DRO), rewards were provided when the participant did not engage in one of the target behaviors for a pre-determined time, and he lost a token when he exhibited a target behavior. Tokens were exchanged for gum, writing materials, magazines, games, or special attention. The authors selected these reinforcers by observing the participant's preferences during free time. Reese et al. suggested that allowing the participant to earn different rewards served an important role in reducing disruptive behaviors and allowing the token economy system to function effectively.

Theoretical Framework and Statement of Purpose

The study was grounded in behavioral theory (Watson, 1913) as it relates to development of reinforcement strategies. "The process of reinforcement can be conceptualized as a sequence of two behaviors: (1) the behavior that is being reinforced, followed by (2) the behavior that is the reinforcer" (Powell, Symbaluk, & McDonald, 2002, p. 257). The reinforcement system used in this study was specifically based on the Premack principle (1959, 1962, 1965) stipulating that a high probability behaviors can be used to reinforce a low probability behaviors. The Premack principle requires that observations occur in a situation where all relevant behavior can occur without restriction and then these observations are used to predict that any higher frequency behavior may serve as reinforcement for any lower frequency behavior (Pierce & Epling, 1999).

Through observations in the classroom setting used in this study, it was determined that behaviors such as playing with and exchanging Pokémon® cards, eating snacks, and drinking soft drinks were high frequency behaviors while pro-social behaviors were low frequency behaviors. Following the Premack principle, these high probability behaviors were identified as reinforcers for the lower probability pro-social skills and, thus, engagement in these activities was made contingent on pro-social behaviors. Therefore, the purpose of this study was to examine effects of a 12-week cooperative games program used with a token economy system applied during a regular school day on verbal and physical

pro-social and anti-social behaviors of adolescents with E/BD. Tokens that represented the low probability pro-social behaviors were used by participants to acquire the high probability behaviors.

Methods

Participants

Data were collected on three adolescents from Northeast Georgia (ages 12–14) identified by the school system as having E/BD. Also included in the study were six other youth whose Individualized Education Programs (IEP) contained information suggesting they had characteristics consistent with E/BD and that they may benefit from being involved in structured activities. The six additional youth were included in the study to allow for a sufficient number of people to be involved in the cooperative games (more than three were needed). The nine youth were involved in all conditions of the study.

Bill. Bill was a 14-year-old male who demonstrated marked changes in behaviors in short periods of time. He could be quietly working or playing and quickly become physically and verbally aggressive. Bill stated that he heard voices (specifically of his dead grandmother) and has verbally responded to these voices. He has been involved in episodes of sexual misconduct (revealing himself to others), noncompliance (walking from the classroom and refusing to return), verbal and physical aggression, and making obscene gestures. Bill stayed to himself during most activities but participated in one-on-one activities with adults. In the classroom he refused to respond to directives, was often off task, and disrupted the class by yelling. Bill has received speech services to correct a slight stutter.

Paul. Paul was a 12-year-old male who has a history of being severely socially aggressive as evidenced by numerous physical assaults on students. He has demonstrated verbally and physically threatening behaviors (e.g., invading others' personal space with fists raised while cursing at them), disruptive and disrespectful behaviors (e.g., calling out during class), and impulsive behaviors, especially with female authority figures. When on the playground, Paul pushed and verbally threatened to physically harm other students. He engaged in physical activities in which he is proficient, but quits or becomes verbally and physically aggressive when someone is better than he, or when he loses. Paul has had recent outbursts involving hitting, tripping, and throwing objects at his peers.

John. John was a 12-year-old male who exhibits verbally and physically aggressive behaviors towards classmates and teachers. John could be polite as indicated by him saying "please" and "thank you," asking for help, and accepting help from other students; however, at times, John showed disrespect toward teachers by refusing to follow instructions and by using excessive profanity. John reported that he enjoys team sports and has demonstrated teamwork during free time.

Design

A single subject A-B_1-BC_1-B_2-BC_2 withdrawal design with baseline (free play) (A), cooperative games (B_1), cooperative games and token economy system (BC_1), cooperative games (B_2), and cooperative games and token economy system (BC_2) replicated across participants was used to measure effects of an intervention on pro-social and anti-social behaviors. The "ABAB design permits the most powerful demonstration of experimental control because it requires the repeated introductions and withdrawal of an intervention strategy" (Tawney & Gast, 1984, p. 200). Threats to internal validity of a single subject withdrawal design include: history, testing, instrumentation, and multiple treatment interference (Dattilo, Gast, Loy, & Malley, 2000).

Since single subject designs occur over time, they are likely to be influenced by outside events in participants' lives. Often with a token economy system there is a "pay day" when participants spend tokens they earned. Participants' behaviors may improve on days when they receive back-up reinforcers on this

"payday." To reduce the chance of cyclical changes such as those that occur with a "pay day," paydays occurred in this study each day participants engaged in the token economy system.

When tests are administered numerous times, there is likely to be improvement due to familiarity with the test as opposed to actual material comprehension. Since single subject designs are essentially repeated pretests, they are apt to be influenced by testing. To limit this threat, the least intrusive measurement and observation methods were used. Before the study began, the first author visited the classroom 3 × week (30–45 min) for two weeks. During this time he observed participants from a distance as the teacher conducted regularly scheduled activities. These observations helped participants become accustomed to the presence of the first author and were designed to reduce participants' perception of a testing situation during data collection.

An additional threat to internal validity, multiple intervention interference, exists when more than one intervention is presented within a single study. When multiple interventions are present, it is impossible to determine whether change resulted from the intended intervention or other factors such as information learned in the classroom relating to social skills. Within this ABAB withdrawal design, there were two interventions, cooperative games (B) and the token economy system in conjunction with cooperative games (BC). To prevent multiple intervention interference, the two interventions were examined individually and then combined.

Experimental Conditions

Free Play Condition (A)

During baseline, participants engaged in 35 minutes of unstructured free play when they participated in various recreation activities (e.g., basketball, Frisbee, 4-square, kite flying) in an outside play area connected to the school.

Cooperative Games Condition (B_1)

The first author was the instructor for the cooperative games. Each day when participants arrived, the planned activity was explained and questions were answered. Safety considerations were delineated and participants verbally committed to understanding safety precautions as well as the session plan. During the activity minimal interaction occurred between the instructor and participants. The instructor interacted with participants to praise appropriate behaviors, keep them safe, answer their questions, and did not intervene unless it was for reasons of physical or emotional safety. Upon completion of the activity, the instructor asked different versions of the following questions: (a) what did we just do, (b) why did we just do it, and (c) how does it apply to me. All cooperative games were physical in nature and selected for their ability to elicit social interactions between participants.

Cooperative Games and Token Economy System Condition (BC_1)

Procedures followed during BC_1 were identical to those followed in other conditions (e.g., the length of sessions, activities presented) except for initiation of the token economy system. Participants arrived and were informed that they were starting a new part of the program. The instructor had in his pocket, token bills similar in appearance to dollar bills. On a nearby bench there was one clear plastic Tupperware® container for each participant labeled with his name that functioned as a bank. At the beginning of the intervention, each participant had five one thousand-token bills in his container to serve as a visual reminder of the reinforcer and prevent participants from creating a "negative balance" if they engaged in negative behaviors before they engaged in positive behaviors (to earn more token dollars). Based on suggestions by Naughton and McLaughlin (1995), each time the instructor observed a participant engaging in one of the pro-social behaviors, he handed a bill to the participant. Similarly, each time the

instructor observed an anti-social behavior, a token was removed from the participant's Tupperware container.

Withdrawal of Intervention #2 (B_2)

Participants engaged in cooperative games in the same manner that they did during the previous cooperative games condition without the token economy system.

Reintroduction of Intervention #2 (BC_2)

During the final condition, the token economy system was reintroduced and participants again received tokens for pro-social behaviors and had tokens removed for anti-social behaviors. Because the intervention was conducted during the second semester of the school year, the length of the study was determined by the school schedule.

Data Collection

Data were collected using a partial interval recording method of observing behaviors that required the 15-minute session be divided into 45 15-second intervals with 5-second periods when the observer prepared for the next observation interval. If a participant engaged in the target behaviors during his assigned observation period, a mark was made for that behavior in that time interval. The primary observer examined participants on a 20-second rotating basis, allowing each participant to be observed approximately 10 times per session. Along with recording the occurrence of a behavior, the primary observer recorded the topography of the behaviors. In the space on the observation form next to the participant's interval, the primary observer wrote the specific behaviors that occurred to provide detail about the behaviors. Data points on the graphs represent mean scores across the three participants for each day. While the interval recording system has the potential for the observer not to record some behaviors that occur, this system of observation provided observers the opportunity to record any target behavior observed during any portion of the interval (Dattilo & Wolfe, 2002).

Dependent Variables

Pro-social verbal behaviors. Based on the work of Miller and Cole (1998) and Richman, Wacker, Asmus, Casey, and Andelman (1999), pro-social verbal behavior was defined as (a) making statements of encouragement to a peer or adult (e.g., "good try," or "better luck next time"), (b) making statements of praise to a peer or adult (e.g., "nice job," "good work"), and (c) making statements of appreciation to a peer or adult (e.g., "thank you," "I really enjoyed this"). Also vital to pro-social verbal behavior is the manner in which words are spoken. According to Hughes (1999), a response is "scored appropriate if the volume, tone, and quality of voice, pitch, intensity, intonation, rate, and topic approximate standards established by social comparison to peers" (p. 44). For the observer to score a participant as having engaged in a pro-social verbal behavior, the participant needed to verbalize appropriate words and adhere to the guidelines established by Hughes during the observation time interval.

Pro-social physical behaviors. Based on Gunter, Shores, Jack, Denny, and DePaepe's (1994) work, pro-social physical behaviors were defined as "purposeful contact that displays affection (e.g., pats on the back, "high fives," or hand shakes) that is not . . . teasing or aggressive" (e.g., bear hugs, loud smacks on the back, missing a "high five," squeezing the other person's hand when shaking it) (p. 438).

Anti-social verbal behaviors. Anti-social verbal behaviors were defined based on suggestions by Zanolli, Dagget, Ortiz, and Mullins (1999), Harding, Wacker, Berg, Cooper, Asmus, Mlela, & Muller (1999), and Posavac, Sheridan, and Posavac (1999) and include (a) swearing (e.g., hell, damn, shit, asshole) (b) threatening physical harm to other participants (e.g., "I'm gonna beat the shit out of you" or "I'm gonna kick you I your face if you don't

get away from me"), and (c) calling peers names (e.g., "idiot," "moron," or "faggot").

Anti-social physical behaviors. Based on suggestions by Durand (1999), Richman et al. (1999), and Piazza, Bowman, Contrucci, Delia, Adelinis, and Goh (1999), anti-social physical behaviors were defined as making contact with another person without their permission by (a) hitting another individual or (b) pushing another individual. During the piloting of the observational recording system, participants primarily engaged in the above anti-social physical behaviors. While anti-social physical behaviors could include more concepts than the two listed, for purposes of this study, anti-social physical behaviors were only defined as hitting or pushing. These two behaviors were selected based on problems observed by the first author prior to initiation of data collection and confirmed by the classroom teacher.

Inter-Rater Reliability

Training. Two observers (primary and secondary) were given a verbal description and task analysis for each activity, were trained to recognize all participants by name, and were taught to recognize identified pro-social and anti-social behaviors. The primary observer recorded behaviors during every session while the secondary observer recorded behaviors to provide reliability data during 34% of the sessions. Both observers were trained in the behavioral recording procedure and asked to observe 20-minute segments of participants in the classroom and record behaviors on the behavioral recording forms according to the target definitions. The observers achieved proficiency when they achieved an 80% agreement of behaviors on three consecutive occasions (Dattilo & Hoge, 1999; Kazdin, 1982).

Observations. A potential threat to internal validity is instrumentation and observation (Dattilo et al., 2000). Over the course of time it is possible for the observer to drift in the interpretation of definitions within the study. To assess observer drift, reliability checks were conducted. Based on suggestions by Tawney and Gast (1984), inter-rater reliability data were collected on eleven separate occasions (34% of the conditions) (sessions #2, #3, #5, #10, #11, #12, #13, #16, #20, #23, and #32) with overall reliability of 91%. During B_2 (withdrawal), reliability data were not collected. Reliability scores were calculated using the point-by-point, nonoccurrence agreement, and occurrence agreement methods.

The point-by-point method was used to determine reliability between the primary observer and the secondary observer. This method was conducted by examining data from each observer, summing all instances where observers agreed, dividing that number by the sum of the number of agreements and the number of disagreements, and multiplying the quotient of those two numbers by 100 to calculate percent of agreement.

The nonoccurrence and occurrence methods were used to examine instances where behaviors occurred more than 75% of the time and less than 75% of the time, respectively. The nonoccurrence method examined only intervals where the observers viewed a nonoccurrence, while the occurrence method only examined intervals where the observers viewed an occurrence. These two methods allowed for the most conservative reliability scores on the basis of occurrence or nonoccurrence.

Procedural Reliability

Based on by Wolery and Holcombe (1993), procedural reliability data were collected across all conditions in the study. Overall procedural reliability across all conditions was 95%, and data were collected during the following sessions: #3, #6, #8, #9, #14, #16, #22, #23, #25, #26, and #30. Different procedural reliability forms existed for different study conditions and included criteria such as: (a) introducing the session, (b) explaining the activity, (c) handling of questions, (d) initiating the activity, (e) providing positive feedback, (f) asking concluding questions, (g) introduc-

ing the token economy, and (h) providing or removing tokens as necessary.

Social Validity

It is important that individuals other than the primary researcher validate aspects of the current study. As posited by Baer, Wolf, and Risley (1968), it is vital to examine "behaviors which are socially important, rather than convenient for study" (p. 92). Social validation data were collected on appropriateness of objectives, importance of intervention, and effectiveness of intervention (see Table 1).

Social appropriateness of objectives was assessed via Likert scale (range 1–5, more positive results associated with lower numbers) instruments completed by participants' parents, and teachers. Teachers rated and commented about the cooperative games component, the token economy intervention, and dependent measures. Mean scores for professionals' questionnaire on the intervention appropriateness (range 1.33–1.88) were all favorable toward the use of the intervention in context of cooperative games on the assigned dependent variables.

Parents were asked to provide feedback on the social importance of the program by completing an 11-item, five point Likert scale with one being the highest rating. The questionnaire assessed current behaviors of participants and whether those surveyed felt the need for similar continued programming. Parents' responses to the questions relating to importance varied but were mostly favorable with means between 1.4 and 3. The lowest score was related to their children mentioning some aspect of the program when at home and the highest scores were related to importance for children getting along with one another and the use of a token store to purchase items.

In response to questions relating to effectiveness of the intervention, parents' responses were less favorable than questions relating to importance (range 1.6–3). The lowest score was associated with parents feeling their children had not improved as a result of the program (M = 3), and the question most agreed with was in support of incorporating a program similar to the one used in this study into daily school programs.

Results

Pro-social Verbal Behaviors

Although data, as reported by mean scores, were variable during BC_1 and BC_2, there were immediate level changes with initiation of BC_1, B_2, and BC_2. Lower means were observed for B_1 and B_2 when compared to the higher scores of BC_1 and BC_2 and no overlap between these conditions existed. Therefore, during baseline and B_1, the group's pro-social verbal behaviors were low, with initiation of BC_1, these behaviors increased, when BC_1 was removed during B_2, behaviors returned to baseline levels and when the tokens were re-initiated in BC_2 behaviors again increased demonstrating replication of effects during baseline and intervention (see Figure 1). When observing each individual's scores, data points were found to mimic the group means with no obvious outliers.

Pro-social Physical Behaviors

Although data, reported as mean scores, were variable during BC_1 and BC_2, there were immediate level changes with initiation of BC_1, B_2, and BC_2 and lower means were observed for B_1 and B_2 when compared to the higher scores of BC_1 and BC_2 and low overlap between these conditions. Therefore, during A and B_1, the group's pro-social physical behaviors were low, with initiation of BC_1, these behaviors increased, when BC_1 was removed during B_2, behaviors returned to baseline levels and when the tokens were re-initiated in BC_2 behaviors again increased demonstrating replication of effects during baseline and intervention (see Figure 2). It is important to note that during BC_2 the group mean may not have presented an accurate picture of all participants. During this condition, Bill engaged in a total of two pro-social behaviors while John engaged in nine.

Table 1.
Social Validity Questions Asked and Mean Participant Responses

Appropriateness	Mean Scores
Objective 1: Use of cooperative games	1.33*
Objective 2: Use of a token economy system	1.83
Objective 3: Promoting pro-social behaviors	1.83
Objective 4: Reducing anti-social behaviors	1.83
Importance	
My child needs to be taught social skills.	2.6
Leisure/recreation is important in my child's life.	1.6
Leisure/recreation activities can teach my child how to behave better.	2.2
Providing rewards is a good way to teach my child social skills.	2.4
Having a store where my child can exchange his rewards for real items is effective.	1.4
My child could benefit from a program that uses games to teach social skills.	1.6
My child could benefit from a program that uses physical activity to teach social skills.	2.0
My child mentioned some aspect of this program at home.	3.0
It is important that my child have opportunities in school to play with other children his age.	1.6
It is important that my child learn how to get along with other children.	1.4
Effectiveness	
My child acts in a more socially acceptable manner after this program.	3.0
My child learned social skills as a result of this program.	2.6
Leisure/recreation is more a part of my child's life now.	2.6
Leisure/recreation activities taught my child how to behave better.	3.2
My child gets along with his friends better now as a result of this program.	2.6
I will try to provide rewards to continue to teach my child social skills.	1.8
My child benefited from this program.	2.4
My child mentioned some aspect of this program when at home.	2.6
My child is better behaved when at home.	2.8
Given the opportunity I would have my child participate in a program similar to this if it were offered.	1.8
I would like the psycho-educational center to incorporate this type of a program into the everyday schedule at the school.	1.6

*based on a 5 point Likert Scale (1 = Strongly Agree and 5 = strongly disagree).

Anti-social Verbal Behaviors

Although data, reported as mean scores, were stable during BC_1 they became variable during BC_2, there were no immediate level changes associated with condition changes and higher means were observed for B_1 and B_2 when compared to lower scores of BC_1 and BC_2. Therefore, during A and B_1, the group's

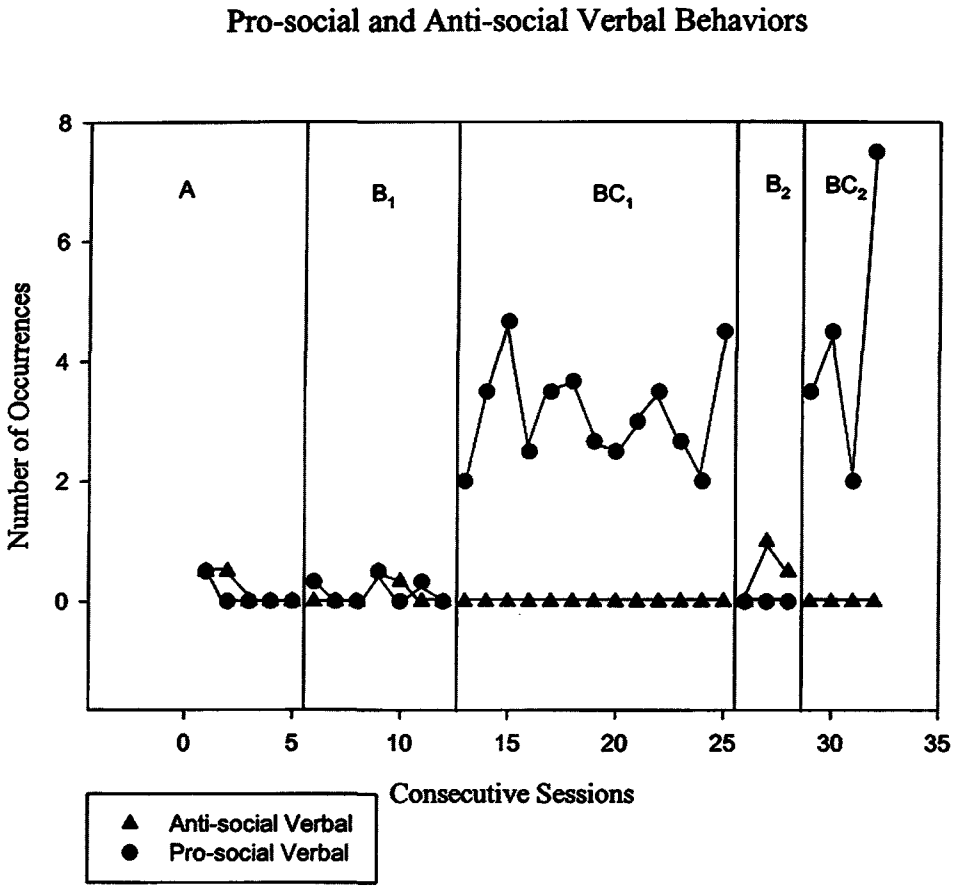

FIGURE 1. MEAN NUMBER OF PRO-SOCIAL AND ANTI-SOCIAL VERBAL BEHAVIORS OF THREE ADOLESCENTS WITH E/BD.

anti-social verbal behaviors were higher, with initiation of BC_1, these behaviors decreased, when BC_1 was removed during B_2, behaviors returned to baseline levels and when the tokens were re-initiated in BC_2 behaviors again decreased demonstrating replication of effects during baseline and intervention (see Figure 1). Anti-social verbal behaviors were virtually non-existent.

Anti-social Physical Behaviors

Although data, reported as mean scores, were variable during A and B_1, no immediate level changes were observed with initiation of BC_1, B_2, and BC_2. Therefore, during baseline, the group's anti-social physical behaviors were high, with initiation of B_1, these behaviors increased, when BC_1 was initiated, anti-social behaviors dropped to zero and remained there during BC_1, B_2, and BC_2 demonstrating that replication of effects did not occur during baseline and intervention (see Figure 2). Anti-social physical behaviors occurred more frequently during B_1 than any other condition. It should be noted that during this condition, Bill did not engage in any anti-social physical behaviors.

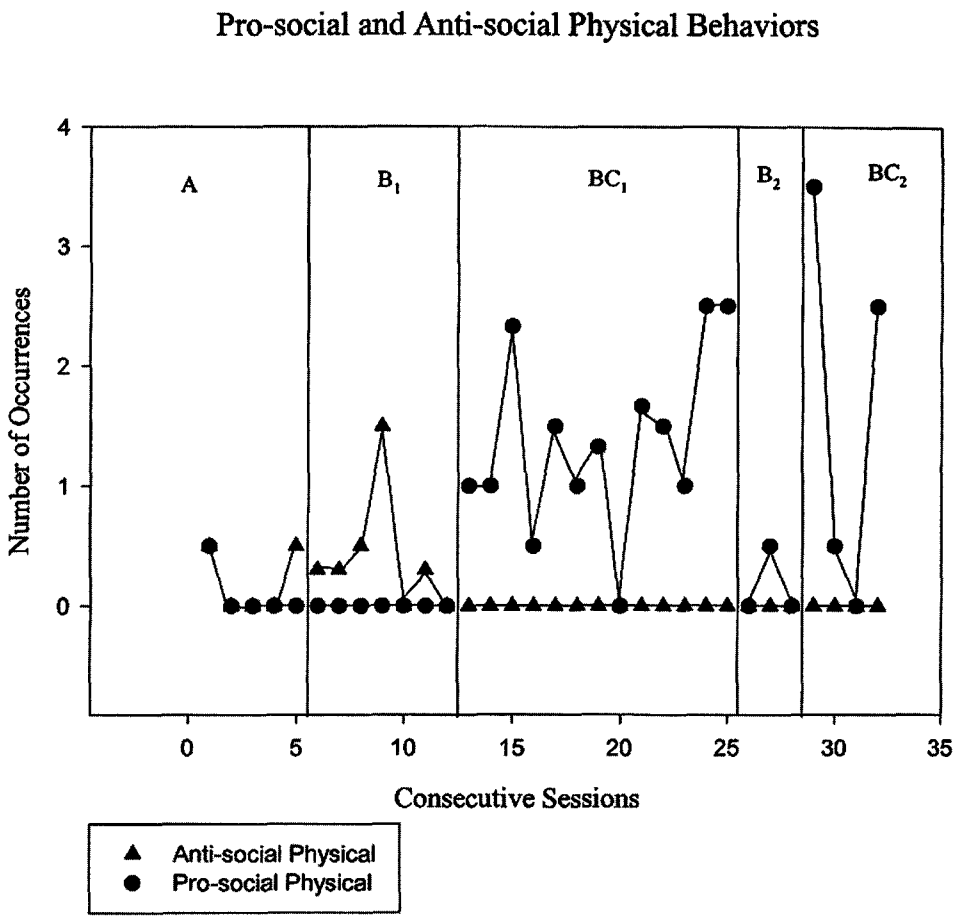

FIGURE 2. MEAN NUMBER OF PRO-SOCIAL AND ANTI-SOCIAL PHYSICAL BEHAVIORS OF THREE ADOLESCENTS WITH E/BD.

Limitations

Participants were observed for 10 15-second intervals each session for a total of 150 seconds of actual observation time. When compared to the remainder of the participants' school day, this is a very small period of time. Caution is advised when attempting to generalize these results due to the limited duration of observation.

During withdrawal of the token economy (B_2), the primary observer was unable to attend two of three sessions. To complete data collection before the end of the school year, the secondary observer recorded behaviors for these sessions. While inter-rater reliability was previously established at 90%, this inconsistency in observers is a concern, especially since inter-rater agreement could not be examined for B_2.

The study was initially designed to phase out the intervention during the final condition using a series of variable ratio schedules of reinforcement; however, this did not occur due to time constraints. As a result, the token

system was abruptly terminated when the school year ended. However, findings were shared with the classroom teacher and suggestions provided on ways to improve the behavior of students in the classroom.

Implications for Research

Findings of this study are consistent with previous research demonstrating positive effects of token economies. Results demonstrated that pro-social verbal and physical behaviors increased with initiation of a token economy system in the context of cooperative games.

Due to the complexities of the dependent variables and participants' behaviors, observations using a video recorder are advised. The current research is potentially limited by the use of in vivo observations as opposed to video taping interactions during data collection. The design was used for its simplicity of replication for classroom teachers and due to restrictions placed on videotaping by the school district; however, videotaping sessions rather than relying on in vivo observations would permit a more thorough examination of dependent variables. In addition, observing participants for longer periods of time in different settings would help to obtain a more thorough sampling of participant behaviors.

Murphy, Hutchinson, and Bailey (1983) suggested that it is important to demonstrate that decreases in incidents of inappropriate behaviors during an intervention are not a result of increased contact between adults and participants. During baseline the researcher did not interact with participants; he stood off to the side with the primary and secondary observers. When the cooperative games intervention began, the instructor interacted with participants while data were collected. However, contrary to concerns of Murphy et al., during this condition behaviors did not change. Since behaviors did not change between baseline and the cooperative games intervention and behaviors were similar during all conditions that did not employ a token economy system, support was provided that simply the interaction of the instructor with participants during cooperative games did not influence behaviors as much as the initiation of the token economy. Therefore, the researcher interacted with participants during four of the conditions including the reversal conditions.

Decisions to move to the next experimental condition were based on group scores. Bluechardt and Shephard (1995) suggested the need for individualized research to explore differences that are lost when performing statistical computations on an aggregate. Because effects of the intervention varied slightly across the group, future researchers might accentuate individualized analysis to learn more about how interventions such as the one implemented in this study influence individual behaviors.

When working with youth with E/BD, there is debate concerning teaching individuals new social skills versus encouraging them to exhibit previously acquired social skills (Miller & Cole, 1998). In the current research, since participants possessed the skills necessary to engage in pro-social behaviors, they were rewarded for demonstrating these behaviors. Continued examination of programs designed to teach *and* reward social skills is warranted. Determining methods to teach new social skills as well as reward demonstration of previously learned skills is important.

Implications for Practice

If practitioners are to use an intervention, it must be simple enough for them to implement within the confines of their day (Phillips et al., 1997). In the classroom where the study was conducted there was a token economy system in place; however, according to the teacher, the existing system was not effective. The intervention developed for this study involved facilitation by two people and could have been implemented by one facilitator. TR specialists could implement a token economy system where rewards are distributed to participants (as in the current research) and collected and totaled at pre-determined times. In addition, it was necessary to provide back-up reinforcers

to participants that were effective, meaningful, and age appropriate (Maag, 1999), but these back-up reinforcers were not limited to store-bought items. Classroom privileges served as effective back-up reinforcers (Hail, 2000). Therefore, the intervention was simple enough to be conducted by one person, inexpensive enough to fit within the school budget and powerful enough to change behaviors.

Authors (e.g., Loy & Dattilo, 2000; Quinn et al., 1999) have discussed the importance of combining interventions such as a social skills training program or cooperative games program with behavior management programs. Behavior management programs "in which specific behaviors are identified, defined precisely, and changed using interventions based on principles of applied behavior analysis" (Maag, 1999, p. 536) are used in many settings. TR specialists may find that using a systematic reinforcement system (e.g., a token economy as detailed by Dattilo & Murphy, 1987) can help them achieve desired client outcomes.

During behavior observations in the current study a trend was noticed in the token economy and cooperative games conditions—pro-social behaviors were exhibited in direct proportion to the proximity of the first author to the participant. For instance, if the group was standing in a circle working on a project, pro-social comments and actions were engaged in at a higher rate by participants nearest the first author. As the first author moved around the circle, pro-social behaviors ceased by those farthest from him and increased by those now closest to him. A concern voiced by a teacher was that participants may not be learning behaviors but simply learning how to receive rewards. One method to help increase the chance that participants learn the pro-social behaviors is to change the reward system from a fixed ratio exchange of one token for one pro-social behavior to a variable ratio of exchange (e.g., one token for two, four, or eight pro-social behaviors). Due to time constraints in this study, this system of withdraw was not used and participants continued to receive one token for every pro-social behavior until the study ended. If practitioners attempt to use a token economy system to change behaviors permanently, implementation of a fading system should help to produce this result.

Another implication of the findings of this study relates to the use of cooperative games as opposed to competitive games when attempting to teach social skills. Roberts and Treasure (1992) suggested that competitive games fostered the importance of defeating an opponent while cooperative games provided an opportunity for socialization, sharing, and taking turns (Ramsey & Rank, 1997). When TR specialists develop activities for their participants with emotional and/or behavioral disorders, they may consider the advantages of using cooperative games when developing strategies to encourage pro-social behaviors and promote friendships (Dattilo, 2002).

Conclusion

Adolescents with E/BD are characterized as experiencing problems with demonstration of social skills. Because traditional competitive games can lead to increased aggressive behaviors (Anderson & Morrow, 1995; Marlowe, 1979), cooperative games offer an alternative method of play. However, simply providing cooperative games does not appear to be sufficient when attempting to increase pro-social behaviors and decrease anti-social behaviors (Loy & Dattilo, 2000; Quinn et al., 1999). Therefore, a token economy system in the context of cooperative games was examined in this study and this intervention was associated with an increase in pro-social behaviors and low levels of anti-social behaviors.

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