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No Teacher Left Behind: Educating Students with ASD and ADHD in the Inclusion Classroom

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The purpose of the present study was to evaluate the effects of a token economy on on-task behaviors by two seventh grade boys with varying disabilities within a public school inclusion classroom setting. At the end of the study, the participant identified with ASD increased his on-task behaviors approximately 52%. The participant identified with ADHD increased about 59% and decreased an average of 3.3 talk-outs per minute, although there were environmental limitations that impacted the design and confounded the ability to determine an educational effect. One specific limitation was the lack of support for the general education teacher to influence the learning environment to be conducive for the students who required more structure than the curriculum typically provided. It is likely that increased support from the administration to provide training and collaboration with special educators for general education teachers would have increased the on-task behavior and participation of both participants.

Keywords: teacher training, inclusion classroom, token economy, behaviorism, ASD, ADHD

If the goal of education is to teach students the skills they need to succeed in the world beyond the classroom, then teachers must consider the importance of explicitly teaching students social, behavioral, and organizational skills in addition to academic instruction. In any school setting, the ability to follow directions and to complete requested tasks without disrupting others is crucial to academic success (Alberto & Troutman, 2009; Bender & Mathes, 1995; Carbone, 2001; Malott, 2008).

For students with disabilities, explicit instruction in these skills is especially crucial. Students with disabilities are suspended at twice the rate as typically developing students every year, and since 1970 the average rate of suspension for all students has doubled (Losen & Gillespie, 2012), indicating that they are not learning the skills they need to function in society. In 2009, 8.1% of American citizens between the ages of 16 and 24, or 3 million students, had dropped out of high school (Chapman, Laird, Ifill, & KewalRamani, 2011).

Educational theorists Sagor and Cox (2004) have identified that discouraged learners who ultimately drop out typically display low self-confidence, task avoidance, distrust of adults, limited notion of the future, self concept as *dumb* rather than unskilled, peer relationships that are either inadequate or frowned upon by adults, impatience with routine and sitting still, and ignorance of the relationship between effort and achievement. Although learning strategies to navigate the social and behavioral aspects of a school day would mitigate many of these perceived failures, research shows that many teachers lessen expectations of students with disabilities mainstreamed into general education, rather than modifying to address individual needs (Moores-Abdool, 2010). Many secondary social studies and science teachers, which was the setting in which this case study occurred, defined access to general curriculum for students with IEPs as being able to use the same curriculum as typically developing students, whereas special education teachers defined access as use of the general curriculum adapted and tailored to student needs in order to develop life skills. General education teachers typically relied on reducing cognitive and reading demands as accommodations for students with IEPs, but such allowances occurred only 17.6% of the time. Additionally, it was determined that seventh grade general education teachers differentiated classroom instruction to assist students with IEPs 23% of the time. Santoli, Sachs, Romey, & McClurg (2008) furthermore revealed that almost 77% of teachers believe that students with behavioral disorders cannot be served in general education classrooms, but that 53% of general education teachers collaborate with special educators to develop behavioral management plans. Additional studies indicate that general education teachers rely almost exclusively on whole-class instruction, which is ineffective for many students with disabilities, but also report that teachers have not been trained in differentiation strategies (Avramidis, Bayliss, & Burden, 2010; Clampit, Holifield, & Nichols, 2004; Santoli, Sachs, Romey, & McClurg, 2008; Scruggs, Mastropieri, & McDuffie, 2007).

Autism spectrum disorder (ASD) and attention deficit hyperactivity disorder (ADHD) can inhibit a student's ability to acquire new skills presented in an academic environment (Barkley, 2006; Dunlap, 2009; Heward, 2013; Mesibov & Shea, 1996) and include disruptive behaviors that often cause teachers to isolate students who display them (Salend & Duhaney, 1999; Santoli, Sachs, Romey, & McClurg, 2008). Students with ASD often have difficulty processing sensory stimuli, integrating academic ideas with their daily relevancies, and adapting to unpredictable schedules, which impact their ability to stay on-task in a classroom (Heward, 2013; Mesibov & Shea, 1996). Characteristics of students with ADHD that most affect ability to stay on-task in a classroom are difficulties with attention span, impulsivity, disorganization, and distraction (Barkley, 2006; Carbone, 2001; Reiber & McLaughlin, 2004).

Students who lack on-task skills often struggle in inclusion classrooms not geared to accommodate individual learning needs, but can succeed if teachers modify classroom procedures to incorporate effective strategies, such as a token economy (Clampit, Holifield, & Nichols, 2004; Kilanowski-Press, Foote, & Rinaldo, 2010; Scruggs, Mastropieri, & McDuffie, 2007; Volonino & Zigmond, 2007). Researchers suggest that the reasons token economies are so effective include: reward of token follows the desired behavior immediately and so is more directly reinforcing for the student, tokens offer a tangible or visual record of appropriate behavior, and tokens show progress toward earning consequences as

well as break up larger consequences into more frequent smaller consequences. Token economies can be free, based on tally marks and rewarded with activities in accordance with the Premack Principle, which fits well with the budget constraints of many inclusion classrooms (Azrin, Vinas, & Ehle, 2007; McLaughlin & Williams, 1988; Salend & Duhaney, 1999). Examples include: free time, extracurricular activities, lunch accommodations, social privileges, or another activity suggested by the student. Furthermore, the implementation of a token economy is low maintenance and does not need to interrupt the teacher's ability to teach and interact with other students, while still providing a necessary accommodation for students with the need for more extensive structure (Alberto & Troutman, 2009; Bender & Mathes, 1995; Carbone, 2001; Naughton & McLaughlin, 1995; Salend & Duhaney, 1999). Token economies provide a child with visual reminders of the behaviors expected of him and include a self-management component that many researchers recommend (Bender & Mathes, 1995; McLaughlin & Williams, 1988; Reiber & McLaughlin, 2004). Some critics claim that the extrinsic reward system of a token economy denies the intrinsic motivation children should foster for learning, but if one considers the inherent response costs of society—such as salaries and legal consequences—as well as the current failure rate of students, it is worth considering that extrinsic strategies should be considered if the research supports their effectiveness (Alberto & Troutman, 2009; Epstein, 1982; Kohn, 1999; Skinner, 1953).

Despite data-driven strategies like the token economy that are easy to implement, many teachers reported that they can be intimidated by students needing specific accommodations and frustrated by the disruption that they cause, sometimes leading to resentment of inclusion for children with ASD and ADHD (Avramidis, Bayliss, & Burden, 2010; Clampit, Holifield, & Nichols, 2004; Salend & Duhaney, 1999; Santoli, Sachs, Romey, & McClurg, 2008; Scruggs, Mastropieri, & McDuffie, 2007). Yet students with ASD and ADHD continue to be mainstreamed due to political mandates included in IDEA for placements in LRE that are vague, open to interpretation, and often abused by school districts (Clampit, Holifield, & Nichols, 2007; Costley, 2013; Kilanowski-Press, Foote, & Rinaldo, 2010). The No Child Left Behind Act of 2002 required that all students must be taught by the most highly qualified teacher, which many school districts interpreted to emphasize content over strategy (Kilanowski-Press, Foote, & Rinaldo, 2010). This strong political influence, unsupported by data-driven research, has motivated many schools to implement a building-wide inclusion model, emphasizing where special education should occur rather than techniques that succeed in teaching students with special needs (Volonino & Zigmond, 2007), and claiming that social benefits for students with disabilities will positively impact other skill areas and that general education students will learn tolerance, leading toward a more equal society (Clampit, Holifield, & Nichols, 2004; Kilanowski-Press, Foote, & Rinaldo, 2010; Mesibov & Shea, 1996; Scruggs, Mastropieri, & McDuffie, 2007; Volonino & Zigmond, 2007). Politicians who encourage it are lauded for respecting the right of all students to learn with high expectations, regardless of ability, and for promoting diversity (Avramidis, Bayliss, & Burden, 2010; Kohn, 1999; Volonino & Zigmond, 2007). Although some studies show that inclusion programs can be considered effective for approximately half of students with disabilities, others reveal that the average achievement score for these

students is in the lowest quartile (Volonino & Zigmond, 2007).

The political influence on policy and school economics toward inclusion has arguably interfered with the ability of teachers to fulfill FAPE for students with disabilities, especially in areas where socio-economic status is lower than average (Clampit, Holifield, & Nichols, 2004; Volonino & Zigmond, 2007), such as the setting where the current study was conducted. Furthermore, studies since 1989 have consistently shown that there is little data on student outcomes to support inclusion, while teachers have over-whelmingly reported that it has minimal impact on the academic and behavioral skill levels of students with disabilities and is difficult to implement without more support and training (Clampit, Holifield, & Nichols, 2004; Kilanowski-Press, Foote, & Rinaldo, 2010; Scruggs, Mastropieri, & McDuffie, 2007; Volonino & Zigmond, 2007). In 1994, the American Federation of Teachers called for an end of "full inclusion" practices that do not consider the individual abilities and benefits of each student to perform in a general education setting (Clampit, Holifield, & Nichols, 2004). Proponents of full inclusion may envision a more equal society, but without providing general education teachers with strategies to manage an ability-diverse class, inclusive classrooms create only frustration for teachers and students alike (Clampit, Holifield, & Nichols, 2004; Costley, 2013; Salend & Duhaney, 1999; Vaughn & Klingner, 1998). If politicians and educators can work together to evaluate effective teaching strategies for students with disabilities and provide the necessary training to implement them successfully, then it is possible that students who have been taught appropriate social, behavioral, organizational, *and* aca-demic skills will cease to become drop-out and suspension statistics. Instead these students will have more choices available to them to participate productively in society. Behaviorist Albert Bandura, in fact, presents a whole new concept of democracy in which it is "defined in terms of the number of options available to people and the right to exercise them" (1976, p. 865).

With this understanding, a teacher's job can be seen as providing students with the strategies needed to procure for themselves the ability to exercise the options available in life. If a child demonstrates through inadequate grades or inappropriate behavior that he is unable to benefit from the curriculum in a general education setting, it is not only a legal responsibility for the teachers to provide services that enable the student to engage in as many environments as possible, but also a responsibility necessary to support the ultimate goal of education. Strategies that give more inten-sive support to the students who need it should be included in teacher training so that teachers can better equip those students to have an equitable chance at succeeding as adults.

The purpose of the present study was to evaluate the effects of a token economy with a contingency contract on on-task behaviors by two seventh grade boys with ASD or ADHD within a public school inclusion classroom setting and to extend the research base of McLaughlin and other researchers regarding token economies (Azrin et al., 2007; Bender & Mathes, 1995; Gurrad, Weber, & McLaughlin, 2002; Klimas & McLaughlin, 2007; McLaughlin & Williams, 1988; Naughton & McLaughlin, 1995; Reiber & McLaughlin, 2004; Salend & Duhaney, 1999; Thompson, McLaughlin, & Derby, 2011). This paper also provides alternative considerations for treatment failure and links to improve personal freedom.

Method

Participants and Setting

The participants were two seventh-grade boys who had IEPs for behavior and academic goals, and who received free and reduced lunch. Both participants were selected by their special education case manager because of their high rate of off-task behaviors and talk-outs, which were incompatible with completing assignments in a classroom setting. Improving on-task behavior was deemed a critical skill for the participants to graduate from high school, as well as succeed in post-school endeavors like maintaining a job.

"Erik," was on the high-functioning end of the autism spectrum, according to his current IEP. When a teacher asked him to complete a task, he would repeat the phrase, "I don't understand," and sometimes would say, "I have Asberger's; you can't make me do it." If a teacher insisted he do a task, he often demonstrated aggressive outbursts including yelling and throwing papers. In addition to ASD, Erik was taking medications for ADHD and anxiety. Although the first author did not witness the symptoms of ADHD in his behavior, ADHD and anxiety disorders are frequently, if contentiously, diagnosed as comorbid with ASD (Sinzig, Walter, & Doepfner, 2009; van Steensel, Bögels, & Perrin, 2011).

"Scott," was diagnosed with ADHD, and had been on medication until three months prior to the present study. Because of a change in custody, access to his medical records was in flux and he could not access his medication. In addition to ADHD, he had IEP goals for written language and occupational therapy. His special education case manager noted that when he was able to sit through a whole test, his scores were high. Scott was frequently removed from class by his teachers for being disruptive in class an average of two to four times daily.

This study took place in a seventh grade classroom at a public middle school in the Pacific Northwest. The first author worked with each participant individually in a general education seventh grade science lab, with approximately thirty students in attendance for each period. There were many visual stimuli varying from colorful posters to experiment stations and audio stimulus of social middle school students arranged in table groups of two to six students. The first author sat at the table group where each participant sat, with one to three other students, and provided one-on-one aid except during recording times. In addition to the general education science teacher, the case manager was sometimes present to provide extra assistance for the 5-7 students in the classroom who had IEPs.

Materials

In implementing a token economy, the first author used index cards and colored markers. She purchased four songs on iTunes and a basketball for Scott's rewards and a magazine from which Erik could copy cars when drawing as his reward. These rewards were of minimal cost to the first author; they did not exceed $25 dollars. In addition, the first author used the Chronology iPhone app ($2.99) to measure the intervals of each session (Chronology, 3.0.1)

Dependent Variable

Two dependent variables were measured in determining acceptable and disruptive behavior. The ability to follow directions given, hereafter referred to as on-task behavior, was the first response class. On-task behavior was defined as having one's notebook open to the proper page. Depending on the teacher's instruction, the participant was also expected to keep his eyes focused in the direction of the notebook or the projection screen, and to write notes in the designated area of his notebook. Because of the internal nature of learning, if the participant engaged in any of these behaviors typically considered as on-task, then the interval was counted as on-task. If

any of these behaviors was neglected, the participant was considered off-task. Because of the design of 5-minute recording sessions at the beginning and end of the class period, the first author was able to observe each participant with exclusive attention to minimize the possibility that he was off-task when she was attending to other students.

The second response class was talk-outs. A talk-out was considered any verbalization that was not in response to an instructor or a classmate, or that was irrelevant to the task to be done. Talk-outs included profanities, interjections to oneself, and insults to other students, laughter, and mouthing to other students. A single verbalization was considered anything said within a single breath, or if the sounds were separated by less than 2 seconds. Permission to speak, in response to an instructor, was considered either acknowledgement after the participant raised his hand or a direct statement to the participant. If in response to a classmate, the topic had to be relevant to the classroom task.

Data Collection and Inter-observer Agreement

Data were collected during the first or last 5 minutes that the participant was in class. The first author stood in the back of the classroom, with a clear view of the participant's mouth and eyes, and started the Chronology iPhone timer app to record data. One timer looped every ten seconds and the second counted down each 5-minute session. The response class of on-task behavior was measured using a 10-second whole interval recording system, indicating that if the student varied from the task at hand at all during a 10-second period, the whole period was counted as off-task. Talk-outs were measured through a frequency count per minute where the first author recorded each talk-out made by the participant during the recording session. Both response classes were recorded on the same data sheet (see Appendix A).

Because of the different rates of behaviors between participants, the first author used different recording methods for each. Erik's behaviors, which were lower, were recorded as number of talk-outs and percentage of time spent on-task.

The first author recorded the behaviors of Scott, who demonstrated more disruptive talk-outs and was frequently removed from the classroom during data collection sessions, as talk-outs per minute and percentage of time spent on-task per minute, in order to accurately represent the behaviors for the time she was able to record them in the classroom.

The case manager or another adult trained in data collection methods collected inter-observer agreement data with the first author approximately every sixth session, or five sessions per participant. She stood next to the first author in order to use simultaneous interval times, but both collectors scored their data independently. After each reliability session, the observers sat down together and calculated the percentage of agreement.

For the first response class of talk-outs, the observers used a frequency ratio where they divided the smaller total of talk-outs marked by the larger total of talk-outs, and multiplied by 100. Mean agreement was 87.5% for Erik's talk-outs and 69.8% for Scott's talk-outs (range for both participants: 0.0%- 95.7%).

For the second response class of on-task behavior, the observers used a total interval ratio where they divided the number of intervals that they agreed on the participant's behavior by the total number of intervals for which the participant was observed, and multiplied by 100. Mean agreement was 87.2% for Erik's on-task behavior and 83.2% for Scott's on-task behavior (range for both participants: 63.0%

- 100.0%). The low percentage of agreement between observers is discussed later.

When the case manager was unable to be in the classroom with the first author, another adult collected reliability data. Mean agreement for talk-outs was not collected, but mean agreement for on-task behaviors was 96.7% (range: 95%- 100%).

Experimental Design

The first author implemented a single-subject reversal design (Kazdin, 2011) to evaluate the effects of a token economy on on-task behavior and talk-outs. During baseline, the participants received no instruction from the first author. Once a trend of three consistent data points became apparent, the first author began intervention. When a trend was reached in intervention, the first author withdrew the token economy to assess the functionality of improved behavior to the procedure. After the correlation was clear, the first author reintroduced the token economy to strengthen the on-task and quiet behaviors.

Baseline. During baseline, the first author stood in the back of the classroom where she could clearly see the participant's mouth and eyes to record data. Between recording sessions, she sat at the table group with each participant to establish rapport and assist with assignments by redirecting him and answering his questions. If either of the participants ignored or reacted negatively to redirection, the first author was required to be silent and allow the off-task behavior to run its course.

While baseline was being collected, the classroom procedures continued as usual. The teacher stood at the front of the classroom and lectured out of the notebook readings or filled in guided notes with the whole class. She prepared modified notes with less writing for both participants, as well as accommodated homework assignments, based on how many of the notes they had successfully copied. The teacher mostly ignored the off-task behaviors of the participants, unless they were distracting to their peers, in which case she would reprimand them or remove them from the classroom.

Token economy. Once baseline had ended, the first author told the participants that they would be rewarded with tallies whenever she noticed that they were quiet and on-task. She asked them toward what type of potential reinforcer they would like to earn with tallies and, once a reward had been determined, how many tallies they thought it should be worth. After the participants stated their ideas, the first author negotiated with them for a reward system she thought would likely be reinforcing and practical, based on her observations of their behaviors during baseline. The participants both initially suggested higher rates of behavior for each tally, but as the goal was to increase the frequency of those behaviors and then reduce the frequency of reinforcement toward generalization, the first author negotiated for more attainable lower rates. Erik earned one minute of drawing in the hall for every five tallies and one minute reading a car magazine from which to copy car designs while drawing for every 14 tallies. Scott earned two minutes of listening to music for every five tallies and five minutes of playing basketball with the first author for every 12 tallies. Tallies were accumulated until the larger reward had been earned, and then were reset. For example, it typically took Scott two class periods to earn music and five or six classes to earn basketball. During those six classes, Scott would listen to music three times. The use of tallies was for the participants' benefit to visually remind them of their goals and reward their efforts, and was not recorded as data by the researcher. The first author chose to use tallies as tokens in accordance with research done by

McLaughlin and Williams (1988), who suggested that tallies are easy to administer to students, impossible for other students to steal, and have relative value that is easy to understand.

While the classroom procedures continued from the general education teacher's perspective, the first author placed an index card with each participant's name on the top of it in the corner of each participant's desk where he could clearly see the accumulation of tallies but did not need to move from his seat or assume responsibility for recording tallies, as suggested by Naughton and McLaughlin (1995) in order to avoid disrupting the participant's attention. Tallies accumulated throughout all sessions of intervention. Approximately every 5 minutes of the class, the first author marked a tally on the index card with a colored marker if the participant had stayed on-task *and* refrained from talking out (see Appendix B). The first author, however, was able to observe the behaviors of the participants while working with other students and casually walk by their desks approximately every 5 minutes to reward them a tally.

When an interval was broken by off-task behavior or a talk-out, the first author verbally redirected the participant and reminded him of the expected behavior. When the first author began using the token economy with Scott, she initially rewarded tallies for every designated whole interval of approximately 5 minutes, but if Scott broke an interval, he had to wait until the interval lapsed to begin earning a new tally. At Session 18, tally earning was changed so that whenever either participant broke an interval, the next interval began immediately in order to maximize the amount of possible reinforcement. When the first author implemented the token economy with Erik, she immediately used the rolling interval schedule.

The first author frequently changed the color of the marker to discourage the participants from trying to cheat and add their own tallies, and coupled each tally with a short specific praise statement to immediately reward the behavior. Because the first author moved around the classroom to answer student questions and provide more immediate feedback to all of the students with IEPs, the other students were used to her momentary presence at the participants' desks. By maintaining an unobtrusive method for keeping track of tallies that the participant could see, but did not interrupt other students, the first author was able to demonstrate the efficiency of token economies in a general education classroom.

Token economy + contingency contract (CC). When the first author noticed the amount of response variability in Scott's performance, she talked to him before Session 18 and signed a contingency contract that would make him more aware of his behavioral expectations (see Appendix C). The contin-gency contract stated the behavioral ex-pectations of the participants and the cost of the rewards. It also included a provision that the participants would not tell the first author, or other teacher, when they had earned a tally. When the first author began intervention with Erik, she immediately used the contingency contract with the token economy. After signing the contingency contracts, the first author kept them in her files and showed them to the participants when she redirected them, where they had signed that they agreed to the expectations. The token economy remained the same as previously described. The addition of the contingency contract framed the expec-tations of the participants by their general education teacher- to pay attention quietly- in positive terms. Although the first author recorded the number of talk-outs during the 5-minute data

sessions, the participants understood that they were rewarded for being quiet and on-task. In this way, the first author was able to take more accurate data while still emphasizing desired behaviors with the participants.

Return to baseline. After Erik showed consistent improvement in his on-task behavior using the token economy and contingency contract, the first author removed the index card from his desk and told him that she could not reward him with tallies until she replaced the card. Once a functional trend between his behavior and the invention was proven, she re-implemented the token economy with the same conditions as described previously.

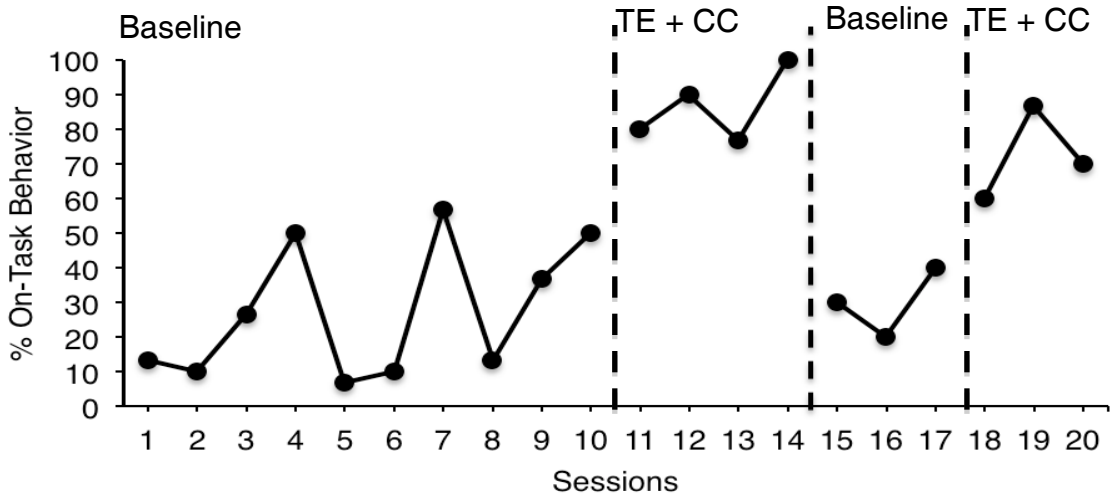
Results

Erik

Erik's on-task behavior is shown in Figure 1. His talk-outs are shown in Figure 2.

Figure 1.

Erik's on-task behavior during baseline and the token economy and contingency contract (TE + CC) implementation. Each session represents the first or last 5 minutes of the period, and does not reflect the number of tallies earned during the whole period.



Baseline. Erik displayed on-task behavior 24.8% of the time, with significant response variability between sessions. His number of talk-outs averaged 2.7 per session, also with a wide variance between sessions.

Token economy + contingency contract (CC). When the first author began using the token economy and contingency contract, Erik's mean performance increased to 86.7% (range: 76.7% – 100%).

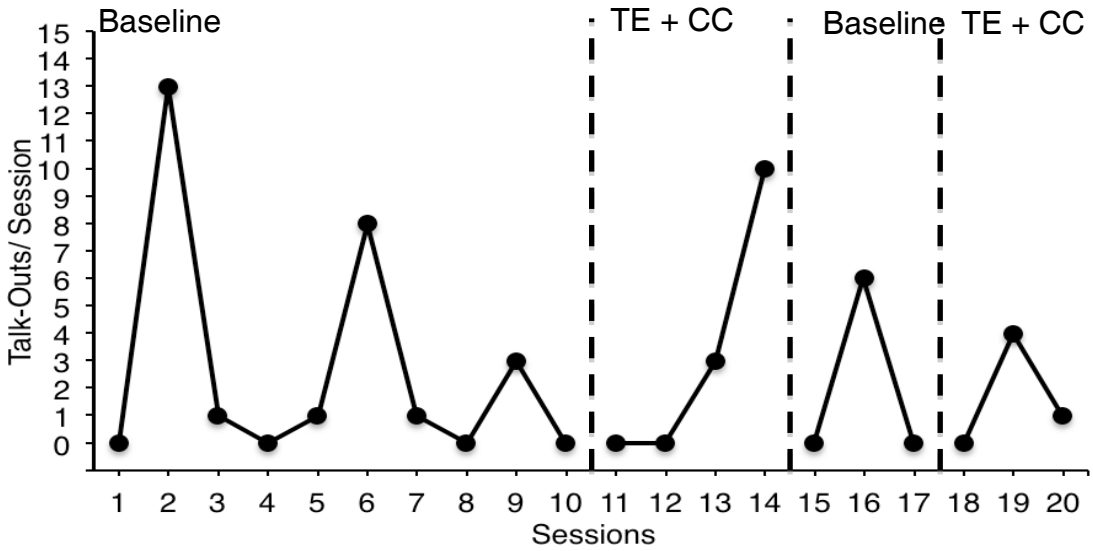
Return to baseline. When the token economy was removed and a return to baseline was implemented, Erik's average on-task behavior dropped to 30.0% (range: 20.0% - 40.0%). He talked out approximately 2 times per session (range: 0 – 6).

Return to token economy + CC. When the first author reinstated the token economy, his mean on-task performance was 72.2% (range: 60.0% - 86.7%).

Regarding Erik's talk-outs, the token economy and contingency contract had a negligible effect, as his talk-outs ranged from 0-4 when the intervention was re-

implemented, which was comparable to baseline, and averaged 1.25 talk-outs per session, or 1.45 less comments than during baseline. When it was first implemented, talk-outs averaged 3.25, and were on an upward trend, though not outside of the response variability seen in baseline (see Figure 2).

Figure 2.
Erik's talk-outs during baseline and the token economy and contingency contract (TE + CC) implementation. Each session represents the first or last 5 minutes of the period, and does not reflect the number of tallies earned during the whole period.



Scott

Scott's on-task behavior is shown in Figure 3. Scott's talk-outs are shown in Figure 4. Because the authors noticed his on-task behavior trends altered depending on the time of day when data was recorded, Figure 3 included differentiated lines during the first 5 minutes and last 5 minutes of the period.

Figure 3.
Scott's on-task behavior during baseline, token economy, and token economy and contingency contract. The round markers indicate sessions during the first 5 minutes of the period, and the square markers indicate sessions during the last 5 minutes of the period. Response variability that may have impacted the efficiency of the data include: different schedules and movies (Session 5), seat changes (Sessions 11 and 22), small group work (Session 12), substitute teachers (Sessions 6, 15, 16, 17, and 18), and a counter effect of the first author's impending absence from the class (Session 27).

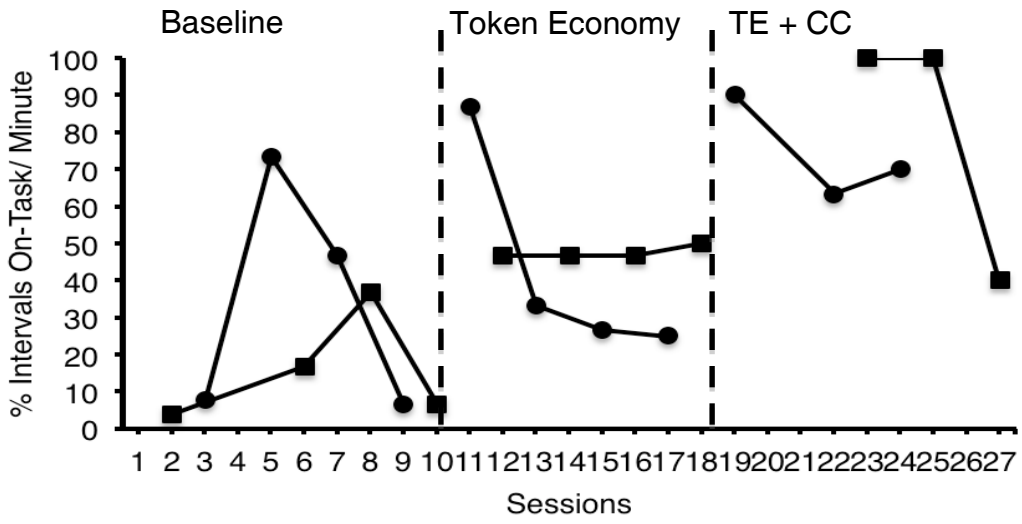
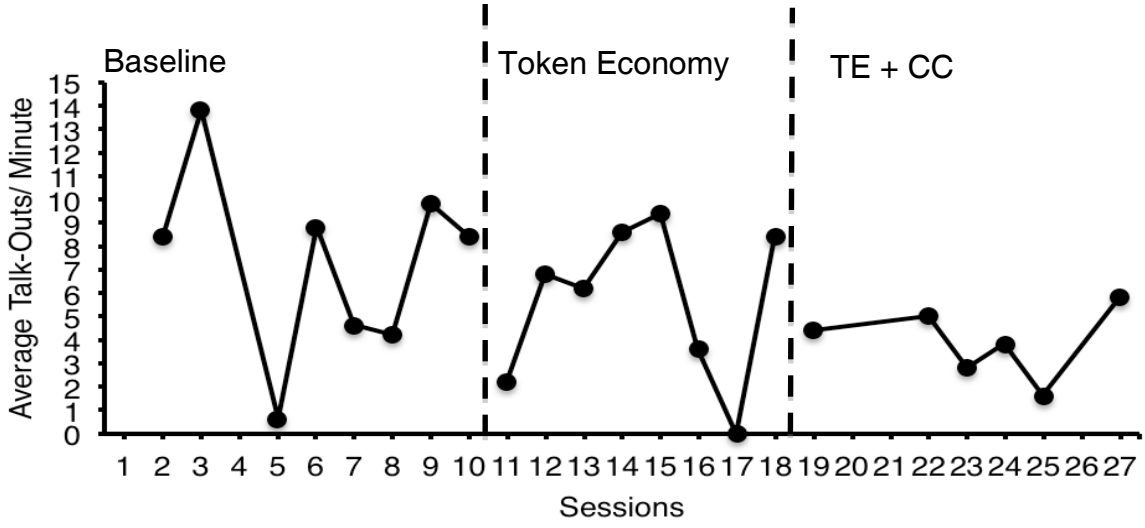


Figure 4.
Scott's talk-outs per minute during baseline, token economy, and token economy and contingency contract (TE + CC). Each session represents the first or last 5 minutes of the period, and does not reflect the number of tallies earned during the whole period. Response variability that may have impacted the efficiency of the data include: different schedules and movies (Session 5), seat changes (Sessions 11 and 22), small group work (Session 12), substitute teachers (Sessions 6, 15, 16, 17, and 18), and a counter effect of the first author's impending absence from the class (Session 27).



Baseline. During baseline Scott displayed on-task behavior only 17.9% of the time (range: 3.8% – 46.7%). Scott talked out an average of 7.3 times per minute (range: 0.6 – 13.8), though there was a great deal of response variability between sessions. There were two days when the first author was unable to collect data during baseline.

Token economy. When the first author used the token economy with him, Scott's on-task behavior was 45.2% (range: 25.0% - 86.7%). His behavior during the sessions at the end of the day were steadily about 32% more on-task than the baseline average, but his on-task behavior during the sessions at the beginning of class were at the same level as during baseline. His mean talk-outs decreased to 5.7 per minute (range: 0.0 – 9.4), but showed an equal amount of response variability as during baseline.

Token economy + contingency contract (CC). On Session 18, the first author added a contingency contract. Scott's mean performance of on-task behavior increased to 77.2% (range: 40% – 100%). His talk-outs decreased to 4.0 per minute (range: 1.6 – 5.8) and became more consistent between sessions. There were three sessions when the first author was not able to collect data.

Discussion

The improvement of on-task behavior promised to be socially significant. Anecdotally, Erik not only increased the amount of work he did on written assignments, but his general education science teacher also noted that he began asking appropriate questions about the lessons and was interacting with his peers more as he participated in the group experiments. He persisted in fabricating stories to avoid written assignments as he had before the intervention, but the nature of the stories reflected more scientific content that implied he was paying more attention and comprehending more of the material presented to him in class. Quantitatively, there were no overlapping data points between baseline and intervention, which is to say that he always performed more on-task while using the token economy and contingency contract than without them. He improved in on-task behavior from 24.8% to 86.7% and his talk-outs decreased from 2.7 from 1.25.

Although the procedure done with Scott was inconclusive, there was an upward trend in on-task behavior from 17.9% to 77.2% average time on-task and a downward trend in decreasing talk-outs from 7.3 talk-outs per minute to 4.0 that correlated with the introduction of a token economy that suggests it had the potential to be a socially significant procedure if the environment had been more consistently structured.

The implementation of the intervention was practical, as it cost the first author the price of one magazine, a basketball, and four songs from iTunes, totaling less than $20. The first author kept costs low by utilizing activities— drawing cars or listening to music and playing basketball— in accordance with the Premack Principle (Iwata & Michael, 1994; Malott, 2008; Premack, 1959). Very little extra time and effort were required by the first author to implement the token economy. Furthermore, the intervention did not diminish learning opportunities for the participants in accordance with FAPE, and did not adversely affect the other students in the classroom. If the intervention were to be continued, it would have been easy to modify the schedule of reinforcement and tally system for data collection to a momentary interval so that the general education teachers throughout the day could use the procedure.

The environmental interference of inconsistent presence of the case manager also impacted the inter-observer agreement data. The case manager available to collect data was only able to be in the classroom once every week and a half, approximately every sixth session, because of meetings and the number of students on her case load for whom she had to provide services in the general education classrooms. The case

manager also balanced the other 5- 7 students on her caseload in the classroom with collecting data on the participant. This unfortunate splitting of attention, despite the case manager's training in special education techniques, is consistent with analyses done which found that most special educators working in inclusion settings were expected to act as instructional aides or behavioral managers with "push in" services of approximately 30 minutes per week, which were rarely effective for providing effective services for students with disabilities (Kilanowski-Press, Foote, & Rinaldo, 2010; Scruggs, Mastropieri, & McDuffie, 2007; Volonino & Zigmond, 2007). The reliability results improved to 96.7% when the first author invited another observer to the classroom, indicating that data collection methodology was valid when there were two researchers able to focus solely on the participant, and further demonstrating the lack of resources and teacher training provided to students with IEPs in the inclusion setting.

In addition to poor, though explainable, inter-observer reliability results, implications of a token economy were difficult to draw because of the unaccounted for confounding interventions being done by other teachers, the lack of assessment done prior to the intervention, and the necessary brevity of the intervention due to changing and conflicting school schedules for the participants.

Despite these weaknesses, the results of both procedures supported previous research done in similar school settings by McLaughlin (Anderson, McLaughlin, & Derby, 2012; Gurrad, et al., 2002; Klimas & McLaughlin, 2007; McLaughlin & Williams; 1988; Naughton & McLaughlin, 1995; Reiber & McLaughlin, 2004; Thompson, et al., 2011) and other researchers (Azrin, et al., 2007; Bender & Mathes, 1995; Carbone, 2001; Salend & Duhaney, 1999) to show that students who have ASD or ADHD benefit from increased structure and more direct reinforcement, such as that found with a token economy and contingency contract, in order to improve appropriate classroom behaviors such as rates of talk-outs and on-task behavior. The first author's success with Eric further corroborates the effectiveness of this procedure.

Erik

The use of a token economy and contingency contract was clearly effective on Erik's on-task behavior, as it increased approximately 52%, but had minimal effect on his talk-outs, decreasing from 2.7 to 1.45 with response variability. The first author noted that the talk-out behavior occurred most often when he was attempting to escape an assignment. The volume and quantity of talk-outs were low enough throughout the study that they had little impact on his ability to act appropriately.

Erik verbally and physically expressed that he disliked the first author on many occasions, yet continued to increase in on-task behavior. Based on the results of the implementation of a token economy and contingency contract, in addition to the observations of general education teachers, the first author suggested to the case manager that a token economy be continued with Erik. Additionally, the general education teacher began a class-wide token economy after she noticed the success of the first author with Erik. This modification in classroom structure should positively impact Erik's on-task behavior.

Scott

Quantitative Analysis. A clear effect was not confirmed due to the first author's inability to return to baseline to determine the functionality of the intervention, but there was an overall increasing trend in on-task behavior, as Figure 3 shows approximately 59% improvement in on-task

behavior. Al-though there is a general downward trend in the amount of talk-outs per minute, from 7.3 to 4.0, the response variability between sessions prevented the first author from determining if the procedure was functional for decreasing Scott's talk-outs. In addition, the first author was often unable to collect data because the general education teacher frequently removed Scott from the classroom during sessions due to failure to comply with teacher requests. A realistic outcome for him would have been 25 talk-outs per 50-minute class and 50% on-task behavior, which he frequently demonstrated was within his ability on Sessions 5, 11, 17, 23, and 25 (talk-outs) and on Sessions 5, 7, 11, 12, 14, 16, 18, 19, 22, 23, 24, and 25 (on-task).

Qualitative Analysis. It should be noted that the nature of Scott's talk-outs changed after the implementation of the token economy. During baseline, his talk-outs consisted mainly of loud interruptions and profanities. After the first author implemented the token economy and the contingency contract, Scott's talk-outs changed to quiet conversations with others in the classroom. This change in content and volume suggests that the intervention was qualitatively effective, as he continued to quantifiably talk-out, yet he became less disruptive to the class.

There was also significant environmental interference that impacted the first author's ability to identify and maintain contingencies on the behavior. The general education teacher moved his seat in the classroom sporadically, from sitting next to a male friend to sitting at a table of three girls, to sitting with the other two students with IEPs (Sessions 11 and 22). Due to the changing nature of the special education program at the school, both the general education teacher and case manager frequently used substitute teachers, which also impacted Scott's behaviors (Sessions 6, 15, 16, 17, and 18). He was often was unable to receive tallies because other students frequently commented rudely about the first author or mocked Scott for being singled out to earn tallies, which incited him to defend himself or the first author. Although these talk-outs were not reflected in the data recording sessions, they impacted the effectiveness of the token economy for him. Because of these perceived injustices that he would likely have wanted to justify when earning tallies, the first author did not attempt to implement a self-monitoring procedure with Scott until his behaviors improved more consistently with the existing token economy. All of these interferences suggest that Scott was highly dependent on social interactions with his peers and teachers to the extent that they detracted from his ability to stay on-task. Although a more restrictive environment with fewer peers to distract him and more teacher attention to reinforce his focus on academic content may have been more appropriate, it is likely that consistent use of higher structured teaching strategies with the whole class - such as keeping seats in the same places or using a token economy with all students to prevent bullying - would have had a positive impact on his behaviors.

Individual teachers throughout the day also were using various techniques to attempt to curb his poor behaviors. These attempts included coffee during first period and self-management plans (Sessions 9, 10, and 15), but they were implemented with inconsistency from week to week, so the first author was unable to explain the response variability from session to session specifically. Based on reports from the case manager and Scott, as well as observations by the first author, it appeared that changes in his home environment also caused increased aggressive and disruptive behaveiors during the school day. These days are

indicated in Figures 6 and 7 by the sessions without data recorded after Session 19, as Scott was removed from class. Although the first author anecdotally documented all of these changes, upon graphing his rates of behavior, they accounted for only some of the response variability shown in the graphs, which led the author and her advisors to conclude that the overall lack of a tightly structured schedule had more impact than any specific inconsistency. In Figure 3, Scott's tendency to behave more consistently on-task at the end of the class period as the intervention continued supports this hypothesis, as the first author was able to provide the level of structure he likely required for at least that period (Barkley, 2006; Carbone, 2001; Reiber & McLaughlin, 2004).

The results with Scott were promising, but explainable in the lack of conclusiveness. Because of the changing environments both at home and within the many classroom environments in which he was placed throughout the week, it is not surprising that the overwhelming amount of social interactions and lack of structure, in addition to the lack of medication, inhibited Scott from performing at his ability. While these changes may have inhibited Scott's ability to stay on-task and would likely have prevented him from generalizing the skill if he had mastered it, it is important to note that teachers have little to no control over the lives of their students outside the classroom and should be prepared with behavioral intervention strategies to attempt to mitigate disruptions during the school day.

Conclusion

Case Study

Erik. Based on results, the first author would have modified the study by revising the contingency contract to change Erik's larger reward to an extended time to draw, rather than a magazine from which to copy the car designs, as he chose to delay his small reinforcements so that they would accumulate for a longer time. He also displayed higher rates of on-task behavior after receiving the drawing reward than after he received the opportunity to read a new magazine. With this revised contingency contract and the increased rates of on-task behavior using the token economy, it is likely that Erik would have continued to increase his appropriate classroom participation and benefited from increased exposure to the learning material. Based on teacher report of his behaviors throughout the day, as well as the first author's observations during the period previous to science where the token economy was implemented in addition to the data supporting its usage during science, the first author recommended extending the token economy to be used throughout the day so that Erik's on-task behaviors might have been generalized.

Scott. At the end of the study, the first author identified that a functional analysis assessment would have been constructive to determine if Scott's behaviors were escape or attention maintained, and that the knowledge gained from this could have been used to develop a behavioral plan to be used by all general education teachers. Based on the first author's observations, she hypothesized that Scott was attention maintained, because his on-task behavior increased when he was allowed to sit with the first author and he frequently tried to talk to or stand by her during class, in addition to his high rate of talk-outs.

Although Scott's attention-maintained motivation was conjecture unless confirmed by a functional analysis assessment, if it was accurate, there would have been many procedures emphasizing positive behaviors that could have been

implemented in a general education environment. If his teachers throughout the day followed a consistent data-based behavioral plan designed in consideration of behaviorist principles, rather than immediately removing him from the class when he was disruptive, it would have been likely that, in light of the positive trends in the data, the use of a token economy with a contingency plan would have been an effective means of increasing his on-task behavior and decreasing his talk-outs. Teacher training in this method would have enabled the teachers and Scott to agree on reasonable and explicit expectations of his classroom behavior, as well as provided Scott with the attention he likely desired. Surely an average of fifteen minutes each day of attention-oriented reward is preferable to the fifteen minutes per class spent addressing his behaviors, rather than instructing, and the innumerable minutes of lost contact with curriculum when he was removed to the office. It certainly would have been fairer for all the students, including Scott, in the classroom. Additionally, other intervention components featuring positive behavioral expectations could have been added throughout the day. Scott could have been given red and green cards to silently indicate when he needed a break and when he was ready to return to a task. Weekly exercises in role playing and social skills games that model appropriate behaviors could have been shared with the whole class. The Premack Principle, another behavioral procedure, could have been instituted in relation with school athletics, where participation in basketball or other sports was contingent upon a certain level of appropriate classroom behavior.

Greater Practical Implications

Both of the participants in this study had IEPs that stated they should receive instruction in a resource setting where they would receive services in a more consistent environment with higher structure to teach them on-task behaviors, which the administration at their school interpreted as "push-in" resources brought to them in general education settings. This interpretation has become more common, in light of inclusion philosophy, where students with disabilities are placed in an environment where they were socially equal to their general education peers but receive assistance in general education rather than the special education afforded them in their IEPs (Clampit, Holifield, & Nichols, 2007; Costley, 2013; Kilanowski-Press, Foote, & Rinaldo, 2010).

Given the actual environment and the data that, though minimal, deserves consideration, it was clear that the administration should reevaluate the appropriateness of the LRE for the participants. Erik's ability to socially and academically engage in the general education classroom after the token economy was implemented shows the extent to which behavioral principles can be effective if the administration had provided extra training to the general education teacher. Based on case manager report of high diagnostic test scores, Scott was likely capable of engaging in the seventh grade curriculum if he could have more contact with the teacher in a more restrictive setting such as a traditional resource room. Instead, his behaviors in classrooms where teachers were unprepared to address them caused him to be removed from the classroom and any contact with the curriculum at all.

The ideals of LRE promoted in FAPE do not imply that students with disabilities are unequal to their typically developing peers, but rather it puts students first in considering what is best for them, irrelevant of placement and instead considering which practices will guarantee each student an acceptable outcome (Scruggs, Mastropieri, & McDuffie, 2007; Vaughn & Schumm, 1995; Volonino & Zigmond,

2007). This individualized theory is not a case-by-case practice that has no standard, but rather operates under the belief that every child deserves to be treated relationally and with consideration of what is best for him specifically, especially if the norm detracts from his ability to access his rights. This belief requires teachers who are trained and given strategies to help every student achieve skills that will enable him or her to flourish as an adult in an undifferentiated world. If the administration fosters an environment where general education teachers can be supported by the special education staff to learn and implement effective teaching strategies for students who need higher classroom structure, then the faculty and students both will be better enabled to achieve the goal of education - to succeed in the world socially, behaviorally, organizationally, and academically (Clampit, Holifield, & Nichols, 2004; Kilanowski-Press, Foote, & Rinaldo, 2010; Scruggs, Mastropieri, & McDuffie, 2007; Volonino & Zigmond, 2007).

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Appendix A

This sheet was used to record the behaviors of the participants during the first and/ or last 5 minutes of the period. On-task behavior for each 10-second whole interval was determined by circling either the (+) or (-), while talk-outs were recorded with a frequency count in the blank line underneath the intervals.

Participant: Setting: Date:

Primary Observer: Michaela Jones Secondary Observer:

Session:

time	10s	20s	30s	40s	50s	60s	
Set 2	+ -	+ -	+ -	+ -	+ -	+ -	
T							total:
	70s	80s	90s	100s	110s	120s	
	+ -	+ -	+ -	+ -	+ -	+ -	
							total:
	130s	140s	150s	160s	170s	180s	
	+ -	+ -	+ -	+ -	+ -	+ -	
							total:
	190s	200s	210s	220s	230s	240s	
	+ -	+ -	+ -	+ -	+ -	+ -	
							total:
	250s	260s	270s	280s	290s	300s	
	+ -	+ -	+ -	+ -	+ -	+ -	
							total:

% (+): %(-): total T:

Session:

time	10s	20s	30s	40s	50s	60s	
Set 2	+ -	+ -	+ -	+ -	+ -	+ -	
T							total:
	70s	80s	90s	100s	110s	120s	
	+ -	+ -	+ -	+ -	+ -	+ -	
							total:
	130s	140s	150s	160s	170s	180s	
	+ -	+ -	+ -	+ -	+ -	+ -	
							total:
	190s	200s	210s	220s	230s	240s	
	+ -	+ -	+ -	+ -	+ -	+ -	
							total:
	250s	260s	270s	280s	290s	300s	
	+ -	+ -	+ -	+ -	+ -	+ -	
							total:

% (+): %(-): total T:

Target Behavior:

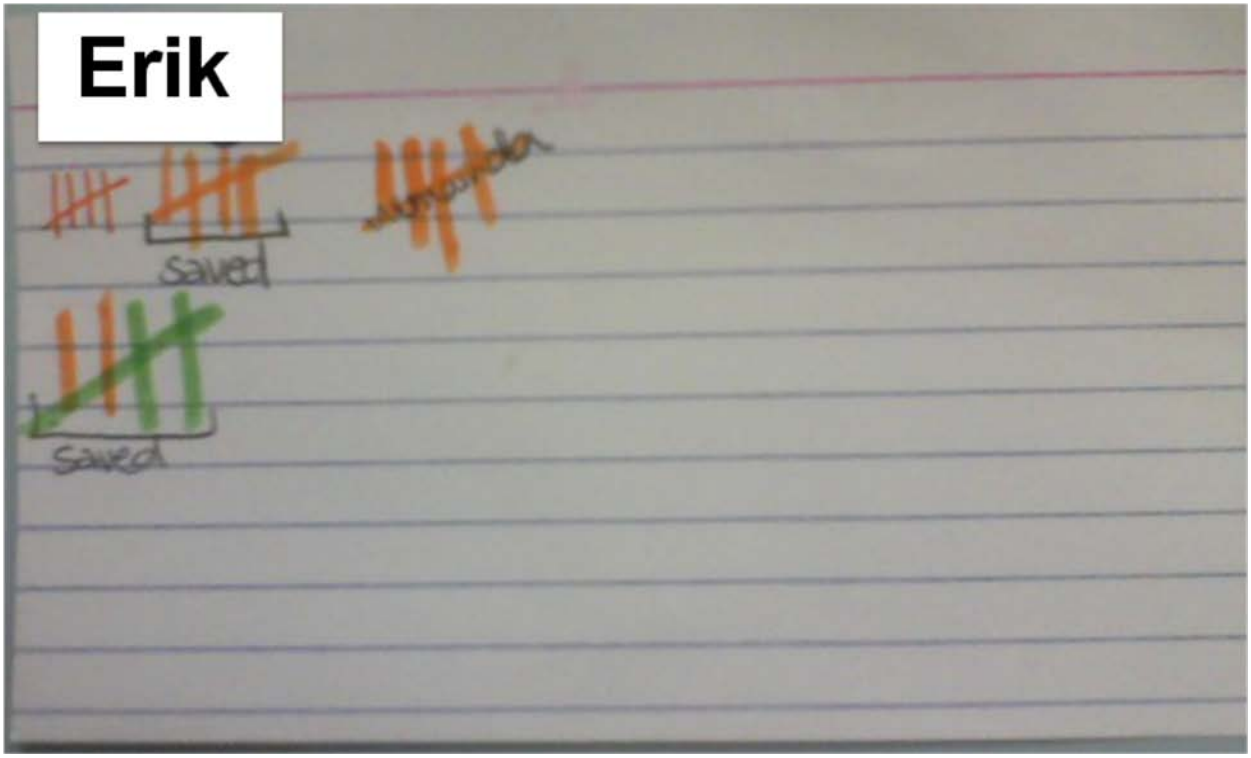
(T) A talk-out is any verbalization that is not in response to an instructor or a classmate, or that is irrelevant to the task to be done. Talk-outs include laughter, cursing, and mouthing. One talk-out is considered any number of sounds without a pause of two seconds or more between them (ex: an explanation is one verbalization)

(+) On-task behavior is the ability to follow directions in written language assignments by having the notebook open to the proper page and having his eyes focused in the direction of the notebook, and/ or writing according to the instructions.

(-) Off-task behavior is any behavior other than on-task behavior.

Appendix B

This is an example of the index card where tallies were recorded for on-task behavior.



Appendix C

Erik and Scott, respectively, signed these contingency contracts with the first author. Erik signed his after baseline, and Scott signed his on Session 18.

Token Economy Contract

I, _____, agree to:

a. Pay attention when my teacher is talking
b. Work on the assignment I have been told to do
c. Refrain from telling stories or asking questions that do not relate to the task I am doing

In order to earn tallies which will go toward rewards I have chosen. Every five tallies I earn will be traded for one minute of drawing in the hall. These tallies will accumulate until I have fourteen, when I will be able to trade them in for a car magazine. After I have earned a magazine, my tallies will be reset.

In class, I will not tell Miss Jones, or any other teacher, when I have earned a tally. This is up to the tally-giving teacher to decide. When I do earn a tally, I will celebrate quietly, without disturbing my classmates.

I have read this contract and agree to its terms.

X_____ date: _____

X_____ date: _____

Token Economy Contract

I, _____, agree to:

a. Pay attention when my teacher is talking
b. Work on the assignment I have been told to do
c. Be quiet and raise my hand when I have something to say

In order to earn tallies which will go toward rewards I have chosen. Every five tallies I earn will be traded for two minutes of time to listen to music in the hall. These tallies will accumulate until I have twelve, when I will be able to trade them in for five minutes of basketball playing. After I have earned basketball, my tallies will be reset.

In class, I will not tell Miss Jones, or any other teacher, when I have earned a tally. This is up to the tally-giving teacher to decide. When I do earn a tally, I will celebrate quietly, without disturbing my classmates.

I have read this contract and agree to its terms.

X_____ date: _____

X_____ date: _____