THE EFFECTS OF SMALLER CLASS SIZES AND POSITIVE BEHAVIOR INTERVENTIONS AND SUPPORTS ON STUDENTS WITH AUTISM AND ADHD

A Dissertation

Presented to

The Faculty of the Education Department

Carson-Newman University

In Partial Fulfillment

Of the

Requirements for the Degree

Doctor of Education

By

Jordan L. Reed

June 2019
Dissertation Approval Form

CARSON-NEWMAN UNIVERSITY

Dissertation Approval

Student Name: Jordan Lloyd Reed

Dissertation Title: The Effects of Smaller Class Sizes and Positive Behavior Interventions and Supports on Students with Autism and ADHD

This dissertation has been approved and accepted by the faculty of the Education Department, Carson-Newman University, in partial fulfillment of the requirements for the degree, Doctor of Education.

Dissertation Committee:

/ Brenda Dean

Brenda P. Dean, Ed.D., Dissertation Chair

/ P. Mark Taylor, Ph.D., Methodologist Member

/ Michael S. Sobiech, Ph.D., Content Member

Approved by the Dissertation Committee Date: June 7, 2019
Abstract

Students with autism and students with Attention-Deficit Hyperactivity Disorder (ADHD) often experience academic failure when compared to their neurotypical peers. This study analyzed the perceptions of faculty, parents, and students on the effects of Positive Behavior Interventions and Supports (PBIS) used in combination with smaller class sizes on students with autism and students with ADHD. Data in this study supported findings by previous research that stated token economies were highly effective means of managing behavior and reduction in class size increased academic growth and achievement in students with learning disabilities. PBIS and smaller class sizes resulted in students having increased confidence, self-motivation, and reduced anxiety. Students also became more goal-oriented and empowered to address their behavior through conversations and positive interactions with their teachers. Students perceived that smaller classes increased their focus and increased individual attention from the teacher. Educators recognized that effective behavior management included a positive, proactive, and focused approach to behavior with parental involvement. Educators also perceived that smaller class sizes presented them with more opportunities for differentiation and individual focus. Parents asserted that PBIS enabled them to take a positive approach to behavior management that included the ability to target, track, and reinforce behaviors at home, and smaller classes produced a less stressful environment for students.
Dedication

I dedicate this study to all my students. You have continually pushed me to find better ways of meeting your educational needs, and I am a better teacher because of it.
Acknowledgements

I cannot fully express how much I appreciate all the help that has been given to me throughout this study. First and foremost, I am grateful to my wife, Mandi, for all of her love, for her support, and for her guidance during this process. I would not be the person that I am without her help. Secondly, I would like to express thanks to my family for supporting me and walking with me on this journey.

I would like to give thanks to my participants for their time and for their stories.

I am exceedingly thankful for my dissertation committee and the guidance I received from them throughout this entire process. I truly appreciate the amount of patience, guidance, and care shown to me by Dr. Brenda Dean. I am thoroughly grateful for the feedback and support given to me by Dr. P. Mark Taylor and Dr. Michael Sobiech. Their combined help has enabled me to grow as a writer and researcher, and I have a better dissertation as a result.

Lastly, I would like to express my gratitude for those who have gone on before me. Your example of hard work and dedication is something I will always strive to live up to as I move forward in life.
# Table of Contents

Dissertation Approval Form .......................................................................................... ii
Abstract .......................................................................................................................... iii
Copyright Statement ...................................................................................................... iv
Dedication ...................................................................................................................... v
Acknowledgements ....................................................................................................... vi
Table of Contents ......................................................................................................... vii
List of tables .................................................................................................................. xi

1. **Introduction** ......................................................................................................... 1
   - Introduction and Background .............................................................................. 1
   - Statement of Problem ......................................................................................... 1
   - Theoretical Framework of Study ....................................................................... 2
   - Purpose of Study ................................................................................................. 2
   - Research Questions (Qualitative Study) ............................................................. 3
   - Rationale for Study ............................................................................................. 3
   - Researcher Positionality Statement .................................................................. 4
   - Definition of Terms ............................................................................................ 4
   - Limitations of Study ........................................................................................... 5
   - Delimitations of Study ....................................................................................... 5
   - Organization of Study ......................................................................................... 6
   - Summary ............................................................................................................. 6

2. **Review of Literature** .......................................................................................... 7
   - Review of Literature ......................................................................................... 7
Students in Special Education......................................................................................... 8
Students with Autism...................................................................................................... 9
Students with ADHD ..................................................................................................... 9
Alternative Education Settings ..................................................................................... 11
Positive Behavior Interventions and Supports (PBIS).................................................... 12
Token Economies........................................................................................................... 13
Smaller Class Sizes ....................................................................................................... 26
Gaps in Research............................................................................................................ 37
Summary ........................................................................................................................ 37

3. Methodology ............................................................................................................. 43
Methodology .................................................................................................................. 43
Research Questions (Qualitative Study) ........................................................................ 45
Qualitative Research ...................................................................................................... 44
Research Approach ....................................................................................................... 44
Research Setting and Participants.................................................................................. 45
Sampling ........................................................................................................................ 45
Data Collection Methods ............................................................................................... 46
Data Analysis and Coding ............................................................................................. 50
Limitations ..................................................................................................................... 53
Ethical Considerations ................................................................................................. 53
Summary ........................................................................................................................ 54

4. Analysis ..................................................................................................................... 55
Analysis of Data............................................................................................................. 55
Participants..................................................................................................................... 55
Research Questions ........................................................................................................ 57
Research Question Data................................................................................................. 58
Student perceptions on how PBIS influences student behavior................................. 58
Educator perceptions on the ways PBIS influences student behavior ......................... 63
Parental perceptions on the ways PBIS influences student behavior ......................... 69
Educator perceptions on effectiveness of teaching in smaller classes ....................... 73
Student perceptions on their abilities to learn in smaller classes.............................. 75
Parental perceptions of the effects of smaller class sizes .......................................... 78
Survey data not specific to parent, teacher, or student ............................................. 83
Summary ........................................................................................................................ 85

5. Conclusion .................................................................................................................. 92

Conclusion ..................................................................................................................... 92
Findings .......................................................................................................................... 94
Influence on Instruction ............................................................................................... 94
Reduces anxiety, increases confidence ....................................................................... 95
Behavior Monitoring .................................................................................................... 96
Positive, proactive, and structured approach to behavior management .................. 98
Positive outlook on behavior ...................................................................................... 100
Increased motivation .................................................................................................... 102
Parental involvement and home use ......................................................................... 104
Limitations of PBIS and smaller classes ................................................................. 105
Recommendations for Future Research ................................................................. 108
List of Tables and Figures

Figures
Figure 3.1 .......................................................................................................................... 47
Figure 4.1 .......................................................................................................................... 62

Tables
Table 4.1 .......................................................................................................................... 84
CHAPTER ONE
INTRODUCTION AND BACKGROUND

Students in special education in the United States are being failed by the education system (Butrymowicz & Mader, 2017). Reasons for this failure, according to interviews with parents, students, and former students include high student:teacher ratios that prevent teachers from giving students individual attention and lack of behavioral support and interventions. Students with autism and Attention-Deficit Hyperactivity Disorder (ADHD) expressed that they had negative school experiences and experienced lower academic achievement and engagement.

Statement of Problem

Students with autism and students with ADHD often experience academic failure when compared to their neurotypical peers (Autism Speaks, n.d.; Attention-Deficit Disorder Association, 2015). In addition to not having their needs met in the classroom (Butrymowicz & Mader, 2017), these students typically have significantly lower success rates and lower rates of employment than other individuals with disabilities. A survey of 3,520 adults with autism conducted by the A.J. Drexel Autism Institute found that “paid, community-based employment was the least common outcome for adults with autism spectrum disorder (ASD). Only 14% held a job for pay in the community” (Roux, Rast, Jessica, Anderson, & Shattuck, 2017). Similarly, Biederman and Faraone (2006) conducted a study and found similar results for students with ADHD: these students were less likely to complete high school or college and obtain gainful employment, resulting in a lower average household income.

Furthermore, while evidence has shown that interventions such as PBIS and smaller class
sizes had an effect on students, there have been few studies that specifically targeted students with autism and students with ADHD. The studies that have been conducted only determined that more research was necessary. Project STAR (Student-Teacher Achievement Ratio) (Tennessee Department of Education, 1990a; Nye, B., Hedges, L.V., & Konstantopoulos, S., 2000) generated evidence that smaller classes were effective for students of all types, but no research has specifically targeted students with autism and students with ADHD.

**Theoretical Framework of Study**

B. F. Skinner’s (1938) operant condition is the theoretical framework for this study. Operant conditioning means that human behavior is shaped through responses generated by behavior. Behaviors that elicit a positive response are reinforced, and behaviors that elicit a negative response are extinguished; as such, positive responses to behavior are defined as reinforcers and negative responses defined as punishers. Changing the responses can modify behaviors; behaviors that receive a reinforcer are strengthened, while behaviors that receive a punisher are extinguished.

Operant conditioning in education focuses on shaping student behavior within the classroom. In a given classroom, modifying student behavior focuses on changing instructor and environmental cues that prompt student behavior. Prompts include positive reinforcement for desired behaviors (e.g. classroom participation) and ignoring or punishing undesired behaviors (e.g. talking out) (McLeod, 2018).

**Purpose of Study**

The study investigated the effects of behavior modification in the form of positive behavior interventions and supports (PBIS) used in conjunction with smaller class sizes on students with autism and students with ADHD. Both PBIS and smaller classes used separately
have been shown to have a net positive effect on all students. In Project STAR, smaller class sizes were shown to have a positive effect on all students (Tennessee Department of Education, 1990a; Nye, B., Hedges, L.V., & Konstantopoulos, S., 2000). However, minimal research has been conducted specifically on students with autism and students with ADHD. Similarly, there is minimal research regarding the effects of these two systems used in combination with students with autism and students with ADHD. Therefore, the primary goal of this study was to examine and provide a holistic, descriptive account of the effects of PBIS and smaller class size on students with autism and students with ADHD.

**Research Questions**

This qualitative study was designed to answer the following six research questions:

1. What are students’ perceptions on the ways PBIS influences student behaviors?
2. What are educators’ perceptions on the ways PBIS influences student behaviors?
3. What are parental perceptions on the ways PBIS influences student behaviors?
4. What are educators’ perceptions on the effectiveness of their teaching in smaller classes?
5. What are students’ perceptions on their abilities to learn in smaller classes?
6. What are parental perceptions of the effects of smaller class sizes?

**Rationale for Study**

Students with learning disabilities often have not experienced academic success for a variety of reasons, such as their needs not being met and Individual Education Plans (IEPs) not being fully implemented. Relative to this study, students with autism and students with ADHD are often unsuccessful in school because traditional academic environments do not support their behavioral needs; subsequently, their educational needs are not supported.
Researcher Positionality Statement

This study was the product of research conducted by an educator whose focus was on students with disabilities and who has worked for three years in the research school with these students. Relationships with students, parents, and other educators were formed that resulted in trust that promoted honest responses in the research. Research conducted in this study was informed with extensive education experience in multiple educational environments (e.g. public, private, tutoring) and nearly thirty years of experience living with children with disabilities and nine years of experience teaching children with disabilities.

Definition of Terms

1. *Behavior* refers to the “functioning of an organism which is engaged in acting upon or having commerce with the outside world” (Skinner, 1938, p.23). In the context of this study, this definition was applied to the educational environment to describe the way in which students responded to stimuli in the classroom.

2. *Academic achievement* refers to the accomplishment of specific academic goals established for each student (Steinmayr, 2017). Measurements related to academic achievement reference single data points in a given time (e.g. a standardized test) that are compared to a given standard (Battelle, 2011).

3. *Academic growth* is similar to academic achievement but refers to academic progress made over a longer period of time (e.g. from one year to the next) and is only compared to how a student has previously performed. Thus, academic growth compares a student’s performance to his/her performance on previous assessments (Battelle, 2011).

4. *Positive Behavior Interventions and Supports (PBIS)* was defined by Gelbar, Jaffery, Stein, and Cymbala (2015) as a framework used by schools to provide a targeted and
individualized approach to managing student behavior to promote positive academic and social outcomes (p.290).

5. *Token economy*, also known as a *token reinforcement system*, is “an interconnected set of contingencies that specifies the relations between token production, accumulation, and exchange” (Hackenberg, 2009, p.259).

**Limitations of Study**

Potential limitations of this study included a small number of participants, which could affect the generalizability of this study. The smaller number of participants may also reduce the transferability of this study to other settings. This study may also have limited breadth because the dynamics of the social unit within the studied school may not relate to the dynamics of social units in other schools.

**Delimitations of Study**

Delimitations of the study were: the study focused on a single unit and the study produced an in-depth description. However, these provide depth to the study; each case study is understood in the totality of the environment and aids in understand the motivations behind participants’ behavior, which also provides more details for a detailed description. This study was anchored in real life, which also contributes to rich, detailed accounts to be provided of phenomena over an extended period of time. Additionally, this study used multiple data collection techniques focused on a single entity, which aids in building a more detailed description. Finally, this study was conducted over a period of time with multiple sources of data, which allows more observations of the same behavior that reduces the possibility of changes being observed being attributed to chance.
Organization of Study

Five chapters comprise this study. Chapter One includes an introduction, the purpose of the study, the conceptual framework, research questions, the rationale for the study, definitions of terms, the researcher positionality statement, and limitations and delimitations. Chapter Two includes a literature review, including the introduction of context and best practices, students in special education, students with autism, students with ADHD, alternative education settings, Positive Behavior Interventions and Supports (PBIS), token economies, smaller class sizes, and a summary. Chapter Three is the methodology section, which includes the methodology, research questions, qualitative research, the research approach, research setting and participants, sampling, data collection methods, data analysis and coding, limitations, delimitations, trustworthiness techniques, and ethical considerations. Chapter Four presents findings from the data. Chapter Five provides conclusions drawn from the study, as well as limitations and recommendations.

Summary

This qualitative study took the form of an ethnographic, multiple case study as it focused on four participants within a single environment for an extended time. The combination of positive behavior interventions and supports and smaller class sizes was observed to be affecting students with autism and students with Attention-Deficit Hyperactivity Disorder. The goal of this study was to provide a thorough, meaningful description of this combination and its effects on students in order to further the study of best practices for supporting students with autism and students with ADHD in the educational environment.
CHAPTER TWO

REVIEW OF LITERATURE

Chapter Two explores best practices, or evidence-based practices, for special education. Spaulding (2009) and Clay (2016) agreed that best practices promoted better learning outcomes for students with learning disabilities, and their research focused on practices that increased student engagement in lessons, increased academic achievement and growth, and promoted positive behaviors. It was also determined that practices that maintained a positive learning environment made for a proactive approach to managing student behavior. Torres, Farly, and Cook (2014) defined evidence-based practices as “instructional approaches that have proven to be effective through rigorous research” (p. 85). When properly implemented (i.e. with fidelity or as designed), evidence-based practices improve the academic performance of students with learning disabilities (Torres et al., 2014, p. 85).

Research conducted by Spaulding (2009) addressed the issue of determining best practices for special education, whether best practices can be determined, and if so, the ways in which practices can be evaluated in terms of efficacy (p. 3). Spaulding (2009) concluded that while it was possible to determine effective education practices in special education, the ultimate answer is to conduct more research into techniques (p. 10). Although numerous techniques exist to educate students with learning disabilities, there also exists a substantial body of empirical evidence that has evaluated those techniques (Spaulding, 2009, p. 10).

However, Spaulding (2009) focused more on the primacy of the teacher’s own discriminative ability: the ability to know and understand what works in the classroom.
Furthermore, in the context of special education, he asserted that educators must know their individual student needs, which they learned through time spent with the student, effective forms of assessment, and accrued teacher experience.

Clay (2016) argued for specific techniques for implementing best practices in the special education classroom. He interviewed eight highly effective special education teachers who worked with students who had emotional and/or behavioral disabilities in order to further the study of best practices for students in special education. Those teachers identified positive relationships, behavioral supports, token economies, and small group instruction as effective means of educating students with emotional and/or behavioral disability.

Clay (2016) and Scheithauer, Cariveau, Call, Ormand, and Clark (2016) agreed that token economies were highly effective means of managing behavior in students with learning disabilities. Clay (2016), Nye, Hedges, and Konstantopoulos (2000), and Harfitt and Tsui (2015) all agreed that a reduction in class size was effective in increasing academic growth and achievement in students with learning disabilities. Having established that class size reduction and token economies were effective in improving students, further review of the literature was conducted in order to more fully understand their effects on students with learning disabilities.

**Students in Special Education**

In a broad manner, the research conducted identified students with learning disabilities as students who have a disability severe enough that it has impacted their ability to learn and be engaged in the classroom. Specific focus was placed on students with autism and students with Attention-Deficit Hyperactivity Disorder (ADHD). Students with autism were covered in a specific category under the Individuals with Disabilities Education Act (IDEA), and students
Students with Autism

IDEA defined autism as:

a developmental disability significantly affecting verbal and nonverbal communication
and social interaction, often evident before age three, that adversely affects a child’s
educational performance. Other characteristics often associated with autism are
engagement in repetitive activities and stereotyped movements, resistance to
environmental change or change in daily routines, and unusual responses to sensory
experiences. Autism does not apply if a child’s educational performance is adversely
affected primarily because the child has an emotional disturbance … A child who
manifests the characteristics of autism after age three could be identified as having autism
if the [previously mentioned criteria] are satisfied. (Individuals with Disabilities
Education Act, 20 U.S.C. § 300.8 (c) (1), 2004)

Students with ADHD

Attention-Deficit Hyperactivity Disorder (ADHD) was not classified as a learning
disability in and of itself under IDEA; that is, it was not given its own category in the same
manner as autism. Rather, ADHD is categorized as an Other Health Impairment (OHI). When
ADHD has impacted a child’s education, protections for the child have been provided.
According to IDEA:

Other health impairment means having limited strength, vitality, or alertness, including a
heightened alertness to environmental stimuli, that results in limited alertness with
respect to the educational environment, that (i) is due to chronic or acute health problems
such as asthma, attention-deficit disorder or attention-deficit hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis, rheumatic fever, sickle cell anemia, and Tourette syndrome; and (ii) Adversely affects a child’s educational performance. (Individuals with Disabilities Education Act, 20 U.S.C. § 300.8 (c) (9), 2004)

Given that ADHD has not been defined in IDEA, the guidelines provided by the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders (DSM-5) defined ADHD as having three manifestations or types: inattentive type, hyperactivity/impulsivity type, and combined type. Characteristics of ADHD must be exhibited to the degree and with the frequency such that they adversely affected a student’s performance.

In order to be diagnosed with predominantly inattentive type, a student must exhibit difficulty with six or more of the following characteristics:

- Often making careless mistakes in schoolwork
- Often has problems maintaining focus in tasks or play activities
- Often appearing to not listen when spoken to directly
- Often does not following through on instructions and fails to finish schoolwork or chores
- Often has difficulty organizing tasks and activities
- Often avoids or is reluctant to engage in tasks that require sustained mental effort
- Often losing things necessary for tasks or activities
- Often distracted by extraneous stimuli (Reynolds and Kamphaus, 2013, p. 1)

In order to be diagnosed predominantly hyperactive-impulsive type, a student must exhibit difficulty with six more of the following characteristics:
• Often fidgeting with or taps hands or feet or squirms in seat.
• Often leaving seat in situations where one is expected to remain seated
• Often running or climbing in situations where it is inappropriate.
• Often unable to play or engage in leisure activities quietly.
• Often “on the go,” acting as if “driven by a motor”
• Often talks excessively.
• Often blurts out an answer before a question has been completed
• Often has difficulty waiting his or her turn
• Often interrupts or intrudes on others (Reynolds and Kamphaus, 2013, pp. 1-2)

In order to be diagnosed combined type ADHD, children must exhibit characteristics from both inattentive type and hyperactive-impulsive type.

**Alternative Education Settings**

Much of the research conducted with students in special education has occurred in alternative education settings, which Kleiner, Porch, and Farris (2002) defined as a public elementary or secondary school that “(1) addresses the needs of students that typically cannot be met in a regular school; (2) provides nontraditional education; (3) serves as an adjunct to a regular school; and (4) falls outside the categories of regular, special education, or vocational education” (p. 55).

Gelbar, Jaffery, Stein, and Cymbala (2015) further defined alternative education settings as “programs that serve students with disabilities whose behaviors interfere with their ability to benefit from education in a typical public school” (p. 288). Although each alternative education setting is different, there are certain shared characteristics: low staff-to-student ratio, more intensive approaches, more intensive data collection, and a more therapeutic approach. While the
lower staff-to-student ratio allows for easier implementation of these practices and further enables an educator to address the problems at hand, debate regarding the efficacy of these settings for students with learning disabilities exists. The behavioral management procedures found there were typically coercive, reactive, and punitive leading to an increase in these students’ negative behaviors (Gelbar et al., 2015, p. 289). Operating on the notion that school-wide positive behavior intervention and supports would improve behavior in students with learning disabilities, Gelbar et al. (2015) conducted a case study of students with emotional/behavioral disorders in alternative education settings that demonstrated an overall improvement in student behavior when SW-PBIS was implemented in an alternative education setting.

**Positive Behavior Interventions and Supports (PBIS)**

Gelbar, Jaffery, Stein, and Cymbala (2015) defined School-Wide Positive Behavior Interventions and Supports (SW-PBIS) as a framework used by schools to provide a targeted and individualized approach to managing student behavior to promote positive academic and social outcomes (p. 290). In this context, the word “positive” referred to the overall culture of the school and practices that were predictable, safe, and consistent (Gelbar, et al., 2015, p. 290). The framework of SW-PBIS contained four elements: observable and measurable outcomes or goal statements, the use of data to inform decision-making, selection and implementation of evidence-based practices, and ensuring the practices are implemented with fidelity (Farkas et al. as cited in Gelbar, et al., 2015, p. 290).

Utley and Obiakor (2012) noted that the features of a successful SW-PBIS include the following:
(a) the development of positive behavioral expectations, (b) specific methods to teach these expectations to staff and students, (c) proactive supervision or monitoring of behaviors, (d) contingency management systems to reinforce and correct behavior, and (e) methods to measure outcomes and to evaluate progress across three tiers. (pp. 49-50)

Positive and proactive behavior management across three tiers has been emphasized. These features also promote the efficiency of the multi-tiered approach. As needs are identified and as problematic behaviors arise, teachers, parents, and pertinent support staff develop behavioral support plans based on evidence obtained from functional behavioral assessments (FBA). A functional behavior assessment provides data on the problem behavior itself and environmental stimuli or antecedent behavior.

**Token Economies**

PBIS existed as a framework for understanding and modifying student behavior, while token economies were the practical methods by which student behavior was modified. As such, further study of the token economy and its development took place. Hackenberg (2009) established significant historical detail regarding the development and usage of token economies. Token economies have been used to modify behavior since the 1800s, and Wolfe and Cowles pioneered studies on token economies throughout the 1930s. In their experimentation with chimpanzees, they found significant data that demonstrated the effectiveness of token economies in animals that would later be applied to modifying human behavior. These experiments laid the foundation for token economies and the ways in which they shaped behavior. Throughout the 1970s, token economies and their research began to play an important role in applied behavior analysis (Hackenberg, 2009, p. 257). As Wolfe and Cowles’ experiments demonstrated, token economies can be used to reinforce behaviors or to extinguish behaviors.
Hackenberg (2009) defined a token as “an object or symbol that is exchanged for goods or services” (p. 257), and humans have employed tokens throughout history. Humanity’s economic systems developed from rudimentary barter systems to more complex monetary economic systems that have increasingly incorporated the usage of tokens. As such, a token reinforcement system, or a token economy, is “an interconnected set of contingencies that specifies the relations between token production, accumulation, and exchange” (Hackenberg, 2009, p.259). In these economies, tokens are small, manipulatable objects – marbles, coins, poker chips. Tokens can also be nonmanipulable, such as points or checkmarks.

Tokens act as conditioned reinforcers through their relationship to other reinforcers. In the experiments conducted by Wolfe and Cowles, tokens were reinforced with food. These experiments demonstrated two facets of token economies: the promotion of a certain behavior (the deposition of white tokens), and the extinguishing of another (the deposition of brass tokens). Researchers first conditioned Chimpanzees to deposit tokens in the form of poker chips or coins to receive food. Once the baseline of association between token and food was formed, researchers modified the token economy: white tokens received grapes and brass tokens received no food. The chimpanzees then differentiated their behavior and more often chose white tokens over brass tokens. The preference for brass tokens was demonstrated as extinguished when a mix of tokens were scattered on the floor and the chimpanzees demonstrated a preference solely for the white tokens (Hackenberg, 2009, p.259).

With humans, token economies are typically implemented as generalized reinforcers as they are paired with multiple reinforcers. Tokens can be exchanged in a type of store of preferred items or activities. Although Wolfe and Cowles did not explicitly experiment with this, Wolfe conducted a similar experiment, wherein chimpanzees were given choices between black and
yellow tokens. Black tokens were exchangeable for peanuts, and yellow tokens were exchangeable for water. When placed under conditions of 16-hr deprivation from food or water, the chimpanzees generally chose the token that alleviated their current deprivation (Hackenberg, 2009, p. 261).

Another important factor in token economies is the delay between behavior and reinforcers, known as reinforcement delay. Wolfe experimented with this concept by experimenting under four conditions:

(1) tokens were earned immediately, but could not be exchanged until after a delay (immediate token, delayed exchange/food); (2) food was earned for each response, but delivered after a delay (no token, delayed food); (3) same as 2, except that brass chips were available during the delays (nonpaired token, delayed food); and (4) tokens were earned and could be deposited immediately, but food was delivered only after a delay (immediate token/exchange, delayed food). (Hackenberg, 2009, p.262)

During each trial, delay times were increased until a breakpoint, or a point of five minutes with no response, was found. In condition 1, Wolfe observed breakpoints in excess of one hour, while in the other three conditions, he observed break points of fewer than five minutes. This difference in breakpoints indicated that the immediate delivery of a token aided in sustaining behavior temporally remote from food. This meant that behavior could be modified through the use of tokens, even when the exchange from token to food was delayed for extended periods of time as long, as the tokens were given immediately, which led to the development of token reinforcement schedules.

In the 1950s, Kelleher, and later Malagodi, conceptualized token economies as a series of three interconnected schedule components: (1) the token-production schedule, the schedule by
which responses produce tokens; (2) the exchange-production schedule, the schedule by which exchange opportunities are made available, and (3) the token-exchange schedule, the schedule by which tokens are exchanged for other reinforcers (Hackenberg, 2009, p. 263). Through the usage of various token-production schedules, Kelleher (1956) found that various fixed rate and fixed interval schedules of token production generated responses similar to fixed rate and fixed interval schedules of food production. Kelleher trained chimpanzees to press a lever and rewarded them first with food after either a fixed number of presses (fixed rate) or a press after a specified amount of time (fixed interval). Once this association was made, he trained chimpanzees to deposit tokens to receive food. Under various schedules of fixed intervals and fixed rates, where chimpanzees received food or received tokens, responses between the two were similar. That is, the response generated by the chimpanzee under food reinforcement was the same as the response generated under token reinforcement (Hackenberg, 2009, p.263).

Further experiments by Kelleher (1958), Malagodi (1967a, b, c), and Bullock and Hackenberg (2006) demonstrated similar results with other types of animals: schedules of reinforcement with food and with tokens produce similar performances, which subsequently demonstrated the effectiveness of tokens as conditioned reinforcers.

Under the exchange-production schedule, tokens are still produced and exchanged for food, but a certain level or number of tokens is required to generate the exchange period. In experiments conducted by Webbe and Malagodi (1978) using rats, a fixed number of lever presses were required to produce tokens and to exchange tokens for food, but groups of tokens were required to trigger the exchange period (Hackenberg, 2009, p. 266). Webbe and Malagodi (1978) experimented with the rate of the exchange-production schedule by changing it in multiple ways; in some experiments a fixed rate (FR) schedule of six tokens required to produce
an exchange period was used, in others, a variable rate (VR), but average of six tokens required, was used. In both instances response rates were maintained.

According to Hackenberg (2009), there has not been much experimentation in the way of changing token-exchange schedules in a systematic fashion (p. 267). Through the careful control of token-production and exchange-production schedules, Malagodi, Webbe, and Waddell (1975) manipulated the token-exchange schedule in such a way that multiple tokens were required to produce food. Unlike previous experiments in which one token produced one unit of food (e.g. one pellet), animals were required to submit multiple tokens for one unit of food. These experiments in token-exchange schedules produced results similar to previous experiments demonstrating that the token economy is effective whether one token or multiple tokens are required to obtain the preferential item or activity.

The interplay between these three schedules determined the function of the token economy system. Under the token-production schedule, tokens demonstrated the same effectiveness as food, and once animals learned the required behavior (i.e. the rate) or the required time learned (i.e. the interval), tokens could be produced with reasonable amounts of accuracy. Similarly, with token-exchange schedules, once the number of tokens was determined by the animal to trigger the token-exchange, response rates increased. Exchange-production schedules also exhibited similar positive results in shaping behavior, provided the other schedules remained the same. Ultimately, these three schedules determined the function of the token economy system.

Given that multiple tokens must be accumulated to trigger a token-exchange or multiple tokens required to obtain a food item (i.e. the token-exchange schedule), token accumulation was
determined to be a factor as well. Cowles (1937) experimented with token accumulation under three conditions:

(1) tokens were earned and accumulated but could not be exchanged until the end of the interval, (2) food was earned and accumulated but could not be consumed until the end of the interval, and (3) food was earned but did not accumulate and could not be consumed until the end of the interval. (Hackenberg, 2009, p. 269)

Under these conditions, situations 1 and 2 produced similar results in Cowles’s (1937) experiment with chimpanzees. A more recent study by Sousa and Matsuzawa (2001) generated a token reinforcement experiment with results consistent with Cowles’s prior experiments with token reinforcement, which continued to demonstrate the efficacy of token reinforcement as a means of establishing and maintaining behaviors. However, Sousa and Matsuzawa (2001) observed a spontaneous saving of tokens. Conditions did not require tokens to be saved or accumulated; however, one chimpanzee accumulated tokens before the exchange.

Token accumulation becomes a factor when token economies are applied to humans; Hackenberg (2009) noted that self-control and choice became areas of interest. Various studies, including one by Hyten, Madden, and Field (1994) demonstrated that humans exhibited more self-control when the delays between the reception of tokens and the exchange of tokens for reinforcers (i.e. preferential items or activities) were equal and consistent. Ultimately with regard to token economies, “choice patterns are governed not by token delays, but by delays to the periods during which tokens are exchangeable for other reinforcers.” (Hackenberg, 2009, p.276).

In other words, behaviors are governed (i.e. the choice for self-control) by the time period between the receiving of a token and the exchange of the token for a preferential activity or item.
Accordingly, the application of token economies to human behavior mimics that of economics and can be governed by economic principles. Response rates, the demonstration of a particular behavior, decline when the costs of producing a token (wages; token-production) and the costs of producing exchange opportunities (procurement costs; exchange-production) increase. The more difficult it is to obtain tokens or the more difficult it is to exchange tokens, or both, the less likely the desired behavior was exhibited. Similarly, when the costs of preferential items (token-exchange) increased, response rates decreased accordingly (Hackenberg, 2009, p. 278).

Two remaining areas merit discussion: common currency and punishing factors. Tokens are defined within the token economy itself as a closed system. Tokens cannot be obtained elsewhere and have no value outside the token economy. The currency itself is defined in common token units, and the preference is the number of tokens one is willing to spend on a reinforcer; thus, tokens are fungible, or replaceable for another of like kind, and can be used to scale qualitatively different commodities (Hackenberg, 2009, p. 279).

Fiske, Isenhower, Bamond, Delmolino, Sloman, and LaRue (2015) continued the study of token economy systems in humans and their particular value when applied to individuals with autism. However, their results are contrary to those presented by Scheithauer, Cariveau, Call, Ormand, and Clark (2016), Nelson (2010), and Coelho, Barbosa, Rizutti, Muszkat, Bueno, and Miranda (2015). Fiske et al. (2015) conducted a small study on two individuals with autism and a previously established token system – the token system was already in place prior to the study itself. In one respondent, primary (i.e. edible, non-token) reinforcers received a more constant or stable response rate, while token reinforcers received a more varied and almost unpredictable rate. In the other respondent, responses were given at a similarly variable rate between token and
primary reinforcement, though there was a slight preference for the token reinforcers as the respondent grew satiated with edible reinforcers. The limitations of this study are that the sample size was only two individuals and the token economy was already established using unknown means; more investigation into the effectiveness of token economies with students with autism was needed (Fiske, et al., 2015, p. 448-452).

Scheithauer, Cariveau, Call, Ormand, and Clark (2016) studied token economies in students with challenger behavior and intellectual and developmental delays. Of particular relevance is that of the 24 participants studied, 22 were individuals with autism, and four were individuals with Attention-Deficit Hyperactivity Disorder (ADHD). The study began with a functional behavior assessment (FBA) to identify what reinforced the identified challenging behavior. Behaviors identified included aggression, disruption, elopement, inappropriate vocalization, and self-injurious behavior; the functions behind these behaviors served as escape in the majority of individuals. Other functions included tangible functions (e.g. to obtain a particular item), and attention-seeking functions (e.g. to get attention from the teacher).

The token economy used was a closed-economy, one in which tokens and reinforcers were only obtainable within the token economy itself and were unavailable outside of token-exchange times. Tokens were made contingent upon appropriate behaviors, the absence of challenging behaviors, or a combination of the two. Production schedules in several individuals were differentiated with regard to academic or leisure time. Individuals started to earn tokens on a dense schedule that was slowly decreased to increase social validity and the practicality of the intervention itself (Scheithauer et al., 2016, p. 160).

There were also differences in exchange-production schedules for individuals: while some individuals could exchange tokens at the end of the day, others could exchange after a
specified number of tokens. Additionally, a few individuals were allowed to exchange after each
token was earned. Token-exchange differed for individuals as well: some tokens were able to be
exchanged for a specified amount of time with an item or activity (e.g. 1 token is 30 seconds of
time), some were exchanged for a specified amount of an item (e.g. 1 token is 1 piece of candy),
and some were more generalized reinforcers wherein tokens could be exchanged for multiple
items (e.g. the individual was able to pick from a menu of items). Each of these described
variations was coded in the appropriate manner (Scheithauer et al., 2016, p. 160).

The results of this study were such that the final behavior plan for 22 of the 24
participants included token economies; the remaining two used simpler interventions that were
just as effective as the token economy. The average reduction in challenging behaviors across
participants was 70.18%, with a median of 92.94%; 17 participants experienced a reduction in
challenging behavior of 75-100%. Furthermore, the inclusion of a menu of reinforcers in the
token-exchange schedule produced moderately higher reductions in challenging behavior than a
single reinforcer (Scheithauer et al., 2016, p. 161-162).

Scheithauer et al. (2016) also identified five aspects of token economies that their study
indicated should be included in future token economies:

a. Use of reinforcers should be restricted outside of the token system while
   participants are in the treatment center
b. tokens should be delivered on an established and consistent schedule
c. exchange time is to be clearly defined
d. backup reinforcers should be consistently available at all times, and
e. assessment tools (i.e. functional analysis, preference assessment) should be used to
guide the selection of backup reinforcers (Scheithauer et al., 2016, p. 162-163)
The results of this study indicated two areas of interest. First, given the significant amount of behaviors maintained by escape, the results showed token economies to be effective because reinforcement may be given when an individual exhibits discrete behavior in the form of compliance or task completion. Additionally, token reinforcement can also signal the remaining amount of required work, and the distribution of tokens is less disruptive than stopping to consume a backup reinforcer, thus supporting the preferential behavior of staying engaged and completing a task.

In like manner, just as tokens can be given, tokens can be taken away. Scheithauer et al. (2016) stated that token economies with response cost were more effective than those without; that is, token economies where tokens could be taken away were more effective than token economies where tokens could not be taken away. However, if response costs were to be included, the individual had to be able to earn the opportunity for the backup reinforcer – that is, the individual had to be able to earn the tokens back. Without being able to earn the tokens back, there were no contingencies in place for appropriate behavior once the tokens have been lost.

In summation, Scheithauer et al. (2016) exceeded the limitations set by Fiske et al. (2015). The study conducted by Scheithauer et al. indicated the effectiveness of using token economies with individuals with autism and ADHD. Unlike the study conducted by Fiske et al. (2015), this study used a larger sample size of 24 participants. Scheithauer et al. (2016) established the token economy for the study itself, and participants unfamiliar with token economies were trained and acclimated to token economies before the study began.

Nelson (2010), Coelho, Barbosa, Rizutti, Muszkat, Bueno, and Miranda (2015), and Scheithauer, Cariveau, Call, Ormand, and Clark (2016) all agreed about the effectiveness of using token economies to promote appropriate classroom behaviors, such as staying engaged or
on task, completing tasks, and class participation. Twenty-five adolescent participants with ADHD were studied to determine the effects of cognitive behavioral therapy and token economies on the reduction of inappropriate or problematic behaviors. Parents identified 10 such behaviors prior to the study occurring in a manner akin to a functional behavior assessment. Researchers analyzed the behaviors listed by parents and caretakers and created behavioral categories. The behaviors present in most children were disobeying rules and routine, verbal/physical aggression, disorganization, and impulsiveness (Coelho, Barbosa, Rizutti, Muszkat, Bueno, and Miranda, 2015, p. 5).

Over a 10-week period, parents recorded the behaviors immediately after they occurred and recorded the number of times each behavior occurred. After each instance of behavior, the parent demonstrated how the child should act; this was done every time the problem behavior occurred. During weekly CBT sessions, researchers tallied the behaviors and gave children a token for each non-occurrence (delayed token production). After 10 sessions (exchange-production) the children exchanged the tokens for prizes. Through the 10-week period, parents utilized various means of positively reinforcing the appropriate behavior (e.g. praise, extended time for preferential activities) with the goal of positive reinforcement of behavior. During the weekly sessions, the therapists reinforced through positive reinforcement techniques and the participants were encouraged to reinforce each other through the same means. After the 10-week period, the tokens were counted and each child awarded an age-appropriate object (e.g. case, crayons, pens); the family also individually gave rewards their child had desired but not been offered during the ten weeks (Coelho et al., 2015, p. 4).

Impulsivity, hyperactivity, disobeying rules and routine, being easily frustrated, and anti-social behavior all decreased in frequency over the course of the 10-week trial. Other behavior
areas studied did not demonstrate a statistically significant increase or decrease. One such area was that of physical/verbal aggression, which was noted as a problem area by parents, but the data of this behavior started at a low-average frequency and subsequently dropped. There were limitations of results in other areas; for instance, lack of initiative in completing homework was difficult to monitor as the participants were of a lower socio-economic class in which many parents worked full time and children were left alone at home. In individuals with inattentive subtype ADHD, disorganization and self-care were two areas that required a level of monitoring that was not able to be received due to parents’ work schedules; lack of supervision and the added difficulty of completing these tasks due to their specific subtype accounted for the lack of results in this category (Coelho et al., 2015, p. 7). These two particular behaviors retained a higher than average frequency throughout the study due to the inattentive subtype of ADHD, not due to the ineffectiveness of token economies used within CBT. Overall, however, using token economies as part of cognitive behavioral therapy “effectively diminished externalizing (impulsivity, hyperactivity, disrupting routine, low frustration tolerance, and antisocial behavior) and internalizing behaviors (poor self-care and disorganization)” (Coelho et al., 2015, p. 7).

Furthering the positive effects of token economies, Nelson (2010) conducted a study using undergraduate students participating in a token economy system to increase classroom participation. Nelson implemented a token economy to encourage student participation in the form of asking questions in his classes. Students received tokens for asking “good” questions in class: (a) content-related questions, (b) sensible to the instructor, (c) related directly to the course material, and (d) not a repeat of a previously asked question. Participants were 292 undergraduate students taking classes over a period of semesters; median age was 25.26, students were ethnically diverse, and relatively evenly distributed across class standing. Students were
only able to earn one token per day, as they translated to extra credit points on the course’s final exam.

The results of this study suggested the usefulness of implementing a token economy to encourage classroom participation; 78% of the students chose to participate through asking questions, and on average each student received a token once every three to four days; the number of questions asked ranged from 0 to 26, with the mean being 7.42 questions asked; furthermore, greater overall class participation resulted in better overall class performance when a positive relationship between tokens and assessment scores was found (Nelson, 2010, p. 52-55).

Nelson (2010) noted three main strengths of this system: (1) it provides clear rules for assessing classroom participation before starting the intervention; (2) it minimizes the increased workload for professors by easing the assignment of points for classroom participation; (3) it may have overcome students’ feelings of being coerced into participating in class – no student ever reported feeling as if he or she was forced to participate in class (p. 55). Limitations of the study were: (1) the potential for students to ask questions to which the instructor does not have answers; (2) discussions related to student questions required substantial amounts of time, which the instructor often had to limit; (3) this study did not record any type of data regarding further contributions made by students (i.e. answers to instructor-posed questions or responding to ideas proposed by other students) (p. 55). However, with adequate planning and understanding, limitations 1 and 2 can be appropriately dealt with to the extent that they no longer act as limitations.
Smaller Class Sizes

In addition to the token economy system and its effects on behavior and subsequently student achievement, there has also been significant study as to the effect of smaller class sizes on student growth and achievement. In particular, Tennessee’s Department of Education has conducted its own studies on the effects of the reduction of class size on student achievement. Smaller class sizes, if demonstrated effective, lead to higher student achievement and growth for all students in general and students with learning disabilities in particular. Additionally, behavioral modifications such as token economies become simpler to implement when classes have fewer students (Nye, Hedges, & Konstantopoulos, 2000).

Tennessee’s own studies are the most relevant as they depict students in Tennessee, which most closely resembled the types of students studied in the case studies in this dissertation. From 1985 to 1989, Tennessee conducted an experiment known as Project STAR (Student-Teacher Achievement Ratio), with several follow-up studies throughout the 1990s as those students graduated high school. Project STAR is included in this study as more recent evaluation of Project STAR’s findings by Nye, Hedges, and Konstantopoulos (2000) indicated that the initial findings of Project STAR underestimated the effects of reduced class size on achievement. Class size had an effect on student achievement to such a level that it warranted an educational policy response and it demonstrated benefits to all types of students in all types of schools.

Students in the 1985-1986 kindergarten class were scrutinized in a longitudinal study lasting to grade 3 – Project STAR would begin in kindergarten and follow the students successively through grades 1, 2, and 3. The legislation that prompted Project STAR required three main questions to be answered:
a. What are the effects of a reduced pupil-teacher ratio (13-17 to 1) on the achievement (normed and criterion tests) and development (self-concept, attendance, etc.) of students in public elementary school, grades K-3?

b. Is there a cumulative effect of being in a small class over an extended time as compared with a one-year effect for students in a small class for one year?

c. Does a training program designed to help teachers take maximum advantage of small classes or to use aides effectively improve student performance as compared with teachers who have no special preparation for their altered conditions? Do differences in teacher behavior attributable to staff development increase student learning? (Tennessee State Department of Education, 1990a, p. 4)

Schools across Tennessee in a variety of settings were included: urban, suburban, and rural schools. Schools classified as inner-city or suburban were located within the major metropolitan areas of Memphis, Nashville, Knoxville, and Chattanooga. Outside of metropolitan areas, census definition classified schools as urban or rural according. Researchers with Project STAR consulted with local school officials to ensure agreement with their school’s designation; 17 schools classified as inner city and 16 schools classified as suburban were chosen from Memphis, Nashville, Knoxville, and Chattanooga. Fifteen of the 17 schools classified as inner city were located in Memphis. With regard to urban schools, eight were located in areas such as Maryville and Manchester; there were 38 rural schools. The number of students on free-and-reduced lunch helped determine socioeconomic status. Overall, the 79 Project STAR schools were spread throughout the state (Tennessee State Department of Education, 1990a, p. 5).

Project STAR had as its goal 100 small classes, 100 regular sized classes, and 100 regular sized classes with teacher aides. These goals were met. Project STAR had 128 small classes with
an average of 14-15 students per class; 101 regular classes with an average of 22-23 students per class; and 99 regular classes with teacher aides of 22-23 students as well. To mitigate the influence of the Hawthorne Effect, or changes in behavior due to awareness of being observed, schools were sought out as comparison schools – schools with average sized classes that would administer the same tests to their students as were used by the Project STAR schools. In sum 22 comparison schools were found and utilized the same standardized tests that the Project STAR schools used (Tennessee State Department of Education, 1990a, p.6).

In most qualities, Project STAR schools were similar to non-Project STAR schools. Curriculum for schools participating in Project STAR remained unchanged; schools participating in Project STAR were to use the same curriculum as non-Project STAR schools. There were no special considerations made; no differences in materials, supplies, curriculum, etc., were made between Project STAR schools and non-Project STAR schools. With regard to funding, the state only funded additional costs for Project STAR teachers and teacher aides in the event that participating schools needed more teachers; there were no other changes in organization or scheduling other than class sizes (Tennessee Department of Education, 1990a, p. 5).

Three assessments were administered during Project STAR, the Stanford Achievement Test (SAT), Tennessee’s Basic Skills First (BSF) test, and the Self-Concept and Motivation Inventory (SCAMIN). Each spring, researchers administered the correct grade level of the SAT. The SAT was a norm-referenced test covering reading, math, spelling, and listening; in the higher grades it also covered science and social science. The SAT also provided subscores for math and reading. Given that there was a difference between what was taught and what was tested by the SAT, Project STAR contracted with the State Testing Service to develop STAR Criterion Tests; these tests covered BSF criteria, or learning objectives, for grades 1-2 in reading
and math. Lastly, researchers administered the Self-Concept and Motivation Inventory (SCAMIN) test, which measured elements of self-concept that were of concern to Project STAR. The SCAMIN test proved useful for comparing groups – in this case, small classes with regular classes (Tennessee Department of Education, 1990a, p. 16).

Project STAR concluded that smaller class sizes affected students in primary grades in reading and math; however, the effect was not statistically significant. The results were as follows:

- Students in smaller classes had higher performance; this effect was the most pronounced in Kindergarten and was increased in grade 1. It was less pronounced in grades 2 and 3.
- This suggested that efforts to reduce class size should have been concentrated in Kindergarten and grade 1.
- The effects in reading and math were similar; however, overall not as significant as expected.
- Smaller class sizes reduced retention rates; teachers were unwilling to retain marginal students in smaller classes.
- Although the effect of smaller class size and teacher aides caused minimal changes in instructional practices, it produced a more effective execution of existing practices. (Tennessee Department of Education, 1990b, p. 187-196)

While class size reduction did not introduce major changes in instructional methods, it provided a more thorough execution of existing instructional methodologies. With a smaller number of students or with the regular class size and an aide, teachers were at an advantage. Teachers could complete basic instruction much more quickly, which allowed more time for
covering additional basic material and a more in-depth instruction regarding basic content.

Teachers used supplemental and enrichment activities. Smaller classes also permitted teachers to more often conduct concrete learning activities. Teachers could also use learning centers and other desirable primary grade practices (Tennessee Department of Education, 1990b, p. 193).

Additionally smaller classes allowed for:

1) increased monitoring of student behavior and learning
2) opportunities for more immediate and more individualized reteaching or enrichment
3) more frequent interactions with each child
4) a better match between each child’s ability and the instructional opportunities provided
5) a more detailed knowledge of each child’s needs as a learner, and
6) the necessary time to meet individual learner needs using a variety of instructional approaches. (Tennessee Department of Education, 1990b, p. 193-194)

These findings prompted Nye, Hedges, and Konstantopoulos (2000) to argue that the findings presented by Project STAR are not as lackluster as they were initially thought to be. Limitations of Project STAR included a flawed implementation, and it is this flawed implementation that more than likely led to the underestimation of the effects of smaller class sizes. Accordingly, small classes benefitted all students in all types of schools.

Nye et al. (2000) noted three major problems, one technical and two conceptual, with prior analyses of Project STAR. The technical problem was caused by ignoring the consequences of clustering students within schools and classrooms: students in the same school were more “likely to be more similar in their achievement test scores than students in different schools… the sampling uncertainty of treatment effects and other features of the data tends to be
underestimated, often making results appear to have greater statistical significance than is justified” (p. 126-127).

The first of the two conceptual problems dealt with the question of whether the intended class sizes were actualized; did classes that were assigned to be small maintain the intended size range, and similarly for the larger classes? The second conceptual problem is that the study itself was imperfect; due to student attrition and student migration between groups, the internal validity of students being randomly assigned to groups became compromised. Thus, Project STAR could not rely solely on this randomization to provide internal validity, and the threats to internal validity presented by attrition and migration required examination (Nye et al., 2000, p. 127).

Intended class size was not always attained: classes assigned to be small often fit the criteria, but classes assigned to be larger often had fewer than required students. This overlap between small classes and nominally large class, Nye et al. (2000) argued, reduced the small class effect (p. 147). Second, attrition was initially considered a factor; however, “the treatment effect in the year previous to dropping out was the same for student who dropped out later and those who did not” (Nye et al., 2000, p. 147), which suggested that differences in achievement between smaller and larger classes was not caused by attrition. Similarly, with student migration between classes, an analysis with an estimate of the initial assignment of students resulted in estimates of small class effects nearly identical to what was found using the actual class type.

When the clustering of students within schools and classrooms was considered, evidence was found for the positive effect of small class size. Achievement scores demonstrated a positive effect in math and reading at every grade level from Kindergarten to grade 3. These effects were consistent across all schools. Earlier findings in Project STAR viewed the smaller class size
group as a whole; that is, viewed the entirety of the small class size group across the entire project. This prompted researchers to note that the group, as a whole, did not have significantly increased achievement. However, when the data were reexamined with a focus on achievement within individual schools, the effect of smaller class sizes was found to be statistically significant. Given that this was consistent across all schools, this new analysis suggested that small classes benefit students of all types in all kinds of schools (Nye et al., 2000, p. 147).

When compared to prior research, Nye et al. (2000) found that the data presented by Project STAR to be on par with expected results of a reduction of class size to an increase in achievement: “a reduction of class size from 25 to 15 students would have been expected to yield an increase in achievement of .215 SD, in the center of the range of .15-.30 SD obtained in the STAR experiment” (p. 147). Furthermore, when Project STAR results are compared to econometric studies conducted throughout the 1970s, a similar reduction in class size “from 25 to 15 would have been expected to increase achievement by .157 SD, at the lower end of the small class effects obtained in this analysis of the STAR data” (Nye et al., 2000, p. 147). Thus, the results of the data found by Project STAR aligned with prior studies on class size reduction; these studies were smaller in scale, which lead to questioning of their generalizability. As such, Project STAR became a supremely important study and held an advantage due to its magnitude of scale and its results being similar to expectations established by prior studies, whose results demonstrated that the reduction of class size had effects that were large enough to be educationally significant.

Harfitt and Tsui (2015) studied the effects of a reduction in class size. Building on previous research and analysis conducted by Project STAR (Tennessee Department of Education, 1990a) and Nye et al. (2000), Harfitt and Tsui (2015) studied English language
learners to determine if a reduction in class size had positive effects. Their study focused on the following three questions:

(1) What are the differences, if any, between teaching and learning in a large English language class and in a reduced-size English language class taught by the same teacher?

(2) What are the factors that mediated the different teaching and learning processes in large and small English language classes, if any?

(3) Can findings from research questions (1) and (2) be understood from a theoretical perspective? (Harfitt & Tsui, 2015, p. 848).

Harfitt and Tsui (2015) conducted their study in Hong Kong using class sizes of a different size than those used by Project STAR, but proportionally similar. In Hong Kong, any class smaller than 30 is considered to be small, with the average size much higher; in contrast, Project STAR considers 13-17 students a small class and 22-25 a larger class. For the purposes of their study, class sizes were established at 25 students for the small classes and 40 for the larger classes. In actuality, the classes averaged 24.5 students for the smaller classes and 39.25 for the larger classes, thus their requirement was met. Participants were student volunteers ages 12-16.

Over the course of several cycles of teaching in multiple classrooms, 60 lessons were observed for 35-40-minutes, video recorded, and then transcribed. Researchers scrutinized student-initiated interactions such as students initiating questions, seeking clarifications, volunteering answers, and initiating interactions with peers. They viewed these actions as indicative of how the students perceived their roles in the classroom community. Furthermore, use of humor between student and teacher was documented as it demonstrated a comfortable
relationship with the teacher. Student engagement in the form of group discussion of classroom tasks, when students worked with peers without prompting from teacher, and when students put their heads down for longer than one minute (Harfitt and Tsui, 2015, p. 850).

Throughout these classroom observations, it became apparent that smaller classes saw students more often volunteer responses, initiate interaction with the teacher on a more frequent basis, use humor more often, and help each other more frequently; additionally, they were often more engaged in learning. Overall, the same task given in both a smaller class and the larger class often generated livelier and student-involved discussion in the smaller class.

Student and teacher interviews were also conducted and generated data with which to answer research questions (2) and (3). In sum, there were 229 student interviews conducted with groups of 4-6 students and 29 interviews with teachers (Harfitt and Tsui, 2015, p. 850-851). These interviews “showed that students were consistently more positive about their learning in the small class, citing better classroom management, increased opportunities to ask questions, and better relations with their peers and teachers” (Harfitt and Tsui, 2015, p. 853).

Overall, the students reported experiencing a more positive learning environment: all reported that the smaller classes had more spirit and harmony than the larger classes. Students previously in larger classes described having a sense of belonging and better and stronger interpersonal relationships with their classmates, and more attention from the instructor (Harfitt and Tsui, 2015, p.853-855). This is contrasted with reports from students in larger classes whose experience was not the same. Students in larger classes reported greater fragmentation of the class into distinct groups; classes felt more like collections of small groups than whole units, with a corresponding drop in a sense of belonging and participation and attention from the instructor. Teacher interviews supported this data as well; smaller classes were more willing to
work together in groups than larger classes. Cliquish behavior was higher in the larger classes, which made group work more difficult. Teachers also observed the same sense of harmony and spirit the students mentioned in their interviews (Harfitt and Tsui, 2015, p. 855).

Harfitt and Tsui (2015) utilized their results to argue that the stronger sense of belonging and community presented by smaller class sizes had four major effects on these students in four distinct areas: (1) engagement with learning, (2) peer support and language learning anxiety, (3) sense of competence and self-worth, (4) teacher and student relationships.

Findings reported by Harfitt and Tsui (2015) stated that all the students in the small classes reported, in interviews, higher engagement in learning – the smaller class size promoted an atmosphere in which they felt more comfortable asking more questions and opportunities to speak in English. The reduction in class size also promoted more on-task behavior from the students; students reported fewer disruptions by classmates and the teacher having more control over the classroom (p. 856).

Teachers reported the environment itself was more supportive – the smaller class size presented more opportunities for students to elicit help from peers and students less apprehensive about sharing work with each other in order to benefit the group (Harfitt and Tsui, 2015, p. 856). Additionally, students demonstrated the habit of forming their own groups without prompting from the instructor. To further illustrate the sense of community, Harfitt and Tsui (2015) noted that during social times, groups from the smaller classes often stayed together; students would often be found eating together, playing and talking together, and often shared ideas on school work (p. 857). To an even greater extent, two of the schools in the study reported that student met outside of school hours to help each other with homework and other assignments; students reported that during these times they often checked each other’s work, worked to understand
what was wrong and why it was incorrect, and planned essays together (Harfitt and Tsui, 2015, p. 857).

Working together in this manner also promoted an increase in the sense of competence and self-worth of students. “Students interviewed said that they felt ‘happy’ and ‘proud’ to support their classmates [through peer tutoring], demonstrating a sense of self-worth within the classroom community” (Harfitt and Tsui, 2015, p. 856). Similar findings were shared in focus-group interviews where students noted that in larger classrooms students did not receive recognition and did not feel as worthy or as competent; students in larger classes were unwilling to help others through sharing work or ideas, making those needing help feel unworthy. “The fear of being laughed at if students make mistakes was closely associated with foreign language learning anxiety and was one of the major reasons for not participating in class” (Harfitt and Tsui, 2015, p. 858).

The positive effects of a smaller classroom environment also bolstered teacher and student relationships; Harfitt and Tsui (2015) noted that teachers began discussing their students and classrooms using an inclusive form of the word “we.” Teachers reported that the smaller classroom environments were more intimate in that they were able to determine student moods and behavior, which in turn led to a better understanding of the individual student’s strengths and weaknesses and more targeted lesson planning (Harfitt and Tsui, 2015, p. 859).

Overall, the study conducted by Harfitt and Tsui (2015) noted findings similar to previous studies on reduced class sizes wherein smaller classes “possessed a stronger sense of belonging or community, developed closer relationships, provided peer support, recognized each other’s expertise, and saw the classroom arena as a more relaxed and happier environment for
learning” (Harfitt and Tsui, 2015, p. 859), all of which led to an increase in academic achievement.

Gaps in Research

The literature reviewed within this chapter dealt with the impact of PBIS and token economies on managing student behavior, and with the impact of smaller class sizes on student engagement. Research demonstrated that these practices were highly effective for most students. However, minimal research exists on the combined effect of these two techniques. Furthermore, several researchers (Fiske, et al., 2015) concluded that more research was necessary to determine the effects of token economies and smaller class sizes on students with autism and students with ADHD. Although there has been research conducted on PBIS and its effects on students with autism, researchers have concluded that more research was necessary. Similarly, research on smaller classes has shown to be promising for all students, but there have been few studies on the specific effects on students with autism and students with ADHD. There has been little to no research on the combination of PBIS and smaller classes and its effects on students with autism and students with ADHD.

However, when PBIS and smaller classes have been used: students with autism and students with ADHD have major positive changes in their behaviors and consequently their academic growth and achievement. Thus, the literature reviewed here provides a solid foundation for conducting further research to explore the nature of PBIS and smaller class sizes used in conjunction to improve student behavior and student academic achievement and growth.

Summary

The focus of this chapter was best practices and evidence-based practices in special education. Spaulding (2009) and Clay (2016) provided evidence that best practices promoted
better learning outcomes for students with learning disabilities. Throughout, this chapter emphasized practices that increased student engagement in lessons, practices that increased academic growth, and practices that increased positive behaviors in the classroom.

Spaulding (2009) concluded that the method for determining best practices was to conduct more research into techniques (p. 10). However, Spaulding (2009) also focused more on the primacy of the teacher’s own discriminative ability due to the fact that educators must know their individual student needs, which were learned through time spent with the student, effective forms of assessment, and accrued teacher experience. However, Clay (2016) argued for specific techniques that included positive relationships, behavioral supports, token economies, and small group instruction as effective means of educating students with emotional and/or behavioral disability.

Scheithauer, Cariveau, Call, Ormand, and Clark (2016), and Clay (2016) agreed that token economies were highly effective means of managing behavior in students with learning disabilities. Nye, Hedges, and Konstantopulos (2000), Clay (2016), and Harfitt and Tsui (2015) agreed that a reduction in class size was also effective in increasing academic growth and achievement in students with learning disabilities. Having established that class size reduction and token economies were effective in improving students, further review of the literature was conducted in order to more fully understand their effects on students with learning disabilities.

This chapter focused specifically on students with autism and students with Attention-Deficit Hyperactivity Disorder (ADHD) in alternative education settings. These education settings were designed to meet atypical student needs that cannot be met in a standard education setting (Kleiner et al., 2002, p.55). Gelbar et al. (2015) added that alternative education settings also served students with disabilities that have behaviors that prevent them from learning in the
traditional environment (p. 288). From this research, certain shared characteristics of alternative education settings arose: low staff-to-student ratio, more intensive approaches, more intensive data collection, and a more therapeutic approach (Gelbar, et al., 2015, p. 289).

To further the efficacy of the alternative education setting, research into Positive Behavior Interventions and Supports was conducted. PBIS was understood as a larger school behavioral structure that allowed for targeted and individualized approaches to modifying student behavior with practices that were predictable, safe, and consistent (Gelbar, et al., 2015, p. 290). Utley and Obiakor (2012) identified characteristics of effective PBIS systems as the following:

(a) the development of positive behavioral expectations, (b) specific methods to teach these expectations to staff and students, (c) proactive supervision or monitoring of behaviors, (d) contingency management systems to reinforce and correct behavior, and (e) methods to measure outcomes and to evaluate progress across three tiers. (pp. 49-50)

Within the structure of PBIS, token economies were used as the practical method by which the behavior modification was implemented. Research revealed a rich history of development of the token economy as a means of modifying behavior. From the 1800s to present, research has been conducted on token economies in various contexts. This chapter described animal experiments from the early 1900s that established the foundational research into token economies and their various functions. Research into studies from the 1970s illustrated the formulation of token economies and their role in applied behavior analysis. The research from this chapter culminated in the conclusion that token economies can be used to modify student behavior in the educational environment (Scheithauer et al., 2016; Nelson, 2010; and Coelho et al., 2015).
Stemming from the notion that smaller classes facilitate easier implementation of behavior modifications, Project Student-Teacher Achievement Ratio (STAR) conducted significant research into the efficacy of smaller class sizes and demonstrated the positive effects of smaller class sizes. Project STAR was included because it studied students from the same background as the students studied in this research. Initially, Project STAR underestimated the effects of smaller class sizes; however, more recent analysis and reevaluation of the data demonstrated a benefit of smaller class sizes to all students.

The initial conclusion reached by Project STAR was that smaller class sizes had some effect on students in primary grades in reading and math; however, the effect was not immense (Tennessee Department of Education, 1990b, p. 196). Effects in other areas were also not statistically significant and did not immediately warrant policy changes. While class size reduction did not introduce major changes in instructional methods, it provided a more thorough execution of existing instructional methodologies. With a smaller number of students or with the regular class size and an aide, teachers were at an advantage and better able to implement a variety of instructional approaches that benefitted individual student needs (Tennessee Department of Education, 1990b, pp. 193-194).

However, in a more recent evaluation of the data, Nye, Hedges, and Konstantopoulos (2000) argued that the findings presented by Project STAR were not as lackluster as they were initially thought to be due to problems within Project STAR. Once the technical and conceptual problems were identified and accounted for, it was determined that the data presented by Project STAR was on par with expected results of a reduction of class size to an increase in achievement.
Furthering the research into smaller class sizes, Harfitt and Tsui (2015) conducted their own study. Based on previous research and analysis conducted by Project STAR (Tennessee Department of Education, 1990b) and Nye et al. (2000), Harfitt and Tsui (2015) conducted a study of English language learners to determine if a reduction in class size had positive effects on their students in Hong Kong. Given that Hong Kong had comparatively larger classes overall, class sizes were established at 25 students for the small classes and 40 for the larger classes. Class sizes were not exactly the same as Project STAR; however, the classes were proportionally similar in size.

Over the course of various observations, it became apparent that the same task given in both a smaller class and the larger class often generated livelier and student-involved discussion in the smaller class. During various student and teacher interviews, Harfitt and Tsui (2015) found that students from smaller classes generally had a more positive outlook about their education experience, more chances to ask questions in class discussions, and overall better relations with peers and teachers (Harfitt and Tsui, 2015, p. 853). Teacher interviews supported this data as well; smaller classes were more willing to work together in groups than larger classes.

Smaller class sizes had four major effects on students that increased academic achievement: (1) increased engagement with learning, (2) increased peer support and decreased language learning anxiety, (3) increased sense of competence and self-worth, (4) increased positive teacher and student relationships (Harfitt and Tsui, 2015, p. 859).

The research presented in this chapter is thorough and significant, but the extant literature contains gaps when it comes to students with autism and students with ADHD. While smaller class sizes and token economies were demonstrated effective to some degree with all students, there is no research on their combined use with students with autism and students with ADHD.
The general conclusion of the existing literature as expressed by Fiske, et al. (2015) is that more research was necessary to determine the effects of token economies and smaller class sizes on students with autism and students with ADHD.
CHAPTER THREE
METHODODOLOGY

The purpose of this qualitative research study was to investigate the effects of behavior modification in the form of positive behavior interventions and supports (PBIS) used in conjunction with smaller class sizes on students with autism and students with Attention-Deficit Hyperactivity Disorder (ADHD). Research conducted separately with PBIS and smaller class sizes has been shown to have an effect on students (Nye, B., Hedges, L.V., & Konstantopoulos, S., 2000; Tennessee Department of Education, 1990a). Yet, minimal research has been conducted specifically on students with autism and students with ADHD. Furthermore, there is little research regarding the effects of these two systems, PBIS and smaller class sizes, used in combination with students with autism and students with ADHD. Therefore, the primary goal of this study was to examine and provide a holistic, descriptive account of the effects of PBIS and smaller class size on students with autism and students with ADHD.

Research Questions (Qualitative Study)

This qualitative study was designed to answer the following six research questions:

1. What are students’ perceptions on the ways PBIS influences student behaviors?
2. What are educators’ perceptions on the ways PBIS influences student behaviors?
3. What are parental perceptions on the ways PBIS influences student behaviors?
4. What are educators’ perceptions on the effectiveness of their teaching in smaller classes?
5. What are students’ perceptions on their abilities to learn in smaller classes?
6. What are parental perceptions of the effects of smaller class sizes?
Qualitative Research

A qualitative research study in the form of an ethnographic, multiple case study was chosen to address these six research questions. These case studies focused on four student participants, their parents, and their teachers for an extended period of time. A single phenomenon was observed in this environment: the school’s combination of PBIS and smaller class sizes was observed to have an effect on student behavior and academics. Due to the small number of students, educators, parents, and other stakeholders, the case study approach was used. Woodside (2017, p. 16) described case study research as “an inquiry focusing on describing, understanding, predicting, and/or controlling the individual (i.e., process, animal, person, household, organization, group, industry, culture, or nationality).” The goal of such research is a deep understanding that represents thorough description and knowledge of the individual, unit, or group studied (Woodside, 2017). With the smaller number of participants, individuals were able to be studied in-depth over an extended period of time. The data in this study contained multiple interviews, observations, surveys, various forms of testing data, and reflective journals submitted by students, teachers, and parents to the researcher for analysis.

Research Approach

An ethnographic, multiple case study approach was chosen for this qualitative research study. Human behavior is best understood as lived experience within a social context (Willis, 2007, p. 240), and this approach sought to develop a detailed account of this school environment and the effects of, or behavioral changes in, students with autism and students with ADHD when PBIS is combined with smaller class sizes. The goal of this approach was to develop a full, rich understanding of human behavior within a natural environment (i.e. one not designed specifically for this study).
Research Setting and Participants

The participants in this qualitative research study were four students attending a private, K-8 school in Middle Tennessee, their parents, and faculty of the school. Two students were selected because their behavior and academic data indicated that PBIS and smaller classes had an effect, and two other students were selected because their behavior and academic data indicated that PBIS and smaller classes had no effect. The school is a small school designed to educate students with learning disabilities, particularly students with autism and students with Attention-Deficit Hyperactivity Disorder. Participants volunteered for the study. Teachers volunteered to be interviewed and be observed, parents volunteered to be interviewed, and students volunteered to be interviewed with parent permission. Working as a member of the school staff provided convenient access to participants, and positive established relationships increased the ease of participants in providing direct and honest answers.

Sampling

This educational facility presented a unique opportunity to study students with learning disabilities in an environment designed to meet their needs. Studying this environment, their teachers, their parents, and their own perceptions about the school demonstrated best practices for teaching students with learning disabilities, namely that PBIS and smaller classes potentially had an effect on students. Convenience sampling of parents, students, and faculty was used because the number of participants was small. Additionally, returning students and new students were included in the study because this provided different perspectives on PBIS and smaller class sizes, and having both sets of perceptions further helped to define best practices.
Data Collection Methods

Data for this qualitative study was collected using a variety of methods. Artifacts in the form of behavior data from behavior point sheets and academic data from test scores indicated that PBIS and smaller classes had an effect on some students but not others. Four students were selected as a result of this observation, two students affected by PBIS and smaller classes and two students unaffected by PBIS and smaller classes. Interviews of these four participants, their parents, and their teachers were conducted in order to gather data regarding the six research questions. Interviews allowed participants to express their perceptions regarding PBIS and smaller class sizes and how they felt it affected their own behavior (in the case of students), their ability to teach (in the case of faculty), and their child’s overall experience of school (in the case of the parents). Interviews were recorded using audio/video recording so accurate transcripts would be obtained.

Information obtained from interviews was then used to inform observations of student behavior in the classroom. Student behavior data during class time was collected using behavior “point sheets” as part of a token economy system. Students earned tokens in the form of behavior points at fixed intervals. Each day was divided into seven periods, each of which corresponded to a specific class time: language arts, math, science, social studies, lunch and recess, academic intervention, related arts. During each period, students could earn zero, one, or two points; a zero meant the student needed to improve (i.e. “needs improvement”), a one meant the student may have had a few minor infractions (i.e. overall “good”), and a two meant the student had model behavior (i.e. “excellent”). Behavior for the period was reviewed with the student at the end of each period and points assigned. Furthermore, students were also able to earn bonus points for behaviors that exceeded expectations. For instance, if one student spills a pencil box and another
student helps without being prompted, he/she would earn a bonus point. Bonus points were only added to a student’s daily total if he/she earned 10 regular points (i.e. the points issued at the end of each class period).

At the end of each day, points were tallied as follows:

- Students earning an 11 or higher earned an “excellent” day and received a small reward ticket.
- Students earning a 7-10 earned a “good” day but did not receive any reward tickets.
- Students earning a 5-6 earned a “fair” day and did not receive any reward tickets.
- Students earning less than 5 points earned a “needs improvement” and did not receive any reward tickets.

Students collected reward tickets and were able to exchange them for prizes every Friday; the token-exchange schedule operated on this fixed interval. Parents also received a daily report detailing the points their child earned. In the case of points not being earned, a short explanation was given. Reward tickets were paper slips as depicted in figure 3.1, with the appropriate reward or rewards circled:

<table>
<thead>
<tr>
<th>Big</th>
<th>Big</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>Small</td>
</tr>
</tbody>
</table>

Student name: ________
Teacher Signature and Date: _____

Figure 3.1. Sample Reward Ticket
At the end of the week, the points earned each day were totaled and more rewards were issued as follows:

- Students who earned 99 points and above earned a “bonus week” and received two big rewards and two small rewards
- Students who earned 71-98 points earned an “excellent week” and received one big reward and two small rewards
- Students who earned 49-70 points earned a “good week” and received one big reward and one small reward
- Students who earned 35-48 points earned a “fair week” and received one small reward
- Students who earned 0-34 points earned a “needs improvement week” and the opportunity to save 10 points and apply them to next week’s total.

Additionally, students could earn rewards for multiple days of excellent behavior; three consecutive excellent days earned a big reward, 10 consecutive days earned 10 big rewards, and 100 consecutive excellent days earned the student a silver dollar and an engraved plaque.

In summary, students earned reward tickets at two times. First, students earned reward tickets at the end of each day. These daily rewards were small rewards, unless a student met one of the consecutive goals stated above. Second, every Friday students received a combination of big and small rewards based upon his/her total points earned for the week. All rewards were able to be exchanged for prizes on Friday.

The token-exchange schedule operated on a fixed interval: students were allowed to exchange their reward tickets for rewards every Friday. Rewards were divided into two categories, big and small, and were non-edible items. This included toys, school supplies, and other items of interest as expressed by the students. Periodically, the teacher surveyed the
students to determine items of interest that the students wished to earn. Small rewards had monetary value of roughly 50 cents; big rewards were worth roughly $1. Examples of small rewards were small vials of bubbles, festive pencils or cap erasers, small slinky toys, and toy soldiers. Examples of big rewards were silly putty, small comic book character statuettes, small action figures, toy cars, permission slips for preferential activities (i.e. reading to lower school students, free time, library time, computer time), and comic book or movie themed folders.

Operant conditioning or the shaping of student behavior was conducted using this token economy. The goal was to extinguish or promote targeted behaviors based on points earned. For example, to extinguish or stop the behavior of talking out, each time a student talked out without permission would mean the student would earn fewer points for that period. For example, to promote a behavior like class participation, the student would not earn points unless he/she participated a specified number of times in class. Furthermore, bonus points were issued at times to also aid in increasing behavior. In a classroom, if multiple students were not engaged in the task, then the students who remained on task earned a bonus point.

Daily behavior point sheets listing all students, points earned, and any commentary were collected as behavior data. These sheets were then analyzed to identify behavior patterns. These point sheets also functioned as field notes and observations as teachers were able to provide additional commentary on a student’s behavior, such as antecedent behaviors or environmental factors that influenced student behavior.

Data were also collected through surveys using a Likert scale. Surveys were self-reported and completed to allow participants to share data that might not otherwise have been shared through other means. Similarly, reflective journals were kept by all participants to obtain data that might not otherwise be shared in an interview timeframe or that might not be encompassed
by a Likert scale survey. Behavior point sheets, acting as observation and field note data, were compared against interview, survey, and journal data as a means of providing triangulation among the data and increasing validity. Lastly, student testing data in the form of curriculum assessments and standardized testing scores were collected as a means of indicating student academic achievement and growth.

**Data Analysis and Coding**

Open, axial, and selective coding and document analysis were the primary means of data analysis for this qualitative study. For interviews, observations, journals, and field notes, open, axial, and selective coding were used. For reflective journals, document analysis was used. In axial coding, category codes were focused on behavior terms (e.g. outburst, off-task, on-task), and terms related to smaller class sizes. With regard to testing data, category codes focused on achievement and growth vocabulary. For the document analysis conducted on reflective journals, category codes focused on key terms from behavior and achievement categories, and other important terms that arose multiple times from the journals.

In the initial stages of data analysis and coding, behavior point sheets and academic data were analyzed and indicated that some students responded to PBIS and smaller class sizes and some students did not. Low numbers of behavior points (weekly averages in the “fair” range) and low academic grades (75 or lower) were used to select students to be part of the group that PBIS and smaller class sizes appeared to not affect. High numbers behavior points (weekly averages in the “good” range) and increased academic grades (76 or higher) were used to select students to be part of the group PBIS and smaller class sizes appeared to affect.

Interviews were conducted with students to determine their perceptions of the point system and their perceptions of smaller classes. Similarly, interviews were conducted with
faculty to determine their perceptions of the effects PBIS and smaller classes may have had on their students. Interviews with parents were also conducted to determine their perceptions of how PBIS and smaller classes may have affected their children. These interviews were recorded using audio/visual equipment and then transcribed. Words were transcribed exactly as spoken.

The coding process began with open coding wherein the interview transcripts were read through multiple times with notes being made that identified participants’ feelings toward the combination of PBIS and smaller classes and its effects. In this initial coding phase, in vivo codes related to those perceptions were applied to data and used to inform observations made in the classroom. These codes, their properties, and examples of participants’ words were also organized into tables.

Observation data was then read multiple times to further identify possible open codes related to perceptions of the effects of PBIS and smaller classes and added to the tables. Subsequently, axial coding was employed, and its purpose is identifying relationships between the open codes, making connections, and bringing the data back together again (Gallicano, 2013). In axial coding, relationships between open codes were identified that allowed multiple codes to be condensed into fewer categories and subcategories focused on perceptions of the effects of PBIS and smaller classes.

Axial codes were further refined during the selective coding process. In selective coding, connections between discrete categories were made in order that data from behavior point sheets, interviews, and surveys could be brought together under core variables that were then transcribed into tables. Results were then written using a neutral voice in order to provide an accurate description of categories and connections between categories. No interpretation of data was made during this step.
Internal validity in the form of credibility of this case study was supported through peer debriefing, triangulation, and member checks. The process of peer debriefing is one in which the researcher submits his/her data and analysis to a disinterested peer for the purposes of exposing biases, unclear information, and other errors within the data or research; the essential point behind peer review is to determine if consensus exists between the data collected and the analysis of the data (Ary et al., 2014; Debriefing, 2018; Lincoln & Guba, 1985).

During the peer debriefing phase, a colleague with a doctorate and familiar with qualitative data analysis was provided with the raw data in the form of journal, interview, and observation transcriptions, surveys, and testing data along with interpretations of this study. The role of the peer debriefer was to provide challenge throughout the research process. Agreement was sought to ensure that data was accurately interpreted without bias. Once this consensus had been reached, member checks were performed.

Member checking, or participant validation, is the process of sharing data with participants to verify that their responses were accurately described and to potentially generate further points of discussion, as well as verify or validate the trustworthiness of the research (Ary et al., 2014; Birt, Scott, Cavers, Campbell, & Walter, 2016; Doyle, 2007) All research participants were shown transcripts of their responses and the interpretations that were made. Participants were asked if these accurately reflected what was observed of them and what they had stated in interviews, written in journals, and responded on surveys. Member checks were done to not only be courteous to participants, but also to gain feedback from participants, call attention to potential missed details, and to potentially gain further insight.

Triangulation was obtained through the use of multiple sources of data: interviews, observations, surveys, student testing data, and reflective journals. Member checks were
conducted at the end of the study, after the transcription of the interviews were completed and initial analysis was conducted. Participants were asked if the interpretations of the data accurately described and interpreted their experiences. Dependability was increased through the usage of an audit trail. Raw data was provided at the end of the dissertation in an organized, easy to retrieve and review manner.

External validity in the form of transferability was established through sufficiently extensive, detailed descriptions of context. Descriptive adequacy was used to provide as much detail as possible about the context of this study, the participants, and their data in order to build transferability of the study.

**Limitations**

Data were limited to the number of interviews, classroom observations, surveys, and reflection journals collected. The small number of participants in this study was a limitation because it affected transferability. The limited breadth of this study to this one particular education environment may have presented dynamics that are unique to this particular social unit, which may bear little relationship to the dynamics of others. These limitations may also have affected the generalizability of this study.

**Ethical Considerations**

The study was conducted with the permission of the head of school and school board. Data collection began after the Carson-Newman IRB granted permission for the study to begin. All participants signed consent forms before interviews, surveys, observations, or collection of student testing data began. Consent forms notified participants that they volunteered to participate in the research, may withdraw from the study at any time, no incentives were offered for participation, that interviews would be recorded, and that all data collected would be stored
on a password-protected computer, or a locked filing cabinet for seven years. Participants were informed that their data would be coded in such a way that it could not be used to identify them. The school was not named in the study, and pseudonyms were used in order to maintain anonymity.

Summary

The purpose of this qualitative study was to investigate the effect positive behavior interventions and supports (PBIS) used in conjunction with smaller class sizes had on four students with autism and ADHD. An ethnographic, multiple case study approach was chosen to study participants in-depth and provide a detailed description of student behavior within this school’s environment. Participants included four students, their teachers, and their parents. Participants were studied over an extended period of time, and data collected included interviews, observations, surveys, various forms of testing data, and reflective journals. Data analysis was conducted through open, axial, and selective coding, and document analysis.
CHAPTER FOUR

ANALYSIS OF DATA

The purpose of this study was to investigate the effects of behavior modification in the form of positive behavior intervention and supports (PBIS) used in conjunction with smaller class sizes on students with autism and students with Attention-Deficit Hyperactivity Disorder (ADHD). This holistic qualitative study utilized an ethnographic, multiple case study approach, with data collected from interviews with participants, a survey, student reflection journals, member checks, classroom observations, and behavior data in the form of point sheets.

A peer debriefer, a colleague with a doctorate and familiar with qualitative data analysis, was provided with the raw data in the form of coding tables and the subsequent interpretations. The peer debriefer discussed the interpretations of data and found that data were accurately interpreted without bias. Consensus having been established, raw data and interpretations were sent to individual participants to complete the member check phase. Participants agreed that their data and interpretations fully represented them and did not seek to make additions or modifications.

Participants

Ten participants were interviewed individually over the period of four weeks. The participants included two faculty members of the school; four students, one in 4th grade, three in 8th grade; and the parents of the four students. All consented to a recorded interview for this study. All participants volunteered for the study and were not offered any form of incentive or
compensation for participating. All participants reviewed and signed the Informed Consent Form found in Appendix A. Interviews were transcribed and sent to participants as part of the member check process. All participants agreed that their transcripts accurately represented what they had expressed during the interview process and that they had no further information to add.

Participants 1 and 2 were educators at the school. Both participants were employed by the school for multiple years and had thorough experience with the class size and PBIS used in the study. Both participants had teaching experience prior to working at this facility and were able to make comparisons between their current placements and previous placements as part of their interviews.

Participants 3, 4, 5, and 6 were students enrolled at the school. Participants 3, 4, and 5 had been enrolled for multiple years at the school, while Participant 6 was new to the school as of this year. Student participants were invited to participate based on artifacts in the form of behavior point data. Behavior point data for Participants 3 and 4 indicated that the point system may have had an effect for managing their behavior; behavior point data for Participants 5 and 6 indicated that the system may have not had an effect on managing behavior. Observations indicated that all students appeared to be affected by smaller classrooms.

Participants 7, 8, 9 and 10 were parents of Participants 3, 4, 5, and 6. Participants 7, 8, and 10 had children that attended the school for multiple years. Participant 9 was new to the school. All participants had experience with their children in settings without PBIS and with larger class sizes. Participant 10 also had experience with attempting to homeschool her children. Furthermore, Participant 10 also had experience with implementing the same behavior point system in her classrooms at home.
**Research Questions**

This qualitative study was designed to answer the following six research questions:

1. What are students’ perceptions on the ways PBIS influences student behaviors?
2. What are educators’ perceptions on the ways PBIS influences student behaviors?
3. What are parental perceptions on the ways PBIS influences student behaviors?
4. What are educators’ perceptions on the effectiveness of their teaching in smaller classes?
5. What are students’ perceptions on their abilities to learn in smaller classes?
6. What are parental perceptions of the effects of smaller class sizes?

Student, faculty, and parent interview guides were developed from these questions and may be found in Appendix B. Multiple themes arose from research data. For Research Question 1, these themes included behavior self-monitoring and reduced anxiety; through ownership PBIS improves behavior and provides a positive outlook; parental involvement and home use; and ease of use. For Research Question 2, these themes included continuous behavior monitoring produces focused behavior management; positive, proactive, and structured approach to behavior; frequent and consistent reinforcement; behavior as separate from self-worth; student motivation; limitations of PBIS; and parental involvement. For Research Question 3, these themes included positive approach leads to accountability and ownership; parental reinforcement, tracking, and monitoring of behavior; goal-oriented; and limitations of PBIS. For Research Question 4, these themes included influence on instruction and limitations of smaller class sizes. For Research Question 5, these themes included influence on instruction and reduced anxiety. For Research Question 6, these themes included influence on instruction, reduced anxiety, and increased confidence.
**Research Question Data**

**Student perceptions on how PBIS influences student behavior.** Student participants were asked interview questions that stemmed from Research Question 1: What are students’ perceptions on the ways PBIS influences student behaviors? Students perceive that PBIS empowers them to address their behavior through conversations with the teacher and positive interactions with the teacher, and through the involvement of their parents. Data were collected and coded into Table C1. Four themes resulted from these data: behavior self-monitoring and reduced anxiety; through ownership PBIS improves behavior and gives a positive outlook; parental involvement and home use; and ease of use.

*Behavior self-monitoring and reduced anxiety.* Participant 3 shared that “Without the points, there’s no telling what you’re doing. You wouldn’t have an idea how you’re acting.” Participant 4 stated, “I have to watch what I’m doing sometimes and make sure I’m not doing anything bad.” Participant 5 shared, “The point system helps us learn what our actions are, like learning how to raise your hand, how to stop talking when you’re not supposed to be talking, like focusing on the teacher.” The point system can also help motivate student participation as well, as Participant 6 shared, “The point system helps me participate in class and ask for help when I need it.”

Participant 3 shared that “I think that the points are better because it tells you how you’re doing, but the clip down [visual / clothespin style behavior systems] you have to get it up every second.” Other participants expressed ideas similar to Participant 3, who stated, “If I don’t earn my points for a period then I try to do better and focus on the future.”

*Through ownership PBIS improves behavior and gives a positive outlook.* The point system promoted ownership of behaviors, as exhibited by Participant 3 as observed through
classroom observations. Participant 3 consistently gave a point value of 0, 1, or 2 that accurately reflected behaviors demonstrated in class with fewer prompts from the teacher. Other participants were able to provide accurate values for their behaviors after some prompting from teacher; prompting took the form of statements such as, “Are you sure?” and “What about the time you did [behavior affecting points]?” It was observed with some participants, such as Participant 3, that students truly did forget their behaviors if they occurred earlier in the class. Other participants, such as Participant 4, tended to require more prompting from the teacher before giving an accurate point value for their behavior. However, with these prompts, students frequently participated in discussing their behavior and the subsequent amount of points earned and generally ended the discussion in agreement with the teacher’s assessment in a positive manner.

Multiple participants expressed that their teacher had conversations with them about their behavior. “[The teacher] likes to let us tell what we earned. [The teacher] is understanding about it, but if we get it wrong [the teacher asks student to reflect],” “The teacher talks about what I earned for points with me,” and “You have be able to handle your time, but if you don’t, Mr. Reed will say something, and you’ll remember that in your head.” From this discussion, a significant point was made by Participant 4 that was also observed in other participants: “It’s important to be told I had a good day.”

The point system promotes a positive outlook on behavior as well. As Participant 4 observed, “[Other students] always talk about how proud they are when they make their day, because they just get that feeling of like, ‘I did good today.’ ‘I did excellent.’” When asked if students liked that reinforcement, that “good feeling,” Participant 4 affirmed that it was important to them as students and to be told when they had a good day. Observations of students
indicated that they more often than not anticipated being told when they had a bad day; students expected to be informed of negative behavior. They did not expect to be told about their positive behavior. As observed, student participants entered this school after being in various environments where there was an overly negative outlook on behavior; participants expressed that they were frequently told how “bad” they were being. As such, being told when they do well was stated as being important by participants; being told they did well made them feel better about themselves, which indicated a rise in confidence. Parent participants also expressed a similar sentiment.

Earning points and rewards motivated students to become more goal-oriented. Participant 4 shared that with the point system, “You have a goal to work toward,” and “You’re working toward stuff with your behavior.” Participant 5 stated, “I want to get all twos, but you can’t always get all twos. If you’re on task, ask for help, raise your hand; that will help you with the point system. I always want to stay on task.” All participants expressed that they enjoyed earning tangible rewards in the form of small toys or fidgets and intangible rewards in the form of free time, library time, or reading to younger students time.

Nearly all participants expressed some form of the idea that the behavior point system helps them to behave better with statements such as the following: “Without the point system, I’d act bad,” “You wouldn’t have people trying to behave as well because they don’t have that motive to get the prize bucket,” “Without the point system, I would act more aggressive and physical,” and “I think the point system helps other children stay on track.” One participant expressed that “Without the point system, I would act exactly the same.”

**Parental involvement and home use.** All student participants expressed that their parents were involved with the point system in one way or another. Participant 4 shared that “If I make
my day, then I may get a reward or something, like a drink from somewhere.” Other participants expressed similar situations.

Participant 5 stated, “…when I was homeschooled, we [used the point system].” Participant 5 also described the point system as it was used in her homeschooling: “Whenever we got an excellent day, we got to pick from a treat bucket, like a candy or something like that. If you got a good day, then you got to pick from a different treat bucket. If you got fair or needs improvement, you didn’t get to pick anything. If you earned bonus days, you got to go somewhere special. [Inaudible – We made a list?] from 1 to 10. We listed what we wanted to do for bonuses, like going out to breakfast or going to [inaudible, but the name of another restaurant].”

**Ease of use.** All participants expressed a variation of the idea that the point system was easy to understand after a slight learning curve. Responses ranged from Participant 6’s, “I didn’t understand why we had it, but I thought it was a pretty good idea… at first it was [difficult to understand], but now it’s easy,” to Participant 3’s “This point system, like two, one… I mean that makes sense.” Overall, there was agreement that it was easy to follow and keep up with.

In addition to being supported by interview responses, survey responses also supported these themes. Survey data showed that respondents identified that PBIS provided a goal for students to work toward; provided a positive approach to managing student behavior; allowed for improving specific behaviors; parents, teachers, and students understood the system better than others; and that PBIS provided a fair and clear understanding of student behavior.
Furthermore, on a Likert Scale of 1-5, with 1 being “Strongly Disagree” and 5 being “Strongly Agree,” 100% of respondents gave a response of 3 or higher to the statement, “I like the point system.” In response to the statements “As a student, I understand my behavior better with the point system,” “As a student, the point system makes me feel positive about my own behavior,” “As a student, I like the prize bucket / getting rewards,” 100% of respondents gave a response of 5. In response to “As a student, I think the point system has helped me to learn more,” 100% of respondents gave a response of 3 or higher.

Student responses to the first research question generated four themes: behavior self-monitoring and reduced anxiety; through ownership PBIS improves behavior and gives a
positive outlook; parental involvement and home use; and ease of use. Student participants perceived that PBIS empowered them to address their behavior through conversations and positive interactions with the teacher and parental involvement.

**Educator perceptions on the ways PBIS influences student behavior.** Faculty participants were asked interview questions that stemmed from Research Question 2, “What are educators’ perceptions on the ways PBIS influences student behaviors?” Educators perceived that effective behavior management in the form of PBIS includes a positive, proactive, and focused approach to behavior with parental involvement. Data was collected and coded into Table C2. Seven themes arose from these data: continuous behavior monitoring produces focused behavior management; positive, proactive, and structured approach to behavior; frequent and consistent reinforcement; behavior as separate from self-worth; student motivation; limitations of PBIS; and parental involvement.

**Continuous behavior monitoring produces focused behavior management.** Participants 1 and 2 both shared that behavior has to be continuously monitored throughout the entire day. Participant 2 drew on experience with PBIS in public school to draw a contrast to illustrate the point: As used in Participant 2’s experience in public school, targeted behaviors were only monitored for one period during the day. At the research school, targeted behaviors are monitored throughout the day. This is a continuous monitoring of behaviors in a broader timeframe, which aids in identifying triggers for behaviors and presents more opportunities for modifying behavior.

Participant 2 shared that in a given period, she only targets one or two behaviors, “Once I know my kid, I try to pick the behavior, one or two, that I know they need help with. If one kid is struggling with hitting, that’s all I’m focusing on. If one kid is struggling with doing their work,
that’s all I’m focusing on. I let them know ahead of time each round, if you want to earn your
two points, you need to work on this and this.”

*Positive, proactive, and structured approach to behavior.* Participant 2 shared that she
viewed her approach to behavior as “almost like I have to be a step ahead,” and “now that I know
how they react, I kind of approach it different so I’m a step ahead or try to be a step ahead and
proactive.” Participant 1 shared that the point system “encourages them to listen to the rules,”
rather than punishes for not listening to the rules.

Intervals for awarding points are shorter and at a fixed rate, as Participant 1 shared
through contrasting her current placement with a previous placement,

“You know, in the regular classroom situation, we always had a reward. We had groovy
sticks when I was at [previous private school]. We used the same groovy stick thing. The
points? Every activity? No. Not so structured as we do now… They could just earn them
throughout the day, if they were doing what they were supposed to, they got sticks. But
here we do it if we go to the gym, we look at what they how many points they get. If we
go to lunch, we do points. If we’re doing, you know, work time… It’s broken down by
each activity.

Participant 2 shared a similar structure for awarding points. After various classroom
activities, such as at the end of math class, Participant 2 will sit with students, review their
behavior, and discuss points earned with her students. This was observed in the classrooms of
both participants during the study. Students were observed to anticipate and understand when it
was time to “do points” and were able to follow a procedure for discussing behavior and
awarding points or groovy sticks in the Pre-K classroom. For Pre-K students, groovy sticks were
colored popsicle sticks that served the same purpose as points for older students; these sticks
acted as physical tokens that students earned and were later able to exchange for prizes once they reached a total of 10 sticks.

Both participants shared that they would rather note when students do well rather than indicate when students are not doing well. As Participant 2 shared, “I like to give [a reward] when they’re just on task… Just when I notice they are doing a good behavior.” Participant 1 shared, “I think it helps children to have positive feedback throughout the day.” This was also stated by students in the data for the previous research question; Participant 4 stated explicitly that he liked being told he had a good day.

**Frequent and consistent reinforcement.** These observations lead directly into the theme of frequent and consistent reinforcement. As observed in classroom observations, students were well aware of when it was time to discuss behaviors and award points or groovy sticks. Participant 1 noted that she modified the original number of behavior check-in times to 14 from 30, stating that 14 behavior check-ins (7 in the morning, 7 in the afternoon) were more manageable and better understood for her Pre-K students. This also was observed to present more opportunities to earn rewards for the Pre-K students, which subsequently allowed for more frequent reinforcement of behaviors. Participant 2 shared a similar observation about the number of check-in times with having 7 check-in times during her day. Participant 1 stated that having 14 check-in times was “more manageable for the students. It’s easier for them, it’s easier for me.”

Consistency seemed to be fundamental for the students; multiple Pre-K students were mentioned. Participant 1 shared that the students who are not at the school full-time, such as those only coming a few days per week, a half day every day, or attending for a period, then not attending, then attending again struggled with the point system more than those who are
attending full-time. Those students attending full-time understood the point system quicker than those who did not.

**Behavior as separate from self-worth.** Similar to a positive approach to behavior, Participants 1 and 2 worked with the point system to help students separate their behaviors from their self-worth. Participant 2 described working with a particular student that struggled with equating bad behavior with being a bad person: “[Student]’s having a hard time, but I just take my time to explain, ‘Remember, this isn’t bad. A one isn’t bad. Zero means you need to work – it’s not necessarily bad and good it’s… are you trying? Are we trying to make this better? You don’t have to be perfect; I just want you to try.’” Participant 2 continued, “Hopefully he’ll get the hang of like, ‘Oh my gosh, I’m a good kid! I get rewarded for being good. Yay!’ It’s just he’s struggling with [earning a 1 instead of a 2], but I just take the time to explain it… It’s also talking with the parent and explaining to the parent, ‘This is how it works. Please explain to him this is not necessarily bad, it just means we are still working on something. You’re not a bad kid. We’re working on this behavior.’” This approach is also used by Participant 2 with other students, “I try to explain stuff to them every time, you know? ‘Why do you do this? You understand what you did. I’m not mad at you, but because of your choice…”” Similar practices were observed in Participant 1’s classroom.

**Student motivation.** Participant 1 stated that, “When I remind students that their behavior will affect their points, they try to do better and listen and things like that.” Similarly, Participant 2 shared, “They’re proud of themselves, and they are excited to earn a prize.”

Participant 1 stated that “When they see other kids getting stuff out of the prize box, they get excited and want to earn prizes too.” Similarly, Participant 2 stated, “If a kid had trouble
sitting, I would give him a mini M&M for sitting for, like, 10 seconds and verbally praise him… You have to find out what they’re motivated by and use that to get what you want out of them.”

**Limitations of PBIS.** Participants 1 and 2 expressed that the point system had two distinct limitations in this setting. The first was that faculty members are expected to provide their own rewards. Although the school has provided funds for rewards used in prize buckets in the past, it has not provided funds for nor reimbursed expenses for prizes purchased by faculty this year. This limits the rewards faculty are able to provide and was observed to add to the stress levels of faculty members.

Another significant limitation is that the point system appears ineffective for non-verbal students. Participant 1 stated that in a previous setting where three of the four students were non-verbal, a point system was not used for that reason. Participant 2 stated that using a point system with a non-verbal student in her classroom was difficult, “I don’t know what motivates him. I’ve tried a lot of stuff. Nothing does.” Being unable to determine motivators for the student and being unable to gather meaningful responses made the point system ineffective for this particular student. Furthermore, as Participant 2 shared, “Some kids don’t care about prizes or rewards. [They’re] not bad… I mean, it’s just the kid.” They are not motivated by the point system to act a certain way, which is similar to what was shared by Participant 6, who stated that she would act the same way regardless of a point system.

**Parental involvement.** Both Participant 1 and 2 expressed a similar opinion on parental involvement with PBIS, stating that parental involvement has to be consistent and aligned with what the teachers are working with at school. Participant 2 stated, “I think it’s really important for the parents to be on board and understand it. I think that makes all the difference in the world, whether it works or doesn’t work. Everyone has to be on board for it to work.” Participant 2
described a situation with a given student where the parent uses the number of points earned to reward the child at home with electronics time: “I think he puts self-pressure on himself to get that [electronic device] every day. If we’re in the middle of the day, and he’s not where he wants to be, that’s when he has his meltdowns. I try to keep it together and explain, ‘Even if you get a seven, that’s still good. Even though your [parent] wants an eight for the [electronic device], you still had a good day with me.’” However, as the discussion continued, Participant 2 shared that the parent does not consistently apply this rule to the child. When the student does not earn the reward at home, the student enters the classroom the next day in a negative mindset and it is more difficult for the student to earn points.

Survey responses generated similar themes. On a Likert Scale of 1-5, with 1 being strongly disagree and 5 being strongly agree, 100% of respondents gave a response of 4 or 5 to “As a teacher, the point system helps me to inform parents of their child's behavior.” Additionally, 100% of respondents gave a 4 in response to, “As a teacher, the point system makes me feel positively about my students' behavior,” and “As a teacher, I think the point system has helped my students to learn more.” 100% of respondents gave a 5 in response to “As a teacher, I like having my students earn rewards from the prize bucket.” One hundred percent of respondents gave a 4 or higher to “As a teacher, the point system helps me to inform parents of their child's behavior.”

Faculty responses to the second research question generated seven themes: continuous behavior monitoring produces focused behavior management; positive, proactive, and structured approach to behavior; frequent and consistent reinforcement; behavior as separate from self-worth; student motivation; limitations of PBIS; and parental involvement. Overall, educators perceived that effective behavior management in the form of PBIS includes a positive, proactive,
and focused approach to behavior with parental involvement, and without PBIS these would not be achievable.

**Parental perceptions on the ways PBIS influences student behavior.** Parent participants were asked interview questions that stemmed from Research Question 3, “What are parental perceptions on the ways PBIS influences student behaviors?” Parents perceived that PBIS in the form of the behavior point system in use at this school enables them to take a positive approach to behavior management. This approach includes being able to target, track, and reinforce behaviors at home. Data was collected and coded into Table C3. Four themes emerged from these data: positive approach leads to accountability and ownership; parental reinforcement, tracking, and monitoring; goal-oriented; and limitations of PBIS.

**Positive approach leads to accountability and ownership.** Participant 9 stated, “I appreciate the fact that [her child doing well behaviorally] gets pointed out to [the student] each day…. Because she was happy about her points, I could tell it meant something to her.” This was important to Participant 9, who stated, “Obviously you’re going to hear about what the kids did wrong. You never get to hear about what they did right.” Participant 7 shared, “With the points, it’s kind of abstract and it’s just numbers, but it’s very simple and it’s not degrading. [A visual, clip-based system that hung in the classroom of a previous school] was just humiliating for him. Every day was a red day, you know what I mean? And then after a while he just stopped caring, and it escalated and it escalated and it escalated, you know? No kid should have to feel like that.” Participant 7 continued, “You always have the opportunities to make more points… You’re never a total loser.”

“It still holds them accountable for the things they do wrong,” stated Participant 9, “In public school, if two or three kids talked, they ruined it for the whole class. Here you have to
own your own behavior.” The individual focus and accountability was important for Participant 9, “This is how you did today, not how the entire class did as a whole… It’s just the fact that she has to own the way she behaves.” Participant 8 shared that it increased ownership of his child’s behavior as well, through comparison to other students, “I think that, particularly in the early stages, him seeing other students make their streaks of days, et cetera, I think that kind of got in his mind of, ‘Hmm… [other student]’s got a streak of so many days.’ He would verbalize that, you know. ‘[Student]’s got 37 days straight,’ and we would always turn that over like, ‘You can do the same thing.’ I think it was one that became more important to him, of wanting to establish that streak of days.”

**Parental reinforcement, tracking, and monitoring of behavior.** Multiple participants shared that they used the behavior point sheets to target and reinforce behaviors at home. “If they have a lower point day, we like to, at home, say, ‘I’d like to see you in this category tomorrow, and if you’re not then we’re going to have to take away something at home,’” stated Participant 7. Participant 8 stated, “It gives us that sort of barometer, if you will of how they’re doing throughout their day. You can always take a look at that sheet and go, ‘Hey, wait a minute. You missed your day today; what happened?’ It was a point we could touch on and have a discussion with him about [his behavior]. Let’s say it was an instance of talking out, you can address that specific behavior with him at the time, you know, like, ‘Why do you think it’s important that you not be talking during that time? Do you think that could be distracting from another child and their opportunity to hear and learn something?’ [It helps us] to be able to focus on those things.”

For Participant 8, specificity was essential in targeting behaviors, and feedback on specific times of days behaviors occurred was observed to be helpful.
Similarly, classroom observations, and interview data from Participant 7 applied this specificity and times behaviors occurred to changes in family life or even with medications. Participant 7 shared that she routinely keeps behavior point sheets and looks for patterns in her both of her sons’ behavior. She frequently identifies patterns such as illnesses, a change in medication, a parent being out of town, a death in the family, or other situations taking place in the home. Participant 7 stated she was able to then convey these data to her doctors and therapists to ensure that her children received the help they needed.

**Goal-oriented.** Multiple participants expressed that they noticed carryover in their children at home, with several of these children taking on more responsibilities and being more motivated to participate in chores and other responsibilities at home. Participant 7 shared that she and her child developed a system for earning money with chores to obtain items that her child wanted, “I set the amount per chore. He completes all the chores. I immediately drop the coins in. So, he checks off the chore and then he sees me visually put the coins in and clink and all that.” In a similar way, Participant 8 shared that his child internalized the nature of working toward a goal; his son had begun working for the church alongside the family to earn money for various clothing and gaming accessories. As Participant 8 stated, “He’s setting this goal of wanting to purchase things and making that correlation of having to do a certain amount of work to get them.” Participant 9 expressed a similar carryover at home with her child now spontaneously offering to help with chores around the house.

**Limitations of PBIS.** Participants expressed limitations with the point system. Participants 9 and 10 shared that the point system may not have been very effective for their children. Participant 9 stated, “She has always been a good student-she really has been… I have never really had problems with her behavior, like ever. She was the little one in elementary they
could send her to the office. They knew she wouldn’t run. She would come back. And then when she would go deliver whatever she was taking, she would then ask the person if there was anything she could take back.” Participant 9 shared that her child’s behavior did not warrant behavior monitoring or the behavior point system. Her child, who also participated in this study, stated that she would act the same with or without the point system. Participant 9 shared that there were the previously mentioned beneficial themes, such as being told about good behaviors, that the point system worked well for, however.

Participant 10 and her child, Participant 5, had used the exact same point system in their home during homeschooling. Participant 10 did not feel that the point system was effective for her child, and stated that her child was unable to earn the rewards at home. Being unable to earn rewards at home made life difficult for the parent and the child, and as result of the negative impact of the point system, Participant 10 no longer used it at home.

Furthermore, similar to Participant 9, Participant 10 shared that the point system was limited for children whose behavior did not need modification and could potentially limit good behaviors. Participant 10 shared that it created a rift between Participant 5 and the other children because Participant 5 frequently did not earn rewards when the other children did. However, as Participant 10 stated, “It got to the point where I was rewarding children for the expectations that I have for them – for my typically developing children.” Further discussion with Participant 10 clarified that for the children whose behavior did not need modification, in this case the more typically developing children in her home, they no longer pushed themselves to have even better behavior. As long as they were able to perform a baseline level of expected behavior, they received rewards and did not try to exceed those expectations.
Survey responses reflected similar themes. On a Likert Scale of 1-5, with 1 being Strongly Disagree and 5 being Strongly Agree, 100% of parent respondents gave a response of 3 or higher to “As a parent, I feel the point system informs me about my child's behavior.” Seventy-five percent of parent respondents gave a 4 or higher and 25% gave a 2 in response to “As a parent, the point system makes me feel positively about my child's behavior.”

Parent responses to the third research question generated four themes: positive approach leads to accountability and ownership; parental reinforcement, tracking, and monitoring; goal-oriented; and limitations of PBIS. Parents perceived that PBIS in the form of the behavior point system in use at this school enabled them to take a positive approach to behavior management; behaviors were easier to track and modify in the home, and the overall outlook on behaviors was presented in a positive manner.

**Educator perceptions on effectiveness of teaching in smaller classes.** Faculty participants were asked interview questions that stemmed from Research Question 4, “What are educators’ perceptions on the effectiveness of their teaching in smaller classes?” Educators perceived that smaller classes present them with more teaching opportunities with more differentiation and individual focus; however, smaller classes limit social opportunities for students. It is noted that parental perceptions were similar to the educator perceptions. Data was collected and coded into Table C4. Two themes emerged from these data: influence on instruction, and limitations of smaller class sizes.

**Influence on instruction.** Participant 2 contrasted this school with her experience teaching in public schools, and stated that smaller classes enabled her to teach more. Participant 2 emphasized the importance of small groups, “You’ve got time to catch them up one-on-one, while the other kids are still in centers doing their own thing you can focus on one and rotate.”
Observations with Participant 1 and Participant 2 demonstrated the importance of one-on-one and how it allowed them to differentiate their teaching to meet the individual needs of students. Participant 1 stated, “I think it benefits every one of those children; They’re all so different, even though they’re fewer there’s still a wide range of learning where they are developmentally and academically. Even though I am teaching five, some of them are on three different levels.” Participants 1 and 2 were observed to differentiate their lessons to meet individual student needs, a practice both expressed as being only possible through having fewer students in each class. Additionally, having fewer students in each class enabled these teachers to have a deeper knowledge of each student and his/her needs, as demonstrated by the specificity and ease with which Participant 1 and 2 were able to discuss individual students during interviews.

Limitations of smaller class sizes. Having fewer students in each class is not without its limitations, as both Participant 1 and 2 expressed. “The only thing I would say,” began Participant 1, “is it would be nice to have [more neurotypical peers]. That would help because in the pre-K and the pre-pre-k class [another school] has “typicals”, so it’s nice to have some that they can [model behaviors for them].” Participant 2 expressed similar concerns over limitations of social opportunities in smaller classes, “Sometimes I feel like they would ‘click’ better with different kids–I wish that there were more kids that they could ‘click’ with that are closer in age or on the same level as them.”

Survey data reflected similar themes for the effect of smaller class sizes on students’ ability to learn. On a Likert Scale of 1-5, with 1 being “Strongly Disagree” and 5 being “Strongly Agree,” 100% of respondents chose “Strongly Agree” in response to the following prompts: “As a teacher, I think smaller classes have helped my students to learn more,” “As a teacher, I think
smaller classes let me have a positive relationship with my students,” and “As a teacher, I think smaller classes let me have a positive relationship with parents.” When asked, “As a teacher, which has helped to increase your ability to teach: the point system or smaller classes?” One hundred percent of respondents chose smaller classes over the point system. Similarly, when asked, “As a teacher, which has had greater influence over your students' academics?” Additionally, 100% of respondents chose smaller classes over the point system.

In summation, responses from faculty participants to Research Question 4, “What are educators’ perceptions on the effectiveness of their teaching in smaller classes?” generated two themes: influence on instruction and limitations of smaller class sizes. Educators perceived that smaller classes present them with more teaching opportunities with more differentiation and individual focus; however, smaller classes limit social opportunities for students. Additionally, it was noted that parental perceptions were similar to the educator perceptions.

**Student perceptions on their abilities to learn in smaller classes.** Student participants were asked interview questions that stemmed from Research Question 5, “What are students’ perceptions on their abilities to learn in smaller classes?” Students perceived that smaller classes increased their focus and increased attention from the teacher. They perceived that this leads to better pacing, more help from the teacher, and empowered them to seek help when needed. Data were collected and coded into Table C5. Two themes emerged from these data: influence on instruction, and reduced anxiety.

**Influence on instruction.** Student participants agreed that smaller classes, classes with fewer students, were quieter and allowed for more focus. Noise was a significant factor for multiple participants. “I couldn’t handle the noise at story time in first grade,” stated Participant 3, “with eight people there’s not so much noise. Like, if we had twenty people in this class,
they’d be talking out and everything, but here it’s not like that.” “I think that having less people allows more time for you to focus, because the more people that’s in a classroom, the louder it is,” shared Participant 4.

“I learn great with a small class, like in two pairs. It’s easier to work in a smaller class,” shared Participant 5, “My teacher works with me more now than my old teacher at [school]. . . Sometimes I don’t understand, like, how math works and stuff, so my teacher describes it to me, and it actually helps.” Participant 3 shared that his teacher now works with him more than at his previous school and does more one-on-one instruction with him. Participant 4 expressed similar notions, “[one-on-one time] allows like, more academic, like actual learning time. So, they can like discuss that I’m struggling with and work on those things.” “It definitely helps me know what I need help with. It’s not like where the whole class knows; I know [the other students in class] won’t make fun of me, but it definitely helps me learn better and to know what I need to get help on,” shared Participant 6.

Multiple participants expressed the theme that a smaller class allows for better pacing by being able to work longer on content with which they were struggling. Participant 4 explicitly stated this, “It was mainly because [the previous school] didn’t like, understand any disabilities that people have; so, they thought that everyone was at the same level and that no one was slower learning or ahead.” Participant 4 continued, “I think that [smaller classes] works better because you get to understand that everyone’s on a different level. you’re not all expected to be on this one level. So, and the small classes allow to spend more time working on things that you don’t understand.”

**Reduces anxiety.** Multiple participants expressed that being in a smaller class resulted in lower anxiety for them. This was observed by being more willing to participate in class and to
ask for help. Multiple participants also explicitly stated that smaller classes reduced their anxiety.

“I’m in a class with eight students. I like that way better than public school. I feel more safe when it’s smaller,” stated Participant 6, “because I dealt with a lot of stuff at public school. I definitely think here I learn better, I can focus, and I can still, like not have to struggle with my anxiety so much.” Participant 3 expressed that he felt more comfortable asking for help in a smaller class, “I honestly think I get way more help here because at the old school I wouldn’t really ask for help that much.” Participants expressed that being less anxious and nervous helped them to ask for help from the teacher when they struggled; feeling safer helped them to focus more on their academics as well.

Survey data corroborated the themes expressed by student participants. On a Likert Scale of 1-5, with 1 being “Strongly Disagree” and 5 being “Strongly Agree,” responses indicated a strong preference of preferring smaller classes over larger class; respondents gave a 4 or 5 to the statement “I like smaller classes,” and 1 or 2 to the statement “I would rather have larger classes (Example: More than 12 students in a class).” One hundred percent of student respondents responded with a 5 to the statements, “As a student, I like being in a smaller class,” and “As a student, I think smaller classes let me have a positive relationship with my teacher.” Student respondents also gave a response of 4 or 5 to the statement, “As a student, I think smaller classes have helped me to learn more.” In response to the question, “As a student, which has helped to increase your ability to learn: the point system or smaller classes?” One hundred percent of respondents chose smaller classes over the point system.

Responses to the fifth research question generated two themes: influence on instruction and reduced anxiety. Students perceived that smaller classes increased their focus and increased attention from the teacher. They perceived that this led to better pacing, more help from the
teacher, and empowered them to seek help when needed. Students’ responses also indicated increased feelings of safety in the smaller classroom.

**Parental perceptions of the effects of smaller class sizes.** Parent participants were asked interview questions that stemmed from Research Question 6, “What are parental perceptions of the effects of smaller class sizes?” Parent participants perceived that smaller classes are a low-stress environment for students where the teacher builds strong, positive relationships with students. Parent participants perceived that this environment provided fewer disruptions, less stress, and less anxiety. Parent participants also perceived that the smaller classes increased academic focus that led to increased confidence and strong student-teacher relationships. While parent participants did perceive there to be a stronger social bond between the students in the class, they also perceived that there were limitations on opportunities for social interactions. Data was collected and coded into Table C6. Five themes emerged from these data: influence on instruction; reduced anxiety; increased confidence; relationships; and social interactions.

**Influence on instruction.** Participant 7 shared that her child was less distracted in a smaller class, “He was so happy to be out of the circus, if you will, because going from a class size of 20 people to six was just huge for him. With Asperger’s, for him, every little sound, every little thing was a distraction. He just could not focus and keep up. . . It just cuts down on all the sensory issues, for one, that kids have in a large classroom.”

The theme of an individual focus on his/her child’s education was expressed by all participants, indicating a high level of importance to parent participants. Overall, parent participants expressed that the one-on-one focus their child receives from the teacher helps
bolster confidence in the classroom and boost academics. All parent participants expressed that having smaller classes was a deciding factor in enrolling their child in this school.

Participant 7 shared, “He can get the help he needs when he’s stuck or when he has a problem.” Participant 7 also stated that smaller classes have “individualized education plans, plus getting to have more attention on the student and where they’re at in their academics.” Participant 7 was not referring to an official IEP, but rather to the teacher being able to individualize instruction.

Participant 8 stated, “I think it offers the opportunity for a lot more individualized focus.” Smaller class sizes, as perceived by Participant 8 were absolutely important to his child’s success, “It’s allowed that more individual focus on him and his learning. . . Not that he wasn’t ever focused on his academia, but I think his acceptance of that responsibility has gotten a lot better. We don’t get nearly the whining or groaning about having to do different things.”

Participant 9 shared that smaller classes let her child have a more individual focus, “She is thriving more academically because [the teacher] can be more one-on-one with her.” Participant 9 emphasized that this was important to her as a parent. Similarly, Participant 10 stated that smaller class sizes were “without a doubt” an influence over her decision to enroll her child in this school. With regard to what effects the smaller class sizes have had on her child, Participant 10 responded, “She’s no longer coming home and expecting me to reteach her stuff at the end of the day. She’s able to ask those questions in class.” Furthermore, Participant 10 noted the increased focus on academics and one-on-one time allowed the child to build responsibility over his/her academics. In this setting, the student was able to ask questions, but did not have an aide helping at each step and possibly completing the work for her. Rather, the student was able to ask for help and receive it, but ultimately had to complete the work on her own.
Reduced anxiety. Parent participants expressed that there was a significant reduction in anxiety in both themselves and their children. Participant 9 noted that during a tour of the school and seeing the classroom environments, she was able to “see the stress kind of come off of her visually as she noticed the ways the rooms were set up.” Participant 9 continued, “I was a little nervous for her sake and how she’s gonna blend in. Even for somebody that’s had some serious anxiety, even when she was around her friends that she’s known for years… The first day she cried. She was nervous. I walked her in. And then she was like “Mom I love it!” The very first day. [Emphatic] The very first day.” Participant 9 noted that this was not a one-time change, but a continued one and vastly different from previous schools. At her previous school, the student would have almost daily panic attacks and have to be forced into the school; however, now the student is happy and excited to come to school. The student is frequently up and ready for school early, more relaxed, and is often giddy and excited upon entering the parking lot.

Participant 7 shared similar experiences with her child, “It’s amazing to see a child have this horrible anxiety and self-doubt and self-image and self-esteem problem. To see them come out on the other side of that – he is confident, he is happy.” Participant 7 continued to emphasize the importance of smaller classes by stating how happy her child is now. Previously, it was difficult to get her child to enter the school; he dreaded it. However, now her child loves school, is often the first person to get ready in the morning and hates to miss school. Happiness was important for Participant 7, “When you’re unhappy, you’re not going to do so well. You’re not going to make friends. You’re not going to feel good about yourself. When you’re happy, all of those things start to come into place.” Furthermore, Participant 7 shared that now her child is thriving academically because he has been given the time to master difficult skills rather than pushed through the material.
Participant 10 shared similar sentiments about reduce stress in the home, “It took a lot of stress off of us at home. She was coming home enjoying it. It was nice to know that she was receiving the education that she needed and taking the stress off the family. I knew she was being educated in a way that was working for her.”

**Increased confidence.** Multiple participants noted that their children expressed higher levels of confidence that stemmed from smaller class sizes. Participant 7 stated that her child “is confident; he is happy.” Participant 8 noted an increase in confidence in his child as well, “Just seeing that step from being that kid to being a young adult, if you will. I know the environment here has played a major part in that. I think his confidence level, the way you guys instruct, and the way he is able to interact with the other kids have helped to build him up, which has allowed him to flourish in those other areas as well.”

Participant 9 noted that her child has experienced a significant boost in confidence in relation to academics. Prior to entering this environment, her child showed no interest in college, despite her mother’s best efforts. Now, Participant 9’s daughter has not only started showing some interest in college but has also begun making plans with her friends for which college they will attend and what degrees they plan to obtain.

**Relationships.** Participant 7 noted that the relationship between teacher and student was stronger in a smaller class, “[The teacher] is not just a teacher; [the teacher] is a supporter of them, like a mentor. I know that he feels that way about [the teacher]. It’s different from ‘Oh, you know, I have a good teacher; we have fun,’ all of that. No, I mean, [the teacher] really cares about these kids and all their issues and their victories and their personal life and family life. It gives [the teacher] more time to really get to know these kids because they spend so much time with [the teacher], away from home… It makes a difference to have somebody that really cares.”
Participant 8 shared a similar statement, “We’re always hearing good interaction between [the teacher] and him, if it’s in the classroom or shooting basketball or whatever the case may be.” Participant 9 noted that her child’s teacher uses humor to establish and reinforce positive relationships with students. “She always comments on how [the teacher] always throws the humor into it. She likes that, instead of straightforward, because she was used to being in a class with something like twenty something kids and the teacher can’t individualize. They don’t have time to do that, and it’s just like ‘Take notes. Do this. Go home.’”

**Social interactions.** As teacher participants expressed concerns over smaller classes having limited opportunities for social interactions, so did parent participants. Participant 8 expressed this sentiment multiple times during his interview; “I won’t say without some reservation coming into this year… that there weren’t some concerns about what social interactions he would miss out on,” and “Again, not that [smaller class sizes] hasn’t come with a little bit of concern over less social interactions with students.”

Participant 7 noted that although social interactions were limited, the social interactions that occurred were positive and stronger than in other settings, “The smaller class setting seems to have a more, closer social bond I guess you could say… Because the kids really get to know each other, and they seem to be more accepting.” Echoing the more accepting nature of smaller classes, Participant 9 contrasted the current social interactions with previous interactions as they related to her child’s anxiety, stating that previous social interactions were extremely negative and hurt her daughter severely. However, in this setting her daughter is now thriving due to the more accepting nature of the smaller class setting, where students accept that each student has an issue or reason for being there and do not see a reason for discussion.
Survey responses reflected similar effects of smaller class sizes. On a Likert Scale of 1-5, with 1 being “Strongly Disagree” and 5 being “Strongly Agree,” 100% of parent respondents responded “Strongly Agree” to the statement “As a parent, I like my child being in a smaller class,” and “As a parent, I think smaller classes help me to have a positive relationship with my child's teacher.” One hundred percent of respondents gave a 4 or 5 in response to the statement, “As a parent, I think smaller classes have helped my child to learn more.” When asked, “As a parent, which has had a larger influence on your child's academics: the point system or smaller classes?” One hundred percent of parent respondents chose smaller classes over the point system.

Parent participant responses to the sixth research question generated five themes: influence on instruction; reduced anxiety; increased confidence; relationships; and social interactions. Parent participants perceived that smaller classes are a low-stress environment for students where the teacher builds strong, positive relationships with students. Parent participants perceived that this environment provided fewer disruptions, less stress, and less anxiety. Parent participants also perceived that the smaller classes increased academic focus which led to increased confidence and strong student-teacher relationships. While parent participants did perceive there to be a stronger social bond between the students in the class, they also perceived that there were limitations on opportunities for social interactions.

Survey data not specific to parent, teacher, or student. The following questions were asked of survey respondents, but there is no indication whether a respondent was a parent, student, or teacher participant. Two major themes developed from these data: smaller class sizes preferred over PBIS, and PBIS positively informs respondents of behavior.
Multiple responses were given when respondents were prompted with the question, “What helps children learn better in a smaller class?”

Figure 4.1. Responses to survey question, “What helps children learn better in a smaller class?”

![Bar chart showing responses to survey questions]

When prompted, “Which is more important to you, the point system or the smaller class?” Eighty percent of participants expressed that smaller class sizes were more important than PBIS.

Table 4.1

Likert scale survey data not specific to parent, teacher, or student respondents

<table>
<thead>
<tr>
<th>Prompt</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>“More learning takes place in a smaller classroom.”</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“The point system informs me about behavior in a positive way.”</td>
<td>20%</td>
<td>80%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“The point system informs me about behavior in a negative way.”</td>
<td>60%</td>
<td>20%</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** A response of 1 indicated “Strongly disagree” and a response of 5 indicated “Strongly agree.”
In summation, these data presented two themes. The first theme is that respondents preferred smaller classes over the point system; this is corroborated with some interview responses from participants. Although most participants could not choose between smaller classes and PBIS and instead preferred to choose a combination, when forced to choose, many participants chose smaller classes over PBIS. The second theme is that PBIS positively informs respondents of behavior. The data indicated that 100% of respondents agreed that PBIS informed them of behavior in a positive way, while only 40% of respondents stated that PBIS informed them of behavior in a negative way. This is corroborated with interview responses from student and parent participants; student participants enjoyed being told about good behaviors and how they did well, parent participants enjoyed being told the good things their children did during the day.

**Summary**

Student, teacher, and parental participants in this qualitative study discussed their perceptions on the ways PBIS and smaller classes influenced student behaviors and their abilities to learn. Data were collected in the form interviews, surveys, reflection journals, and classroom observations and revealed multiple positive themes, or effects on students.

Student participants shared responses that generated four themes: behavior self-monitoring and reduced anxiety; through ownership PBIS improves behavior and gives a positive outlook; parental involvement and home use; and ease of use. Data showed that students perceived they were better able to monitor their own behavior to help them meet classroom expectations. Students also experienced reduced anxiety as a result of PBIS. The more abstract nature of earning points and not having a classroom display were significant factors in reducing behavioral anxiety.
PBIS also influenced students to improve their behavior and form a positive behavioral outlook. Behavior conversations and the subsequent earning of 0, 1, or 2 points contributed to building a positive view of each individual’s behavior. Interviews with students revealed that students enjoyed being told when they were meeting expectations and had good behavior. Parent participants also expressed a similar sentiment. Earning points and rewards motivated students to become more goal-oriented. All participants expressed that they enjoyed earning tangible rewards in the form of small toys or fidgets and intangible rewards in the form of free time, library time, or reading to younger students time. Also, nearly all student participants expressed that PBIS influenced their behavior in a positive way, often stating that without it they would act very different.

Parental involvement in and home use of PBIS also played a role in influencing student behavior. Participants shared that their parents often used the point sheets to reward or address behaviors at home. One participant shared that her family had previously used the same point system in her home when she was homeschooled. Although student participants initially may have found the point system difficult or not understand why it was implemented, all shared that it was easy to use once they become familiar with this system.

Smaller classes also had positive effects on students. Data revealed that students perceived smaller classes to have better pacing, more help from the teacher, and enabled them to seek help when needed. Student participants agreed that smaller classes, classes with fewer students, were quieter and allowed for more focus. Many students worked one-on-one with the teacher or in small groups, which many students perceived to have an increase in their academic time. Students also perceived that the smaller class setting provided them more opportunities to get help when they struggled with material in class. Subsequently, students shared that smaller
classes also allowed for better pacing; students were able to work on difficult material longer than in previous settings.

Data collected from student participants revealed that smaller classes also resulted in lower anxiety for students. According to classroom observations, students were more willing to participate in class through answering questions aloud or asking for help when facing difficult material. Multiple participants also explicitly stated that smaller classes reduced their anxiety and that they felt safer in a smaller class setting.

Data from faculty participants revealed that educators perceived that effective behavior management in the form of PBIS includes a positive, proactive, and focused approach to behavior with parental involvement. Seven themes arose from these data: continuous behavior monitoring produces focused behavior management; positive, proactive, and structured approach to behavior; frequent and consistent reinforcement; behavior as separate from self-worth; student motivation; limitations of PBIS; and parental involvement.

Faculty participants both shared that continuously monitoring behavior throughout the entire day aided in identifying triggers for behaviors and presents more opportunities for modifying behavior. Faculty members stated that they worked to consistently identify behaviors with which students struggled in order to stay ahead of any behavioral issues. Behavior management was also demonstrated to follow a consistent structure each day. Broadly, after each activity or class period, students would have a conversation with the teacher and points would be earned. Students anticipated “points time” and followed a set procedure for discussing behavior and being awarded tokens. This structure was observed to keep monitoring detailed and consistent from day to day. Faculty participants also shared the positive nature of PBIS, and
stated that they would rather indicate when students do well rather than note when students are not doing well.

The positive approach to behavior and rewarding students for meeting expectations also was observed to separate behavior from self-worth. Faculty worked with students to make this association even when students did not earn the amount of points they expected. Students still earned enough points for a good day. Furthermore, faculty observed that students were motivated by PBIS to earn rewards, and that they worked to determine motivators for students in order to help improve behavior.

However, faculty did express that PBIS had two distinct limitations. First, faculty members were expected to provide their own rewards. The school did not provide funding for rewards used in prize buckets. This limited the amount of rewards faculty could obtain for students. Secondly, the point system appeared ineffective for non-verbal students because it was exceedingly difficult to determine motivators for those students. Being unable to determine motivators meant that modifying the behaviors of non-verbal students was almost impossible with PBIS.

With regard to smaller classes, educators perceived that smaller classes presented them with more teaching opportunities with more differentiation and individual focus; however, smaller classes limited social opportunities for students. Faculty members expressed that smaller classes allowed for more one-on-one instruction and meeting the individual needs of students. Faculty members expressed that this allowed them to modify pacing as needed, and that doing so was beneficial for every student in their classrooms.

However, smaller class sizes were observed by faculty to have limitations. Faculty, as did parents, expressed that smaller classes meant for fewer opportunities for social engagement in
the classroom. Faculty also stated that smaller classes composed entirely of students with learning differences meant that there were no neurotypical students to model expected behaviors. Although parents and faculty expressed these concerns, student data did not reveal any such concerns from their perspective.

Data collected from parent participants revealed that parents perceived that PBIS in the form of the behavior point system in use at this school enables them to take a positive approach to behavior management. This approach includes being able to target, track, and reinforce behaviors at home. Four themes emerged from these data: positive approach leads to accountability and ownership; parental reinforcement, tracking, and monitoring; goal-oriented; and limitations of PBIS.

Similar to students, parents also responded that they found it important to be told when their child did well. Parent participants also shared that the positive nature of PBIS was appealing by citing its redemptive nature. PBIS offered their children multiple opportunities to earn points for meeting expectations. However, parents also expressed that PBIS held their children accountable as individuals, rather than the entire class being punished for the actions of a few. Furthermore, PBIS enabled parents to address their child’s behaviors in a very specific manner at home. These participants stated that PBIS provided them a more detailed picture of their child’s behavior that enabled them to target behaviors in a very specific way. This detailed behavioral analysis also allowed parents to keep therapists and doctors informed of student behaviors and monitor the ways in which medicines and other outside events affected behavior.

The nature of earning points had significant carryover for parent participants. Multiple parent participants noted that several of their children had begun taking on more responsibilities and being more motivated to participate in chores at home. Several parent participants expressed
that their children had some form of system at home for earning money for chores or jobs to purchase desired items.

However, parent participants did express limitations with PBIS. In particular, parents noted that PBIS seemed limited for students whose behaviors did not need modifications and for typically developing students. For students whose behaviors did not need modifications, parents noted that their children appeared relatively unaffected by PBIS; these same students expressed similar sentiments during their interviews. For a parent participant who implemented this point system in her own household, she noticed negative effects on her typically developing children. This participant noted that typically developing children began to only meet expectations rather than exceed them, and that her child needing behavioral intervention did not respond to PBIS in a positive way.

Parent participants noted positive effects of smaller class sizes. Participants perceived that smaller classes are a low-stress environment for students where the teacher builds strong, positive relationships with students. Parent participants perceived that this environment provided fewer disruptions, less stress, and less anxiety. Parent participants also perceived that the smaller classes increased academic focus that led to increased confidence and strong student-teacher relationships. While parent participants perceived there to be a stronger social bond between the students in the class, they also perceived that there were limitations on opportunities for social interactions. Five themes emerged from these data: influence on instruction; reduced anxiety; increased confidence; relationships; and social interactions.

With regard to influence on instruction, parent participants stated that children were better able to get the help they needed with difficult material. Smaller classes also meant fewer
distractions and an increase in focus for their children. All parent participants expressed that having smaller classes was a deciding factor in enrolling their child in this school.

Parent participants also noted a reduction in anxiety. Parents noted that their children were visibly less anxious and stressed by smaller class sizes. Parents noted that having their children become less anxious and stressed about school carried over to a reduction in anxiety and stress in the home. Furthermore, multiple participants noted that their children expressed higher levels of confidence that stemmed from smaller class sizes.

In smaller classes, parents stated that faculty members were viewed as having stronger relationships with students. Parents observed that the teacher took on the role of mentor and became a significantly positive influence in the lives of their children. Multiple parent participants expressed concerns over limited social opportunities and relationships with classmates. However, one parent participant noted that in spite of limited social interactions, the interactions that did occur were positive and stronger than in other settings.

Overall, the combination of smaller classes and PBIS was demonstrated to have a positive effect on students with autism and students with ADHD. Through parent, faculty, and student data, students demonstrated multiple positive benefits that included reduced anxiety, increased focus, positive outlook on behavior, and behavior being separate from self-worth. Additionally, students were more goal-oriented and motivated to improve behaviors and engaged in academics in this environment. Lastly, students were more confident in the academic environment, and were better equipped to learn in a smaller class setting combined with PBIS.
CHAPTER FIVE

CONCLUSIONS, IMPLICATIONS, & RECOMMENDATIONS

The purpose of this study was to investigate the effects of behavior modification in the form of positive behavior intervention and supports (PBIS) used in combination with smaller class sizes on students with autism and students with Attention-Deficit Hyperactivity Disorder (ADHD). The data collected in this study offered insight into student, faculty, and parental perceptions of the effects of using PBIS in combination with smaller class sizes. The data utilized in this study was collected from interviews with student, faculty, and parental participants, a survey issued to all participants, student reflection journals, member checks, peer debriefing, classroom observations, and behavior data in the form of point sheets.

This chapter contains a summary of the major findings and implications from this study as well as recommendations for future areas of study. There is a limited amount of research on PBIS and smaller class sizes used in combination on students with autism and students with ADHD. This study contributes to the general base of knowledge in this area by analyzing perceptions on the ways PBIS and smaller class sizes affect students with autism and students with ADHD. This study establishes positive effects between smaller class sizes used in conjunction with PBIS and students with autism and students with ADHD.

The environment analyzed in this study was one in which a PBIS system and smaller classes had previously been implemented. The system used in this study was deemed effective according to criteria established by Utley and Obiakor (2012). It implemented positive
behavioral expectations with specific methods of conveying expectations to faculty, students, and parents with proactive supervision and monitoring of behaviors.

The method of PBIS studied was described by participants as a “points system.” This system was a token economy with fixed production and exchange schedules similar to systems described in previous studies conducted by Cowles (1937); Kelleher (1958); Malagodi (1967); Malagodi, Webbe, and Waddell (1975); and Hackenberg (2009). The token economy observed in this study was similar to token economies conceptualized by R.T. Kelleher and E.F. Malagodi in that it functioned as a series of three interconnected schedule components: (1) the token-production schedule, (2) the exchange-production schedule, and (3) the token-exchange schedule (Hackenberg, 2009, p. 263).

The token-production schedule for Pre-K, elementary, and middle school students was a fixed interval with tokens being earned at the end of specific activities or class periods. At these times, students discussed their behaviors with teachers and earned a specified number of points, which served as tokens. The exchange-production and token-exchange schedules for these groups of students varied. For Pre-K, points were exchanged at the end of the day for colored popsicle sticks, or “groovy sticks.” The exchange-production schedule was set at fixed rate of 10 “groovy sticks.” At the end of the day, immediately upon earning 10 sticks, students were permitted to get a prize from the prize bucket. The token-exchange schedule for Pre-K students was set to 10 sticks for one prize, or reinforcer.

For elementary and middle school students, the exchange-production schedule operated similarly where students exchanged points for reward tickets at the end of each day; however, the exchange was at a fixed interval of occurring every Friday afternoon. The token-exchange schedule was also variable: reward tickets displayed both “big” and “small” rewards and students
could exchange their tickets for rewards of one type or a combination of types. In both settings, sticks, points, and tickets had no value outside of the educational environment, similar to recommendations for token economies made by Scheithauer, Cariveau, Call, Ormand, and Clark (2016).

**Findings**

The research questions this study explored were:

1. What are students’ perceptions on the ways PBIS influences student behaviors?
2. What are educators’ perceptions on the ways PBIS influences student behaviors?
3. What are parental perceptions on the ways PBIS influences student behaviors?
4. What are educators’ perceptions on the effectiveness of their teaching in smaller classes?
5. What are students’ perceptions on their abilities to learn in smaller classes?
6. What are parental perceptions of the effects of smaller class sizes?

The data collected in this study generated multiple themes for each research question, with similar themes being expressed by student, parent, and faculty participants. In the next section, these themes have been grouped together and are discussed with a brief summary of the findings across all participant types.

**Influence on Instruction**

Data clearly demonstrated that PBIS and smaller classes challenged the instruction of educators, students, and parents working in this environment. Faculty participants found that they had more time for actual teaching; they were able to work with smaller groups and increase their instructional time; faculty could teach more with the smaller groups. Student participants shared a similar standpoint that smaller classes and PBIS helped them to stay on track and focused in the classroom. Having the teacher work one-on-one with them and in small groups
was important to student participants because students received more help and instruction. Responses from parent participants paralleled these same themes; parents observed that their children were learning more with an individual focus, and that this was only possible through the implementation of smaller classes and PBIS. Parent participants shared that their children were better able to ask for and receive help due to the combination of PBIS and smaller classes. Overall, the response from participants was that PBIS and smaller classes had a positive influence on instruction in this educational environment.

**Reduces Anxiety, Increases Confidence**

Data from participants demonstrated that the combination of PBIS and smaller classes led to reduced anxiety and increased confidence among student participants, as observed by parent and student participants. Student participants themselves saw a reduction in their own anxiety being in a smaller class setting. Student participants shared that they were less nervous, less anxious, and safer in a smaller class setting. PBIS contributed to these feelings by ensuring that student behaviors were kept in check; student participants shared that PBIS helped prevent many students from misbehaving. Having more students behaving well meant a less stressful environment for them.

Regarding smaller classes, the increased focus from the teacher in combination with PBIS keeping students on track with good behavior made the environment more welcoming for questions and seeking help when needed for students. Student participants shared that they were able to ask for help without fear that other students, or the teacher, would belittle them for asking. This formed a supportive environment where students could increase their confidence in academics and behavior as a result. The combination of PBIS and smaller classes increasing student responses is supported by results found by Harfitt & Tsui (2015), who noted students
were more apt to volunteer responses to questions posed by teacher in a class with fewer students and Nelson (2010), who found that a token economy system increased classroom participation. However, neither study mentioned a reduction in anxiety.

This increase in confidence was noted by parent participants. Parent participants noticed their children feeling more confident in themselves and their academics. Parents also observed a reduction in their child’s anxiety and stress levels as a direct result of smaller classes and PBIS. They noticed an overall improvement in their child’s nature and wellbeing; parent participants detailed that their children appeared happier and more confident as a result of smaller classes and PBIS. One parent participant shared that her child now showed enough confidence in herself to begin planning for college.

PBIS also aided in reducing anxiety behavior by keeping the number of points earned between the student and the teacher. Points were assigned at the end of class and only the teacher and individual student kept track and were aware of the points until the end of the day. Participants shared that they preferred this over visual color charts or clip systems often found in classrooms. Having behavior represented visually for the entire class to see all day caused increased stress and anxiety over behavior that simply was not present with PBIS. Student participants stated they preferred the system in use at this school for this very reason; they were less anxious over improving their behavior, which subsequently enabled them to improve their behavior.

**Behavior Monitoring**

Student, parent, and faculty participants perceived an increase in their ability to monitor, track, and modify behaviors. Student participants shared that they were able to monitor their own behavior. Conversations with the teacher at “points time” at the end of class allowed students to
reflect on their behavior during a given period and earn a certain amount of points. Students used this awareness of their own behavior to help themselves stay on track. When they earned a 0 or 1 for their points in a class, students used that as motivation on improving in the next class. Multiple participants shared that they were motivated by earning points to keep their behavior in check. With PBIS, students learned their behaviors and how they affected the learning environment; participants also shared that they were empowered to monitor their own behavior.

Parent participants also shared that they use the point system to monitor their child’s behaviors. Parents shared that they used behavior feedback in the form of behavior point sheets to track their child’s behavior to inform decisions about therapy and medicines. Participants also tracked behavior to modify behaviors and to help identify triggers for behaviors, such as a death in the family or a parent being out of town. Parents also used the point sheets daily to discuss their child’s day. If a child had not made his/her day, parents used the point sheets to discuss what happened, and how to manage similar situations in the future.

This parallels steps taken by the students when they had not earned their points in each class. Similar to results from Hyten, Madden, and Field (1994), students were able to exhibit more self-control in the form of maintaining positive behaviors to earn rewards. Student participants shared that without PBIS, their behaviors would be very different. This indicated that students were able to maintain positive behaviors as an effect of PBIS. Students shared they reflected and tried to improve for the next class; parents shared that they helped their child reflect and improve for the next day. As such, this process built a stronger parent involvement and more accountability with regard to behavior.

Faculty participants also monitored behavior with PBIS and incorporated similar strategies to modify student behavior. Point sheets were analyzed by faculty to find behavior
trends and potential triggers for behavior, then attempts made to prevent, replace, or change certain behaviors. Behaviors are monitored throughout the entire day, which elucidates a student’s behavior that aids in modifying behavior.

Similar to findings by Tennessee Department of Education (1990b), data collected from faculty participants showed that small class sizes played the role of enabling faculty to use PBIS. By having a smaller class, faculty shared that they were able to gain a more intimate knowledge of their students and have a deeper focus on behavior. Smaller classes also helped in building relationships between parents and faculty, and in turn facilitated a proactive and structured approach to behavior management.

**Positive, Proactive, and Structured Approach to Behavior Management.**

Faculty participants shared that they monitored behavior continually throughout the day, with specific behaviors focused on for greater lengths of time, similar to the way described by Utley and Obiakor (2012). Faculty participants detailed that the period of longer focus increased educator’s chances of identifying triggers for the targeted behavior and more opportunities for modifying behaviors. Participants also stated that this contrasted with public school experiences where monitoring behaviors took place during only one period of the day. This resulted in less time to monitor and modify behaviors.

The approach to behavior was described as proactive by faculty participants. The point system encouraged students to follow the rules and made them aware of the behavior expectations for earning points. Faculty worked diligently to monitor student behaviors and target areas that needed improvement. A behavior was identified as needing to be changed, then steps taken to modify that behavior using the points system. For instance, in order to earn his/her points for a period, a student would have to refrain from hitting others, if that were the targeted
behavior. Or, a student would be prompted to ask for help when confused to earn his/her points in order to encourage advocating for oneself. Participant 1 shared that the point system “encourages them to listen to the rules,” rather than punishes for not listening to the rules.

Behavior monitoring was structured around various class times. In the classroom of Participant 1, there were a higher number of periods due to the lower age of students. Thus, due to the age of the students, the intervals for earning points were shorter in duration, but higher in number; 14 periods of roughly 30 minutes. This is contrasted with the classroom of Participant 2 whose intervals for earning points were higher in duration, but lower in number; seven periods of roughly one hour. In both classrooms, students knew the procedure for “doing points” as it was called and were able to discuss their behaviors at an appropriate level. At both levels, the number of check-in times for points was comprehensible and manageable for those students.

From the faculty standpoint, this approach was also presented in a positive manner. Both participants shared that they would rather indicate when students behave well rather than indicate when students are not behaving well. Overall, this was observed to be helpful to students because it helped students to achieve a positive mindset as they were able to discern how they met expectations.

Multiple parent participants shared that they used the behavior point sheets to target and reinforce behaviors at home. Participant 8 likened it to a barometer that informed him more fully than a simple end of day summary; he was able to monitor behaviors throughout each day and make note of the times behaviors occurred. Similarly, Participant 7 used this increased feedback to understand how medication may or may not have been working for her child; medication may be wearing off at a certain time of day, and behavior feedback would aid in such an identification. She used feedback to identify patterns in behavior and communicate those to her
doctor and therapist teams, and to her child’s teacher. Overall, the increase in documentation of behaviors and times gave parent participants a more in-depth look into their child’s day from a behavior perspective.

**Positive Outlook on Behavior.**

As stated by faculty and parents, multiple students displayed lower self-worth that stemmed from previous negative experiences in public school. As a result, many students struggle with seeing themselves as bad people because they have demonstrated bad behavior. It becomes a cycle of misbehaving and low self-worth, as expressed by Participants 7 and 3. A visual system reinforced that the student misbehaved frequently, which then became the student’s identity; the student saw himself as acting bad, internalized that he must be bad, and continued to act even worse, while at the same time having very low self-esteem and self-worth.

The data from this study show the opposite effect in a setting with PBIS and smaller class sizes. Student, parent, and faculty participants shared that PBIS and smaller classes promoted a positive outlook on behavior, one in which behavior is separated from self-worth. In this outlook, the student internalizes that he/she is not defined by behavior and is able to change his/her behavior. This outlook on behavior builds accountability and ownership of behaviors, which reinforces the positive outlook on behavior.

Classroom observations revealed that the point system promoted ownership of behaviors. Multiple student participants were able to accurately rate their behavior as a 0, 1, or 2 and discuss with the teacher on how to improve their behaviors. These conversations were described by student participants in interviews where students shared that they used these conversations to reflect on how they acted in a class and how their actions affected the classroom.
Student participants also shared that they had behavior conversations among themselves. They often shared with each other about “making their day,” when they earned enough points to have an “excellent” or “good” day. They also had conversations with each other when they had not met expectations and earned “fair” days. Student participants shared that these conversations over good behavior were important, and that being told that they behaved well and met expectations was important; likewise, the feeling of having good behavior was important to these students.

Students were observed to enter the setting with a mindset of anticipating being told how they had misbehaved. New students anticipated being told the ways in which they had not met expectations. The importance of being told when they met expectations and behaved well was expressed by students to be of significant importance. Being told when they behaved well and when they met classroom expectations made them feel better about themselves and bolstered confidence. This also contributed to a separation of behavior from self-worth.

Faculty participants worked with the point system to help students separate their behaviors from their self-worth. Participant 2 described the work that she performs to help students who struggle with equating bad behavior with being a bad person. She described frequently telling the student that scores less than a 2 were not bad, but rather indications that the student just needs to work on a certain behavior. Participant 1 was observed to frequently remind students in a similar way in her class. Both were observed to address behavior with points and then move on; there was a finality to the negative behavior when addressed in this manner. Students performed behaviors, earned the requisite number of points, and then the class as a whole progressed. This is contrasted with previous school experiences shared by participants wherein a teacher would continue to punish a student for the same instance of negative behavior
throughout the day. This manner of addressing behavior, providing a consequence – good or bad – and then moving on aided in building up a student’s self-worth and helping him/her understand that he/she can overcome his/her negative behaviors.

Parent participants also stated that they enjoyed being told when their children had a good day. As with student participants, parent participants often expected to hear about their child’s bad behavior, but they had not expected to hear about their good behavior. Multiple parent participants shared that this was an important aspect of PBIS. Furthermore, parent participants shared that the PBIS system helped their child to be held accountable and to take ownership of their behavior without being degraded. Participants shared that the individual nature of consequences helped to build accountability; rather than an entire class receiving a consequence for the actions of one student, only the single student received consequences. Overall, the daily feedback of how an individual behaved during the school day was important to parents to aid in addressing behavior at home and building ownership and accountability for behaviors.

Overall, the positive outlook on behavior was established by the PBIS system and was seen as beneficial by faculty, parent, and student participants. Data suggested that most participants were empowered to change behavior because it was no longer tied to the student’s self-worth or identity.

**Increased Motivation.**

The data showed that PBIS influenced students to have an increased motivation and to become more goal-oriented. Student participants expressed this as having a goal to work toward through earning a 2 for each class and through earning rewards. Student participants also expressed that PBIS motivated them to participate more in class through asking questions when
help was needed. Student participants shared that not only PBIS increased motivation, but also that having a smaller class made them feel more comfortable in addressing academic struggles.

Student participants also expressed motivations to increase positive behaviors, stating that without PBIS they would act more aggressive or be more off task; PBIS motivated them to stay “on track” in class. Student participants recognized this motivation in other students, stating that other students in class would demonstrate negative behaviors if PBIS were removed.

Student participant data revealed that not every student was motivated to act well by PBIS. One participant noted that behavior would remain the same, with or without the point system; data from parent participants revealed similar results. Although both parent and student participants that stated they were unaffected by PBIS perceived no motivation to act positively in class as a result of PBIS, both parent and student participants perceived that PBIS was helpful in other ways. Namely, both preferred to be reminded of good behavior in class and that PBIS was helpful for other students. Thus, with more students than not, PBIS was perceived to influence students to become more motivated and goal-oriented.

Multiple parent participants expressed that they noticed carryover in the form of more motivation and being goal-oriented outside of school. For parent participants, this took the form of children taking on more responsibilities and being more motivated to participate in chores and other responsibilities at home. Participant 7 described a chore system for her younger child for earning money to spend on desired items, such as a t-shirt. Participant 8 described that his older child also internalized the goal-oriented approach of PBIS and applied it to working and earning money for various things the child wanted to buy. In like manner, Participant 9 stated that her child required less prompting to complete chores at home.
Faculty participants stated similar effects in the classroom. When prompted that their behavior would affect their points, students were observed to be motivated to earn points by stating, “I want to earn points,” before changing their behavior. Faculty participants stated similar observations, stating that when reminded they are earning points with their behavior, students often try to behave better by listening, staying on task, or ceasing the negative behavior. Furthermore, faculty participants noted that when students see other students earning rewards, they often get excited and verbalize that they also want to earn prizes. Overall, for faculty, the goal was to find what motivated students and provide students the opportunity to work.

**Parental Involvement and Home Use**

Parental involvement was noted as important by data gathered from students and faculty, while parental participant data demonstrated a high level of involvement. As discussed, parental participant data showed a high level of involvement by using behavior point data to track, target, and modify behaviors at home; using behavior data to find antecedent behaviors in home life, such as a death or parent travelling; using behavior data to track the effects of medicines; and using behavior sheets to have conversations at home about behaviors.

Student participant data also expressed high levels of parent involvement, from parents rewarding students for good behaviors with rewards at home. Other participants expressed similar situations. Uniquely, Participant 5 shared that the same point system used at this school was used at her home, which subsequently meant that her parents were highly involved in monitoring her behavior.

Parent, student, and faculty participants expressed that PBIS was easy to use, follow, and understand. Students found PBIS easy to understand and learned the system quickly. Parent participants found PBIS easy to understand and follow, which when combined with the positive
outlook on behavior accounted for the increase of parent involvement in behavior monitoring. Faculty participants also found it easy to implement in the classroom and easy to use to monitor and modify student behavior.

Faculty participants stated that parental involvement in PBIS was critical and could be a determining factor in the effectiveness of PBIS. When parents were supportive of the system and supported PBIS in the home, faculty participants observed that PBIS was very effective in the classroom as well. For faculty participants, support in the home took the form of understanding the point system, reinforcing behavior changes in the home, and reinforcing the positive outlook on behavior.

However, when parents demonstrated a misunderstanding of the point system, or operated in ways contrary to PBIS, it had a negative impact on the effects of PBIS in the classroom. As shared by faculty participants, when parents held a different view of behavior as PBIS (e.g. a 7 or 8 on the PBIS scale still qualifies as a “good” day but may not be “good” in the eyes of the parent), it negatively impacted the student’s behavior and outlook on himself/herself. This was observed to take the form of the student placing excessive pressure on himself to behave and placing the student in a negative mindset the day after earning a 7 or 8. This was observed to increase the difficulty of the student earning points as it often maintained the negative self-worth that faculty was working to improve.

**Limitations of PBIS and Smaller Classes.**

Faculty and parent participants expressed that the combination of PBIS and smaller classes was overall beneficial, but there were limitations. Participants indicated that there was a limitation of opportunities for social engagement, limitations on funding, limitations with nonverbal students, and PBIS not having an influence on typically developing children and
children not requiring behavior modifications. It was observed, however, that student data revealed no such limitations. Student participant data showed that students perceived no limits on their opportunities for social interactions.

Faculty participants shared that one of the limitations of PBIS was due to funding; participants were expected to fund their own prize buckets and were not reimbursed for monies spent. A second limitation observed by faculty participants pertained to nonverbal students. Both participants shared that PBIS was limited in efficacy for nonverbal students because of the difficulty of determining motivators. Determining motivators for students was observed to be a critical part of PBIS. If students were to work toward a goal or earn a reward, students had to be able to express the desired goal or reward. Being unable to express themselves significantly lessened the impact of PBIS on those students.

To a lesser extent, faculty noted that some students were not concerned about rewards or points, which resulted in limited efficacy for PBIS; however, students observed in this study to not be motivated by PBIS were also students that were observed to require few behavior modifications. Parent participant data agreed with faculty data in this regard; one parent participant noted that her child has never had major behavioral problems and that PBIS had a limited effect as a result. Student participant data demonstrated this to a degree, with one participant stating that she would act the same regardless of a point system. Although indicated a perceived limited influence over behavior modification, observations noted a contrary result. Observations indicated that this student was motivated to increase class participation when participation was required of her to earn points as a means of prompting the student to ask for help when needed. Further observations also noted that the student’s confidence levels increased
when she was told through behavior point sheets that she was meeting expectations in class and behaving well.

Similar to PBIS not having an influence on students not requiring behavior modification, parent data also revealed limited effectiveness for typically developing children. Parent data showed that when used with typically developing children, PBIS tended to limit the amount of positive behavior shown by children. One of the goals of PBIS is to reward students for meeting expectations, with the understanding that they have trouble meeting expectations and need the rewards. With children that have no trouble meeting expectations, being rewarded for meeting expectations motivated children to not go above and beyond expectations and thus limited their behavior. Although PBIS had limited effects on typically developing children, PBIS had a positive effect on children with autism and children with ADHD.

Faculty and parent participants noted that smaller classes limited social opportunities for students. Faculty participants working with younger children expressed the need for more typically developing children to model appropriate behaviors for non-typically developing children. Faculty participants also indicated that students may have better social experiences with different groups of children. Parent participant data revealed similar concerns; for parents, fewer students meant fewer social opportunities. The concern for parents was that having fewer social opportunities might hinder or delay the development of social skills and become a future setback when the child enters a larger class setting.

However, parent participant data also revealed a higher quality of social opportunities for students. Data showed that opportunities that occurred demonstrated a closer social bond between students; students were able to know each other on a deeper level and were observed to
be generally more accepting of other students. Parent data also showed that the quality of social interaction increased due to a reduction in social anxiety brought on by larger classes.

Limitations of social opportunities in smaller classes were absent from student data, which indicated that students perceived that there were no limitations on social engagement in a smaller class. Students expressed feeling more accepted in a smaller class and having more knowledge of peers, as demonstrated by students participating in conversations about behavior and point sheets. As such, while faculty and parents may have expressed that PBIS and smaller classes limited social opportunities, student data revealed no such perceptions of limited social opportunities.

**Recommendations for Future Research**

The purpose of this study was to investigate the effects of PBIS used in combination with smaller classes on the behaviors of students with autism and students with ADHD. Data collected in this study offered insight into student, faculty, and parental perceptions of the effects of using PBIS in combination with smaller class sizes. While this study added to existing research on PBIS and smaller class settings, there are areas for further exploration in future research.

One recommendation would be to incorporate more students with a wider range of behaviors into the study. While the study provided data on how PBIS and smaller classes changed students’ behaviors, these effects might be more prominent on students with more severe behavior. Another area to explore would be to collect data on participants before entering into the PBIS and smaller classroom environment, then collect data on participants after they have been in the environment for a length of time. This process would help to confirm or deny that behavior modifications resulted from the combination of smaller classes and PBIS.
A final area to explore would be the introduction of this combination in another setting, such as a public school. This study was conducted in an environment built to address the needs of students with autism and students with ADHD; to a degree, it was built around this combination. Conducting the study in a setting that had not previously been constructed around this combination might provide useful quantitative data. Participant data could be collected before, during, and after the introduction of this combination to the educational environment, which could more fully develop the effects of PBIS and smaller classes used together.

**Limitations**

There were limitations with this study that may have impacted the findings. The sample size was relatively small; there were only 10 participants, four students, four parents, and two educators. Several of the student participants were in the same grade. Having students at different ages and grade levels could have yielded different results. This study was limited to one school; incorporating multiple schools in a variety of areas could have yielded different results.

**Summary**

This study analyzed the perceptions of faculty, parents, and students on the effects of PBIS used in combination with smaller classes on students with autism and students with ADHD. Data in this study supported findings by Clay (2016) and Scheithauer, Cariveau, Call, Ormand, and Clark (2016), which stated token economies were highly effective means of managing behavior in students with learning disabilities. Data in this study also supported findings by Clay (2016), Nye, Hedges, and Konstantopoulos (2000), and Harfitt and Tsui (2015) which stated that a reduction in class size was also effective in increasing academic growth and achievement in students with learning disabilities.
This study differed in the combined effect of PBIS and smaller classes on students with autism and students with ADHD. Data showed that the overall effects on students with autism and students with ADHD were beneficial. Students displayed increased confidence and self-motivation, and reduced anxiety. Students became more goal-oriented and empowered to address their behavior through conversations and positive interactions with the teacher. Students perceived that smaller classes increased their focus and increased attention from teacher. Accordingly, classes displayed adequate pacing, more help from teacher, and greater empowerment to seek help when needed. Educators perceived that effective behavior management included a positive, proactive, and focused approach to behavior with parental involvement. Educators also perceived that smaller classes presented them with more teaching opportunities with more differentiation and individual focus; however, smaller classes limited social opportunities for students. Parents perceived that PBIS enabled them to take a positive approach to behavior management that included being able to target, track, and reinforce behaviors at home. Parents also perceived that smaller classes were a low stress environment for students in which the teacher built strong, positive relationships with students.
References


Individuals With Disabilities Education Act, 20 U.S.C. § 300.8 (c) (1), 2004


*Journal of Instructional Psychology, 37*(1), 49-56.


Tennessee Department of Education (1990b) The state of Tennessee’s student/teacher achievement ratio (STAR) project (Technical report part II).


Appendices
Appendix A

Informed Consent Forms
Parent/Guardian Informed Consent

Identification of Investigators & Purpose of Study
Your child is being asked to participate in a research study conducted by Jordan Reed as a student of Carson-Newman University. The purpose of this study is to examine and provide a holistic, descriptive account of the effects of using PBIS and smaller class size on students with autism and students with Attention-Deficit Hyperactivity Disorder. This study will contribute to the researcher’s completion of his dissertation.

Research Procedures
Should you decide to allow your child to participate in this research study, you will be asked to sign this consent form once all your questions have been answered to your satisfaction. This study consists of one interview, one survey, a reflection journal, and classroom observations. Interviews will take place at your child’s school. Your child will be asked to provide answers to a series of questions related to their perceptions regarding the effects of behavior point system and smaller class sizes on their school experience. The interviews will be audio-recorded, and the transcriptions, field notes, recorded interviews, and any other related materials will be secured in a locked filing cabinet and a password protected computer in which the researcher is the only one with the key/password. The name of the school will not be shared, and your child will be given a pseudonym throughout the study in order to remain anonymous. Also, you will have full access to the final report before publication.

Time Required
Participation in this study will require an interview lasting no longer than one hour during non-academic time.

Risks
The investigator, Jordan Reed, does not perceive more than minimal risks from your child’s involvement in this study (that is, no risks beyond the risks associated with everyday life).

Participation & Withdrawal
Your child’s participation is entirely voluntary. He/she is free to choose not to participate. Should you and your child choose to participate, he/she can withdraw at any time without consequences of any kind.

Questions about the Study
If you have questions or concerns during the time of your child’s participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact Jordan Reed.
Giving of Consent

I have read this consent form and I understand what is being requested of my child as a participant in this study. I freely consent for my child to participate. I have been given satisfactory answers to my questions. The investigator provided me with a copy of this form. I certify that I am at least 18 years of age.

☐ I give consent for my child to be audio recorded during their interview. _____ (parent’s initial)

________________________________________________
Name of Child (Printed)

______________________________________
Name of Parent/Guardian (Printed)

______________________________________    ______________
Name of Parent/Guardian (Signed)                          Date

______________________________________    ______________
Name of Researcher (Signed)                                   Date
Participant Informed Consent

Identification of Investigators & Purpose of Study
You are being asked to participate in a research study conducted by Jordan Reed as a student of Carson-Newman University. The purpose of this study is to examine and provide a holistic, descriptive account of the effects of using PBIS and smaller class size on students with autism and students with Attention-Deficit Hyperactivity Disorder. This study will contribute to the researcher’s completion of his dissertation.

Research Procedures
Should you decide to participate in this research study, you will be asked to sign this consent form once all your questions have been answered to your satisfaction. This study consists of one interview, one survey, a reflection journal, and classroom observations. Interviews will take place at your school. You will be asked to provide answers to a series of questions related to your perceptions regarding the effects of behavior point system and smaller class sizes on your school experience. The interviews will be audio-recorded, and the transcriptions, field notes, recorded interviews, and any other related materials will be secured in a locked filing cabinet and a password protected computer in which the researcher is the only one with the key/password. The name of the school will not be shared, and you will be given a pseudonym throughout the study in order to remain anonymous. Also, you will have full access to the final report before publication.

Time Required
Participation in this study will require an interview lasting no longer than one hour during non-academic time.

Risks
The investigator, Jordan Reed, does not perceive more than minimal risks from your involvement in this study (that is, no risks beyond the risks associated with everyday life).

Participation & Withdrawal
Your participation is entirely voluntary. You are free to choose not to participate. Should you choose to participate, you can withdraw at any time without consequences of any kind.

Questions about the Study
If you have questions or concerns during the time of your participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact Jordan Reed.
Giving of Consent

I have read this consent form and I understand what is being requested of me as a participant in this study. I freely consent to participate. I have been given satisfactory answers to my questions. The investigator provided me with a copy of this form. I certify that I am at least 18 years of age.

☐ I give consent to be audio recorded during the interview.______ (participant’s initial)

________________________________________________
Name of Child (Printed)

________________________________________________
Name of Parent/Guardian (Printed)

________________________________________________    ______________
Name of Parent/Guardian (Signed)                          Date

________________________________________________
Name of Researcher (Signed)                                   Date
Appendix B

Interview Guides
Student Interview Guide

1. Tell me about when you first found out about this school.
   1. What made it different from your old school?
   2. What were those first few days of tours / shadowing like?

2. When you first heard about the point system, what did you think? (PBIS question)
   1. Had you heard about anything like this before?
   2. Did your old school do anything like it?
   3. Was it hard to understand?

3. Did you “get in trouble” for your behavior at your other school? What did you do to get in trouble?

4. How does the point system help you stay on track in class? (PBIS question)

5. Tell me what you think class would be like without the point system. (PBIS question)
   1. How would you act without it?
   2. Can you give me an example of how it changes your actions or behavior?

6. Tell me how your teacher uses the point system. (PBIS question)

7. What do you think about earning prizes? (PBIS question)
   1. How would you act if you couldn’t earn prizes?
   2. Do you like the treasure chest items or the prizes that give you special privileges?
      Why?

8. Tell me about your class (class size question).
   1. How well do you learn in a class like that?
      1. What’s it like working in a small class? Is it easy or hard? Why?
      2. Does the teacher work with you more or less than in your old school?
1. How does this help you learn more?

9. Why do you think that the point system works for you? Do you think it works for other students? Why? (PBIS question)

10. If our school could only have the point system or smaller classrooms, which would you choose?

11. Have we missed something you think is important? Is there anything about the class size or the points system you want to talk about?
Parent Interview Guide

1. Tell me about when you first heard about this school.
   1. What made it different?
   2. What were those first few days of tours / shadowing like for you as a parent?

2. What were you school experiences with your child in school settings prior to this school?

3. Tell me about how your child responded to the school.
   1. What was his or her first reaction? What did you notice?
   2. How did they grow / develop / change from that initial response?

4. How did seeing the smaller class sizes influence your decision to attend? (Class size question)
   1. What made that important to you?
   2. How do you think having fewer students influences how your child’s teacher responds to your child?
   3. What have you observed that makes you believe that smaller classroom size is important to your child’s success?

5. When you first heard about the point system / behavior at this school (or when it was first described to you), what did you think about it? (PBIS question)
   1. Was it difficult to understand or get the grasp of? (PBIS question)
   2. How do you believe that it has influenced your student’s behavior?

6. As a parent, is the point system helpful way to help your child manage his or her own behavior? What have you observed that leads you to this conclusion? (PBIS question)
1. Have you observed any carry-over benefit of the point system for in-school behavior to settings outside of the school? Could you give me some examples?

7. Based on your child’s specific needs, which do you think is most critical to your child’s success in school, the point system for behavior or smaller classrooms? Why?

8. Have we failed to discuss any issues that you believe is critical to providing an appropriate learning environment for your child?
Faculty Interview Guide

1. Tell me about when you first became a member of this school faculty.
   1. If you’ve worked in other schools, what made it different?
   2. Tell me about your first few weeks teaching here.

2. When you first heard about the point system at this school (or when it was first described to you), what were your thoughts? (PBIS question)
   1. Had you worked with anything like this before?
      1. How does this compare? Do you think it is more effective or less effective or the same?

3. Tell me how the point system works in your classroom. (PBIS question)
   1. What is effective about its use in your classroom?
   2. What are its limitations in your classroom?

4. How do the students respond to the point system? (PBIS question)

5. Describe your class. What are the students like (age range)? (class size question)
   1. How do you organize your classroom for teaching during the day?
   2. What is the influence of a smaller class size on your teaching? On your teaching style?
   3. What are the limitations of the smaller class size on your teaching?

6. How do you use the point system to guide your students? (PBIS question)
   1. How have you adapted the point system to your classroom?
   2. How has it changed over time?
   3. Are there ways the point system has changed your teaching?
7. Which factor do you believe is most important to meeting the needs of your students, smaller classrooms or the PBIS system?

8. Have we failed to discuss something you think is important?
Appendix C

Coding Tables
Table C1

**Student perceptions of the effects of PBIS on behavior**

<table>
<thead>
<tr>
<th>Raw Data</th>
<th>Open Coding</th>
<th>Axial Coding</th>
<th>Selective Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>“You have a goal to work toward” (I)</td>
<td>Goal-Oriented</td>
<td></td>
<td>Students perceive that PBIS empowers them to address their behavior through conversations and positive interactions with the teacher and parental involvement.</td>
</tr>
<tr>
<td>“I have to watch what I’m doing sometimes and make sure I’m not doing anything bad”</td>
<td>Monitoring own behavior, point system is easy to understand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Without the points, there’s no telling what you’re doing. You wouldn’t have any idea how you’re acting.” (I)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“I picked it up [understood it] quickly.” (I) (RJ) (S)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“The point system helps us learn what our actions are, like learning how to raise your hand, how to stop talking when you’re not supposed to be talking, like focusing on the teacher.” (I)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“If I don’t earn my points for a period then I try to do better and focus on the future.” (I)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Without the point system I’d act bad.” (I) (RJ)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Awareness of Own Behavior**

Less pressure / anxiety over having to improve

Feels like it helps them to behave better
“You have to think about how you do in each class... to stay on task and make sure you, like, stop talking.” (I)

“Without the point system, I would act more aggressive and physical.” (I) (RJ)

 “[The teacher] likes to let us tell what we earned. [The teacher] is understanding about it, but if we get it wrong [the teacher asks student to reflect].” (I)

“The teacher talks about what I earned for points with me.” (I) (RJ) (S)

“It’s important to be told I had a good day”

“If I make my day, then I may get a reward [from parents] or something.... Like a drink from somewhere.” (I)

“We used this point system at home.” (I)

“You’re working toward stuff with your behavior” (I)

Physical prizes over intangibles (I) (RJ)

“Teacher discusses behavior with student. Behavior conversations”

Students like to be reminded that they are good.

Parents are involved with point system.

Parental Involvement

Prizes are motivators

Rewards as Motivators.
“I like earning free time and time to read to the younger students” (I) (RJ)

“You wouldn’t have people trying to behave as well because they don’t have that motive to get the prize bucket.” (I)

Note. (I) = data obtained from interview; (RJ) = data obtained from reflection journal; (S) = data obtained from survey
**Table C2**

*Educator perceptions on the effects of PBIS on student behavior*

<table>
<thead>
<tr>
<th>Raw Data</th>
<th>Open Coding</th>
<th>Axial Coding</th>
<th>Selective Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Point system throughout the entire day.”</td>
<td>Continuous monitoring or broader timeframe for monitoring</td>
<td>Targeted approach to modifying behavior</td>
<td>Educators perceive that effective behavior management includes a positive, proactive, and focused approach to behavior with parental involvement.</td>
</tr>
<tr>
<td>“I try to pick the behavior, one or two, that I know they need help with…. That’s all I’m focusing on… each period.” (I)</td>
<td>Proactive approach to behavior</td>
<td>Proactive approach to behavior</td>
<td></td>
</tr>
<tr>
<td>“It’s almost like I have to be a step ahead.” (I)</td>
<td></td>
<td>Proactive approach to behavior</td>
<td></td>
</tr>
<tr>
<td>“Now that I know how they react, I kind of approach it differently so I am a step ahead and proactive.” (I)</td>
<td></td>
<td>Proactive approach to behavior</td>
<td></td>
</tr>
<tr>
<td>“I think it helps children to have positive feedback throughout the day.” (I)</td>
<td></td>
<td>Proactive approach to behavior</td>
<td></td>
</tr>
<tr>
<td>“I think it encouraged them to listen to the rules.” (I)</td>
<td></td>
<td>Proactive approach to behavior</td>
<td></td>
</tr>
<tr>
<td>Teacher describes modifying number of check-ins from 30 to 14, “That’s more manageable for the students. It’s easier for me, it’s easier for them.” (I)</td>
<td></td>
<td>Proactive approach to behavior</td>
<td></td>
</tr>
<tr>
<td>Frequent check-ins are beneficial, but too many can be difficult for children.</td>
<td></td>
<td>Proactive approach to behavior</td>
<td></td>
</tr>
</tbody>
</table>
Teachers described structure of their day with frequent behavior check-ins. (7 for elementary, 14 for Pre-K/K) (I)

“Those that are here every day all day long understand it and they do well with it.” (I)

“I think it helps children to have positive feedback throughout the day.” (I)

“I think it encouraged them to listen to the rules.” (I)

“Remember, this isn’t bad. A one isn’t bad. Zero means you need to work – it’s not necessarily bad and good. Is the student trying? Is the student trying to make [behavior] better” (I)

“Behavior is separate from self-worth / removing value judgments from behavior. Behavior conversations.

You’re not a bad kid. We’re working on this behavior.” (I)

“Even though you didn’t earn a reward from your parents, you still had a good day with me.” (I)

Frequent and consistent reinforcement.

Pointing out when students do well

Positive Approach to Behavior Management
“I try to approach it as a conversation, not as a bad kid.” (I)

“I try to explain behaviors every time, ‘Why do you do this? You understand what you did. I’m not mad at you, but because of your choice…’” (I)

“When I remind students that their behavior will affect their points, they try to do better and listen and things like that.”

“When they see other kids getting stuff out of the prize box, they get excited and want to earn prizes too.” (I)

“It is really important for the parents to be on board and understand it. I think that makes all the difference in the world.” (I)

PBIS helps me inform parents about their child’s behavior (S)

“We have to buy our own rewards” (I)

Students are motivated to act positively by the points

Consistent parental involvement is crucial

Rewards are motivators for kids

Educators are limited by having to provide their own rewards for students to earn.

Limitations
“I wish I knew what motivated [nonverbal student]”
(I)
“Out of the four children I had, three were non-verbal, so we did not use a point system at that point.” (I)

Limitsations for non-verbal students.

Note. (I) = data obtained from interview; (S) = data obtained from survey
Table C3

*Parental perceptions on the effects of PBIS on student behaviors*

<table>
<thead>
<tr>
<th>Raw Data</th>
<th>Open Coding</th>
<th>Axial Coding</th>
<th>Selective Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Because she was happy about her points, I could tell it meant something to her.” (I)</td>
<td>Positive approach to behavior, uplifting for kid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“I appreciate the fact that [student doing well behaviorally] gets pointed out to her each day.” (I)</td>
<td></td>
<td></td>
<td>Parents perceive that PBIS enables them to take a positive approach to behavior management that includes being able to target, track, and reinforce behaviors at home.</td>
</tr>
<tr>
<td>“Points are abstract, very simple, not degrading. Other behavior systems are degrading.” (I)</td>
<td>Positive Approach to behavior management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBIS makes me feel positive about my child’s behavior (S)</td>
<td></td>
<td>Kids with bad behavior can be redeemed / restorative justice</td>
<td></td>
</tr>
<tr>
<td>“You always have the opportunities to make more points.” (I)</td>
<td></td>
<td>Accountability and ownership of behavior</td>
<td></td>
</tr>
<tr>
<td>“You’re never a total loser.” (I)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“It still holds them accountable for the things they do wrong.” (I)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“…This is how you did today, not how the entire class did as a whole.” (I)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“The motivators and the rewards are something that have always worked for him.” (I)</td>
<td>Parents recognize that students enjoy receiving tangible rewards.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like my child earning rewards from the prize bucket (S)</td>
<td>Parental reinforcement of behavior system at home, makes student goal-oriented</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“If they have a lower point day, we discuss their behavior and maybe take something away at home.” (I)</td>
<td>Behavior is monitored by and reinforced by parents, aids in making students goal-oriented at home</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple participants described carryover to systems of earning at home. (I)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBIS informs me of my child’s behavior (S)</td>
<td>Behavior tracking, informing medical / therapists</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent describes how they keep behavior sheets at home and use them to track their children’s behavior at home. Aids in identifying trends and helps inform medical / therapist teams (I)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“It’s straightforward.” (I)</td>
<td>Point system easy for parents to understand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“She was always a good kid.” (I)</td>
<td>Point system limited in effectiveness for those students who are “always good” or “always well behaved.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“She always earns her points.” (I)</td>
<td>Limited to kids that need behavior improvement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“I’ve never had a problem with her behavior.” (I) Limited by students who do not display problematic behaviors.

Participant 10 describing the failure of the point system at home for typically developing children. (I)

Note. (I) = data obtained from interview; (S) = data obtained from survey
Table C4

**Educator perceptions on the effectiveness of their teaching in smaller classes**

<table>
<thead>
<tr>
<th>Raw Data</th>
<th>Open Coding</th>
<th>Axial Coding</th>
<th>Selective Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I feel like I get to teach more.” (I)</td>
<td>More opportunities for teaching in smaller classes</td>
<td>Increases teaching opportunities</td>
<td></td>
</tr>
<tr>
<td>“You get to work with a smaller group.” (I)</td>
<td>Smaller classes have more one on one time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“One-on-one time is important to me.” (I) (S)</td>
<td>Deeper knowledge of students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussion of various students throughout interview demonstrates an in-depth knowledge of students and their behavior and academics (I) (S)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“It benefits every one of those children… They’re all so different, there’s a wide range of learning… Even though I am teaching five of them some of them are on three different levels.” (I)</td>
<td>Able to differentiate instruction to meet the needs of individual students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Sometimes I feel that they would ‘click’ better with different kids. I wish that there were more kids they could ‘click’ with that are closer in age or on the same level as them.” (I)</td>
<td>Smaller classes have limited social interactions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Educators perceive that smaller classes present them with more teaching opportunities with more differentiation and individual focus; however, smaller classes do limit social opportunities for students.
“It would be nice to have peers that are more neurotypical to model behaviors.” (I)

Note. (I) = data obtained from interview; (S) = data obtained from survey
Table C5

*Student perceptions on their ability to learn in smaller classes*

<table>
<thead>
<tr>
<th>Raw Data</th>
<th>Open Coding</th>
<th>Axial Coding</th>
<th>Selective Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The more people that’s in a classroom, the louder it is.” (I)</td>
<td>Smaller classes are quieter, allow for more focus.</td>
<td>Increases focus, fewer distractions</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“It is harder to focus in a larger classroom.” (I)</td>
<td>Small class has more one-on-one with teacher.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“More one-on-one” (I) (RJ) (S)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“My teacher now works with me more one-on-one than my old school.” (I) (RJ)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“It’s easier to work and my teacher works with me more now than at my old school.” (I) (RJ)</td>
<td>One-on-one time is important, helps students more with their work.</td>
<td>Increased attention from teacher improves focus, pacing, opportunities for help, reduces anxiety</td>
<td></td>
</tr>
<tr>
<td>“It helps me more with my work.” (I) (RJ)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“It allows more academic time, so [the teacher] can discuss what I’m struggling with.” (I) (RJ) (S)</td>
<td>Smaller class has better pacing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“My old school thought everyone was at the same level and that no one was slower learning or ahead.” (I)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“I get way more help here because at the old school I wouldn’t really ask for help that much.” (I)</td>
<td>Smaller class, more comfortable in asking for help, lowers anxiety</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students perceive that smaller classes increase their focus, and increase attention from teacher. They perceive that this leads to better pacing, more help from teacher, and empowering them to seek help when needed.
“I feel more safe when [the class] is smaller… I definitely think here I learn better, I can focus, and I can still, like not have to struggle with my anxiety so much.” (I)

“I do not feel nervous asking for help.” (I)

“The teacher makes his classroom a safe place to learn…. I feel safer in this setting.” (RJ)

Note. (I) = data obtained from interview; (S) = data obtained from survey
Table C6

*Parental perceptions of the effects of smaller classes*

<table>
<thead>
<tr>
<th>Raw Data</th>
<th>Open Coding</th>
<th>Axial Coding</th>
<th>Selective Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I could see the stress come off of my child visually.” (I)</td>
<td>Environment reduces anxiety.</td>
<td></td>
<td>Parents perceive that smaller classes are a low stress environment for students in which the teacher builds strong, positive relationships with students.</td>
</tr>
<tr>
<td>“It’s amazing to see a child have this horrible anxiety and self-doubt and self-image and self-esteem problem. To see him come out on the other side of that, he is confident, he is happy. He loves to come to school.” (I)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“He was so happy to be out of the circus, because going from a class size of twenty people to six was huge for him.” (I)</td>
<td>Smaller classes have less distractions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“It just cuts down on all the sensory issues.” (I)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“The smaller class setting seems to have a closer social bond. The kids really get to know each other and they seem to be more accepting.” (I)</td>
<td>Smaller classes build positive social relationships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“It lets her have more individual focus.” (I) (S)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“She is thriving more academically because the teacher can be more one-on-one with her.” (I) (S)</td>
<td>More one-on-one time increases academics, differentiation.</td>
<td></td>
<td>More focus from teacher builds academics and confidence.</td>
</tr>
</tbody>
</table>
“He can get the help he needs when he’s stuck or has a problem.” (I) (S)

“I think it offers the opportunity for a lot more individualized focus.” (I)(S)

“She’s no longer coming home and expecting me to reteach her stuff at the end of the day. She’s able to ask those questions in class.” (I)

Children are now planning for college. (I)

“I think his confidence level, the way you guys instruct, and the way he is able to interact with the other kids have helped to build him up.” (I)

“You’re not just a teacher, you’re a supporter of them. Like a mentor.” (I) (S)

“It gives you more time to really get to know these kids.” (I)

“And again, not that [smaller classes] hasn’t come with a little bit of concern over less social interactions with students.” (I)

Smaller classes are able to build confidence.

Stronger relationship between teacher and student in smaller classes

Concern over limited social interaction

Note. (I) = data obtained from interview; (S) = data obtained from survey
Appendix D

Student Reflection Journal
Name: ____________________  Student Reflection Journal

Mr. Reed greatly appreciates your participation in his dissertation research. One of the final steps is to complete a short reflection journal. The goal of this journal is to reflect on how the points system changes your behavior and if smaller class sizes (having fewer students in a class) affects your learning. Mr. Reed has included a few questions and spaces for reflection for you to complete. Please complete these over the weekend and return them to Mr. Reed on Monday. Thank you.

Please be honest in your responses, and please give answers longer than a simple “yes” or “no.” Just like the interviews, your responses will not affect you positively or negatively in any way. If you need more room, then feel free to use another sheet of paper and staple it to this one. If you would rather type your responses, then feel free to type them and have your parents e-mail them to Mr. Reed. His e-mail address is jreed@theidisonschool.com.

1. Does the point system help you behave in class? What about completing your work?
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

2. Would you act the same or different without the point system?
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

3. Do you think the points you earn for each period (or for each day) are fair? Do you agree with the points you generally earn? Why?
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

4. How do the points you earn make you feel about yourself? How do the points you earn make you feel about your behavior? How do you feel if you don’t earn the points you wanted to earn?
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

5. Would the class (or school) be better without the point system or with the point system?
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

6. Does having fewer students in your class help you complete your work? Is it easier or harder to work in a class?
   __________________________________________________________________________
   __________________________________________________________________________
7. How does having fewer students help you get help from the teacher? Does it help you learn better?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

8. How comfortable are you in a class with fewer students? Do you like it more or less than a larger class? Does it make you happy / sad / nervous / angry / relaxed compared to other classrooms you’ve been in?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

9. Think of a regular day in Mr. Reed’s class. Do you prefer this class over other classes you’ve had before? Why? What makes this class different than other classes (other than not having Mr. Reed teach you before)?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

10. Is there anything you think is important about the point system or having fewer students that you would like to share?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________