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Age Differences in Effect of Collaboration of Care Activities on Student Behaviors

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Walden University
2020

Abstract

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MS, Walden University, 2012

BS, Park University, 2008

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

Over 18 million children in the US have mental health problems and 70% receive the care in the education sector. The Collaboration of Care (CoC) approach is widely used to address these needs. However, the body of knowledge to date does not focus on relationships between the use of a CoC in a school environment nor examines school-based outcomes. This study examined a specific CoC, called the Collaboration of Services for Youth (COSY), to see if there was a positive association between participation in COSY and changes in attendance, behavior, and academic performance among 52 public-school students, ages 5-16, and if there was an association with student age. Theoretical foundations for this study included the biopsychosocial model, fundamental aspects of cognitive behavioral therapy, the cognitive development theory, and Erikson's eight stage theory of development. A 2 x 2 x 2 chi-squared test was used on four out of six variables and factorial ANOVAs with repeated measures was used to analyze academics. This study found that participation in a collaborative program was significantly associated with a 60% reduction of referrals for behavioral problems and improvement in academic test scores for the sample. While there were no pre/post COSY differences for the older students, there was a statistically significant increase in absences from pre to post COSY for the younger students. Results of this study can inform stakeholders of this school district, and others, about possible effectiveness of this type of collaboration program to be useful for future planning and implementation in the educational setting leading to positive social change.

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Dedication

I would like to dedicate this doctoral capstone to my family, the friends, and colleagues along the way who have helped me during this journey. First to my daughter Aviana who has been there with unwavering love, support, and encouragement every step of the way--this would not have been possible without her love and sacrifice. To my late grandmother who supported academic success for females far before it was socially acceptable. To my father who inspires me to this day with his unwavering work ethic, honesty, and love for his family. To my friends that encouraged me and gave support to me when I needed it most. To my cousin, Jen who anchors my past to my present. To my brother, my best friend, who sees me as a stronger person inside than I can ever see myself as. Finally, for the individuals in my life who came up against me time after time—you gave purpose to my tenacity, perseverance, and determination. I did it.

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Chapter 1: Introduction to the Study

It takes a village to raise of child (Shapiro, 2006). From the beginning of time, humans have recognized the importance and collective responsibility of taking care of their community's youth. A similar proverb to the infamous 'it takes a village' quote appears in *Swahili sayings from Zanzibar* "mkono mmoja haulei mwana" which translates to: "one hand cannot nurse a child" (Farsi, 1965, p.27). The collaborative approach to care is the epitome of "it takes a village." Collaboratives are used and studied in the medical field but rarely are studied in the public-school setting. This study examined the use of a specific collaborative and for the first time, examined specific school-based outcomes in relation to collaborative use.

Background

The need for evidence-based interventions is at an all-time high as the amount of mental health diagnoses rises annually amongst student bodies. Mental health delivery system frameworks define how children with mental health issues receive treatment (Kilbourne et al., 2018) and how ineffective service delivery can lead to self-harm and risk to others which presents a huge social problem (O'Toole, n.d.). A historical analysis on the psychiatric care models shows that institutionalization was the mainstream option for hundreds of years; children with mental illness were taken from their parents at birth and were considered to be incapable of making important decisions regarding their daily lives and kept separated from the general population for their own safety and the safety of others (Chow & Priebe, 2013). The philosophy of psychiatric treatment shifted during the 1970s due to advancements in psychiatric medications and due to a shift in gestalt

perception of mental illness in general. This shift was brought on by equal rights activist groups protesting for equality of all (Chow & Priebe, 2013). The advancements in psychiatric medications led to an increase in functioning and stabilization of mental illnesses which increased the likelihood of effective community integration (Chow & Priebe, 2013). The belief that all mentally ill persons needed to be locked away in a state institution slowly evolved as more community integration successfully occurred.

Successful community integration lead to care transformation from monolithic state institutions to an array of state, nonprofit and for-profit institutions that shifted the control of the treatment from a bureaucratic framework to a market approach where the clients and families were made responsible for seeking out and managing their own care out in the community (Milward & Provan, 2000; Scott & Greer, 2019). In this a la carte system of care, several plans may exist for the same individual as clients sought care from multiple providers in the community (both state and private) and seldom do agencies speak to one another (honoring federal HIPPA regulations). Therefore, information sharing is determined by the ability the family and child must have to conceptualize the issues and needs and information sharing is subjective to the relationships (political or professional) that providers may have with one another (Milward & Provan, 2000; Scott & Greer, 2019).

The release of many psychiatric clients from institutions (more than half a million) was preemptive and carried out (via federal regulation) prior to the establishment of adequate multileveled community-based mental health services (Chow & Priebe, 2013). Due to the premature transfer of care, many mistakes were made and approaches

to care were trial and error for years. However, the contemporary framework that is emerging with promise is a comprehensive approach that includes a collaboration of state, community-based, and in-home services. A well-organized Community of Practice (CoP) approach helps close the gap of services by establishing and maintaining inter-agency partnerships of which the family is a part (Tee & Böckle, 2012). Under the community-care approach, there are periodic meetings between the family and all organizations/case managers involved in the client's life and information is shared in a roundtable discussion style (Tee & Böckle, 2012). This study examined a contemporary style of mental health service delivery called Collaboration of Care. Examination of a contemporary style/model is enriched by a knowledge of historically used models because retrospective knowledge of past mistakes, for example, is useful in the planning and prevention of future oversights.

Problem Statement

Collaboration of care frameworks have become a common mechanism for the delivery of mental health services; however, literature and research on CoC use in the school, home, and community is sparse. Out of the few studies conducted on implementation frameworks, positive results have been found with the use of collaboration of care; however, these studies involve the healthcare field and outcomes are not related to school performance (Blanchard et al., 2017; Terao et al., 2019; Hajjar et al., 2020). A study which investigates a collaborative approach by examining a particular program in use by a school could remedy the situation.

Purpose of the Study

The purpose of this quantitative study was to expand the very limited research to date on the possible benefits of collaboratives (CoCs) as an intervention for students with complex behavioral and academic challenges. This study examined a specific CoC, called the Collaboration of Services for Youth (COSY), to see if there was a positive association between participation in COSY and changes in attendance, behavior, and academic performance among 52 public-school students, ages 5-16 in a specific school district, and if there was an association with student age.

Research Questions and Hypotheses

Research Question 1: Are there between-group differences based on student's age in pretest and posttest school math MAP scores among students who participate in the COSY program?

H_{01}: There are no between-group differences based on student's age in pretest and posttest school math MAP scores among students who participated in the COSY program.

H_1: There are between-group differences based on student's age in pretest and posttest school math MAP scores among students who participated in the COSY program.

Research Question 2: Are there between-group differences based on student's age in pretest and posttest school attendance rates among students who participate in the COSY program?

H_{02}: There are no between-group differences based on student's age in pretest and posttest school attendance rates among students who participated in the COSY program.

H_2: There are between-group differences based on student's age in pretest and posttest school attendance rates among students who participated in the COSY program.

Research Question 3: Are there between-group differences based on student's age in pretest and posttest school behavior write-ups among students who participate in the COSY program?

H_{03}: There are no between-group differences based on student's age in pretest and posttest school behavior write-ups among students who participated in the COSY program.

H_3: There are between-group differences based on student's age in pretest and posttest school behavior write-ups among students who participated in the COSY program.

Theoretical Framework

One theoretical base for this study was the biopsychosocial model (BPSM). The BPSM analyzes the child within the context of complex family and social systems (Decker, 2016). Relatedly, parenting is central to the development of disruptive behavioral problems (Dodge et al., 2008; Forehand et al., 2012; Moffit et al., 2008). Because parenting is a central component of the child's biopsychosocial world, it would

be important to consider it in modes of intervention for disruptive behaviors. Methods that incorporate parents along with other critical psychosocial influences, such as peers, teachers, and therapists are consistent with BPSM approaches.

Nature of the Study

A between-group, with repeated measures, design, was utilized to evaluate whether there were differences in outcomes as a function of age for students who participated in COSY activities. This design was appropriate in order to evaluate both between-group and within-group participant differences across time. This design was ideal because the independent variable was based on a preexisting demographic variable rather than the experimenter's group assignment and the event had already occurred. Relatedly, participants were not randomly sampled nor randomly assigned to condition (Salkind, 2010). Further, this was a repeated measure design to study outcomes among students in the two age groups who completed the COSY activities. Between-group differences in changes across time on three dependent variables was evaluated: academic performance, school behaviors, and school attendance.

Theories of child development also are relevant to possible differences in receptivity to, and benefit from, life experiences. Erik Erikson's psychosocial development theory proposed the concept of an eight-stage life cycle, with each developmental cycle presenting different life challenges to be met (Erikson, 1963). Failure to meet the developmental challenge of that stage is demonstrated by personality attributes, behaviors, and reactions that are less than productive for meeting life challenges. Erikson suggested age ranges as typical for each of the developmental stages.

Thus, the same environmental conditions may be responded to very differently, depending on the life cycle stage of the individual, and that individual's outcomes from previous developmental phases. This may include student dysfunction. A second developmental model of relevance is Jean Piaget's (1971) theory of cognitive development. This theory also describes stages through which children pass. Each stage is characterized by cognitive changes in the youth's abilities to process information and experiences, and, as such, potential for changes in responses to situations. For example, older children, such as older than age 12, may be more likely to evaluate situations less reactively and with less dependence on more externally derived, black-and-white rules for classification and interpretation. They are more able to consider new possibilities that go beyond the limits of their actual past experiences. Another example of a developmental change under this theory that this is said to occur between the ages of 4 and 6 is the movement from egocentrism to being able to take into consideration others' perspectives and feelings. Children may not successfully complete all of the tasks of a stage and may bring the limitations with them as they move to the next stage (Piaget, 1971).

Definitions

Academic Performance: In 1973, researchers Allan Olson and George Ingebo pioneered how accurate data could be used to inform instruction using computer adaptive testing (NWEA, 2019). The Northwest Evaluation Association is a research-based, not-for-profit organization that uses this method to precisely measure student academic growth and proficiency (NWEA, 2019). The Northwest Evaluation Association was

referred to as NWEA from this point forward. Currently over 9,500 school districts in 145 different countries utilize the NWEA testing for academic measurement (NWEA, 2019). The testing is called Measures of Academic Progress and from this point forward was referred to as MAP. The NWEA uses the Rasch unit scale (RIT), which is derived from testing thousands of United States students, to produce these RIT scores on the MAP testing. The RIT value given to a student predicts that at that specific difficulty level, a student is likely to answer about 50% of the questions correctly. Results are scored across an even interval scale, meaning that the difference among scores remains consistent regardless of whether a student scores high or low. It also means that grade level is not a factor. See Appendix C on how to understand Math MAP RIT scores. Since the MAP test is taken on a computer, once the child finishes the test, scores are immediately available. MAP testing is administered three times a year, Fall, Spring, and Winter. Academic achievement was measured from RIT scores taken from the testing cycle prior to COSY enrollment and after COSY enrollment.

Age Groups: Participants ranged from 5 years old to 16 years old. Age was measured at enrollment date to COSY. There are many theories that state age has a significance effect. In accordance with Jean Piaget's Theory of Cognitive Development (1971) participants were broken up into categories called levels or related groups based on their stage of cognitive development. Piaget's stages of cognitive development theorize that formal cognitive operations do not take place till around 12 years of life. The formal operational stage begins around age twelve and lasts into adulthood, this stage allows for the ability to think in an abstract manner by manipulating ideas in their head,

without any dependence on concrete manipulation (Inhelder & Piaget, 1958). Formal operational thinking is the ability to form new ideas on your own without the need for external influences, it was interesting to see if this ability is a variable in any of the psychosocial and behavioral changes that the COSY program collaborates utilize to induce change/student improvement. The two age groups for this study were pre formal operations (children ages 5 to 11 at COSY intake) and formal operations period (youth ages 12 to 16 at COSY intake).

Attendance: Attendance was defined as the number of days a participant missed school the quarter before and the quarter after program enrollment. This included all absences, both excused and unexcused as well as days missed due to Out of School Suspension (OSS). Research shows that students with higher absenteeism rates perform lower academically (Ginsburg et al., 2014; Gottfried & Kirksey, 2017; Stempel, Cox-Martin, Bronsert, Dickinson, & Allison, 2017) and students with lower test scores have higher rates of school behavior issues (Kremera, Flower, Huanga, & Vaughna, 2016) confirming the interrelated connection between school attendance, academics, and behavior.

Collaboration of Care (COC): The University of Washington's Advancing Integrated Mental Health Solutions Center (2019) is an integrated consultation group of national experts and supports from The John A. Hartford Foundation, Agency for Healthcare Research and Quality, The Robert Wood Johnson Foundation, and The California HealthCare Foundation. They define Collaboration of Care programs using five principles of criteria: patient-centered team care, population-based care,

measurement-based treatment to target, evidence-based care, and accountability (University of Washington AIMS Center, 2019). These five core principles of a collaborative increase patient engagement, result in better patient outcomes, ensure that no patients fall through the cracks, provide evidence-based treatment with measurement-bases to track, and hold providers accountable to ensure reimbursement reliability (University of Washington AIMS Center, 2019). Collaboration of Care was further referred to as CoC.

Collaborative Organization of Services for Youth (COSY): The Collaborative Organization of Services for Youth's mission is to coordinate services for at-risk youth and their families through a collaborative of care approach. Most referrals for this CoC derived from the local school district. The goal of this program is a to maintain a child with mental health issues at the least restrictive setting possible by facilitating an effective continuum of support for children and their families utilizing family-centered practices and local services available in the community (DHS, 2019). Collaborative Organization of Services for Youth was further referred to as their agency acronym COSY. The following is a description of the program:

COSY's mission is to plan, develop and facilitate an effective continuum of support for students and their families. Youth service representatives get together with the family to share information and congeal treatment plans in a roundtable design brainstorming format. Representatives present at the table are the school, therapist, rehabilitative behavior health provider, pediatrician, psychiatrist, school district, local government, law enforcement, the department of social services, the department of

special needs, and any/all caregivers involved in the child's development). COSY was founded on the idea that local community professionals could provide better therapeutic service coordination by being more family-centered, minimizing family disruption and reducing the cost of services (see Appendix A). The collaborative care model is cost-effective to the state because it reduces redundancy of services through the years. Every state and local agency that has been involved in this child's life explains in open forum the interventions used, what worked and what did not work in the past, and possible recommendations for the future. This helps eliminate new providers applying the same top five interventions typically used in the onset of treatment. COSY was created in 2005 out of a government grant called the Coastal Community Foundation Endowment Fund bestowed to the Medical University of South Carolina. Remaining on the same page to maximize inter-agency collaboration to develop, implement, and assess medical/therapeutic needs has proven effective for this particular CoC (DHS, 2019).

Number of behavioral referrals: Number of behavioral referrals was defined as the number of documented referrals a participant received as reflected by PowerSchool before and after COSY program enrollment. This was a simple numerical count tallied and recorded by the school district staff for negative behavioral referrals and represents the number of times a participant's negative behavior was severe enough to warrant recording in PowerSchool.

PowerSchool: PowerSchool is the student information system software used by the school district in the currently proposed study. PowerSchool is an online information storage system for school districts that is utilized internationally (Gulati, 2017).

Information including but not limited to student demographics, behavior, and attendance are all recorded in the database by multiple schools and personnel in the district.

Quarters: Each school year is divided into four Quarters. For example, in the 2017-2018 school year, Quarter 1 began on August 17, 2017 and ended on October 18, 2017. Time between measures was one of the independent variables for this study. Measurements was pretest and posttest. Time period one was the school quarter prior to any COSY involvement. Time period two (post COSY) was taken from the end of the quarter following COSY enrollment.

Table 1

Time 1 and Time 2 (IV) by School Quarters

School Year	School Quarters			
	Quarter 1 (Q1)	Quarter 2 (Q2)	Quarter 3 (Q3)	Quarter 4 (Q4)
2013-2014	08/19/13-10/21/13	10/22/13-01/15/14	01/16/14-03/25/14	03/26/14-06/05/14
2014-2015	08/18/14-10/20/14	10/21/14-01/14/15	01/15/15-03/26/15	03/27/15-06/05/15
2015-2016	08/17/15-10/14/15	10/15/15-12/18/15	12/19/15-03/08/16	03/09/16-05/27/16
2016-2017	08/15/16-10/12/16	10/13/16-12/16/16	12/17/16-03/15/17	03/16/17-05/26/17
2017-2018	08/17/17-10/18/17	10/19/17-12/20/17	12/21/17-03/16/18	03/17/18-05/31/18
2018-2019	08/20/18-10/17/18	10/18/18-12/20/18	12/21/18-03/13/19	03/14/19-05/31/19
2019-2020	08/19/19-10/16/19	10/17/19-12/20/19	12/21/19-03/17/20	03/18/20 - 06/02/20

Time 1 and Time 2: This study utilized 2 x 2 x 2 chi-squared test on four out of six variables and factorial ANOVAs with repeated pre/post measures were used to analyze the last two variables. Time 1 represented pre COSY enrollment and was the end of the school quarter prior to any COSY involvement. Time 2 was post COSY enrollment and data was drawn from the school quarter following COSY enrollment.

Assumptions

It was assumed that the data that was used in this study had been correctly documented by the teachers and administration of the school district into the student

information system(s). This was necessary to assume as it is now archival data and the researcher will not be present at the time it was transferred to the program database. Second, and for the same reason, it was assumed that data given to me would not be manipulated to support or negate any hypotheses of the study. Last, it was assumed that participation in the program, not what resources may be prescribed within it, was related to the effect on the dependent variables as each participant's program experience varies with consideration to referrals and resources provided. Some students, for example, may have been referred to one company that specialized in rehabilitative behavioral health services, while others may have been referred to a company that offered therapy only services. This study was not descriptive of the additional individual programs that students may have been involved with while enrolled in the COSY process.

Scope and Delimitations

The current research study analyzed the relationship of participation in COSY and three indicators of student outcomes (academic performance, behavioral referrals, and attendance) by student age levels. Several studies have confirmed a relationship among academics, behavior, and attendance on successful degree completion. School attendance is affected by suspension rates brought on by behavior. Behavior can affect academics and academics can affect behavior; a two-way relationship exists between behavior and academics (Cochrane, 2008; McIntosh & Goodman, 2016) and when behavior is inappropriate, suspensions are given which affect student attendance rates. Bijsmans and Schakel (2018) reported that student attendance affects several measures of student academic success. Freeman, Simonsen, McCoach, Sugai, Lombardi, and

Horner (2015) examined academic achievement, behavior, and attendance in relation to high school completion and found that when a school implements positive behavior interventions a statistically significant positive effect occurs with attendance, and attendance is a proximal and statistically significant indicator of high school dropout risk.

The current study only included the population of students ages 5 to 16 in this district who had been referred to the COSY program; ages are based on the date of each participant's actual enrollment in COSY. Although students can be referred by a school for a variety of reasons, students without academic or behavioral needs obvious to teachers and school administrators were not included in the study. Regarding generalizability, COSY was administered in just one southeastern school district that is lower in socioeconomic status as shown by having over 60% of its student body receiving free or reduced lunch (NCES, 2017). This district does have a diverse student body, however, not all cultures were adequately represented. The district consisted of approximately 39% White, 28% African American, 29% Hispanic, and 4% multiracial (NCES, 2017). There was little to no representation of Asian, Native American, nor Pacific Islander cultures in this study, communities rich in those cultures or higher in socioeconomic status were not represented in this sample.

Limitations

There were several limitations anticipated for this current study. First, extraneous variables such as therapeutic treatments and school supports that students participate in outside the program concurrently with COSY was unknown and not controlled for. A

participant, for example, may have concurrently participated in private therapy weekly that was not a result of participating in COSY. There was not a way for controlling these types of variables as they are not part of the data the program collects. Second, this study used the school district's preset timed intervals referred to as quarters which some may argue against because school quarters are not equally divided. This meant that a student received an extra week of instruction in one quarter versus another quarter which could be the arguable reason a student may perform better on the MAP math testing. For example, in the 2017-2018 school year, Q1 and Q2 were 62 calendar days long whereas Q3 was 85 calendar days long. The difference in length of time were due to the holiday breaks in the calendar so despite having a 23-day difference in length there was only a 5-day difference in actual days of instruction. Given that one of the possible extraneous variables was the possibility of external interventions that could have contributed to student achievement from outside providers that were not a part of the COSY collaboration, the extra calendar days are an increase in probability of these external interventions. Third, because participation of the COSY program is left up to the parent/legal caregiver, confounding variables such as differences in personality traits that make it more likely for a caregiver to actively participant and follow through with CoC recommendations and referrals could also have had an effect on the dependent variables. Finally, this was a relatively small student population that was affected by this study: students with severe behavioral and academic dysfunctions. Given the smaller population affected by this study and the concentration of location to one school district, a limitation could be lack of variation, however, a narrowly defined study population provided

homogeneity and ruled out the possibility of any noise and additional confounding factors.

Significance

The current study contributes to the increase in CoC programs available to public school students by providing evidence that COSY, in particular, was related to a decrease of negative student behaviors and an increase in student academic achievement. At the very least, it adds to the current small body of literature about CoCs, most of which were concentrated in the primary care setting and not in the school setting. Additionally, it is hoped that this may bring about positive social change by giving school districts an option to help tackle the ever-growing amount of behavioral and mental health issues amongst today's youth. An estimated 17.1 million U.S. students K-12 had or have had a psychiatric disorder (Child Mind Institute, 2015). Furthermore, if the results in the school setting mimic the primary care setting, then the 70% of the 17 million students in this nation who receive care from their schools for behavioral and emotional needs will benefit from the implementation of a CoC approach.

Summary

It is vital to educational psychology that empirical based treatment models exist to treat behavioral and mental health issues for school aged children. The Centers for Disease Control and Prevention (CDC) estimates that in 2016, 6.1 million children (ages 2-17) living in the U.S. have been diagnosed with attention-deficit/hyperactivity disorder (ADHD) alone and, among these, nearly two-thirds also had another mental, emotional, and/or behavioral disorder (CDC, 2019). Behavioral and mental health issues affect not

only the child and parents but also the schools and students as well. Ineffective approaches and lack of effective behavior/mental health treatment for children can lead to a risk of harm nationwide in our schools (O'Toole, n.d.). In 2018 there were 23 school shootings from January to May in the United States where someone was injured and/or killed which averaged out to be more than one school shooting a week (Ahmed & Walker, 2018). This increasing number of school shootings in the recent years has schools and policy makers scrambling to reevaluate safety plans as well as mental health student supports available spawning a $2.7 billion school security industry (Rowhani-Rahbar & Moe, 2019). Using archival records from a southeastern school district, data was analyzed to determine if COSY had a significant relationship with improvements on academics, behavioral referrals, and attendance by age level. The next chapter will discuss research regarding barriers to CoCs, the rationale for using a biopsychosocial system perspective for treating student issues, and existing research on CoCs.

Chapter 2: Literature Review

Introduction

A lot has changed in the course of a hundred years for mental illness perception in America. Segregation of mental illnesses from general populations is now perceived as the last possible resort and consideration for human rights, equal opportunities and social justice is given (Armstrong et al., 2016). Once upon a time, children with mental illness were not integrated into society and shunned from public-school systems. Nowadays, all students are treated equal and given the opportunity to socialize and learn together despite any/all disabilities including mental health issues. Inclusion refers to the societal ideology that all individuals with disabilities and special needs should learn alongside their nondisabled classmates. Failure to provide effective supports to disabled students with mental health issues is a federal offense for school districts, under the Individuals with Disabilities Education Act (Title 34, §300.8(c)(4)(i)). According to this federal act, school districts must provide support for students who suffer from emotional disturbances which are defined as any long-term behavioral and/or mental health condition that adversely affects a child's educational performance that
cannot be explained by intellectual, sensory, or health factors (Title 34, §300.8(c)(4)(i)).

One approach the school systems are utilizing to meet the federal requirement is the implementation of an individual education plan to inform pedagogy (Timothy & Agbenyega, 2018). The individual education plan is a written document of a student's goals to be achieved over a set period of time and includes teaching strategies, resources and supports the school brainstormed to help that student achieve those goals (NCSE, 2006, p. xii). With all approaches, improvement is possible, and shortcomings may exist.

Lehman, David, and Gruber (2017) report that the primary reason individual education plans fail is because professionals and developers of the individual education plan fail to see the student as a "whole" person with complex problems and needs; their assessment of the child is constricted to their observations in only one of the child's environments (the school) and contains little to no professional input about what this child goes through 18 out of 24 hours a day in the nonschool settings in which the child lives. CoC frameworks may be the solution to successfully creating comprehensive individual plans of care for a student with an emotional disturbance. CoC focuses on accountable, evidence-based, patient-centered, and measurement-driven interventions delivered by a team of coordinated providers that meet regularly to collaborate (Asarnow et al., 2015; Campo et al., 2005; Kolko et al., 2014; Kolko et al., 2010; Kolko & Perrin, 2014; Lyon et al., 2016).

There is a lack of empirical research regarding the effectiveness of CoCs in the public-school system. The purpose of this study is to examine the relationship between a specific CoC called COSY and variables connected to educational achievement: academics, attendance, and behavioral referrals of public-school students ages 5-16. This chapter will explore literature regarding current usage of CoC in different settings, barriers to implementation, and discussing existing research about CoC programs.

Literature Search Strategy

The term *Collaboration of Care* was used to search the following databases accessed through Walden University: Academic Search Complete, Business Source

Complete, CINAHL Plus with Full Text, Communication & Mass Media Complete, Complementary Index, Computers & Applied Sciences Complete, Directory of Open Access Journals, eBook Collection (EBSCOhost), Education Source, ERIC, Gale Academic OneFile Select, International Security & Counter Terrorism Reference Center, Journals@OVID, MEDLINE with Full Text, PsycARTICLES, PsycINFO, Regional Business News, Science Citation Index, Science Direct, Social Sciences Citation Index, Social Work Abstracts, SocINDEX with Full Text, Supplemental Index, and Teacher Reference Center. The limiters used in this search were publication dates between 2009 and 2019 and inclusion of only scholarly journals. In addition to the search term *Collaboration of Care*, *school* was added to the search as well as *academics, behavior,* and *attendance*. A general internet search through Google Scholar was done for further information which generated 598 articles (0.29 sec) using the search term *collaboration of care* in quotes. When narrowed down to articles within the last 5 years, 340 results remained and out of those current articles, only 55 included school-based variables (academics, behavior, and attendance). None of the 55 articles included studies done in the school environment, instead they were conducted in the primary care setting (hospital, outpatient, and private healthcare settings).

Theoretical Foundations

The theoretical basis for this study was Erikson's theory of development (1963), Jean Piaget's theory of cognitive development (1971), and the biopsychosocial model (BPSM). BPSM calls for the acknowledgment that children do not operate independently, and that treatment and assessment need to include the complex family and social

system(s) of which that the child is a part (Decker, 2016). The dominant perspective in the literature is that parenting is central to the development of disruptive behavioral problems; this theoretical assumption is rooted in various child psychology theories to include but not limited to the early starter model (McMahon & Forehand, 2003; Forehand et al., 2012), the child-onset type model (Moffit et al., 2008), and the cascade model (Dodge et al., 2008; Forehand et al., 2012). Since the role of parenting is central to development, it is therefore significant to the diminution and treatment. Despite the significance of home life, many behavioral issues are handled by the schools and mental health issues are handled by a therapist in office once a week for an hour. This leaves most of the child's life obscure to professionals. In order to truly assess a student and create a plan of care their home life needs to be observed and interventions integrated.

The most frequent issue in working with exceptional individuals in the school or community setting is that professionals and developers of the individual education plan (IEP) fail to see the student as a "whole" person with complex problems and needs (Kóbor, 2009; Lehman et al., 2017). For example, a female first grade student in SC, who had begun to rapidly decline academically and behaviorally, would not sit still long enough to absorb any information causing her to fail most tests and assignments; her symptoms mimicked Attention Deficit Hyperactive Disorder (ADHD) and her teachers and administration documented the symptoms. The school recommended a mental health assessment with her pediatrician and using the school documentation she was diagnosed with ADHD due to inattention, inability to sit still, and hyperarousal. Medication for ADHD began, and the symptoms grew worse. The school referred the child to an outside

mental health provider who specialized in Community Support Services (CSS) rendered in the home. The first day involved going to the student's home and discovered that this child was living in a broken camper in the woods with her military veteran father who was recently widowed. The camper was filled with bedbugs and the little girl's inability to sit still in class and concentrate on schoolwork was a result of the plethora of itchy bites in her genital area. The bites had gone unseen by the parent because the widowed father had his daughter wash herself alone for the past year since the mother's death. The current framework for pediatric psychiatric medication only includes an office visit with a parent reported checklist of symptoms, in order to increase effectiveness in treatment the client needs to be viewed from a BPSM viewpoint of entirety (Decker, 2016).

Children develop biologically, psychologically, and socially as they age. How development occurs is arguable, as evidenced by the many theories of Freud, Kohlberg, Piaget, and Vygotsky. What is inarguable in all these theories is that age plays a part in the progressive maturing of human character (Erikson, 1963). In his book, Childhood and Society, Erik Erikson (1950) introduced the concept of an eight-stage life cycle. According to his theory, as individuals age, they progress through a set of challenges that they must overcome at each stage. If the child is unsuccessful at the challenge, he or she will obtain a negative personality attribute that is associated with that stage. For example, around age one, an infant is learning if they can trust their primary caregiver to care for their needs or not. Lack of need fulfillment by the primary caregiver results in the obtainment of mistrust in the world and people in general (Erickson, 1950). The display of negative personality attributes can manifest into problems functioning at age

appropriate levels. The students enrolled in the COSY collaborative are referred because they are experiencing impairment in school, home, and/or community. For this reason, it is important to look at age as a viable demographic variable because any behavioral disfunction and/or psychosocial development delay may be linked to an early childhood event. The collaborative approach to care that this study evaluated involved the parent/primary caregiver as an active storyteller of the past events as well as serving as an active future vehicle for the delivery of the positive intervention(s) for the child. Research findings indicate that early interventions are more effective for prolonged effectiveness in behavioral and mental health populations (Kösters et al., 2015). In terms of ages, grade levels K-12 was open for evaluation with an anticipated age range of five to seventeen. In addition to Erikson's theory of development used to understand possible negative attribute(s) obtainment to explain student dysfunction, Jean Piaget's Theory of Cognitive Development (1971) was used to divide the students into two age groups. Piaget classified child development by four sequential periods, the final cognitive development stage is termed formal operations period which occurs around the age of twelve and is the stage of adulthood cognitions (Piaget, 1971). Participants was divided by age in relation to this theory; before twelve years of age and after twelve years of age.

Literature Review

The literature review began with an event history analysis of the psychiatric care models for children and youth that have existed in this nation in order to understand the foundations of current methods. Asylums were the mainstream option for hundreds of years; children with mental illness were kept separated from the general population and

their own families (Goffman, 1961; Chow & Priebe, 2013). Nowadays, all students are treated equal and given the opportunity to socialize and learn together despite any/all disabilities including mental health issues. Inclusion is not only the new gestalt, violation of such, is a federal offense (Title 34, §300.8(c)(4)(i)). Finding empirical based interventions for the mental health treatment of children is paramount. Collaboratives are emerging as a contemporary approach to care. A Collaboration of Care (CoC) model is a systematic approach to treatment that involves the integration of care managers, medication prescribers, legal caregivers, specialists, and collateral contacts to more proactively manage client aliments (University of Washington AIMS Center, 2019). While cooperative, inter-organizational networks have become a common framework for delivery of mental health services, literature on collaborative organizational structures and their effectiveness is lackluster. Out of the few studies conducted on collaboration of care frameworks, positive results are found with the use of collaboration of care; however, these studies involve the healthcare field and outcomes are not related to school performance (Blanchard et al., 2017; Terao et al., 2019; Hajjar et al., 2020). An estimated 17.1 million U.S. students K-12 have or had a psychiatric disorder (Child Mind Institute, 2015) and it is estimated that the majority of disorders are first discovered and treated in the school environment (Costello et al., 2003; Lyon, 2016). The body of knowledge to date casts no definitive studies on the use of a CoCs in the school environment with outcomes based on the academics, school attendance, and school behavioral write-ups. Research shows that students with higher absenteeism rates perform lower academically (Ginsburg et al., 2014; Gottfried & Kirksey, 2017; Stempel et al., 2017) and students

with lower test scores have higher rates of school behavior issues (Kremera et al., 2016) confirming the interrelated connection between school attendance, academics, and behavior.

Collaboration of Care (CoC)

The COC model is a systematic approach to treatment that involves the integration of care managers, medication prescribers, legal caregivers, specialists, and collateral contacts to more proactively manage client aliments. The University of Washington's Advancing Integrated Mental Health Solutions Center (2019) has published the five core principles of collaborative care warning that if any one of the principles is missing, then effective collaborative care is not being practiced. These five principles were developed in 2011 through integrated consultation with a group of national experts and support from The John A. Hartford Foundation, Agency for Healthcare Research and Quality, The Robert Wood Johnson Foundation, and California HealthCare Foundation (University of Washington AIMS Center, 2019). The five core principles of collaborative care are patient-centered team care (increased patient engagement results in better patient outcomes), population-based care (ensure that no patients fall through the cracks), measurement-bases treatment to target, evidence-based care, and accountable care (providers are accountable and reimbursed correctly) (University of Washington AIMS Center, 2019).

Barriers to CoC

Although it may seem evident that a child benefits the greatest when all the adults involved in their lives are working together, with HIIPPA regulations and insurance

company preference for faster approaches to care, seldom is time taken to adequately gather all the pieces of the puzzle to figure out why a child is in need of support/treatment. Insurance company preference for faster approaches (California SBHA, 2019) has hampered the widespread implementation of collaborative care models because reimburse for providers is seldom offered by insurance companies for indirect patient care (the communication exchange amongst providers) due to the current fee-for-service reimbursement (Raney, 2015). Despite, the barriers for providers, the CoC model has shown positive mental and physical health outcomes for children in the medical field setting. The collaborative care model has been shown to be more effective than usual primary care in improving client outcomes however, of the small amount of research performed on CoC studies have varied greatly regarding implementation, population, and type of program used making a clear.

CoC in the Primary Care Medical Setting

Asarnow, Rozenman, Wiblin, and Zeltzer (2015) conducted a meta-analysis study on 31 trials of different primary care approaches used to address youth mental health issues and found that implementation of CoC approaches had a 66% probability of having a better treatment outcome and that this probability increased to 73% for the five trials that explicitly utilized the CoC model. Trask, Barounis, Carlisle, Garland, and Aarons (2018) studied the factors associated with positive health outcomes for children utilizing a large public pediatric mental health network and found that administration of interventions done in the child's home led to greater client outcomes in terms of mental health symptoms reduction.

CoC in the Foster Care Setting

A COC program called the Interagency System for Caring for Emotionally Disturbed Children (ISCEDC) ensures children in the foster care system receive complete care (physical, emotional, cognitive) through mandated interagency staffing meetings comprised of the Department of Social Services, the Department of Mental Health (DMH), the Department of Disabilities and Special Needs (DDSN), the Department of Juvenile Justice (DJJ), the Department of Education (DOE), and local providers involved (SC DSS, 2012). ISCEDC focuses on implementing local community–based services to support children and relies on a CoC model to operate. Research shows positive mental health results for children in the ISCEDC system; positive mental health outcomes were measured in terms of days in psychiatric hospitalization and long-term psychiatric care; in FY 2011-2012 the number of such was reduced by 22% (SC CMACC, 2012; SC DSS, 2012).

CoC in the School Setting

Over 18 million children and adolescents in the United States experience mental health problems yet only one third of these children actually receive treatment, and amongst this 70% the care received was often identified and delivered in the education sector (Costello et al., 2003; Lyon, 2016). Because of the connection between behavior and academics (McIntosh et al., 2008; McIntosh & Goodman, 2016) schools are increasingly offering a variety of services to address the totality of the student. The Collaborative of Care approach is a particularly useful model for schools to address

student mental health needs to improve outcomes for children in schools (Lyon et al., 2016).

School-Based Health Centers (SBHC) also known as Managed Care Organizations (MCO) are contracted by the Department of Health Office of School and Adolescent Health, and the Medical Assistance Division School Health Office to provide physical health and behavioral health services to the students at school, to enforce the federal Medicaid policies, and to regulate the reimbursement for services delivered in school-based health centers (SBHC, 2019). Per the Medicare Catastrophic Coverage Act of 1988 (P.L. 100-360) Section 1903(c) of the Medicaid statute, states are able to draw down federal funds under Medicaid to pay for school-based health and related services required by the Individuals with Disabilities Education Act (IDEA, P.L. 101476) to pay for services listed in a child's individualized education program (IEP) or individualized family service plan (IFSP) if the child is enrolled in Medicaid (P.L. 100-360). SBHC utilize community-based services in collaboration with the school supports to provide better care for the totality of the student. The utilization of in-home supports increases the success of mental health outcomes for children (Trask et al., 2018).

Several states have contracted with School-Based Health Centers and/or managed care organizations to offer CoC services in the public-school setting: Delaware, Illinois, Louisiana, Maine, New Mexico, North Carolina, South Carolina, Texas and West Virginia (SBHA, 2019). Schools utilizing the CoC model through SBHCs can draw down federal funds for a child's access to care, care coordination, referrals, and transportation to and from outside providers; in FY 2016 Medicaid spending on school-based services

and Medicaid-related administrative services for collaboration was estimated to be $4.5 billion (MACPAC, 2018). Private companies are also able to access the federal funding for School Based Health Services to provide CoC. Examples of such are the Accessible, Collaborative Care for Effective School-based Services (ACCESS) (Evans & Weist, 2004; Owens et al., 2014; Lyon et al., 2016). It is essential to the wellbeing of the student and for cost effectiveness to research the pilot programs offering CoC programs for SBHS.

Summary

A gap exists in the amount and quality of research associated with CoC models. CoC approaches have become a common mechanism for the delivery of mental health services; however, literature and research on such is sparse. Out of the few studies conducted on implementation frameworks, positive results are found with the use of CoC; however, these studies involved the healthcare field and outcomes were not related to school performance (Blanchard et al., 2017). A study which investigated a collaborative approach by examining a particular program in use by a school could remedy the situation. Chapter 3 describes how the current study examined the relationship between COSY, grade point average, number of behavioral referrals and attendance by student ages.

Chapter 3: Research Method

Introduction

Collaboratives are used worldwide as an effective, team-work approach for common mental health disorders. However, they are understudied in the primary care setting (Martin et al., 2016) and any research on their use in the school setting is scarce at best. The purpose of this study was to expand the very limited research to date on the use of a collaborative in the school setting. This study examined a specific collaborative, called COSY, which is used as an intervention for students with complex behavioral and academic challenges to see if there was a positive association between participation in COSY and changes in attendance, behavior, and academic performance among 52 public-school students, ages 5-16 in a specific school district. Further examination took place to see if the age of the student at program enrollment mattered. Three school outcomes were examined (attendance, behavior, and academics) at two points in time (before COSY enrollment, and after) resulting in six variables. The six variables were:

1. Attendance pre COSY
2. Attendance post COSY
3. Behavior pre COSY
4. Behavior post COSY
5. Academics pre COSY
6. Academics post COSY

Variables 1 through 4 were measured using a 2 x 2 x 2 chi-squared test and Variables 5 and 6 were measured using the original plan for factorial ANOVAs with repeated

pre/post measures; more information on the inclusion of two analysis designs can be found in Chapter 4 under the 'evaluating data regarding the assumptions for planned data analyses' heading. This chapter discusses the methodological components of the study including design, population, statistical analyses to be performed, data collection procedures, and variables.

Research Design and Rationale

This study had three dependent variables (DVs): academics, number of school behavioral write-ups, and the number of absences from school. The independent variables (IVs), or 'predictors,' were time of measurement and age of student. Measurements were taken before COSY enrollment and after COSY enrollment (pre and posttest) and the student ages at enrollment were placed into two age groups (younger students and older students). Archival data were used from measurements taken the school quarter prior to COSY enrollment and the school quarter after COSY enrollment. Possible exogenous variables included the use of additional interventions outside of the COSY program such as a private therapist who may have refused to collaborate with other providers in the COSY meetings and major changes in the student's life such as improvement in socioeconomic conditions. For example, if a student shows behavioral improvement following COSY program involvement, it would be impossible to distinguish if the improvement was due to the private therapist's interventions, socioeconomic improvements, or COSY program interventions. Possible confounding variables were personal characteristics of students and caregivers. For example, some

parents could be more predisposed then others to follow collaboration board recommendations.

Research Design

This quantitative study used a 2x2x2 chi-squared design and an analysis of variances with repeated measures to examine possible relationships between participation in COSY and changes in student academics, behavior, and attendance and further examined any possible differences between younger and older students. The dependent variables were measured pre and post COSY enrollment. Due to the school district in this study not being year round, school quarters were used as time markers; a summer break exists that generally ranges from June until mid-August for the sample which means that some of the participant's timed intervals fell during summer break when in-school interventions would not be administered and data collection was not feasible. For example, if a student enrolled in COSY during the month of May, data from the school would have only been documented for the first interval of time (pre COSY) for that particular school year, which meant the second measurement (post COSY) was drawn after summer break from the next sequential school quarter which would have been in August. The district's preset intervals called 'quarters' were used to measure the independent variable of time. Data ranged from the 2013-2014 school year to the 2019-2020 school year.

This study did not involve my direct interaction with a vulnerable population because data collection involved archival data retrieval. There were no randomly assigned groups which reduced time constraints and potential ethical considerations. This

design also looked for differences in effects between student ages to see if early intervention resulted in more positive student outcomes and/or if cognitive developmental operations may play a role in a student's ability to change an inappropriate behavior.

Methodology

Population

The population for this sample was students ages 5 to 16 at program enrollment from a southeastern public-school district, with an estimated total $n = 52$, who enrolled in the COSY program between 2012-2020. The participants represented in this study were African American, Caucasian, Hispanic, and Biracial. Students referred to the COSY program were identified a state agency, such as the school, the department of social service, the department of mental health, the department of juvenile justice, or law enforcement. The students typically struggled with behavioral and/or academic issues. Referrals are often given when the school district or department of juvenile justice felt as though they have exhausted all their supports with little to no improvements being seen.

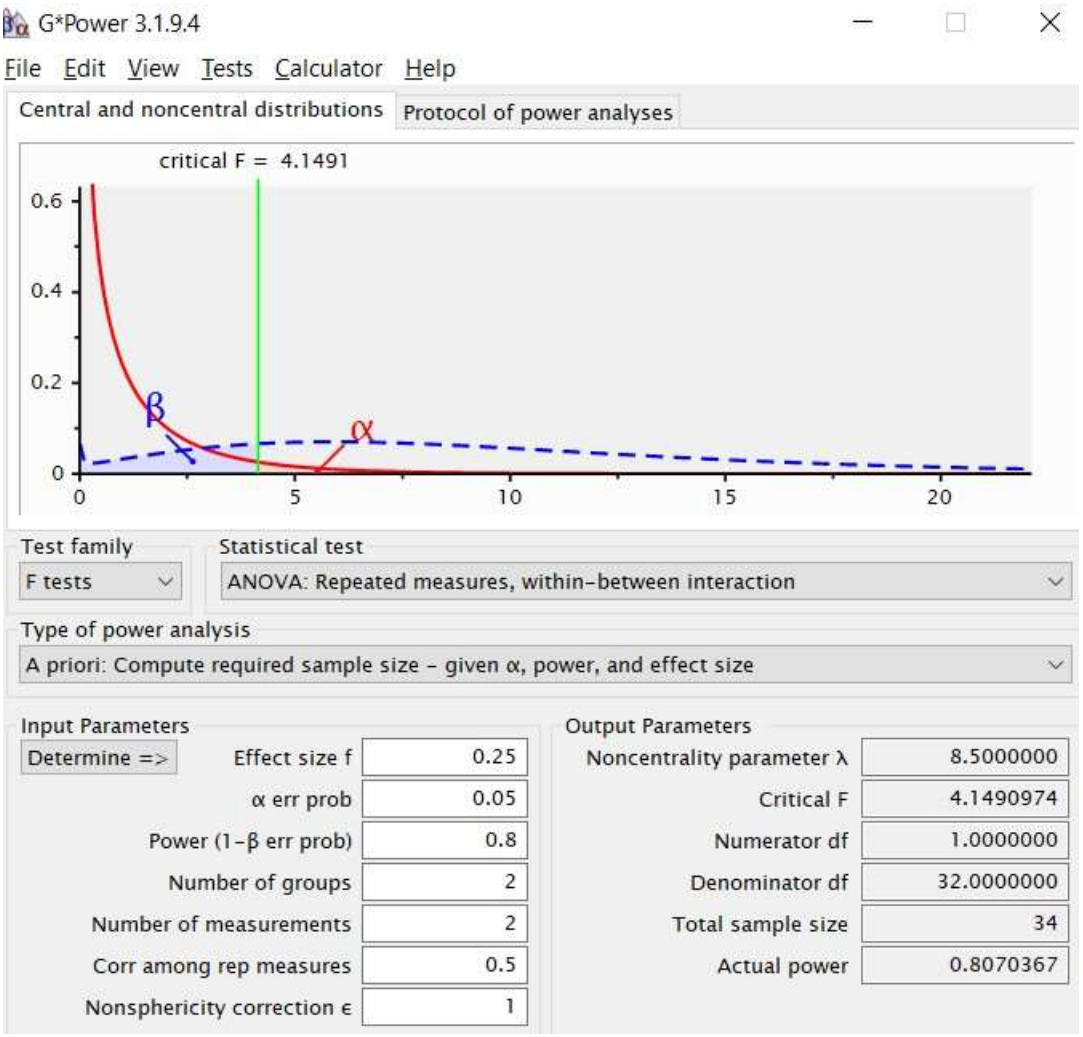
Sampling and Sampling Procedures

The sample was drawn from the participating school district's archival data stored in the PowerSchool electronic data collection/storage system. COSY's mission was to meet the needs of the individual student and family; therefore, the resources, referrals, and meetings varied from student to student. For the purpose of this study, participants must have met three criteria including enrollment in COSY, active participation in COSY for a minimum of 30 days, and participation in at least two or more agencies present at the collaborative.

To test the hypotheses that there was a significant relationship between COSY program participation and the specific school outcomes (attendance, behavior , and academics), and possible significant differences by age group, an 2 x 2 x 2 chi-squared test was used on four out of six variables (attendance and behavior) and factorial ANOVAs with repeated pre/post measures were used to analyze the last two variables(pre/post COSY math MAP scores). Using the G*Power version 3.1.9.4 to perform a power analysis with an $\alpha = 0.05$, $\beta = 0.95$, the minimum sample size was determined to be 34 (see Figure 1 below). In order to error on the side of caution, a total target sample size of $n = 50$ was established and the power level of $\beta = 0.95$ was used to reduce the probability of making a type II error, and the effect size was 0.25.

Figure 1

Minimum Sample Size for This Study



This study utilized categories or levels to divide the participants into two age groups. Many psychological studies show that age factors into participation, buy-in, and ability to change a behavior; studies show that the younger the child, the easier it is to change an inappropriate behavior into an appropriate behavior (Conroy, 2016). This study utilized age groups based on Jean Piaget's Theory of Cognitive Development (1971) which stated that age affects readiness for and

impact of life experiences. Piaget classified child development by four sequential periods, the final cognitive development stage is termed formal operations period which occurs around the age of 12 and is the stage of adulthood cognitions (Piaget, 1971). The formal operational stage allows for the ability to think in an abstract manner by manipulating ideas in one's own mind, without any dependence on concrete manipulation (Inhelder & Piaget, 1958). Since formal operations is the ability to think on your own without the need for external teachings, it was interesting to see if this ability is a variable in any of the psychosocial and behavioral changes that the COSY program collaborates utilize to induce change/student improvement. The two independent variable age groups for this study was preformal operations (5 to 11 years old) and formal operations period (12 to 16 years).

Collaborative Organization of Services for Youth (COSY)

The focus of the current study was to determine if participation in a specific CoC, COSY had a significant relationship with changes in student academics, behavior, and attendance. COSY is not for profit organization that receives funding under a governmental grant called the Coastal Community Foundation Endowment Fund and board members are all state and private agencies that provide care for youth development in the county. Referrals to the program must come from a state agency, such as the school, the department of social service, the department of mental health, law enforcement, etc. Referrals are often given when the school district has exhausted its supports with little to no improvements being seen. Referrals to COSY included, but

were not limited to, multiple academic and behavioral problems, lack of parental participation in school interventions, parental concern, mental health issues, history of self-harm and/or harm to others, and lack of congruency between agencies involved. Students and their parents were not required to participate after being referred to the program and they were not required to use any of the resources offered by the program. Involvement in the collaborative was dependent on parent/legal guardian participation because they were believed to be a key part in the modification of behavior process.

Once referred, an initial meeting was set up by the COSY facilitator with the legal guardian of the student. This initial meeting was called the *intake*. Information gathered during intake was a full history of the student's cognitive, physical, and social development. Any/all possible trauma history was discussed, past hospitalizations, medications, diagnoses, and past/current involvement in any services. The facilitator explained consent for information exchange and the importance of involving any/all people and agencies that were involved with the child. The facilitator then scheduled the first team meeting sending invitations to everyone involved, at the meeting the caregiver was introduced to the team members, the intake information was summarized and then each agency involved gave a summary. The COSY team then collaborated with the parent in an open forum to gather information used to brainstorm a plan of action that included referrals and resources. These recommendations, for example, can range from psychological evaluations to involvement in a community team sport. Periodic meetings were scheduled at a rate typical of once every two months, however, scheduling was based on student's individual needs and progress. At any point in the process, a team

member and/or the family could have requested an emergency team meeting. COSY maintained a record of these meeting recommendations and the documented progress of the student at every meeting. Student progress academically and behaviorally was recorded by the school district as they did with every student. The data that was used for this study was accessed through the school district's electronic information collection system called PowerSchool SIS.

Procedures for Data Collection

Archival data was used for this study. These data had been independently collected by the school district and stored in their online PowerSchool database (behavior write-ups & attendance) and online ENRICH database (Math Map scores). The following demographic information was collected and stored in PowerSchool for each student: student age, grade, sex, academics, behavior referrals, and attendance. No identifying information was released so no informed consents needed to be dispersed to participants. No student names were ever used throughout any of the data collection process, only student ID numbers which are coded by the school's software system. All student ID numbers were also coded a second time with new number assignments and the data was stored in a triple locked security set-up consisting of a lock box hidden within a locked filing cabinet drawer located within a locked private office.

The procedure for gaining access to the data described involved meeting with the school district's head of student services to request access. The administrator was made fully aware of all aspects of this study and appropriate permission letters were obtained and are available in Appendix B of this study. After coding for confidentiality, the

information from the PowerSchool SIS school online storage site was uploaded to excel and SPSS for data analysis. The computer used for this process also had a 3-fold lock system and was used only by the researcher.

Operationalization of Variables

This current study had two IVs: time (pre COSY and post COSY), and student's age at enrollment. The three DVs for this study were student academics, behavior referrals, and attendance. Each DV value was taken at the end of an academic quarter which coincided with the designated points in time. Academics was measured using math MAP RIT scores taken the testing period prior to COSY enrollment, and the testing period after COSY enrollment. The school district had three MAP testing periods per year (Fall, Winter, Spring). The RIT value given to a student predicted that at that specific difficulty level a student was likely to answer about 50% of the questions correctly. Results were scored across an even interval scale, meaning that the difference between scores remained consistent regardless of whether a student scored high or low. It also meant that grade level was not a factor. Since the RIT scores on the MAP testing were taken on a computer, once the student finished the test, scores were immediately available and stored on the school district's academic server called ENRICH. The third DV is school attendance which measured the number of school days missed during a quarter. School days missed also represented the amount of days the student was given out of school suspension(s) which was also an indicator of behavioral progress/regression. The number of school days missed also could be an indication of decline in psychological functioning since placement in a psychiatric hospital would

result in a student missing more days of school. Research shows that missed days of school results in decline of academic success (Bijsmans & Schakel, 2018). For example, a COSY client missed a lot of days due to a "tummy ache" and getting the pediatrician, school nurse, and parent together produced the discovery that the student's "tummy ache" was psychosomatic, meaning that the anxiety of having to go to school caused a physical pain. Once the parent received psychoeducation on psychosomatic symptoms and treatments, the line of communication was opened between him and his son which revealed that the son was anxious over a certain peer bullying him, and he didn't know how to speak up. This student was adopted and had a history of child sexual abuse where he was conditioned for years to not ever speak up. The collaborative allowed for an environment where all the pieces of the puzzle were placed together to make sense out of why this student was failing the 8th grade for the second time. Prior to the collaboration each agency was treating the symptoms of the problem separately which was expensive to insurance companies, ineffective for the child, and included the use of psychotropic medications which when prescribed falsely can lead to serious health consequences.

Data Analysis Plan

SPSS software was used to analyze 2 x 2 x 2 chi-squared test on age and four out of six variables (pre/post COSY attendance and behavior) and factorial ANOVAs with repeated measures were used to analyze the last two variables (pre/post COSY math scores) with age factored in as the between-group IV. The results of the test were interpreted in *p*-values for each dependent variable with a 95% confidence interval and effect size, if any, was reported in *f*. The purpose of this current quantitative study was to

determine if the Collaborative Organization of Services for Youth program had a significant relationship with academics, behavior, and attendance improvements and if so, did age of the student have a significant relationship with the improvements seen. The prediction was that participation in the COSY program would have a significant relationship with improvements in student's academic performance, behaviors, and school days missed. The following were the original research questions of the study:

Research Question 1: Are there between-group differences based on student's age in pretest and posttest school math MAP scores among students who participate in the COSY program?

H_{01}: There are no between-group differences based on student's age in pretest and posttest school math MAP scores among students who participated in the COSY program.

H_1: There are between-group differences based on student's age in pretest and posttest school math MAP scores among students who participated in the COSY program.

Research Question 2: Are there between-group differences based on student's age in pretest and posttest school attendance rates among students who participate in the COSY program?

H_{02}: There are no between-group differences based on student's age in pretest and posttest school attendance rates among students who participated in the COSY program.

H_2: There are between-group differences based on student's age in pretest and posttest school attendance rates among students who participated in the COSY program.

Research Question 3: Are there between-group differences based on student's age in pretest and posttest school behavior write-ups among students who participate in the COSY program?

H_{03}: There are no between-group differences based on student's age in pretest and posttest school behavior write-ups among students who participated in the COSY program.

H_3: There are between-group differences based on student's age in pretest and posttest school behavior write-ups among students who participated in the COSY program.

The statistical analyses that was performed examined the possible relationship to participation in COSY and three indicators of student outcomes (attendance, behavior, and academics) and compared any age group difference in the possible relationships. The results for each dependent variable was reported in *p*-values with a 95% confidence interval. If a significant relationship on dependent variables was found, effect size was reported in *f*.

Internal Reliability

The use of archival data was beneficial because it reduced the ability to control for exogenous factors which can produce results with untampered integrity (Heng et al., 2018). Exogenous factors such as the use of additional interventions outside of the COSY

program such as private therapist (who refuse to collaborate with other providers in COSY meetings) concurrent to participation in the program may have been responsible for student improvement; however, since the data collected was archival, these factors were not recorded. This data was also collected by several different administrators and logged into the PowerSchool system; therefor behavioral referrals may have been subjective. For example, one teacher may tolerate more behavioral disruptions than another and therefore improvement may have been based on measurement differences in the documentation of such. Population validity may also have been an external threat to the study since the sample studied may not have been representative of the entire population of students. In order to qualify for COSY, a student must have had enrollment in two or more agencies that participated in COSY. Most of the agencies involved in the COSY collaborative had a majority of clients who received Medicaid as their primary insurance provider. A qualifier of Medicaid is below poverty level household income which would mean that most participants did not represent the general population.

Ethical Procedures

The main ethical concern involved in a study of student outcomes would be the use of a vulnerable population (minors) as study participants. This concern was elevated by using archival data gathered by the public-school system and filed electronically utilizing the district's external contract with PowerSchool SIS. Student confidentiality was maintained by using student ID numbers versus student names which was previously coded in the PowerSchool system which requires a login and password for school district employees only. No access (past nor present) to PowerSchool, nor a login password, was

shared. Data was not collected until appropriate Walden Institutional Review Board (IRB) permission was granted, approval number 06-17-20-0148842. IRB approval letter is found in Appendix E. A data use agreement was signed prior to data collections and is found in Appendix B.

Summary

This quantitative study utilized a 2x2x2 chi-squared tests to analyze age and two out of three dependent variables (behavior and attendance) at the two points in time (pre COSY and post COSY) and a repeated measures ANOVA to analyze academic scores pre and post program involvement with age as the in between independent . Further analysis was conducted between groups to see if differences existed in relation to age. The participants were broken into two different age categories. The target total sample size was N=50+, target age group size was having two age groups of at least 20 participants each, and an $\alpha = .05$, $\beta = .95$. The results of the tests were interpreted in p values for each dependent variable with a 95% confidence interval and effect size, if any, was reported in f. The results of the statistical analysis are reported in Chapter 4.

Chapter 4: Results

Introduction

The purpose of this quantitative study was to expand the very limited research to date on the possible benefits of CoCs as an intervention for students with complex behavioral and academic challenges. This study examined a specific CoC, called COSY, to see if there was a positive association between participation in COSY and changes in attendance, behavioral referrals, and academic performance among public-school students, ages 5-16 in a specific school district in a southeastern state, and if so, did age have an effect. This chapter will outline descriptive information about the data collected and characteristics of the sample. Subsequently organized are the results of the data analyses which were performed to address the research questions and hypotheses. The research questions and hypotheses are also presented along with the findings from their respective analyses. Finally, this chapter ends with a summary of the findings.

Data Collection

This study utilized archival data that were originally collected by the school district and stored in an electronic information system. Data used for this study were for school years 2012 till 2019. These data had been independently collected by the school district and stored in their online electronic information systems; the PowerSchool database stores behavior reports and attendance records while the ENRICH database stores the MAP test scores. The dependent variables were measured pre and post COSY enrollment. This study did not involve vulnerable population interaction because data collection involved archival data retrieval. There were no randomly assigned groups

which facilitated a reduction in time constraints and drastically reduced potential ethical considerations. The design allowed for the examination of possible associations between age and time (pre and post COSY) for the specific school-based factors of attendance, behavior, and academics. The archival data were collected and transferred into data files in Excel and SPSS Version 24.0. Once the data were uploaded into SPSS, the variables and categorical levels were coded, and a new variable was created to represent the age level groups. Ages 5 to 11 at COSY enrollment were labeled younger students and ages 12 to16 were labeled older students.

The data were double-checked for accuracy for entries in Excel and SPSS. No errors were found. As discussed in Chapter 3, the G*Power analysis minimum required sample size was 34. To err on the side of caution, a total target sample size of 50 was established. Data were collected on 62 participants; however, 10 students had transferred out of the district following their enrollment in COSY so obtaining complete data for them was impossible. Removing these 10 left a total of 52 participants for the analysis. The younger age group (5-11) had 29 participants and the older age group (12-16) had 23. Out of 52 participants, eight had a blank in the data cell for the academic variable for either the pre COSY testing cycle or the post COSY testing cycle. These blanks did not indicate a zero was the test score, it meant that the student was unable to take the test at that time point. Inquiring with the data provider on these particular cases shed light as to the lack of test scores; for example, one participant had been recommended by COSY to get reevaluated psychiatrically which lead to the discovery of misdiagnosis and sequential medication change which was followed by a brief inpatient stint for

stabilization. Correction of misdiagnosis is beneficial for long-term progress (Li et al., 2020), however, for this particular study the student missed the testing cycle for Spring 2019 and therefor the cell was blank for the variable "Post COSY Math MAP scores." An easy-to-use approach for dealing with missing data is to throw out all the data for any sample missing one or more data elements if the participant size is still within limits (Duricki et al., 2016). In doing so, the sample size for the DV Academics was subsequently reduced to 42, which still sufficed the G*Power analysis minimum required sample size of 34.

Demographic Characteristics of the Sample

This study included the population of students ages 5 to 16 who had been referred to the COSY program; ages were based on the date of each participant's actual enrollment in COSY. Figure 2 and Table 2 presents a summary of participant demographics.

Figure 2

Participants Dates of Enrollment into COSY

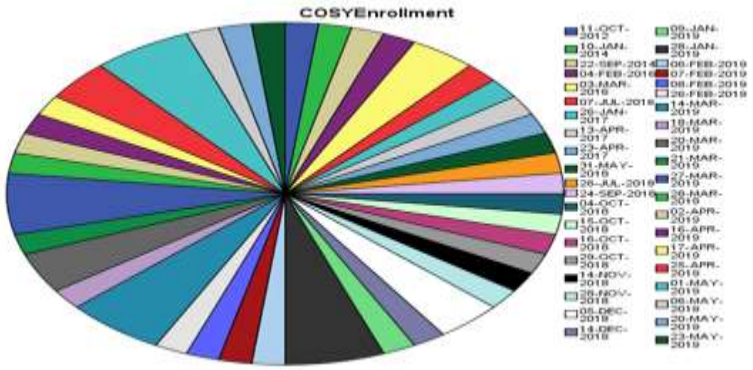


Table 2

Demographics of the Research Sample

Age at COSY Enrollment	Frequency of Age in Sample	% of Frequency
5	1	1.9
6	6	11.3
7	4	7.5
8	6	11.3
9	4	7.5
10	3	5.7
11	5	9.4
12	7	13.2
13	7	13.2
14	5	9.4
15	2	3.8
16	2	3.8
Missing	1	1.9
Total	53	100.0

Representation of Population from this Sample

Although students can be referred by a school for a variety of reasons, students without academic or behavioral needs obvious to teachers and school administrators were not included in the study. COSY enrollment dates were vastly scattered which allowed for an extensive time variable. Regarding generalizability, COSY was administered in just one southeastern school district that is lower in socioeconomic status as shown by having over 60% of its student body receiving free or reduced lunch (NCES, 2017). This district does have a diverse student body, however, not all cultures were adequately represented. The district consisted of approximately 39% White, 28% African American, 29% Hispanic, and 4% multiracial (NCES, 2017). There was little to no representation of

Asian, Native American, nor Pacific Islander cultures in this study; communities rich in those cultures or higher in socioeconomic status were not represented in this sample.

Assessments of Reliability of Research Measure

The use of archival data reduces the time to obtain data and can represent activities that were completed over a longer period of time. On the other hand, archival data were not collected by the researcher directly so that methods could be observed and controlled and there also is limited ability to control for exogenous factors that can affect outcomes (Heng et al., 2018). Exogenous factors such as the use of additional interventions outside of the COSY program such as private therapist (who refuse to collaborate with other providers in COSY meetings) concurrent to participation in the program may be responsible for student improvement; however, since the data collected were archival, these factors were not recorded. These data were also collected by several different administrators and logged into the PowerSchool system; therefore, behavioral referrals may be subjective. For example, one teacher may tolerate more behavioral disruptions than another and therefore improvement may be based on measurement differences in the documentation of such.

Evaluating Data Regarding the Assumptions for Planned Data Analyses

A repeated-measures within-between interaction ANOVA was to be used to test each of the three hypotheses. Each ANOVA had one between-group IV (age) and one within-subjects DV (pre/post). The results of these tests were to be interpreted in *p* values for each dependent variable with a 95% confidence interval and effect size if any

significance was reported in *F*. Each of the six dependent variables was separately evaluated for outliers utilizing boxplots and *z* values. After examination and corrections for outliers took place, the assumption of normality was assessed on each of the six DVs. Assumptions of normality were checked utilizing a Shapiro-Wilk's test for significance, and the skewness and kurtosis were evaluated. The first four dependent variables (attendance pre COSY, attendance post COSY, behavior pre COSY, and behavior post COSY) all had identifiable outliers (See Appendix D) that were corrected by utilizing the Winsor adjustment (Glen, 2020) of changing the outlier value to the next value closer to the mean that is not an outlier. However, even when the outliers were corrected, and transformations for positive skewness were applied, normal distributions could not be achieved for the first four DVs (See Appendix D). Thus, it was decided to transform each of these variables to categorical scales, using a median split. Values below the median were designated as Low (coded 0) and values at or above the median were designated as High (coded 1). This allowed for a nonparametric test of the relationships between the variables. Assumptions for a 2 (Pre COSY; low, high) X 2 (Post COSY; low, high) X 2 (Age; younger, older) chi-squared test of associations were met.

With respect to the final two variables, pre COSY and post COSY math test scores (Academics), there were no problems with normality. Thus, these data were evaluated in relation to the assumptions for the planned analysis, the factorial ANOVA with repeated measures. These evaluations indicated that assumptions generally were met. These are discussed in the section reporting the results of testing the research hypothesis regarding the academic outcomes.

Testing the Research Questions

Research Question 1

The first research question was, "Did the frequency of absences from school change after participation in COSY? If so, were the changes different for younger and older students?"

2 x 2 x 2 Chi-squared analyses were employed to test the association among pre COSY missed days of school, post COSY missed days of school, and student ages. Frequencies of cases in each cell of the 2 x 2 x 2 crosstabulation are show in Table 3. There was an overall statistically significant association among variables, $\chi^2(1) = 7.74$, $p < .001$. Upon closer examination (see Table 3), I found that while there was no statistically significant difference in the number of absences for the older students ($p = .400$), there was a statistically significant increase in absences from pre to post COSY for the younger students ($p = .009$). In fact, it went from 20% in the high absences group pre COSY to 80% after the COSY enrollment.

Table 3

Pre and Post COSY Missed Days of School by Age Group

				0-2.5 days Pre COSY	>2.5 days Post COSY
Ages	Missed	0-2.5 days	Count	10	4
5-11	Days		% within Group	71.4%	28.6%
	Pre COSY	>2.5 days	Count	3	12
			% within Group	20.0%	80.0%
	Total		Count	13	16
			% within Group	44.8%	55.2%
Ages	Missed	0-2.5 days	Count	9	3
12-16	Days		% within Group	75.0%	25.0%
	Pre COSY	>2.5 days	Count	6	5
			% within Group	54.5%	45.5%
	Total		Count	15	8
			% within Group	65.2%	34.8%
Total	Missed	0-2.5 days	Count	19	7
Ages	Days		% within Group	73.1%	26.9%
5-16	Pre COSY	>2.5 days	Count	9	17
			% within Group	34.6%	65.4%
	Total		Count	28	24
			% within Group	53.8%	46.2%

Table 4

Chi-Square Tests: Pre and Post COSY Day of Missed School by Age Group

		Value	*df*	Sig (1-sided)	Sig (2-sided)
Ages	Pearson Chi-Square	7.744	1	.007	.009
5-11	N of Valid Cases	29			
Ages	Pearson Chi-Square	1.059	1	.278	.400
12-16	N of Valid Cases	23			
Total	Pearson Chi-Square	7.738	1	.006	.012
	N of Valid Cases	52			

Research Question 2

The second research question was, "Did the frequency of student behavior reports change after participation in COSY? If so, were the changes different for younger and older students?"

2 x 2 x 2 Chi-Squared analyses were employed to test the association among pre COSY behavior infractions, post COSY behavior infractions, and student ages. Frequencies of cases in each cell of the 2 x 2 x 2 crosstabulation are show in Table 6. There was an overall statistically significant association among variables $\chi^2(1) = 13$, $p <$ .000. Therefore, there is very strong evidence against the null hypothesis for both age groups that no relationship exists amongst Pre COSY behavior and Post COSY behavior. It was notable how much improvement was seen in behavior writes-ups following COSY enrollment for both age groups. The overall median for behavior write-ups before COSY for all students in this study was 7.5 incidents which was drastically reduced by 73% following the COSY program.

Table 5

Chi-Square Test: Pre and Post COSY Behavior Infractions by Age Group

		Value	*df*	Sig (1-sided)	Sig (2-sided)
Ages 5-11	Pearson Chi-Square	5.992	1	.018	.025
	N of Valid Cases	29			
Ages 12-16	Pearson Chi-Square	7.340	1	.010	.012
	N of Valid Cases	23			
Total	Pearson Chi-Square	13.019	1	.000	.000
	N of Valid Cases	52			

Table 6

Pre and Post COSY Behavior Infractions in School by Age Group

				Pre COSY 0-7.5	Post COSY >7.5
Ages 5-11	Behavior Infractions Pre COSY	0-7.5 Behavior Infractions	Count	10	3
			% within Group	76.9%	23.1%
			% within Group	66.7%	21.4%
			% of Total	34.5%	10.3%
		>7.5 Behavior Infractions	Count	5	11
			% within Group	31.3%	68.8%
			% within Group	33.3%	78.6%
			% of Total	17.2%	37.9%
	Total		Count	15	14
			% within Group	51.7%	48.3%
			% within Group	100.0%	100.0%
			% of Total	51.7%	48.3%
Ages 12-16	Behavior Infractions Pre COSY	0-7.5 Behavior Infractions	Count	10	3
			% within Group	76.9%	23.1%
			% within Group	83.3%	27.3%
			% of Total	43.5%	13.0%
		>7.5 Behavior Infractions	Count	2	8
			% within Group	20.0%	80.0%
			% within Group	16.7%	72.7%
			% of Total	8.7%	34.8%
	Total		Count	12	11
			% within Group	52.2%	47.8%
			% within Group	100.0%	100.0%
			% of Total	52.2%	47.8%
Total All ages (5-16)	Behavior Infractions Pre COSY	0-7.5 Behavior Infractions	Count	20	6
			% within Group	76.9%	23.1%
			% within Group	74.1%	24.0%
			% of Total	38.5%	11.5%
		>7.5 Behavior Infractions	Count	7	19
			% within Group	26.9%	73.1%
			% within Group	25.9%	76.0%
			% of Total	13.5%	36.5%
	Total		Count	27	25
			% within Group	51.9%	48.1%
			% within Group	100.0%	100.0%
			% of Total	51.9%	48.1%

Research Question 3

The third research question was, “Did student performance on standardized math tests change after participation in COSY? If so, were the changes different for younger and older students?”

I interpreted the Pillai’s Trace for the repeated measure output because of equivocal findings regarding homogeneity of covariance matrices. According to the Box’s *M* test of equality of covariance, the probability of the observed outcome for my data was $p = .024$ shown in Table 7, which is less than $p = .05$. However, it is greater than $p = .001$, the criterion often set for significance for the Box’s *M* test (Glenn, 2020). Age had a statistically significant effect on the differences in math scores pre vs post COSY $F(42) = 11.78$, $p < .05$, as shown in Table 8. It can be interpreted that a possible 22.8% of the variance in the math scores pre and post COSY can be explained by age. Utilizing the Wilks lambda test, as shown in Table 9, in terms of the effect of time (Pre COSY vs. Post COSY Math scores), there was a statistically significant increase in math test scores , $p <.001$; however, the relative increase was not different for the two age groups.

Table 7

Box’s M of Equality of Covariance Matrices Pre and Post COSY Across the Age Groups

Box’s M	10.050
F	3.152
*df*1	3
*df*2	37272.321
Sig.	.024

Table 8

Academics Tests of Between-Subjects Effects

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	2876296.046	1	2876296.046	3321.220	.000	.988
Age Groups	10209.379	1	10209.379	11.789	.001	.228
Error	34641.442	40	866.036			

Table 9

Multivariate Tests for Pre and Post COSY Math Scores

		Value	*F*	Hypothesis *df*	Error *df*	Sig.	Partial Eta Squared
Pre and Post COSY	Pillai's Trace	.275	15.140	1.000	40.000	.000	.275
	Wilks' Lambda	.725	15.140	1.000	40.000	.000	.275
	Hotelling's Trace	.378	15.140	1.000	40.000	.000	.275
	Roy's Largest Root	.378	15.140	1.000	40.000	.000	.275
Pre and Post COSY across the Age Groups	Pillai's Trace	.000	.019	1.000	40.000	.891	.000
	Wilks' Lambda	1.000	.019	1.000	40.000	.891	.000
	Hotelling's Trace	.000	.019	1.000	40.000	.891	.000
	Roy's Largest Root	.000	.019	1.000	40.000	.891	.000

Table 10

Tests of Within-Subjects Effects for Pre and Post COSY Math Scores

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Pre and Post COSY	Sphericity Assumed	799.011	1	799.011	15.140	.000	.275
	Greenhouse-Geisser	799.011	1.000	799.011	15.140	.000	.275
	Huynh-Feldt	799.011	1.000	799.011	15.140	.000	.275
	Lower-bound	799.011	1.000	799.011	15.140	.000	.275
Pre and Post COSY by Age Groups	Sphericity Assumed	1.011	1	1.011	.019	.891	.000
	Greenhouse-Geisser	1.011	1.000	1.011	.019	.891	.000
	Huynh-Feldt	1.011	1.000	1.011	.019	.891	.000
	Lower-bound	1.011	1.000	1.011	.019	.891	.000
Error Pre & Post COSY	Sphericity Assumed	2111.048	40	52.776			
	Greenhouse-Geisser	2111.048	40.000	52.776			
	Huynh-Feldt	2111.048	40.000	52.776			
	Lower-bound	2111.048	40.000	52.776			

Summary

The purpose of this quantitative study was to examine if a specific CoC, called COSY, had any significant associations on student outcomes (academics, behavior, and attendance) in an understudied setting (school) and if so was there a significant difference in effect by student age level. This chapter presented the findings of the data. Three key research questions were examined in this study with respect to specific school-based outcomes (academics, behavior, and attendance). Findings were as follows.

RQ1: The frequency of absences from school did not change significantly for the older age students, but actually increased significantly for the younger students, when comparing pre and post COSY data.

RQ2: Frequency of student behavior infractions decreased after participation in COSY for both the age groups without any statistically significant change between the two age groups.

RQ3: Academic performance on standardized tests increased after participation in COSY for both age groups without any statistically significant change between the two age groups.

Overall, there were variable outcomes for the three dependent indicators of student outcomes. Age was a significant factor in pre and post COSY frequencies of absences, primarily for the younger students, whose absences increased significantly from pre to post COSY check points. On the other hand, there was a reduction of reported behavioral infractions from pre to post COSY, and this was noted similarly for both age groups of students. Finally, the scores on the math test increased significantly from pre to post COSY points, and these increases were noted for both age groups of students as well. Two of the three of the school-based outcomes (behavior and academics) showed overall improvement following COSY for both age groups. Only the outcome of attendance actually was worse after COSY, but only for the younger students ($p = .009$). As will be discussed in Chapter 5, without a control group, it is difficult to know if these changes across time were related to an increase in excused absences (medical/treatment appointments recommended by the COSY collaborative) vs. unexcused absences (suspensions, corrigibility, etc.) or if they would have been observed anyway in relation to typical developmental changes.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to expand the very limited research to date on the possible benefits of CoCs as an intervention for students with complex behavioral and academic challenges. This study examined a specific CoC, called COSY, to see if there was a positive association between participation in COSY and changes in attendance, behavioral referrals, and academic performance among public-school students, ages 5-16, in a specific school district in a southeastern state. The study used a quantitative design with archival data. The final statistical analyses to test the research questions included 2 x 2 x 2 Chi-squared tests of associations (attendance, behavioral referrals) and the originally planned factorial ANOVA with repeated measures (academic performance: math test scores).

The study found that participation in a collaborative program was significantly associated with improvements for both child and adolescent students in reduction of behavioral referrals and improvement in academic test scores. Only one outcome variable, attendance, showed either no change for older students or an actual statistically significant increase for the younger students in number of absences from school.

Interpretation of Findings

Jean Piaget's stages of cognitive development theorize that formal cognitive operations do not take place until around 12 years of life (Inhelder & Piaget, 1958). This formal operational thinking that begins around age 12 is the ability to form new ideas on your own without the need for external influences. Basically, it is the ability to be able to

form, shape, and change one's own thoughts. Given Piaget's theory of cognitive development and what we know about cognitive behavioral therapy (CBT), we can hypothesize that older children may react differently to behavioral interventions (such as a collaborative) than a younger child. The fundamental assumptions of CBT are as follows: cognitions (thoughts) affect behaviors (actions), cognitions (thoughts) can be changed/modified, and desired behavior modification can be achieved through changing your thoughts (Beal, 2013). The ability to shape/change one's own thoughts equals the ability to change negative feelings inside and the ability to stop inappropriate behaviors from happening, which would suggest that children who have entered the formal operational stage of cognitive development are better at changing their behaviors in school to reduce write-ups. Improvement in all outcomes for both age groups, with the exception of younger student, attendance rates may possibly be associated with COSY/CoC program involvement. The use of a collaboration approach may be beneficial for all students with mental health diagnosis and/or behavioral problems regardless of the student's age at enrollment.

Limitations of the Study

Two of the three of the school-based outcomes (behavior and academics) showed overall improvement following COSY for both age groups. The outcome of attendance was worse after COSY for the younger students ($p = .009$). This may be due to the increase in medical appointment following COSY recommendations. For example, a student newly enrolled in COSY would be referred out to community services (such as doctor's visits) which would increase the amount of days missed the school quarter

following COSY; without a control group, it is difficult to know if these changes across time were related to an increase in excused absences (medical/treatment appointments), if they were related to unexcused absences (suspensions, corrigibility, etc.), or if they would have been observed in relation to typical developmental changes. Additionally, there were some problems with distributions that were corrected for with the variables pre and post COSY for attendance and behavior. For the variables pre and post COSY math scores, the distribution of the data was normative; however, there were some issues with homogeneity shown in Table 8; thus, caution should be exercised in interpreting these results.

Recommendations

The frequency of absences from school did not change significantly for the older age students, but increased significantly for the younger students, when comparing pre and post COSY data. In fact, it went from 20% in the high absences group pre COSY to 80% after the COSY period. I speculate that this might reflect a typical developmental increase, but that is not clear because there was no comparison group. Since the behaviors of students statistically significantly improved, future recommendations would call for the distinguishing of excused absences and unexcused absences since medical appointments are excused absences and out-of-school-suspensions are unexcused absences. The removal of excused absences (doctor/treatment/testing due to COSY recommendations) may drastically alter the results of the next study in terms of attendance rates following collaborative participation. This study demonstrated trends; however, since this design was void of a control group, it is not appropriate to directly

attribute the improvements shown to COSY program involvement. This study offered initial exploratory data on student outcomes for those who participated in COSY. Future recommendations would be for a design consisting of random sampling, random assignment to condition, experimental manipulation of condition, and having a comparison/control group that did not receive the intervention to be able to posit cause and effect.

Implications

With the high need for empirically based methods at an all-time high as the amount of mental health diagnoses rises annually amongst student bodies, it is certain that there are implications of this research study. The desired results of this quantitative study were to contribute to very limited knowledge we have on collaborative models and to explore the use of such in the school setting with specific school based outcomes which has never been done before. By exploring the relationship between age and the three specific school based outcomes of attendance, behavior, and academics, this study could provide information, advocacy, and positive social change to improve student experiences and mitigate ineffective mental health service delivery in the school environment, which can lead to self-harm and risk to others which presents a huge social problem (O'Toole, n.d.). Results of this study may inform stakeholders of this school district, and others, about the effectiveness of collaborative programs so that it may be considered for future planning and implementation in the educational psychology field.

Social Change Implications

Social change endeavors impact children and communities on an individual, organizational, and global scale (Walden University, 2016). In 2017 there were 23 school shooting from January to May which averages out to be more than one school shooting a week where someone is injured and/or killed. Schools and federal supports are recognizing students as a totality that extends beyond academics. The need for research of treatment models used in the specific school setting is paramount. The school environment is where majority of children are receiving their care. Over 18 million children and adolescents in the United States experience mental health problems yet only one third of these children actually receive treatment, and amongst this 70% the care received was often identified and delivered in the education sector (Costello et al., 2003; Lyon, 2016).

Individual Social Change Implications

The CDC estimates that 6.1 million children (ages 2-17) living in the U.S. have been diagnosed with attention-deficit/hyperactivity disorder (ADHD) alone and among these nearly two-thirds also had another mental, emotional, and/or behavioral disorder (CDC, 2019). Schools are increasingly offering a variety of services that include mental and behavioral health to address the totality of the student because of the interrelated connection between behavior and academics (McIntosh et al., 2008; McIntosh & Goodman, 2016). The COC approach is a particularly useful model for schools to address student mental health needs to improve outcomes for children in schools because behavior, attendance, academics are all interconnected (Lyon et al., 2016). Behavioral

and mental health issues affect not only the child and parents but also the schools and students as well.

Organizational Social Change Implications

The majority of children who suffer from mental and behavioral health issues receive their treatment in the school setting (70%). It is vital to educational psychology that empirical based treatment models exist to treat behavioral and mental health issues for school aged children. Identifying effective treatment models that contribute to improved mental health care outcomes is a goal of the School-Based Health Centers and managed care organizations contracted with the public schools in our nation (SBHA, 2019). Per the Medicare Catastrophic Coverage Act of 1988 (P.L. 100-360) Section 1903(c) of the Medicaid statute, states are able to draw down federal funds under Medicaid to pay for school-based health and related services required by the Individuals with Disabilities Education Act (IDEA, P.L. 101476) to pay for services listed in a child's individualized education program (IEP) or individualized family service plan (IFSP) if the child is enrolled in Medicaid (P.L. 100-360). School-Based Health Centers (SBHC) also known as Managed Care Organizations (MCO) are contracted by the Department of Health Office of School and Adolescent Health, and the Medical Assistance Division School Health Office to provide physical health and behavioral health services to the students at school, to enforce the federal Medicaid policies, and to regulate the reimbursement for services delivered in school-based health centers (SBHC, 2019). Several states have contracted these MCOs to include Delaware, Illinois, Louisiana, Maine, New Mexico, North Carolina, South Carolina, Texas and West

Virginia. In FY 2016 Medicaid spending on school-based services and Medicaid-related administrative services for collaboration was estimated to be $4.5 billion (MACPAC, 2018). Schools can also draw down federal funds for a child's access to care, care coordination, referrals, and transportation to and from outside providers. It is essential to the wellbeing of the student and for the cost effectiveness for Medicaid to identify effective interventions and modalities that lead to better outcomes academically and to treat the mental health of the student. With school districts on board, the potential for social change increases. In order to make a larger social change impact, global social change implications must be discussed.

Global Social Change Implications.

James Baldwin, (1979) said "the world changes according to the way people see it, and if you can alter, even by a millimeter, the way people look at reality, then you can change the world" (Vrana, 1982). Building the foundation for a better version of humanity is done one brick at a time. This is just one small study in a vast field; however, we must lay one brick at a time in order to pave the pathway that leads to change. We are currently in the midst of a global pandemic that has brought on a rapid social change for all nations of the world. Many students around the world are learning through the use of online schooling as a way to social distance. Collaboration with the schools, providers, telehealth providers and parents are a necessity for this to work. This research provides possible modalities and interventions for social change that may improve the quality of life for individuals and societies at large. The first step is to share this research with the educational psychology field, with the school district involved, with stakeholders, and

with the managed care organizations (MCO)s that are the insurance providers for the SBHCs.

Conclusions

The purpose of this quantitative study was to expand the very limited research to date on the possible benefits of CoCs as an intervention for students with complex behavioral and academic challenges. This study examined a specific CoC, called COSY, to see if there was a positive association between participation in COSY and changes in attendance, behavioral referrals, and academic performance among public-school students, ages 5-16 in a specific school district in a southeastern state, and if age had an effect on these associations. The study found that participation in a collaborative program was significantly associated with improvements for both child and adolescent students in reduction of behavioral referrals and improvement in academic test scores for both age groups. Only one outcome variable, attendance, showed either no change for older students or an actual statistically significant increase for the younger students in number of absences from school. Overall averages of student behaviors improved by over 56%, attendance improved by 18%, and academics rose by 3% following the use of this Collaborative, COSY. Both behavior and academics improved at a statistically significantly rate for both age groups. The most significant improvement following COSY enrollment was seen in the older age group, students 12-16, who had a 60% decrease in the amount of negative behaviors displayed in the school environment. The younger age group, students 5-11, also showed significant improvements in behavior with a 57% decrease in negative behavior displays. Therefore, suggesting that it is never

too late nor too early to apply collaborative interventions to facilitate student behavioral and academic improvement.

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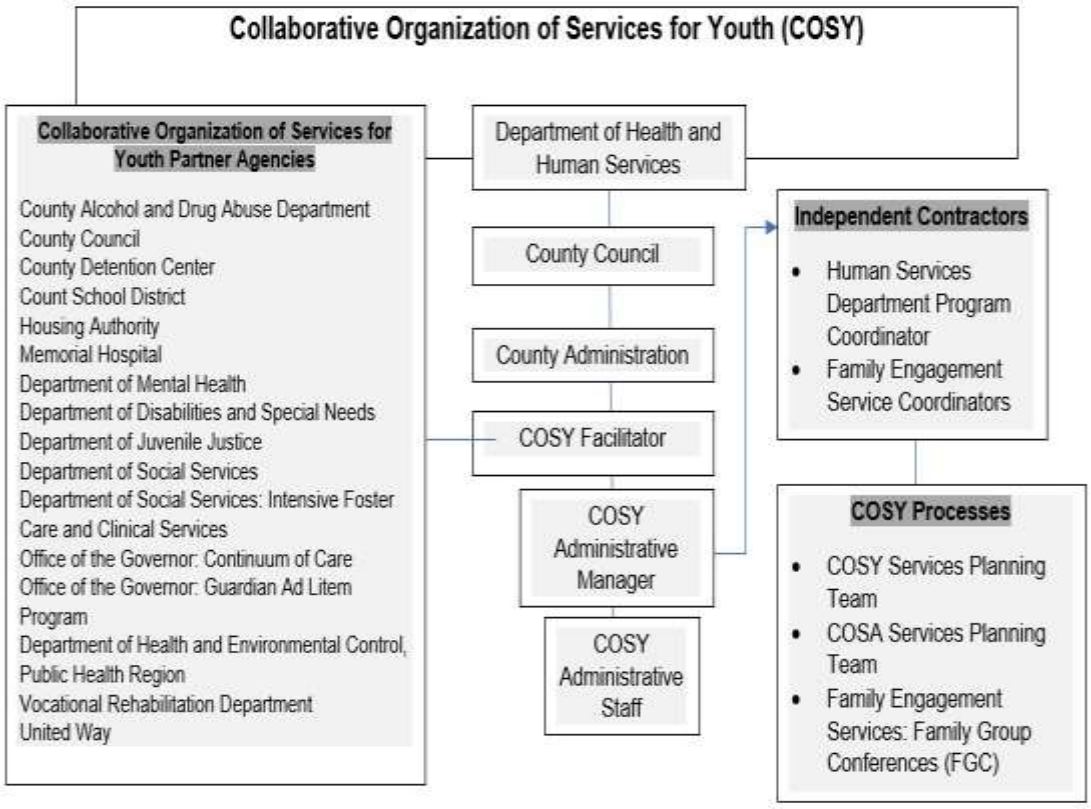
Appendix A: COSY Organizational Chart



Appendix B: Data Use Agreement

This Data Use Agreement ("Agreement"), effective as of 04/24/2020 ("Effective Date"), is entered into by and between Ronda Stevens (Data Recipient") and LaKinsha Swinton, Director of Student Services for BCSD (" Data Provider"). The purpose of this Agreement is to provide Data Recipient with access to a Limited Data Set ("LDS") for use in research in accord with the HIPAA and FERPA Regulations.

1. Definitions. Unless otherwise specified in this Agreement, all capitalized terms used in this Agreement not otherwise defined have the meaning established for purposes of the "HIPAA Regulations" codified at Title 45 parts 160 through 164 of the United States Code of Federal Regulations, as amended from time to time.
2. Preparation of the LDS. Data Provider shall prepare and furnish to Data Recipient a LDS in accord with any applicable HIPAA or FERPA Regulations.
3. Data to be included in the LDS. No direct identifiers such as names may be included in the Limited Data Set (LDS). The researcher will not name the Data Provider in the doctoral study that is published in Proquest unless the Data Provider makes a written request for the researcher to do so. In preparing the LDS, Data Provider or designee shall include the data fields specified as follows, which are the minimum necessary to accomplish the research: attendance, behavioral incidents, and math MAP RIT scores.
4. Responsibilities of Data Recipient. Data Recipient agrees to:
    a. Use or disclose the LDS only as permitted by this Agreement or as required by law;
    b. Use appropriate safeguards to prevent use or disclosure of the LDS other than as permitted by this Agreement or required by law;
    c. Report to Data Provider any use or disclosure of the LDS of which it becomes aware that is not permitted by this Agreement or required by law;
    d. Require any of its subcontractors or agents that receive or have access to the LDS to agree to the same restrictions and conditions on the use and/or disclosure of the LDS that apply to Data Recipient under this Agreement; and
    e. Not use the information in the LDS to identify or contact the individuals who are data subjects.
5. Permitted Uses and Disclosures of the LDS. Data Recipient may use and/or disclose the LDS for its research activities only.
6. Term and Termination.
    a. Term. The term of this Agreement shall commence as of the Effective Date and shall continue for so long as Data Recipient retains the LDS, unless sooner terminated as set forth in this Agreement.
    b. Termination by Data Recipient. Data Recipient may terminate this agreement at any time by notifying the Data Provider and returning or destroying the LDS.
    c. Termination by Data Provider. Data Provider may terminate this agreement at any time by providing thirty (30) days prior written notice to Data Recipient.

d. For Breach. Data Provider shall provide written notice to Data Recipient within ten
(10) days of any determination that Dala Recipient has breached a material term Of this Agreement. Data Provider shall afford Data Recipient an opportunity to cure said alleged material breach upon mutually agreeable terms. Failure to agree on mutually agreeable terms for cure within thirty (30) days shall be grounds for the immediate termination of this Agreement by Data Provider.

e. Effect of Termination. Sections l, 4, 5, 6(e) and 7 of this Agreement shall survive any termination of this Agreement under subsections c or d.

7. Miscellaneous.

a. Change in Law. The parties agree to negotiate in good faith to amend this Agreement to comport with changes in federal law that materially alter either or both parties' obligations under this Agreement. Provided however, that if the parties are unable to agree to mutually acceptable amendment(s) by the compliance date of the change in applicable law or regulations, either Party may terminate this Agreement as provided in section 6.

b. Construction of Terms. The terms of this Agreement shall be construed to give effect to applicable federal interpretative guidance regarding the HIPAA Regulations.

c. No Third-Party Beneficiaries. Nothing in this Agreement shall confer upon any person other than the parties and their respective successors or assigns, any rights, remedies, obligations, or liabilities whatsoever.

d. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

e. Headings. The headings and other captions in this Agreement are for convenience and reference only and shall not be used in interpreting, construing or enforcing any of the provisions of this Agreement.

IN WITNESS WHEREOF, each of the undersigned has caused this Agreement to be duly executed in its name and on its behalf.

DATA PROVIDER

Signed DocuSigned by: 04/24/2020
7425C7FC5C364FO...

Print Name: LaKinsha Swinton
Print Title: Director of Student Services for BCSD

DATA RECIPIENT

04/

Print Name: Ronda Stevens
Print Title: Walden Student

Appendix C: Understanding Math RIT Scores

Appendix D: Tests of Univariate Assumptions for Six Dependent Variables

Attendance Pre COSY

Utilizing the box plot method, four scores were found to be outside of the whiskers on the box plot and therefor needed to be addressed. The specific values all were higher than the mean. I used the Winsor correction for these outliers: changing the outlier value to the next observed value that was not an outlier. After I corrected the outlier situation, the next thing to do was to check the assumption of normality. Following that the skewness and kurtosis was checked. The skewness for the distribution of days missed from school pre COSY was 2.54. Further, there was marked deviation on kurtosis; here the value was 8.392, well above the + 1.0 range for normality (See Table D2). Further, results from the Shapiro-Wilk test confirmed that the data for missed days of school (Attendance) pre COSY did not follow a normal distribution, W (52) = 0.245, p < 0.001. Attempts to apply transformations for moderate and severe positive kurtosis did not result in normalizing the distribution of these scores. Even when the outliers were corrected and transformations, square root (constant – x), cube root (constant – x), and log (constant – x), were applied, normal distributions could not be achieved. Thus, it was decided to switch from parametric to non-parametric statistics by transforming each of the variables to categorical scales, using a median split. Values below the median were designated as Low (coded 0) and values at or above the median were designated as High (coded 1). The attendance pre COSY median was 2.5 school days missed (see Table D3), so 0-2.5 missed days of school were coded as ‘0’ (low) and values greater than the 2.5

mid-point were coded as ‘1’(high). The same procedures were followed for each of the remaining dependent variables. Results are summarized below.

Table D1

Attendance: Missed Days of School Pre COSY Extreme Values

		Case Number	Value
Top 5 Highest Days of School Missed by a Student Pre COSY	#1	20	41
	#2	14	22
	#3	37	22
	#4	13	18
	#5	36	17
Top 5 Lowest Days of School Missed by a Student Pre COSY	#1	52	0
	#2	50	0
	#3	49	0
	#4	47	0
	#5	44	0[a]

Table D2

Distribution of Missed Days of School (Attendance) Pre COSY

		Statistic	Std. Error
Mean		5.33	1.068
95% Confidence Interval	↓ Bound	3.18	
	↑ Bound	7.47	
5% Trimmed Mean		4.29	
Median		2.50	
Variance		59.322	
Std. Deviation		7.702	
Range		41	
Interquartile Range		7	
Skewness		2.538	.330
Kurtosis		8.392	.650

Table D3

Medians of Each Dependent Variable for Coding from Continuous to Ordinal

	Attendance Pre COSY (*N*=52)	Attendance Post COSY (*N*=52)	Behavior Pre COSY (*N*=52)	Behavior Post COSY (*N*=52)	Academic Pre COSY (*N*=45)	Academic Post COSY (*N*=44)
Median	2.50	1.00	7.50	2.00	191.00	197.00
Missing	1	1	1	1	8	9

Attendance Post COSY

There were three outliers for this variable (see Table D4). Again, outliers were corrected using the Winsor method. Assumption of normality testing was conducted and the Shapiro-Wilk test of normality with the correct scores indicated that this assumption was violated: $W(52) = .612$, $p < .001$. See Table D5. Even when the outliers were corrected, and transformations, square root (constant -x), cube root (constant -x), and log (constant -x), were applied, normal distributions could not be achieved. Again, data were transformed using the median split to create a low group (below median) and a high group (at or above median). The median for attendance post COSY was one day of missed school (see Table D3).

Table D4

Attendance: Missed Days of School Post COSY Extreme Values

		Case Number	Value
Top 5 Highest Days of School Missed by a Student Post COSY	#1	37	42
	#2	1	27
	#3	48	17
	#4	7	13
	#5	46	13
Top 5 Lowest Days of School Missed by a Student Post COSY	#1	52	0
	#2	50	0
	#3	49	0
	#4	45	0
	#5	43	0[a]

Table D5

Distribution of Missed Days of School (Attendance) Post COSY

		Statistic	Std. Error
Mean		5.33	1.068
95% Confidence Interval	↓ Bound	3.18	
	↑ Bound	7.47	
5% Trimmed Mean		4.29	
Median		2.50	
Variance		59.322	
Std. Deviation		7.702	
Minimum		0	
Maximum		41	
Range		41	
Interquartile Range		7	
Skewness		2.538	.330
Kurtosis		8.392	.650

Behavior Pre COSY

There were two outliers for these scores (see Table D6). Again, the Winsor method was used to correct for these outliers. The distribution of corrected values had a skewness of 1.35 and kurtosis of 1.48. Both values were beyond the acceptable range (+

1.0) (see Table D7). Attempts to apply transformation for moderate positive skewness did not result in normalizing the distribution of these scores. Due to this the data was switch from parametric to non-parametric, the scores were transformed from scale to categorical, using the median split. Values below the median were designated as Low (coded 0) and values at or above the median were designated as High (coded 1). The behavior pre COSY median was 7.5 behavior infractions.

Table D6

Behavior Infractions Pre COSY Extreme Values

		Case Number	Value
Top 5 Highest Number of Behavior Infractions Before COSY	#1	8	53
	#2	42	46
	#3	12	39
	#4	30	34
	#5	23	32
Top 5 Lowest Number of Behavior Infractions Before COSY	#1	47	0
	#2	32	0
	#3	28	0
	#4	27	0
	#5	17	0a

Table D7

Distribution of Behavior Infractions Pre COSY

		Statistic	Std. Error
Mean		11.77	1.781
95% Confidence Interval	↓ Bound	8.19	
	↑ Bound	15.34	
5% Trimmed Mean		10.46	
Median		7.50	
Variance		164.965	
Std. Deviation		12.844	
Range		53	
Interquartile Range		18	
Skewness		1.349	.330
Kurtosis		1.485	.650

Behavior Post COSY

There were four outliers, all above the mean (see Table D8). The Winsor adjustment was applied: the four outlier values were changed to the next lower observed value that was not an outlier. As before, the outlier-corrected distribution of scores was positively skewed ($S = 1.426$) and only slightly above limits for kurtosis ($K = 1.017$) (see Table D9). Results from the Shapiro-Wilk test showed that the behavior infractions post COSY did not follow a normal distribution, $W(52) = 0.768$, $p < 0.001$. Attempts to apply transformation for moderate and severe positive kurtosis did not result in normalizing the distribution of these scores. Again, a switch from parametric to non-parametric was decided, and values below the median were designated as Low (coded 0) and values at or above the median were designated as High (coded 1). The median was 2 behavior fractions.

Table D8

Behavior Infractions Post COSY Extreme Values

		Case Number	Value
Top 5 Highest Number of Behavior Infractions after COSY	#1	12	24
	#2	2	20
	#3	8	20
	#4	25	19
	#5	42	17
Top 5 Lowest Number of Behavior Infractions after COSY	#1	51	0
	#2	46	0
	#3	41	0
	#4	40	0
	#5	38	0[a]

Table D9

Distribution of Behavior Infractions Post COSY

		Statistic	Std. Error
Mean		4.92	.901
95% Confidence Interval	↓ Bound	3.11	
	↑ Bound	6.73	
5% Trimmed Mean		4.27	
Median		2.00	
Variance		42.190	
Std. Deviation		6.495	
Minimum		0	
Maximum		24	
Range		24	
Interquartile Range		8	
Skewness		1.426	.330
Kurtosis		1.017	.650

Academics Pre COSY

Missing values

Some students had values of 0 for their test score. As this did not make sense, I double checked with the school data source. These values did not indicate a zero was the test score. Instead, it meant that the student was unable to take the test at that point in time. Inquiring with the data provider on these particular cases shed light as to the lack of test scores; for example, one participant had been recommended by COSY to get reevaluated psychiatrically which lead to the discovery of misdiagnosis and sequential medication change which was followed by a brief inpatient stint for stabilization. By removing these zeros, the sample size for this variable was reduced down to 42, which still sufficed, given the G*Power analysis minimum required sample size of 34 (see Figure 1).

Potential Outliers & Assumption of Normality

Once the participants with missing data were removed, no cases were outside of the whiskers on the box plot and therefore none need to be addressed (see Table D10). Skewness for the pre COSY math scores was S = -0.524, which indicates a normal distribution with just slight (.5) negative lean. The degree of flatness/peakness of this variable was also normally distributed with just a slight flattening of the curve with a kurtosis of -0.388 (see Table D11). Results from the Shapiro-Wilk test showed that the math scores pre COSY followed a normal distribution, $W(42) = 0.963$, $p = 0.191$.

Table D10

Math Scores Pre COSY Values

	Case Number	Value
Top 5 Highest Math Scores (Pre COSY)	#1	34	227
	#2	37	223
	#3	3	220
	#4	6	215
	#5	17	214
Top 5 Lowest Math Scores (Pre COSY)	#1	39	125
	#2	14	136
	#3	28	141
	#4	25	148
	#5	5	148

Table D11

Distribution of Math Scores Pre COSY

		Statistic	Std. Error
Mean		184.62	3.837
95% Confidence Interval	↓ Bound	176.87	
	↑ Bound	192.37	
5% Trimmed Mean		185.37	
Median		190.00	
Variance		618.485	
Std. Deviation		24.869	
Minimum		125	
Maximum		227	
Range		102	
Interquartile Range		38	
Skewness		-.524	.365
Kurtosis		-.388	.717

Academics Post COSY

As stated above in the Pre COSY Academic section, the sample size for the academic variables was reduced to *N*=42 (which is within the G*Power analysis minimum sample size of 34) in order to remove the participants that had missed taking the math test for one or both of the time periods (pre and post COSY). With the missing cases removed, there were no outliers identified for post COSY academics either (see Table D12). Post COSY math scores also met the assumption of normality. The Shapiro-Wilk test result was, $W(42) = .961$, $p = .156$.

Table D12

Math Scores Post COSY Extreme Values

		Case Number	Value
Top 5 Highest Math Scores (Post COSY)	#1	37	234
	#2	34	227
	#3	3	219
	#4	7	216
	#5	17	216[a]
Top 5 Lowest Math Scores (Post COSY)	#1	14	141
	#2	28	146
	#3	39	149
	#4	25	149
	#5	44	158

Table D13

Distribution of Math Scores Post COSY

		Statistic	Std. Error
Mean		191.02	3.542
95% Confidence Interval	↓ Bound	183.87	
	↑ Bound	198.18	
5% Trimmed Mean		191.49	
Median		197.00	
Variance		526.951	
Std. Deviation		22.955	
Range		93	
Interquartile Range		33	
Skewness		-.507	.365
Kurtosis		-.420	.717

Appendix E: Institutional Review Board (IRB) Approval

Wed 6/17/2020

Dear Ms. Stevens,

This email is to notify you that the Institutional Review Board (IRB) confirms that your study entitled, "Effect of COSY on Academics, Behaviors, and Attendance," meets Walden University's ethical standards. Our records indicate that you will be analyzing data provided to you by Beaufort County School District as collected under its oversight. Since this study will serve as a Walden doctoral capstone, the Walden IRB will oversee your capstone data analysis and results reporting. The IRB approval number for this study is 06-17-20-0148842, which expires when your student status ends.

Sincerely,
Libby Munson
Research Ethics Support Specialist
Office of Research Ethics and Compliance
Walden University
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Minneapolis, MN 55401
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Information about the Walden University Institutional Review Board, including instructions for application, may be found at this link:
http://academicguides.waldenu.edu/researchcenter/orec