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## Examining Risk Behaviors of a School-Based Mental Health Program in Rural Georgia

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# Examining Risk Behaviors of a School-Based Mental Health Program in Rural Georgia

By

Nancy Nava

April 16, 2018

**INTRODUCTION:** In the United States, approximately one out of five people experience a mental illness (CDC, 2018, SAMHSA, 2013) and half of mental health concerns start during adolescence (Belfer, 2008). Due to regular contact with children and adolescents, school-based mental health (SBMH) programs have emerged a promising solution to increase access to mental health services (Belfer, 2008).

**AIM:** This study aims to answer two questions. 1) Do participants in a school-based mental health program display a decrease in risk behaviors, as measured by the Child and Adolescent Needs and Strengths (CANS) assessment? 2) What intake measures predict a decrease in risk behavior at six months?

**METHODS:** This study is a preliminary analysis of an evaluation of a SBMH program being implemented in three rural school districts in the western part of Georgia. A Behavioral Health Assessment (BHA), the Columbia-Suicide Severity Scale (C-SSRS), and a CANS assessment are administered to students by school-based clinicians at intake. The CANS is followed up at six months. Primary research questions were answered using a non-parametric Wilcoxon-Sign Rank Test and a logistic regression.

**RESULTS:** The Wilcoxon-Sign Rank Test demonstrated a statistically significant reduction of student risk behavior. The final multi-logistic regression model included emotional lability, risk behaviors, emotional needs, and race. The logistic regression analysis indicated risk behavior, emotional needs, and emotional lability predictors of student risk reduction.

**Conclusion:** Findings from this study suggests that CANS can be utilized as an outcome measurement of risk behavior for student participating in a SBMH program. Furthermore, this study demonstrated that SBMH programs may be effective interventions for students in rural communities and adds to the growing body of literature which position SBMH programs as a promising intervention to increase access to mental health services for students in rural communities. Limitations of this study include possible therapist bias, lack of data, and generalizability of sample. Future research should continue to explore the impact of SBMH programs on student risk outcomes over time. In sum, this study provides preliminary evidence for the effectiveness of SBMH programs to meet student's mental health needs and the utility of the CANS as an outcome measure.

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Nancy Nava

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## Author's Statement Page

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Nancy Nava  
Signature of Author

## TABLE OF CONTENTS

LIST OF TABLES.....	7
INTRODUCTION.....	8
1.1 Mental Health .....	8
1.2 School Based Mental Programs.....	9
REVIEW OF THE LITERATURE.....	11
2.1 School Based Mental Health.....	11
2.2 SBMH Program Outcomes and Measurement.....	14
2.3 Youth Risk Behaviors.....	16
2.4 Child and Adolescent Needs and Strengths (CANS) Assessment .....	17
2.5 CANS Usage in SBMH Programs.....	18
METHODS .....	19
3.1 Purpose.....	19
3.2 Medical Facility.....	19
MEASURES AND PROCEDURES.....	21
4.1 Assessments.....	21
4.2 Administration of CANS.....	22
4.3 CANS Validity.....	23
4.4 Statistical Analysis.....	23
RESULTS.....	25
DISCUSSION AND CONCLUSION.....	27
6.1 Discussion .....	27
6.2 Implications .....	31
6.3 Limitations.....	32
6.4 Conclusions.....	32
REFERENCES.....	34
APPENDICES.....	40

## List of Tables

Table 1 Student demographics

Table 2 Sample bivariate predictor table from BHA

Table 3 Sample bivariate predictor table from CANS assessment

Table 4 Regressions for risk behavior reductions

## **Chapter 1**

### **Introduction**

#### **1.1 Mental Health**

In the United States, 44.7 million adults have experienced mental illness in the past year (SAMHSA, 2017) and over 50% of adults in the United States will develop at least one mental illness in their lifetime (CDC, 2011; Kessler R.C., Angermeyer M., Anthony J.C., et al., 2007). Mental illness includes a broad variety of behavioral and emotional disorders that impair an individual's daily life (SAMSHA, 2017). In contrast, mental health refers to “a state of well-being in which an individual realizes his or her own potential, can cope with normal stresses of life, can work productively, and fruitfully, and is able to contribute to his or her community” (WHO, 2014). Thus, mental illness or the absence of mental health is a significant public health issue with detrimental impacts on physical health, mortality, and social costs (WHO, 2003).

The CDC reports that mental and physical health are essential to address as mental illness can increase the risk for a variety of physical health problems (CDC, 2018). Untreated mental illness can lead to worse health outcomes such as a severe disability and higher risks for suicide (Larson, Chapman, Spetz, & Brindis, 2017; Marshall, Galea, Wood, & Kerr, 2013; Merikangas et al., 2010; Paschall & Bersamin, 2018). Additionally, mental illness not only affects the individual but also the community and those around them. Costs associated with mental health problems can also impact the economy. For example, cost-benefit analyses indicate that money spent on mental health treatment and services can have a more significant return with an increase in productivity and health (Chisholm et al., 2016; Kern et al., 2017). The growing burden of mental health problems amounts to huge costs in terms of economic loss and disability (WHO, 2003).

For youth, the consequences of mental illness can have long lasting societal impacts. According to the National Institute of Mental Health (NIMH), an estimated 37% of students with a mental health condition by the age of 14 drop out of school (NAMI, n.d) and 70% of youth in the juvenile justice system have a mental illness. Mortality for individuals with mental illness often manifests by suicide, which is the third leading cause of death among persons between the ages of ten and twenty-four (NAMI, n.d). Despite widespread mental health concerns among youth, the average delay between the onset of symptoms and intervention is 8 to 10 years (NAMI, n.d) thus suggesting a critical need for early intervention. Initiatives to intervene in youth mental health concerns have taken different approaches and are seen in multiple community contexts (Burns & Costello, 1995; Cordell & Snowden, 2015). Research has identified schools as a possible avenue for mental health interventions (Burnett-Zeigler & Lyons, 2012; Kase et al., 2017; Larson et al., 2017).

## **1.2 School-based Mental Health Programs**

Research indicates that half of the mental health concerns seen in adults emerge during adolescence (Belfer, 2008), thus providing a promising point for mental health intervention. Due to the routine contact schools have with children and adolescents, school-based mental health (SBMH) programs have emerged as a venue to close the gap that exists in children and adolescents receiving mental health services (Mills et al., 2006; President's New Freedom Commission on Mental Health, 2003). SBMH programs can also take a preventive approach by identifying children at risk for developing behavioral or psychological illness (Berzin et al., 2011; Larson et al., 2017). Consequently, SBMH programs can intervene and route students to appropriate treatment and services (Berzin et al., 2011). Many terms are used to describe mental health services in school settings including: school-based mental health (SBMH) (Capp, 2015),

school-based health care (SBHC) (Paschall & Bersamin, 2018), System of Care Programs (SOC) (Burnett-Zeigler & Lyons, 2010), and school-based support program (SBS) (Blackman et al., 2016). For the purpose of this paper, SBMH is used to describe mental health programs that are implemented in a school setting. The focus of SBMH programs vary widely. Many focus on the provision of mental health resources for students or teachers while others target specific psychological disorders such as anxiety (Cordell & Snowden, 2015; Effland, Walton, & McIntyre, 2011) or suicidal ideation (Aseltine & DeMartino, 2004; Marshall et al., 2013; Spirito, Overholser, Ashworth, Morgan, & Benedict-Drew, 1988).

SBMH programs have the opportunity to be inclusive and provide services to diverse student bodies. Studies have examined SBMH programs in a multitude of settings including in both urban (Wade, 2008; Montañez, 2015) and rural areas (Smokowski, 2018; Francis, 2006). For instance, the Systems of Care-Chicago (SOC-C) project facilitates access to mental health services for students with emotional and behavioral problems in a large urban area. The project serves eight Chicago public schools as part of a larger program within the Children's Mental Health Initiatives (CMHI) through Substance Abuse and Mental Health Services Administration (SAMHSA). A study examining the use of school-based mental health in urban and rural school districts found that while more students were enrolled in the SBMH program in urban districts, rural districts utilized school-based health care at a higher rate (Wade et al., 2008). SBMH programs are also in a position to serve hard to reach minority populations however data on the effectiveness of these program with minority students is limited. A study examining a SBMH program that predominately served Latino at risk students documented improvements in prosocial behavior, classroom compliance, attendance, and academic achievement (Montañez, Berger-Jenkins, Rodriguez, McCord, & Meyer, 2015). However, in a qualitative study

examining a SBMH program with urban minority youth, Gamble and Lambros (2014) found that cultural factors were barriers for participating in SBMH services. Ultimately, SBMH programs have the capability to provide services to all, however, more research is needed to explore the effectiveness of SBMH programs with minorities and rural settings.

In sum, while the evidence base for SBMH programs is growing, more data are needed on the effectiveness of these programs in underserved communities, such as for ethnic minority students and students in rural settings. This paper reviewed current research on SBMH collaborations at the intersection of public health and public schools. Specifically, the literature review focused on the established evidence base for the effectiveness of SBMH interventions, outlining the need for more data on SBMH interventions in rural communities. Within the context of rural SBMH intervention outcomes, this paper reviewed the literature of the Child and Adolescent Needs and Strengths (CANS) assessment, focusing on its background, administration, validity and its use in mental health treatment studies.

## **Chapter 2**

### **Literature Review**

#### **2.1 School-Based Mental Health**

Global epidemiological data indicates that 20% of children and adolescents experience significant mental health difficulties (Belfer, 2008). Yet, few children and adolescents receive the services needed to reduce the impact of mental health disorders (Kern et al., 2017). For youth, insufficient mental health services is associated with increased juvenile delinquency, substance use, underemployment, poor educational attainment, and premature mortality (Kern et al., 2017). The lack of required mental health services and resources also interferes with student educational achievement (Kern et al., 2017) and many times, mental health concerns are not

addressed until it results in classroom disruption (Tacker & Dobie, 2008). As evidence accrues showing that mental health problems can impact students' school engagement, academic success, and overall well-being (Capp, 2015; Sanchez et al., 2018), SBMH programs have emerged.

Schools offer a unique opportunity to support the mental health of a wide range of youth (Burnett-Zeigler & Lyons, 2012; Kern et al., 2017). In fact, research shows that providing SBMH services in schools aids in identifying mental health concerns before they escalate (Kern et al., 2017). Moreover, SBMH programs may also reduce the barriers with access to care, services, and resources (Sanchez et al., 2018; Suldo, Gormley, DuPaul, & Anderson-Butcher, 2014). For example, providing mental health treatment and/or resources in school settings alleviates the family from the financial burden that is usually associated with the seeking and obtaining of mental health care (WHO, 2003; Suldo et al., 2014).

In addition to increasing access to mental health services, SBMH programs are also able to serve a diverse population as schools may represent students from various backgrounds (Anderson-Butcher, Amorose, Iachini, & Ball, 2012; Larson et al., 2017). This includes students from rural areas who may not have as many resources in their community compared to urban areas (Moon, Williford, & Mendenhall, 2017). Positioning more human resources in rural schools may aid the effort to meet mental health needs of children who live in rural areas (Moon et al. 2017). Through SBMH programs, schools are also able to alleviate barriers associated with mental health care utilization including, a lack of transportation, financial, or practical resources (Blackman et al., 2016; Cappella, Frazier, Atkins, Schoenwald, & Glisson, 2008).

SBMH interventions developed to address mental health problems have taken multiple approaches at different levels. For example, Tacker and Dobie (2008) used a classroom-based approach by implementing MasterMind: Empower Yourself with Mental Health, a classroom-

based workshop program developed to support mental health fitness in adolescents. The program goal was to implement a pilot program in a classroom setting that created a “toolbox for mental health” through educational curriculum and materials. The study’s outcome, mental health knowledge, was assessed through entry and exit surveys. Findings demonstrated the need for programs to facilitate mental health resources to adolescents and provided an example of how the MasterMind program is able to optimize students’ mental health. Burckhardt, Manicavasagar, Batterham and Hadzi-Pavlovic (2016), evaluated the delivery of therapy in a SBMH program. Strong Minds, a combined positive psychology with the acceptance and commitment therapy was examined in a randomized controlled trial of 267 high school students in Sydney, Australia. Students reported a reduction in depression, stress and anxiety symptoms. Overall there was an increase in well-being and the researchers suggested to further research the generalizability of including prevention programs for emotion regulation.

Additionally, most interventions are influenced by specific models. For example, Capp (2015), took a public health approach using the pyramid of interventions concept. The pyramid model covered prevention, specialization of programs designed for at-risk behaviors, and intense and specialized services. The first prevention of the model was geared to all the students. The second tier served students with at-risk behaviors through specialized programs, and the last tier included the smallest number of students; which consisted of intensive and specialized services for students who exhibited high-risk behaviors. Other programs have opted to develop curriculums to disseminate targeted mental health information, with an aim of bringing awareness to mental health issues and to close health disparities gaps (Broderick & Metz, 2009; Spirito et. al. 1988; Wahl, Susin, Kaplan, Lax, & Zatina, 2011). Although interventions have specific foci, findings have demonstrated that SBMH programs are promising at reducing mental

health symptoms.

## **2.2 SBMH Program Outcomes and Measurement**

Across studies, SBMH interventions have focused on numerous outcomes. Common outcome measures found in the literature for SBMH programs include student mental health knowledge (Labouliere et al., 2015; Salerno, 2016), emotional regulation skills (Broderick & Metz, 2009), student risk behaviors (suicide risk and substance use) (Paschall & Bersamin, 2018), and risk status (Dang, Weiss, Nguyen, Tran, & Pollack, 2017). Furthermore, studies have focused on specific outcomes depending on the needs of the community. For instance, as a result from an increasing prevalence of youth suicide in one rural community, Schmidt et al. (2015) found that schools are well positioned to address this public health issue by integrating a suicide prevention program into a rural school district. Another study examined caregiver influence among students participating in SBMH programs (Burnett-Zeigler & Lyons, 2010). In California, a study providing SBMH services found significant improvements in mental health outcomes with the implementation of SBMH programmatic services (Paschall & Bersamin, 2018). Another study in Oregon, where 168 public schools provided SBMH services to students, found a significant increase in the utilization of services, and a significant reduction in mental health concerns when compared to other public schools who did not participate in the expansion of SBMH services (Paschall & Bersamin, 2018). A systematic review of SBMH program outcomes concluded that SBMH programs increased positive outcomes including an increase in mental health knowledge, attitudes, and help-seeking among adolescents (Salerno, 2016). Due to the positive experiences and promising results of SBMH services, it is imperative that the dissemination of knowledge and best practices of SBMH programs be further explored (Paschall & Bersamin, 2018; Capp, 2015).

Throughout SBMH programs, a variety of measures have been used to understand the impact of these programs on mental health. Studies have included researcher created instruments (Broderick & Metz, 2009; Aseltine & DeMartino, 2004; Paschall & Bersamin, 2018), opinion scales (Esters, Cooker, & Ittenbach, 1998), attitude scales (Esters et al., 1998), and knowledge scales (Burnett-Zeigler & Lyons, 2012). Many researchers reasonably focus on emotions and behaviors related to mental health concerns. For example, (Broderick & Metz, 2009) used a combination of instruments during pre-and post-testing, such as the Positive and Negative Affect Schedule (PANAS) and Ruminative Response Scale (RRS) scales. Each was administered by teachers. The study aimed at supporting the development of emotion regulation skills through the use of mindfulness. Both (Labouliere, Tarquini, Totura, Kutash, & Karver, 2015; Paschall & Bersamin, 2018) used the Oregon Healthy Teens Survey for their program. The survey was self-administered during a class period. Esters et al. (1998) used the Opinions about Mental Illness Questionnaire (OMI) measure opinions regarding prognosis, treatment, and cause of mental illness. They measured students' attitudes towards seeking help through the Fischer-Turner Pro-Con Attitude Scale. Burnett-Zeigler and Lyons (2012) used a Caregiver Information Questionnaire (CIQ) to obtain clinical information such as child experiences. In addition, they also utilized the Multi-Sector Services Contacts-Revised (MSSC-R) to record the utilization of services across many child-serving sectors. In all, the measures found in the literature were mostly self-reported surveys, and not all of the measures included their validity and reliability in the examined literature.

While, the Paschall & Bersamin (2018), study does not describe the validity of the survey, it does note that it was adopted from the statewide Oregon Healthy Teens Survey previously administered. Additionally, neither of the instruments that Burnett-Zeigler and Lyons

(2012) used in their study have tabulation nor scoring conventions. Specifically, the CIQ was only used to obtain descriptive information and had no validity or reliability. With the exception on the Strengths and Difficulties Questionnaire (Humphrey & Wigelsworth, 2016), which is also widely used within mental health measures (Humphrey & Wigelsworth, 2016), no measurement described above identified children's strengths and service needs. Furthermore, although the above measures provided valuable information, the literature show few measures that have been administered by clinicians to guide appropriate treatment.

### **2.3 Youth Risk Behaviors**

The CDC 2015 Youth Risk Behavior Surveillance (YRBS) reports on health risk behaviors that could ultimately lead to causes of morbidity and mortality. Findings indicate that many adolescents engage in health risk behaviors that are associated with leading causes of death. Some risk behaviors included in the report are substance use, sexual behaviors and behaviors that contribute to unintentional injuries, among others. Due to the effects of risk behaviors, novel approaches need to be developed to provide youth access to health services. Specifically, SBMH programs should be considered as they are able to address the mental health concerns of at-risk students.

Some SBMH programs have focused on addressing risk -specific behaviors such as suicide. For instance, findings from Paschall and Bersamin (2018) and Wasserman et. al. (2016) suggest that SBMH programs can help decrease suicide risk and substance use among at-risk youth. Berglas et.al. (2016) sought to reduce sexual risk behaviors through classroom-based interventions and reports that the intervention was well received by the students. Goosens (2016) conducted a secondary outcome study of a cluster randomized controlled trial examined school-based intervention with a focus on delinquent risk behavior among other mental health concerns.

Although the authors did not find delinquent risk behavior statistically significant, it called for future studies to continue researching school-based mental health programs (Goossens, 2016). Furthermore, a systematic literature by Lima-Serrano and Lima-Rodriguez (2014) suggest that SBMH programs can address risk behaviors and promote student health. Hence, the current study explored student risk behaviors as the outcome, through the examination of CANS scores.

#### **2.4 Child and Adolescent Needs and Strengths (CANS) Assessment**

One promising tool for SBMH intervention studies is the Child and Adolescent Needs and Strengths (CANS) assessment (Cordell & Snowden, 2015; Cordell, Snowden, & Hosier, 2016). The CANS is a tool designed to assist with decision making, facilitate quality improvement initiatives, and provides the option to monitor service outcomes (Praed Foundation, n.d). CANS was originally developed as part of the child welfare initiative in Illinois to decrease the number of children and youths in custody (Lyons, 2009; Rosanbalm et al., 2016) and was developed using a communication theory rather than a psychometric perspective. It assists with the development of individualized service plans while representing children at all levels of the system. Since the CANS is designed for use within systems, it may be an ideal tool for use in SBMH interventions.

The administration of CANS, can be used to capture information regarding behaviors or conditions that may put students at risk for negative outcomes (Rosanbalm et al., 2016). Retrospective studies support the utility of CANS as a tool to make decisions, identify strengths, and monitor change resulting from service utilization (Anderson & Estle, 2001; Go, Chu, Barlas, & Chng, 2017). Furthermore, CANS evaluates the strengths and concerns of children and youth including those with mental health disorders, developmental disabilities, and emotional and behavioral health care needs (Cordell et al., 2016). The CANS has been conducted in a variety of

settings including urban, rural, community, school settings, and with a wide range of populations ( Anderson & Gittler, 2005; Cordell et al., 2016; Effland et al., 2011). Furthermore, partnerships between schools, local governments, residential providers, and community-based providers have used the CANS to assess programmatic services in multiple educational and clinical community settings (Cordell & Snowden, 2015).

## **2.5 CANS Usage in SBMH Programs**

CANS is a widely used tool to better understand the patient needs and to decide the best course of treatment (Praed Foundation, n.d; Anderson, Lyons, Giles, Price, & Estle, 2003; Rosanbalm et al., 2016). Although CANS has been continuously used in the mental health sector (Praed Foundation, n.d), only two studies were identified to have used CANS within SBMH programs ( Cordell & Snowden, 2015; Cordell et al., 2016). Both studies partnered with multi-service agencies who conducted multi-youth programs, including a SBMH program. The authors used recursive partitioning on CANS to examine characteristics of children and youth who needed comprehensive interventions. The findings indicated that recursive partitioning could identify items that were strongly associated with high CANS scores, thereby displaying that its utility is efficiently able to identify youth who require the most comprehensive interventions to address mental health concerns. Cordell and Snowden (2015), sought to test associations between indicators of emotional distress and the frequency of crisis within six months of the youth's participation in SBMH programs. The authors concluded that emotional distress could be identified early within treatment in a clinical setting. Again, while few published studies exist on the utilization of CANS within SBMH program, this study hopes to contribute to the growing body of literature on SBMH programs and the utilization of CANS.

## **Chapter 3**

### **Methods**

#### **3.1 Purpose**

The current study utilized data from a larger evaluation to examine if treatment through a school-based mental health program in three rural counties in Georgia decreased reports of student risk behaviors as measured by the CANS (Kisiel et al., 2011). Student risk behaviors included suicide risk, non-suicidal self-injury, other self-harm, danger to others, sexual aggression, runaway, delinquency, judgment, fire setting, intentional misbehavior and sexually reactive behavior. We sought to answer the following questions:

- 1) Do students participating in a school-based mental health program located in rural Georgia display a decrease in risk behaviors, as measured by the CANS, over the course of receiving clinical services?
- 2) What intake measures predict decreases in risk behaviors at six months?

Data for this study will be used to (1) provide insight on the relationship of a SBMH program and the risk behaviors of students receiving mental health services, and (2) provide an analysis of student risk behavior outcomes. For the scientific community, data from this study will address the utility of the CANS as an outcome measure for SBMH interventions and provide data on the outcomes of a SBMH intervention.

#### **3.2 Medical Health Facility**

The medical health facility examined is a branch from a nonprofit health system serving rural areas of west Georgia and east Alabama. The health system offers a wide range of medical services and resources to its community. The medical health facility in West Georgia has implemented a SBMH program as part of their behavioral health initiative to provide early

detection, diagnosis, treatment, and resources for mental health services to youth in ten public elementary, middle, and high schools located across three rural counties of Georgia. School personnel are able to refer students who are in need of mental health services to the SBMH program at their school. The medical facility places mental health therapists in each school to conduct intake assessments and provide trauma-focused cognitive behavioral therapy (TF-CBT) to identified youth. Therapists utilize various intake assessments to ensure that students receive the needed resources and services to address their mental health. Therapists may also provide psychoeducation, modulation skills, social skills, and parenting skills as needed. Lastly, the SBMH program provides Youth Mental Health First Aid Training (YMHFA) to school staff, students, and lay persons which teaches individuals how to help students who may be experiencing a behavioral health crisis.

The current study utilizes data obtained from 294 students participating in the SBMH program. As students are referred to the program, a designated therapist administers a battery of mental health assessments including the Behavioral Health Assessment (BHA) and the Columbia Suicide Severity Rating Scale (C-SSRS) at intake and the Child and Adolescent Needs and Strength (CANS) at intake, six months and 12 months. For the current study two data points, intake and six months, are available for examination.

Participants of the SBMH program included students in Pre-K through 12<sup>th</sup> grade who ranged from ages 4 to 18. Students were predominantly White (n = 254), followed by African American/Black (n = 19), multi/other (n = 14) and Latino/Hispanic (n = 7). Table 1 displays the representation of students and grade level.

**Table 1. Student’s Demographics**

Students' characteristics	N	%
Race		
White	254	86.39
AA	19	6.46
Latino/HISP	7	2.38
Multi/Other	14	4.76
School		
Elementary School	93	41.62
Middle School	79	35.74
High School	49	22.17

Note: AA=African American, HISP=Hispanic

## **Chapter 4**

### **Measures**

#### **4.1 Assessments**

The current study includes data from the Behavioral Health Assessment (BHA) and the Child and Adolescent Needs and Strength (CANS).

The BHA is a comprehensive mental health assessment that patients complete as part of their intake process in the medical facility. Although the BHA captures many intake information including patient history and admission concerns. This study only examined the 26 presenting problems from the admission concerns section, as these were the data accessible at the time of the study. The presenting problems from the BHA are used as possible predictors for reduction of risk behaviors. Students were rated ‘0’ if the problem was present and ‘1’ if no problem was present. Reference was set to ‘1’.

The CANS was administered to assist with treatment planning. The CANS-Trauma core domains include Traumatic/Adverse Childhood Experiences, Traumatic Stress Symptoms, Child Strengths, Life Domain Functioning, Acculturation, Child Behavioral/Emotional Needs, Child

Risks Behaviors, Trauma Comprehensive Optional Domain, Transition to Adulthood-Optional Domain, and Caregiver Needs and Strengths. Scores from the domain can be used for service planning. For example, a rating of '2' or '3' indicates to the provider that the area needs to be addressed in the child's service plan. On the other hand, a rating of '0' or '1' would be recognized as a strength of the child (Praed Foundation, n.d). The CANS can be used at an item level for service planning or as aggregated data from domain scores (Rosanbalm, 2016;Accomazzo, 2017). This study calculated the sum scores for each domain. The CANS domains were found to be highly reliable and calculated: Child Risks Behaviors ( $\alpha=0.77$ ), Traumatic/Adverse Childhood Experiences ( $\alpha=0.74$ ), Traumatic Stress Symptoms ( $\alpha=0.79$ ), Child Strengths ( $\alpha=0.68$ ), Life Domain Functioning ( $\alpha=0.64$ ), Acculturation ( $\alpha=0.58$ ), and Child Behavioral/Emotional Needs ( $\alpha=0.71$ ). Due to CANS being administered over time, scores and the changes in the ratings for each domain can be tracked (Praed Foundation, n.d). For this study, we excluded the optional domains due to missing data. The domains used in the study as possible predictors for student reduction in risk behavior were: Traumatic/Adverse Childhood Experiences, Traumatic Stress Symptoms, Child Strengths, Life Domain Functioning, Acculturation, Child Behavioral/Emotional Needs, and Child Risks Behaviors.

#### **4.2 Administration of CANS**

The CANS is an open domain instrument used throughout the United States and internationally (Praed Foundation, n.d.; Rosanbalm et al., 2016). The Praed Foundation, founded by Dr. John Lyons, maintains the copyrights to CANS. To administer the CANS, one has to be CANS certified. The CANS can be used with children and youth ages 2 to 21 years of age (Rosanbalm et al., 2016). The CANS is administered at intake or within 30 days. It can be followed up by additional CANS assessments for reassessment over the treatment period

(Effland et al., 2011; Epstein, Schlueter, Gracey, Chandrasekhar, & Cull, 2015). Also, CANS adaptability provides programs the opportunity to customize the CANS to meet their community needs (Accomazzo et al., 2017; Cordell & Snowden, 2015).

The CANS assessment utilized in this study reflects a population of children and adolescents who are in need of mental health services in rural Georgia. The CANS Comprehensive Scoring for NCTSN (CANS-Trauma Comprehensive) was administered to all students in the program. The administration of CANS takes 10-15 minutes to complete and can be repeated every three to six months or at key time points (Anderson et al., 2003, Rosanbalm, Snyder et al., 2016).

#### **4.3 CANS Validity**

The CANS was created for improving communication across levels of care and emphasizes construct validity at the item level (Accomazzo et. al., 2017). Studies show social validity with CANS as evaluators can use CANS data across domains to make system-level decisions (Accomazzo et al., 2017). Furthermore, CANS scores have been validated as outcome measures for mental health in intensive community treatment, residential treatment, and juvenile justice programs (Dunleavy & Leon, 2011; Effland et al., 2011; Lyons, Griffin, Quintenz, Jenuwine, & Shasha, 2003; Rosanbalm et al., 2016; Praed Foundation, n.d).

#### **4.4 Statistical Analysis**

Data were analyzed via Statistical Analysis Software (SAS) 9.4. Due to ongoing services by SBMH program, data collection was ongoing at the time of this study. To address our first question, whether student risk behavior decreased from intake to six months, we compared the risk behaviors measured at intake to risk behaviors measured six months later. Total sum scores

were calculated for each of the child risk behavior domains of the CANS. Due to the small sample size and having a non-normal distribution, a non-parametric Wilcoxon-Sign Rank Test was used to examine the change in student risk scores from intake to six months later. Only students who completed an intake CANS and six-month CANS were included in the analysis (N=92).

For the second research question, we were interested in identifying intake measures that predicted student risk reduction over time. Intake measures included as predictor variables for this research question included 26 presenting mental health problems as measured by the BHA and six domains of the CANS (Traumatic/Adverse Childhood Experiences, Traumatic Stress Symptoms, Child Strengths, Life Domain Functioning, Acculturation, Child Behavioral/Emotional Needs). A new outcome variable, risk reduction, was created using the CANS risk behavior domain to create a dichotomous indicator of “risk behavior reduction” or “no risk behavior reduction”. This included, comparing CANS risk behavior domain scores at intake and at follow-up. If scores at follow-up were lower than scores at intake, the outcome was code as “1” to indicate a reduction in risk behavior. If scores at follow-up were equal to or higher than scores at intake, the outcome was coded as “0” to indicate no risk behavior reduction.

A series of logistic regressions were conducted with the intake measures as predictor variables and the new variable measuring risk reduction as the outcome to identify strong predictors of risk reduction. For the BHA, a binary logistic regression was conducted for each of the 26 possible predictors. For the CANS, total sum scores were calculated for each domain and a binary logistic regression was conducted with each of the six domains. Based on the results of the preliminary logistic regressions, five significant predictors ( $p < .05$ ) were selected to include in a final model. Results from the preliminary logistic regressions can be found in Appendices A

and B. Five possible predictors were identified: risk behaviors, emotional lability, stress, trauma, and emotional needs. To choose the best predictors from the five, a stepwise backward selection was conducted. Results from the stepwise selection indicated risk behavior, emotional lability and emotional needs as predictors. Given the lack of research investigating SBMH program outcomes for diverse students, race was added into the final model. Due to the majority of the sample being White, race was coded as White vs all other races. Thus, the final logistic regression included race, risk behaviors, emotional lability, emotional needs, measured at intake as predictors of risk reduction.

## **Chapter 5**

### **Results**

For the first research question, results from the Wilcoxon sign rank test revealed a statistically significant reduction of student risk behavior from intake to follow up ( $M=1$ ,  $SD=2.7$ ,  $p<0.01$ ); with a median score of 3.7 at intake and 2.9 at follow up. For the second research question, a multiple logistic regression analysis was conducted to assess if intake measurements predicted reduction of risk behaviors. Table 4 shows the logistic regression results with our final predictors. From the CANS, risk behavior and emotional needs were found to be predictors of risk reduction. After controlling for emotional lability, risk behavior, emotional needs, and race, risk behavior, emotional lability, and emotional needs were predictors of risk reduction at six months. From the BHA, emotional lability was the only presenting problem identified as a predictor. Results from the logistic regression indicated a significant effect of risk behaviors ( $p < 0.001$ ), emotional lability ( $p < 0.002$ ), and emotional needs ( $p < 0.03$ ). Race was not statistically significant ( $p = 0.27$ ).

Results suggest that there is an association between risk behavior assessed at intake and

risk behaviors at six months. Students who scored higher on risk at intake were less likely to have reduction of risk behaviors at six months. For one unit increase in risk behavior, we expect 54% decrease in the odds of risk behavior reduction at 6 months. This is not surprising as student who have more risk behaviors have more work to do, may exhibit more need, and may need more time to decrease their risk behavior. Findings indicate the odds of decreases in risk behavior among students who reported emotional lability is lower than among those without emotional lability (adjusted OR = 0.12 95% CI (0.03, 0.46)). Results also indicated that students with emotional needs at intake were more likely to have a reduction of risk behaviors. For a one unit increase in emotional need, we expect a 33% increase in the odds of decrease in risk behavior. Lastly, in the examination of the role of race in the reduction of risk behaviors, being White was not a predictor for reduction of student risk behavior. Although race was not found to be statistically significant, the odds of decrease in risk behavior among other races is 3.70 times the odds of decrease among white. The sample was predominantly white which is consistent with the race and Hispanic origin from the United States Census Bureau report of people across the three counties being serve identify themselves as White alone.

**Table 4. Regressions for Risk Behavior Reduction**

<b>Variables</b>	<b>No Risk Behavior Reduction</b>	<b>Risk Behavior Reduction</b>	<b>Adjusted OR(95%CI)</b>	<b>P-value</b>
<b>Risk Behavior at Intake</b>				
Median (IQR)	2(1.0-3.0)	4.5(2.5-7.0)	0.46(0.31-0.69)	<b>0.0001</b>
<b>Emotional Needs</b>				
Median (IQR)	10(8-11)	11.5(9-14.5)	1.33(1.01-1.74)	<b>0.03</b>
<b>Emotional Labilty</b>				
Not present	7*(20) **	21*(48.84) **	1	
Present	28*(80) **	22*(51.16) **	0.12(0.03-0.46)	<b>0.002</b>
<b>Race</b>				
White	39*(86.67) **	44*(91.67) **	1	
Other	6*(13.33) **	4*(8.33) **	3.79(0.34-42.31)	0.27

Note: IQR= Interquartile Range, \*= N, \*\*=Column Percentage

## **Chapter 6**

### **Discussion**

This study sought to examine if students participating in a SBMH program being implemented in three rural counties of Georgia displayed a reduction in risk behavior. Furthermore, it explored intake variables as predictors for reduction of risk behavior. The data suggested that there was an improvement of students' risk behaviors problems after six months of participating in the SBMH program. This indicates that SBMH programs are associated with a decrease in student risk behaviors. Furthermore, measurement of emotional needs, emotional labilty, and risk behavior at the beginning of the program are also related to reduction of students engaging in risk behaviors after participating six months in the SBMH program.

Although research studies examining the effectiveness of SBMH programs have measured different outcomes, this study adds to the body of literature demonstrating that SBMH programs are related to decreases in risk behaviors, particularly for children with more emotional needs (O'Connor, Dyson, Cowdell, & Watson, 2018).

The CANS is primarily designed to assist trained users within child serving systems to create an individualized treatment plan and make system level decisions; however, it can also be used to investigate program outcomes. For example, Cordell and Snowden (2015) examined social-emotional symptoms with the CANS in order to identify associations between the frequency of crisis events and socio-emotional symptoms (e.g., anger) and program differences among youth in a multi-service agency undergoing treatment within residential and community settings. The study found a strong association between socio-emotional symptoms and frequency of crisis events. Unlike the Cordell and Snowden (2015) study, the current study utilized the CANS as an outcome variable to predict risk behavior. The current study also did not examine the frequency in which services were provided to students. However, similar to Cordell and Snowden (2015) findings on emotional symptoms, this study also identified emotional needs and emotional lability as factors in decreasing risky behaviors. Although CANS was used to assess emotions for both studies, it is important to note that different versions of CANS were used. Nevertheless, both studies reveal that emotion needs to be addressed in the context of mental health.

This study is unique as it examined a risk behavior domain that included a variety of risk behaviors. Existing research emphasizes the importance of prevention on student risk behaviors (Cordell & Snowden, 2015; Montañez et. al., 2015), however, most published studies examine specific risk behaviors among children and adolescent. For example, Wasserman et al., (2015)

investigated three different school-based preventive interventions on student suicidal behaviors. Their findings indicated that prevention interventions in schools can be effective in reducing the number of suicides and occurrence of suicidal ideation. Another SBMH program implemented a multicomponent sexuality education intervention aimed at reducing the risk of pregnancy and STI risk (Berglas et al., 2016). The intervention included classroom curriculum, parent workshops, peer advocate programs, and sexual health services. Results from the study indicated that students who received the intervention were more likely to carry a condom and utilize sexual health service (Berglas et al., 2016). The current study used aggregated risk behavior data from the Child Risk Behavior domain in the CANS-Trauma. By focusing on the whole domain, we were able to assess broad changes in risk behaviors, rather than particular behaviors.

This study adds to a growing body of literature showing that CANS can be used as a valid psychometric instrument. Although CANS has historically been used to make individualized treatment plans and system level decision (Anderson and Estle, 2001), some studies suggest its utility as a psychometrically valid outcome measure (Dunleavy and Leon, 2011; Effland et al., 2011; Cordell and Snowden, 2015). This study demonstrated that CANS can be used as an outcome. The reliability of using CANS as a whole domain for risk behaviors had an alpha of 0.77. Overall, the other domains also had an alpha level high enough to be used in the final model to predict risk behavior reduction. Thus, this study indicates that the CANS risk domain score may be a useful measure in future studies.

While CANS is commonly used within the mental health field (Anderson, et al., 2003; Rosanbalm et al., 2016), it is not frequently researched within SBMH programs. The few published studies on CANS used in a school setting come from multi-service agencies (Cordell & Snowden, 2015; Cordell et al., 2016). To the authors knowledge, this is the first study to solely

use CANS with a SBMH program as a measurement of risk behavior outcomes. Most measurements within SBMH programs vary from program developed surveys (Paschall and Bersamin, 2018), mental illness questionnaires (Esters et al., 1998; Spagnolo et al., 2008), and qualitative analysis such as focus groups (Garmy et al., 2015). Using the CANS as a measurement with SBMH programs is feasible as most mental health programs may already be employing the CANS. Furthermore, it establishes a valid measurement within SBMH practices.

CANS has been validated with many populations. For example, Anderson and Estle (2001) examined intake CANS assessment to assess youth outcomes in a rural state in the United States. However, unlike our study, it examined outcomes in inpatient and community-based care settings. Most of the children were living in foster care and a disproportionate number of children compared to urban areas were admitted to inpatient care. Similar to our study, they summed up the CANS domain and noted high alpha levels for the CANS domains. Their sample were also predominantly white. Anderson & Gittler (2005) also assessed CANS of youth ages 12-18 who had been discharged from a community based mental health and or substance use treatment program in three rural counties. Results demonstrate that there are unmet treatment needs among youth living in rural areas. Most of the participant (93%) were white and most of the participants also resided outside of the county from which they received services. Accomazzo et al. (2017) explored four strategies to summarize CANS results from a large urban public behavioral health system. Participants were predominantly Black, followed by Latino, Asian American, White/European-American, and Multi-Ethnic. Findings indicate that aggregating CANS domains are useful for programs and systems. Collectively, studies indicate that because CANS is able to be employed across diverse populations, it may be a useful metric for a variety of SBMH programs.

SBMH programs can also serve a variety of populations. Due to the school programs being inclusive, all students are able to receive services. This study predominately had white participants. However, research indicates that although there might be some barriers to servicing certain population (e.g. Latinos), mental health services are still able to be effectively provided to students (Gamble & Lambros, 2014; Montañez, 2015). Additionally, SBMH programs have been successfully implemented in urban and rural areas. Wade et. al. (2008) examined a program providing health services including mental health services among children and adolescents in rural and urban schools. Similar to our study, it noted that most of the students receiving services in the rural schools were predominantly white. Overall, studies demonstrated that SBMH programs can effectively be implemented across diverse populations.

## **6.2 Implications**

This study identifies risk behaviors associated with mental health needs among youth in rural areas of Georgia. Additionally, it bridges mental health needs of underserved youth living in rural areas to the provision of prevention and intervention services. Results from this study indicate that SBMH programs can effectively address student risk behavior. These findings aid the development of risk reduction services for rural areas in need of additional mental health services. Consistent with the literature, SBMH programs are able to effectively provide interventions and treatment for hard to reach populations. Furthermore, this study validates CANS being used as a risk behavior measurement within school based mental health programs. It also brings awareness to the services needed in rural areas for youth. This study provides the opportunity to further research the usage of CANS as an outcome measure which can be psychometrically sound and low cost to utilize and address needs of youth in rural school settings.

### **6.3 Limitations**

The outcome of this study should be interpreted within the contexts of the study limitations. First, although the assessments were administered by therapists, the answers were still self-reported from the student and/or caregiver. Hence, there may be biases in the answers. Also, many of the questions are sensitive, and without rapport buildup, students and/or caregivers may not have reported accurately. Secondly, the lack of data from CANS at six months could have had a large impact on the study. This lack of data could have been caused by various factors including, students not yet reaching six months of treatment/services, students moving, students receiving services elsewhere, quick student improvement and having an early discharge, and students or parents wanting to discontinue treatment. Third, it is important to note that the sociodemographic of the students were not all reported or reported accurately. Hispanic was reported as a race, and there may have been students who were Hispanic but identified with a more specific race. Furthermore, due to our small sample size, it is not generalizable.

### **6.4 Conclusion**

Due to the prevalence of mental illness and its impact on children and adolescents, SBMH programs are promising strategies. As part of a larger evaluation study, this paper examined if student risk behaviors decreased with the intervention of SBMH services. Results indicated a statistically significant reduction in student risk behavior. Furthermore, we analyzed if measures at intake can predict the reduction of risk behaviors at a 6-month follow-up interval utilizing the CANS assessment. Emotional lability, emotional needs, and risk behavior at intake statistically predicted a reduction of student risk behavior. A next step for this study is to examine collected qualitative data to gain insight of implementation of SBMH program, student and faculty satisfaction, and school impact from having mental health services within the school

setting. Future studies should also explore trends on students' progress in SBMH programs. This study adds to a growing body of research suggesting that SBMH programs can be effective in providing mental health resources and services.

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## Appendix A

**Table 2. Sample bivariate predictor table from BHA**

Variables	B	Odds	P-value	Include
Abuse Issues	0.15	1.16	0.76	NO
Altered Mental Status	-0.21	0.81	0.88	NO
Anxiety/Panic	-0.24	0.78	0.59	NO
Appetite Disturbances	0.46	1.6	0.70	NO
Communication Barriers	-0.29	0.74	0.61	NO
Conduct or Behavior Problem	0.11	1.12	0.80	NO
Declines in Activities of Daily Living	13	>999.999	0.98	NO
Delusions	-0.21	0.81	0.88	NO
Depression	0.24	1.27	0.59	NO
Destruction of Property	0.35	1.41	0.52	NO
Eating Disturbance	-0.21	0.8	0.83	NO
Emotional Lability	1.33	3.818	0.01	YES
Grief/Loss	0.29	1.34	0.52	NO
Homicidal Threats or Gestures	0.5	1.65	0.68	NO
Inability to care for self	13.06	>999.999	0.98	NO
Manic Behaviors	13.03	>999.999	0.98	NO

Table 2 (continued)

Variables	B	Odds	P-value	Include
Psychotic	13.03	>999.999	0.98	NO
Runaway	0.47	1.61	0.70	NO
Self-Injurious Behaviors	0.62	1.87	0.26	NO
Sleep Disturbances	0.54	1.72	0.26	NO
Substance Abuse	13.03	>999.999	0.98	NO
Suicidal Threats or Gestures	0.12	1.12	0.85	NO
Weight Loss	13	>999.999	0.98	NO
Inappropriate Sexual Behaviors	11.03	>999.999	0.96	NO
Insomnia	11.03	>999.999	0.96	NO
Playing with Fire	-0.51	0.6	0.74	NO

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Note: ADL= Activities of daily living.

## Appendix B

**Table 3. Sample bivariate predictor table from CANS assessment**

Variables	B	Odds	P-value	Include
Trauma	-0.08	0.91	0.05	YES
Stress	-0.18	0.83	0.002	YES
Strength	0.007	1	0.89	NO
Life	-0.04	0.96	0.45	NO
Acculturation	-0.09	0.91	0.70	NO
Emotional Needs	-0.16	0.84	0.01	YES
Risk Behaviors	0.590	0.54	0.0001	YES