Innovative Work Behavior Related to Student Mental Health Promotion among Middle School Faculty and Staff

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Dissertation

Submitted to the Faculty of the

Graduate School of Vanderbilt University

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

in

Nursing Science

August 11, 2017

Nashville, Tennessee

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To my children Adeline and Byron,

and

To my husband Adam.

ACKNOWLEDGEMENTS

I am grateful to the following individuals and groups who were instrumental to the completion of this dissertation study.

My adviser, Dr. Lorraine Mion, has been endlessly supportive and patient. I hope to reflect the commitment to quality, kindness, and fun that she has displayed during my time as her mentee.

My remaining committee members, Dr. Mary Dietrich, Dr. Melanie Lutenbacher, and Dr. Velma Murry, have provided an enormous amount of creative insight throughout this process. I am grateful for the support and guidance they have provided.

I have gained something unique and meaningful from each Vanderbilt School of Nursing faculty member I have encountered. I am honored to have learned from such distinguished scholars. My peers at the Vanderbilt School of Nursing are among some of the most outstanding individuals I have known. I am grateful for their friendship and professional wisdom as well.

Finally, my family has been my anchor as I have explored the professional world of nursing research. My husband and best friend, Adam Jordan, has held my hand through the mountains and valleys of graduate school. My sweet children, Adeline and Byron, have loved me through many tiring and stressful days.

This dissertation was completed with the support of the Vanderbilt University School of Nursing PhD Student Fund. I am grateful for the generous financial assistance of the Vanderbilt Nursing community.

TABLE OF CONTENTS

Page

DEDICATION ii

ACKNOWLEDGEMENTS iii

LIST OF TABLES vii

LIST OF FIGURES viii

Chapter

I. Introduction 1

Statement of the problem 1
Innovation in the public health system 2
Innovative work behaviors in the public health system 3
Purpose and aims 4
Aim one 4
Aim two 5
Significance of the issue and need for study 5
Significance to society 5
Significance to health care 7
Significance to nursing 8

II. Review of the Literature and Theoretical Framework 10

Theoretical framework 10
Analysis of relevant literature 11
Mental health promotion in schools 11
Innovative work behavior 18
Operational definitions of variables 23
Innovative work behavior 27
Contextual characteristics 27
School characteristics 28
Faculty/staff characteristics 34
Summary 35

III. Methodology 36

Data sources 37

Individual level data....37
School level data....39
Population/sample/setting....40
Data collection procedures....41
Middle school-level data collection....41
Faculty/staff level data collection....42
Dataset construction....42
Data management and quality control....44
Data analysis strategy....45
Aim one....45
Aim two....46
Summary....46

IV. Results....47

Participant profile....47
Individual....47
School....50
Aim one results....52
Aim 1-A....52
Aim 1-B/1-C....53
Aim two results....56

V. Discussion....61

Sample characteristics....61
Aim one....62
Description of IWB....62
Faculty/staff characteristics associated with IWB....63
Contextual characteristics associated with IWB....64
School characteristics associated with IWB....65
Aim two....66
Strengths and Limitations....67
Recruitment/sampling....67
Analysis....68
Methodology....68
Implications....68
Recommendations for future research....69
Descriptive study of IWB....70
Exploration of further measurement opportunities....70
Impact of IWB on student and employee outcomes....70
Conclusion....71

Appendix

A. Original Measure of Innovative Work Behavior 72

B. Modified Measure of Innovative Work Behavior 73

REFERENCES 74

LIST OF TABLES

Table Page

1. Aim one study variables....24
2. Aim two study variables....26
3. GA DOE weighting rates for student suspensions....31
4. Calculation of Georgia middle school CCRPI score....33
5. Individual-level variable summary....43
6. School-level variable summary....44
7. Participant position and level of education....48
8. Chi square testing for differences in participants completing usable and non-usable IWB surveys....50
9. Range of number of respondents by category within each school....51
10. Summaries of univariate and multivariate associations of faculty/staff characteristics with IWB related to student mental health....54
11. Univariate associations between school-level IWB and school/contextual variables....55
12. Hierarchical linear model of the influence of faculty/staff, school, and contextual characteristics on IWB....56
13. Participant perceptions of student mental health and school mental health services....57
14. School-level variables: average IWB, perceptions of mental health service need, quantity, and quality....58
15. Intercorrelations among perceived mental health service need, quantity, and quality....59
16. Summaries of univariate and multivariate associations between IWB related to student mental health and perceived service need, quantity, and quality....60

LIST OF FIGURES

Figure Page

1. Middle school faculty and staff innovative work behavior model 11

2. Perceived innovative work behavior related to student mental health promotion histogram.....52

CHAPTER 1

INTRODUCTION

The intent of this research was to explore middle school faculty and staff innovative work behavior (IWB) and examine the associations among middle school faculty and staff IWB and the quality and quantity of middle school mental health services. Gaining a better understanding of associations is critical to the future development of interventions that will enhance faculty and staff IWB to promote middle school students' mental health.

Statement of the Problem

Mental health disorders affect up to 20% of all US children and adolescents and cost up to 247 billion each year. [1] Common mental health disorders among US children and adolescents include attention-deficit/hyperactivity disorder (ADHD), conduct problems, anxiety, depression, and autism. [1] These mental health disorders have a high personal and societal cost through impaired relationships with family, peers, and teachers along with increased rates of substance use, criminal activity, and other risk taking behaviors.[2-6] Despite an enormous amount of public health attention, these disorders continue to be a serious issue for adolescents.[1] Though the rates of mental health disorders for early adolescents, defined as ages 11-14, are not reported as a distinct age group, it is clear that this group is vulnerable. Along with diagnosable mental health disorders, undiagnosed mental health problems can cause challenges for early adolescents. Rapid changes in development along with increasing academic and social expectations can cause difficulties in identifying and treating mental health problems in early adolescents.[7]

Consequences of inattention to the mental health needs of early adolescents are serious, including suicide, which is the second leading cause of death for 10-14 year olds.[1,8] Mental health problems among early adolescents are a public health concern requiring approaches geared to promotion of mental health, early identification of mental health problems, and targeted services to address these problems.

The ability to innovate is critical for any lasting, effective organization. It is through innovation that organizations are able to adapt, grow, and survive. At the heart of all organizational innovations are individuals who are able to conceive of and implement new ideas, procedures, processes, and products that benefit the organization. This behavior, known as IWB, has received surprisingly little attention in the scientific literature despite its importance to organizational success. Little is known about how the public health system in particular leverages the creative ideas of diverse staff to better meet organizational outcomes and address public health needs, including the mental health needs of early adolescents. A better understanding of how IWBs can result in improved public health outcomes has the potential to yield better health in the US and across the world.

Innovation in the Public Health System

The call for innovation in the public health system is almost impossible to miss. Government programs, private foundations, and research institutions alike are looking for something different, a new way to do more, do better, and with less. The call is far from novel; history is riddled with examples of innovation, among them notable public health achievements such as vaccinations, public sanitation, and school nursing. Innovative progress was once considered a matter of fate, beyond the boundaries of science and management. However,

modern approaches to innovation consider it the result of systematic practice[9] and amenable to scientific inquiry. Applying innovation studies to the field of public health could speed the progress of society to a healthier state. The innovative nature of an idea, process, procedure, or product can be determined by two criteria: 1) whether it is novel to the user, context or application and 2) if it is an improvement.[10] These types of improvements are the fundamental means by which public health has advanced over time. These innovations can occur at any part of the public health system including, but not limited to, public health organizations. Innovation in public health organizations allows organizations to respond to changes in the environment, potentially resulting in alterations in the larger system that lead to a healthier society.[11] However, a more comprehensive view of the public health system includes individuals, organizations, and relationships with various functions that contribute to the health of society and yet may not be a part of the formal public health system. School nurses, for example, are often employed by school systems but are important players in the public health system. A meaningful examination of public health innovation necessitates consideration of organizations and players beyond those in traditional public health organizations.

Innovative Work Behaviors in the Public Health System

The actions of individuals are at the heart of innovations throughout the public health system. Despite the necessity of individual actions to innovation at the team, organizational, and system levels, relatively little attention has been given to the role of individuals in innovation studies. The term "innovative work behavior (IWB)" describes a scientific construct used to study individual innovation. IWB has been given varying definitions, but generally includes both the development and implementation of new ideas by employees.[12] The specific

application of IWB to public health systems has the potential to benefit society by leveraging the abilities of individuals throughout the system; in essence, combining the benefits of grassroots and top-down approaches to better health.

Purpose and Aims

The primary goal of the proposed study was to explore middle school faculty and staff IWB. This information can assist middle school leaders in understanding IWB and related factors from their employees. Outcomes of this project will be used as part of a program of research that allows middle school leadership to foster school environments where faculty and staff innovate on a regular basis in order to meet student mental health needs that would not otherwise be met.

Aim One

1. Explore middle school faculty and staff IWB (related to student mental health promotion).
    a. Describe middle school faculty/staff IWB (related to student mental health promotion).
    b. Determine associations of middle school faculty/staff IWB (related to student mental health promotion) with selected contextual characteristics, school characteristics, and faculty and staff characteristics.
    c. Determine influence of middle school faculty/staff IWB (related to student mental health) with selected contextual characteristics, school characteristics, and faculty/staff characteristics.

Aim Two

2. Explore associations of middle school faculty and staff IWB (related to student mental health) with the quantity and quality of strategies to promote student mental health (formal or informal).

Significance of the Issue and Need for Study

Significance to Society

Prevalence. Mental health can be defined as "a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community."[13] Problems with mental health are common among adolescents[14], and reports of disorders such as autism and attention deficit/hyperactivity disorder (ADHD) are increasing.[15-18] A clear description of the mental health of early adolescents (ages 11-14) is not available in the literature, but general data regarding children and adolescents is available. The CDC reports the 12 month prevalence of mental health disorders at between 13 and 20% for children under the age of 18.[19] Half of the individuals who will experience a mental health disorder in their lifetime manifest their disorder before the age of 14.[14] Anxiety disorders are the most commonly reported mental health disorder among US adolescents, with behavior disorders, mood disorders, and substance abuse disorders following.[20] Gender differences appear to exist, with boys being 2.1 times more likely to display ADHD than girls and girls being two times more likely to display mood disorders than boys.[21] Anxiety disorders and conduct disorders do not appear to differ among genders.[21] Most mental health disorders in children and adolescents appear to be

mild, with the prevalence of severe disorders estimated at 8% and primarily related to behavior and mood disorders.[22] Persistence of mental health disorders appears higher for children and adolescents than for adults, with anxiety and behavior disorders being particularly persistent among young people.[23] The high prevalence and persistence of mental health disorders among children and adolescents in the US underscores the importance of appropriate early treatment.

Value of early treatment. Young people with mental health disorders are more likely than older people to experience delays before seeking treatment and tend to experience more prolonged mental illness.[14] Young people with mental health disorders are more likely to experience mental health disorders as adults.[24] Mental health problems can significantly decrease quality of life for affected individuals and can result in dramatic costs to society as a whole.[19] However, early appropriate treatment of mental health disorders can improve the quality of life of youth with mental illness.[25] Effective treatment of mental health disorders in young people is associated with improved physical health, stability, and productivity.[26]

Negative consequences of mental illness for individuals. Mental health disorders can lead to suicide, which is the most serious direct consequence of mental health disorders in youth.[1] Suicide was the second leading cause of death for the 10-24 year old age group in 2010.[27] The rate of suicide for early adolescents aged 11-14 in the US was 2.28 per 100,000.[28] Decreased educational attainment is another serious problem, with 14.2% of those who drop out of high school having a mental health disorder.[3] Mental health disorders are associated with problems with relationships, including those with parents, siblings, and peers.[5 6 19] Depression in older adolescents has been associated with low social support from family and friends and increased conflict with parents.[5] Mental health disorders in middle school students are associated with increased sexual risk taking behavior.[4] Moderate depressive symptoms have been

associated with substance use at last sex for females and high depressive symptoms have been associated with a lack of birth control and substance use at last sex for males.[4] The individual negative consequences of mental health disorders can lead to further negative consequences for society as a whole.

Negative consequences of mental illness for society. The majority of youth, up to 70%, involved in the juvenile justice system have a mental health disorder,[29 30] with 20% of these having mental disorders that significantly impair their ability to function.[30] Youth with mental health disorders often require the use of expensive special education services. One study reported 2/3 of youth sampled received special education services for a mental health problem, and 17% who received special education services for a non-mental health problem had serious emotional/behavioral difficulties.[31] Mental disorders in youth are also associated with crime, injury, substance use, and increased societal cost as adults.[2 19 32 33] Furthermore, lost productivity as adolescents and potentially as adults creates an additional societal burden.[19 26]

Significance to Health Care

Service use by children and adolescents. Data describing the early adolescent population specifically is not clearly represented in the literature. However, it is clear that mental health service use for children and adolescents under the age of 18 is increasing.[34 35] Treatment for children and adolescent mental health disorders incurs costs of approximately 12 billion per year.[36] Adolescents aged 12-17 are responsible for approximately 60% of this cost, though they represent only about 35% of the population.[36] Outpatient care is the predominant form of service use, also accounting for approximately 60% of the total cost.[36] School-related mental health service use is estimated at over $4 billion each year.[36]

Treatment issues for children and adolescents. Treatment issues, as with service use, are not clearly described specifically for the 11-14 year-old age group and are better examined within larger groups of children and adolescents. Despite the large cost of service use for children and adolescents, approximately ¾ of youth needing mental health services do not get appropriate treatment.[36] Treatment use also does not appear to be equitable, as minority youth are less likely to receive treatment.[36] A notable trend is the significant increase in the use of psychotropic medications in youth since the 1980s, with over $1 billion spent on psychotropic medication use for youth in the year 1998 alone.[36]

Mental health as a public health priority. Recognition of mental health and mental illness as distinct but related concepts provides a foundation for public health mental health services that increase positive affect, decrease negative affect, and promote satisfaction with life.[37] Increasing attention is being given to mental health as a public health priority, with a focus on prevention and health promotion.[38] Identification of risk factors, increasing awareness, removing stigma, reducing disparities, and improving access to mental health services are all priority actions consistent with a public health paradigm.[39] The US Surgeon General has called for a full integration of mental health into the US public health system.[37]

Significance to Nursing

Increasing attention is being placed on schools as important settings for mental health interventions.[40] School nurses often serve as the health experts and advocates in their schools.[41] [42] This leadership role incorporates aspects of individual caregiving and public health interventions addressing all aspects of health.[41] School nurses address health promotion, illness prevention, and illness management through health services such as health assessment, advocacy,

referral, and coordination of student health care.[41 43] Mental health care is an important part of the school nursing role[43], with approximately 1/3 of school nurse time spent addressing mental health issues.[44]

CHAPTER 2

REVIEW OF THE LITERATURE AND THEORETICAL FRAMEWORK

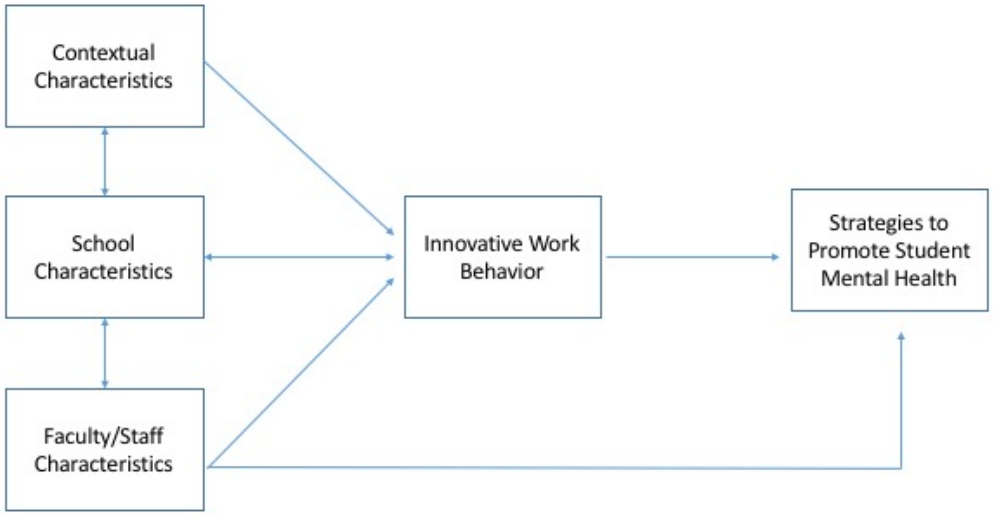
Schools have a history of investing in mental health in order to better meet the organizational goal of educating students. Despite this long history, addressing mental health in the school environment is still a major challenge due to the complexity of the problem and evolving legislative requirements that change the expectations of students and school professionals. The study of IWB is a fundamentally different, but complementary, way to approach early adolescent mental health problems. Instead of finding one solution and implementing it across a variety of locations, individual faculty and staff would be encouraged to create and implement strategies that are highly relevant to the needs of their student populations.

Theoretical Framework

A theoretical framework unique to this study was developed for this project due to the dearth of well-developed guiding models in the literature. This framework, based on previous research of IWB in other settings, connected IWB to student mental health services and was based on the available scientific evidence and expert opinion. The model proposes that contextual, school, and individual factors influence middle school faculty and staff IWB; in turn IWB influences school characteristics (Aim 1). Since IWB has been shown to be influenced by organizational characteristics and is partially defined by the implementation of something novel within the organization, it is necessary to include both pathways in the conceptual framework. It is expected that IWB may result in organizational changes, measured as influence on school

characteristics. The model also proposed that middle school faculty and staff IWB is associated with strategies to promote student mental health (Aim 2).

Figure 1. Middle School Faculty and Staff Innovative Work Behavior Model



Analysis of Relevant Literature

Mental Health Promotion in Schools

History. Modern school mental health services evolved through a variety of social, educational, and professional influences.[45] Prior to the Progressive Era, which lasted from around 1890 to 1930, schools had less diversity and served relatively few students.[45] During the Progressive Era schools began to serve many more students, with enrollment more than

doubling.[45] Additional responsibilities were added to traditional expectations of public education, including mental hygiene.[45] School professionals began to seek new ways to address the mental health needs of students, particularly students from disadvantaged backgrounds that previously would have been less likely to receive a formal education.

The Mental Hygiene movement, with notable founders Clifford Beers and Adolf Meyer, originated in the mid-1800s and promoted environments where individuals and populations could develop normally.[46] Mental hygiene can generally be described as a social movement that aimed to promote and preserve mental health.[47] Major goals associated with this movement were the improvement of conditions for individuals being treated for mental illness and addressing mental health early in life.[48] Clifford Beers described the motivation to treat mental problems in childhood in his statement, "In the opinion of conservative specialists in mental disease, about half of all cases of mental or nervous disorder could be prevented by the timely application, largely in childhood and adolescence, of knowledge already available."[48] The exploding school population made public schools an ideal location to access youth, and mental health services in schools received increased public support.

Two major types of activists emerged during these societal and educational reforms: those who wanted to reform the school environment and those who wanted to reform student behaviors.[45] Activists who wanted to reform the school environment included figures such as Jane Adams and John Dewey.[45] Many mental hygiene activists, but not all, endorsed this perspective.[45] Reforms advocated by these activists included attempts to make classrooms mentally healthy places and pedagogical transformations that addressed ecological barriers to learning.[45] A number of other activists, however, sought to address unsuccessful students largely through a theory of psychopathology.[45] Students who had academic and behavior problems were

treated, as they often are today, by mental health professionals and returned to schools.[45] These two perspectives ultimately led to the creation of ungraded "special classes" for students with behavior problems, truancy issues, or learning disabilities.[45]

School nursing evolved alongside these reforms, with the earliest school nurses appearing in New York City in the 1920s.[45] The goal of the school nursing role was to improve academic success by addressing health needs of students.[49] Student mental health needs and overall well-being, while not the sole focus of the school nurses, were clearly within the purview of the nursing role.[45] Modern school nursing continues to include the mental health of students as an important responsibility of the profession.[43]

A number of other professions are also central to mental health services provided in schools. Psychologists, psychiatrists, counselors, and social workers work alongside teachers and other school staff to provide a number of services to students. Resource constraints often limit the time these professionals can attend to the mental health of students. Psychologists, for example, are often involved primarily in assessment activities.[45]

A number of policy changes have had a significant impact on mental health services provided in schools.

Compulsory attendance laws. Massachusetts became the first state to mandate school attendance in 1852, though enforcement of the legislation proved difficult.[50] All states had passed compulsory education laws by 1918.[50] Enforcement of these laws became more common during the 1920s as schools became more accountable for truancy and child labor regulations were more effectively addressed.[50] Currently, some variation by states exists on when youth are required to attend school, with the starting age varying between five and eight and ending age between 16 and 18.[51]

Individuals with Disabilities Education Act. The Education for all Handicapped Children Act, now known as the Individuals with Disabilities Education Act (IDEA), was originally signed into law in 1975.[52] This legislation profoundly influenced the education of students with mental illness by requiring that all students, regardless of type of disability, receive a free and appropriate education in the least restrictive environment possible.[52] Later changes to the legislation have addressed children aged zero to five, increasing access to the general curriculum, and increasing accountability for the academic achievement of students with disabilities.[52]

No Child Left Behind. The No Child Left Behind (NCLB) Act is a version of the Elementary and Secondary Education Act that was originally established in 1965.[53] Though the emphasis of the legislation is addressing achievement gaps for disadvantaged children, its emphasis on school accountability and student assessment has had implications for students with mental health problems. A criticism of NCLB is the tendency of educators to "teach to the test"[54], which may distract from a student-centered approach to learning.

Race to the Top. Race to the Top is a grant program meant to encourage the adoption of standards and measurement in public education.[55] This program, as with NCLB, is not targeted specifically for students with mental health problems but has significant implications for this population. States must adopt Common Core standards in order to receive funding, which homogenizes the curriculums within schools. States must also pursue high quality assessments that are in line with the common core standards.[55] Some argue that this will help to ensure a high quality education, but others contend that it promotes an industrial pedagogical approach that stresses systems and students, including vulnerable populations such as those with mental health problems.

Mental health services

Middle school mental health services can be considered at the individual, group, or population levels. The individual services provided in schools include the identification and referral of students with mental health disorders, counseling, case management, and medication management, among others. Group services may include group based counseling sessions. Population level interventions include initiatives designed to screen, educate, or promote mental health among all students. All faculty and staff in middle schools have a role to play in the promotion of student mental health, whether directly through traditional services, or indirectly through supportive roles.

Organizational aspects of the middle school environment are also significant to the provision of student mental health interventions. Collaboration for the purpose of mental health care can be difficult in the school environment.[56] The unique qualities of each school environment require community collaborators to be adaptable and flexible in order to enhance the possibility of an effective collaboration.[56] Funding is also a challenge for school mental health services. Varying financial models are used to provide school health, including mental health, services, including revenue from patient billing, government grants, partner contributions, and support from the private sector.[57] The variety of models used to organize school health programs, including Coordinated School Health, System of Care, and the Whole Child Framework adds to the complexity of their financial management.[58-60] These challenges, both financial and technical, underscore the necessity of looking for additional approaches to improve student mental health.

Current models of mental health promotion activities in middle schools.

School-based health centers. School-based health centers are "health centers on school property where enrolled students can receive primary care, including diagnostic and treatment services."[61] These centers may include, but do not always include, mental health care. Often, these centers are the results of a collaborative effort between the school and a community agency.[56] Approximately 2000 school-based health centers currently operate in the US.[62] One study reported that 71.4% of states have at least one school-based health center that offered health, mental health, and social services.[61] A major advantage of school-based health centers is the convenience of access for students. Some evidence suggests that the presence of school-based health centers are linked to greater satisfaction in learning environments.[63] Disadvantages include the challenges to implementation and maintenance related to financing and collaboration.[56]

Expanded school mental health services. Traditionally, mental health services in schools are offered primarily to students receiving special education services.[64] Expanded school mental health represents an effort to provide comprehensive mental health services to all students in the school environment.[64] These programs theoretically have the advantage of access to young people in a natural environment, but outcomes of these programs are difficult to measure.[65] Limited evidence supporting expanded school mental health services does exist, particularly related to access and utilization of services.[66] Funding, however, remains a challenge.[67]

Coordinated school health. Coordinated School Health is a Centers for Disease Control and Prevention (CDC) recommended strategy for providing health services, including mental health services, to children and adolescents in the school environment.[58] Coordinated School

Health consists of eight components: health education; physical education; health services; nutrition services; counseling, psychological, and social services; a healthy and safe school environment; health promotion for staff; and community involvement.[58] The comprehensive nature of the model may encourage schools to think broadly about the health of the school environment, but as of now limited information exists on how to successfully implement this complicated strategy.

System of care. The System of Care model emerged in the 1980s as an effort to provide comprehensive services to the families of children with mental health needs.[68] This model has received extensive federal support and is now widely accepted and implemented. The emphasis in the System of Care model is to engage families fully as partners in care and to coordinate services so that they can meet the always evolving needs of the family and child.[68] Advantages of this approach include early detection and intervention and individual-centered care.[68] However, this model requires complex collaboration to be fully implemented [69] which can be difficult for many communities.

Whole child framework. The Whole Child Framework is an approach to educating children and adolescents that emphasizes long term development and success rather than confining measures of academic success.[70] This approach is often viewed in tandem with the CDC promoted Coordinated School Health model in the Whole School, Whole Community, Whole Child model.[60] The Whole Child Framework supports keeping students healthy, safe, engaged, supported, and challenged in the school environment.[70] Advantages of this framework include its comprehensive nature and recognition of the connections between health and learning. The tenets of this model are relatively generic, which can bring about the disadvantages of challenging implementation and measurement.

Positive behavior interventions and supports (PBIS). PBIS is a federally supported approach to teaching positive behaviors in the school environment.[71] The emphasis on PBIS is on positive behaviors rather than negative ones.[71] PBIS is a multi-tiered approach, with efforts to prevent problem behavior, reduce problem behaviors, and reduce severity of severe problem behaviors.[71] It incorporates a systems approach with an emphasis on data and outcomes.[71] PBIS is the only behavioral approach specifically mentioned in IDEA and is extensively implemented across the country.[71] Advantages to this approach include a strong research base and extensive formal implementation support. A major disadvantage is the need for 80% staff buy-in in order for the approach to be successfully implemented.[71]

Innovative Work Behavior

History. The concept of IWB has received little research attention in public health and educational research, though management opinion pieces in both fields sometimes tout potential benefits.[72 73] Though IWB is not very well understood in these contexts, the presence of IWB has been documented in nursing and middle schools through scientific studies and case reports of successful organizational innovations initiated at the employee level.[74-86] Though some studies do address individual level innovation within the conceptual framework, the dearth of research in this area makes it necessary to look at case reports of innovative activities initiated at the individual level as evidence of IWB. Nursing research in innovative behavior has introduced the study of key variables internal to employees including employee age, work experience, and training.[74-79]

Innovation is often considered as old a concept as mankind, but scientific inquiry into innovation is a recent phenomenon. Joseph Schumpeter, an Austrian-American economist, is

credited with some of the earliest academic perspectives on innovation.[87] Schumpeter, who lived from 1883 to 1950, focused on the importance of entrepreneurs and innovation to economic and social change.[87] He considered innovations to be "new combinations of existing resources" that included new products, the utilization of new markets, and new ways of organizing business.[87] Schumpeter mainly focused on individual entrepreneurs in his early days, but later attended to innovation within larger organizations as well.[87] Schumpeter argued that entrepreneurs had an important role to play in societal advancement by overcoming resistance to new ideas and ways of doing things that could move society forward.[87]

The Science Policy Research Unit (SPRU), founded in 1966 at the University of Sussex, UK, represents another important development in the history of innovation studies.[88] This interdisciplinary unit produced some of the earliest formal academic programs focused on innovation studies and served as a model for a number of other European and Asian institutes that continued the study of innovation from the 1980s onward.[87] SPRU remains a leading voice in innovation policy development[87], and interdisciplinary approaches remain a notable part of modern innovation research.[87] Innovation research does not fall entirely under the realm of any one discipline, rather it is a cumulative effort of many fields.[87]

The term "innovative work behaviors" emerged in the 1980s. IWBs have been researched in an effort to improve organizational performance and have been conceptualized through both employee output and as employee behaviors.[12] Research addressing IWB is growing in many fields, but is still in early stages. It is widely recognized that the most competitive organizations benefit from the innovative behaviors of employees.[12] Though the precise nature of the relationship between IWBs and positive organizational outcomes is not well described in the literature, certain characteristics of IWBs in a broad spectrum of organizations

are known. Motivation, openness to ideas, and original problem solving are employee characteristics associated with innovative work behaviors.[89] Leadership behaviors, organizational culture, and organizational values are organizational characteristics associated with innovative work behaviors.[89] Importantly, IWBs do not appear to be an inherent trait only applicable to certain individuals[89] and are amenable to organizational interventions.[89]

IWB is a concept and approach thought to improve organizational performance in a variety of settings such as banking, technology, manufacturing, and more recently health care.[14,15] Innovative behaviors are often relied on in industry as a source of new ideas and products to maintain a competitive edge, but early evidence indicates that the clinical performance of acute care hospitals benefits from a higher degree of innovative behavior among individual employees as well.[15] Currently, investigation of IWB in the educational setting, specifically related to student mental health, is lacking.

Innovation in Public Work Environments

The nursing literature base contains a significant amount of the literature that investigates individual and organizational variables associated with IWB in the public sector. The literature is lacking clear descriptions or associations of IWB in the school environment.

Organizational characteristics associated with IWBs. Management support, work discretion, rewards/reinforcement, and structural empowerment are organization characteristics that have been associated with innovative behavior.[76 78 79]

Management support. Management support is defined as "the willingness of top-level managers to facilitate and promote entrepreneurial behavior, including the championing of innovative ideas and providing the resources people require to take entrepreneurial actions."[90]

Management support was both correlated with innovative nursing behaviors and predictive of innovative nursing behaviors.[76] However, a low response rate (0.03%)[76] makes this data questionable due to the possibility of selection bias.

Work discretion. Work discretion is defined as "top-level managers' commitment to tolerate failure, provide decision making latitude and freedom from excessive oversight and to delegate authority and responsibility to managers".[90] As with management support, work discretion was both correlated with and predictive of innovative behaviors in nursing[76]; however, the data supporting this is weak.

Rewards/reinforcement. Investigators have defined rewards/reinforcement as "developing and using systems that reward based on performance, highlight significant achievements, and encourage pursuit of challenging work."[90] Rewards/reinforcement were found to be statistically significant predictors of innovation, but not correlated with innovation.[76] This finding is subject to the same weaknesses as management support and work discretion.

Structural empowerment. Two studies of moderate strength examined the relationship between structural empowerment and innovative behavior in nursing. Structural empowerment was defined as "the promotion of employee effectiveness and satisfaction through the availability of social structure factors in the environment"[78] and describes the ability of employees to accomplish what the organization demands of them.[79] Structural empowerment has been positively correlated with innovative behaviors in both nursing education and acute care nursing.[78 79] The correlations, though statistically significant, were not strong ($r = .35$ and $r = .45$).[78 79]

Individual characteristics associated with IWBs in nursing. Younger age, more years in professional position, proactivity, creative efficacy, and psychological empowerment are individual characteristics that have been associated with IWB in nursing.[76 79]

Younger age. Younger age was found to be a predictor of innovative behavior (β = .19), but not correlated with innovative behavior.[76] This finding is subject to the limitation of a low response rate (response rate = .03).[76]

More years in current position. More years in a nurse's current professional position was found to be a predictor of innovative behavior (β = .18), but was also not correlated with innovative behavior.[76] These data are subject to the same response rate limitation previously discussed.

Proactivity. Proactivity is defined in this research as "the relatively stable tendency for an individual to take action to influence his or her environment and affect change."[76] Proactivity was found to be positively correlated (r = .63) with and predictive of innovative behavior (β = .593) in nurses.[76] This finding is subject to the same limitation as the previously two discussed variables.

Creative efficacy. Creative efficacy is defined in this research as "the self-perception of one's capacity to be creative."[76] Creative efficacy was positively correlated with (r = .39) and predictive of innovative behavior (beta = .13).[76] Though this finding is subject to limitations, it is consistent with the generally accepted conceptual framework of creativity as a component of innovative behavior.

Psychological empowerment. Psychological empowerment refers to empowerment as something intrinsic to individuals.[79] Psychological empowerment was correlated with innovative behavior in nurses in one study (r = .53).[79]

More exploration and specification of factors contributing to IWBs related to public health are needed. The organizational and individual factors described in this literature review are not comprehensive, though the literature does support associations among both organizational and individual characteristics to IWB. A broad perspective of the contextual nature of IWBs will provide a more holistic view of IWB that can be more easily translated to different environments. Further exploration of different pertinent variables may also lead to the development of conceptual frameworks with more useful causal pathways.

Operational Definitions of Variables

While IWB is actively sought after in some organizations[13,14], scientific study of IWB in public health and educational contexts is sparse. Well understood and managed IWB related to student mental health promotion may allow middle schools to respond more quickly and fully to the unique mental health needs of students. This study is the first known to the author to explore IWB related to student mental health promotion in the middle school environment. This study is an initial step in describing the presence and amount of IWB in middle schools and exploring potential associations between IWB and other variables. This study will contribute to a program of research seeking to better understand how individual level innovation can be managed for optimal organizational outcomes in the public health system. Study variables for each of the major constructs diagrammed in Figure 1 are listed in Tables 1 and 2. The following sections describe the operationalization of the study variables.

Table 1. Aim One Study Variables

Variable/Type	Measurement Strategy	Level of Measurement	Source of data
Contextual Characteristics			
Staffing	Student/teacher ratio (current)	Continuous	Guidance counselor / GA Department of Education
Economically disadvantaged student population	% students eligible for free/reduced meals (current)	Continuous	Guidance counselor
Size	Student population (current)	Continuous	GA Department of Education
School Characteristics			
School Mental Health Status Proxy: Violence	Safe and substance free school score	Continuous	GA Department of Education
School Mental Health Status Proxy: Behavior	Weighted suspension rate	Continuous	GA Department of Education
Student achievement	State provided CCRPI score	Continuous	GA Department of Education
Faculty/Staff Characteristics			

Variable/Type	Measurement Strategy	Level of Measurement	Source of data
Age	Age	Continuous	Faculty/staff survey
Experience in present position	Years employed in present position	Continuous	Faculty/staff survey
Experience in education	Years employed in education	Continuous	Faculty/staff survey
Position	Position	Nominal	Faculty/staff survey
Training	Educational level	Ordinal	Faculty/staff survey
Innovative Work Behavior			
Innovative Work Behavior related to Mental Health	Summed scores from Kleysen & Street Measure of Innovative Work Behavior – Mental Health Adaptation	Continuous	Faculty/staff survey

Table 2. Aim Two Study Variables

Variable	Measurement Strategy	Level of Measurement	Source
Innovative Work Behavior			
Innovative Work Behavior related to Mental Health	School average of summed scores from Kleysen & Street Measure of Innovative Work Behavior – Mental Health Adaptation	Continuous	Faculty/staff survey
Mental Health Interventions			
Quality of student mental health promotion activities	Perceived quality of school provided mental health promotion activities	Continuous	Faculty/Staff Survey
Quantity of student mental health promotion activities	Perceived quantity of school provided mental health promotion activities	Continuous	Faculty/Staff Survey

Innovative Work Behavior

Innovative work behavior, as defined by de Jong and den Hartog[91] consists of creatively finding solutions at the individual level within organizations (idea exploration and generation) and implementing these solutions in the work environment (idea championing and implementation). This behavior is theorized to be influenced by contextual characteristics and faculty/staff characteristics, to have reciprocal influence with school characteristics, and to influence strategies to promote student mental health (see Figure 1, page 10). Current measurement evidence best supports IWB measurement through a one-dimensional measure.

- *Innovative work behavior* was operationalized through a modified version of Kleysen and Street's measure of innovative work behavior. A detailed discussion of this modification is presented in chapter three.

Contextual Characteristics

Contextual characteristics are characteristics of the school that are proposed to influence IWB but are not proposed to be influenced by IWB. These characteristics have been chosen based on previous literature suggesting that IWB is influenced by the job complexity and intensity of the work environment.[14, 52, 53] Three variables were chosen to reflect this construct: school size, staffing and economically disadvantaged student population.

- *School size* was operationalized as the most currently available (academic year 2016-2017) number of enrolled students.
- *Staffing* was defined as the most currently available (academic year 2016-2017) proportion of students to teacher.

- *Economically disadvantaged student population* was defined as the most currently available (academic year 2016-2017) proportion of students who received free or reduced school lunches.

School Characteristics

The construct *school characteristics* represents the student body mental health status and is proposed to influence IWB and be influenced by IWB. In addition, school characteristics can influence faculty/staff characteristics. Since IWB, by definition, results in a change in the work environment, the mental health-focused innovations would be expected to result in a change in the student body mental health status. Given the lack of literature related to IWB specific to school environments, variables related to mental health outcomes were selected based on Drucker's[9] hypothesis that incongruity and needs within processes spur innovation. Three variables were chosen to reflect school characteristics: student violence, student behavior and student achievement.

Student violence. Student violence was defined as unsafe events within the school environment and was operationalized using the Georgia Safe and Substance Free Learning Environment score. The Safe and Substance Free Learning Environment score is free and publically available through the Georgia Department of Education (GA DOE).[92] This score is calculated using data collected both on the GA Student Health Survey 2.0 – Middle School/High School and through records of reported incidents.[93] The GA Student Health Survey 2.0 – Middle School/High School collects data on student perceptions of drug and alcohol use, bullying and harassment, and violent incidents.[93] Reported incidents are reported by each school.[93] Descriptions for the coding process for each subcomponent reflected in the Safe and Substance

Free Learning Environment score are below. Inverse percentages are calculated for each subsection using the coded responses.[93] The inverse percentage calculation for the GA Student Health Survey 2.0 – Middle School/High School is as follows: 100 – 100 *[(sum of responses for subsection)/(total number of surveys completed)].[93] Inverse percentages for reported incidents were also calculated as described below. The final Safe and Substance Free Learning Environment Score was calculated as follows using the subsection scores:

[SSFLVI (Data) + DRI (Data) + BHI (Data) + VI (Survey) + SDA (Survey) + BH (Survey)]/6

SSFLVI: Safe and Substance-Free Learning Violent Incidents

DRI: Drug Related Incidents

BHI: Bullying and Harassment Incidents

VI: Violent Incidents

SDA: Student Drug Abuse

BH: Bullying and Harassment

Student health survey – drug and alcohol use. Students were asked questions about the number of days they used alcohol and various drugs over the past 30 days.[93] Results were coded as 0 (for no use) and 1 (for any student reported number between 1 and 30).[93]

Student health survey – bullying and harassment. Students were asked questions about the number of times they experienced peer victimization over the past 30 days.[93] Responses were recorded as a Likert-type scale with the options "never", "once or twice", "a few times", "many times", and "every day".[93] Results were coded as zero for "never", one for "once or twice", two for "a few times", three for "many times", and four for "every day".[93]

Student health survey – violent incidents. Students were asked questions about the number of times they have engaged in violent incidents over the past 30 days.[93] Responses were

recorded on a Likert-type scale with the options "not at all", "on 1-2 occasions", "on 3-4 occasions", and "on more than 5 occasions".[93] Results were coded as zero for "not at all", one for "on 1-2 occasions", two for "on 3-4 occasions", and three for "on more than 5 occasions".[93]

Reported incidents – drug and alcohol use, bullying and harassment, and violent incidents. Schools in Georgia are required to report a number of incidents that relate to student safety.[93] These incidents can be divided into sub-domains, three of which are "Drug Related Incidents", "Bullying and Harassment Incidents", and "Violent Incidents". Inverse percentages are calculated for each subsection using the coded responses.[93] The inverse percentage calculation is as follows: 100 * [1-(total subsection incidents/total incidents)].[93]

Student behavior. Student behavior was defined as student discipline events and operationalized as the school's weighted suspension rate. Suspensions in the state of Georgia must be reported to the GA DOE. These suspensions were weighted according to the severity of the severity of the suspension, using the following table.

Table 3. GA DOE Weighting Rates for Student Suspensions[93]

Action	Points
No Action	0.0
Any # of ISS (In School Suspension)	0.5
1-2 OSS (Out of School Suspension)	1.0
3-4 OSS	3.0
5-9 OSS	5.0
10 or more OSS	7.0
Alternative School Assignment (for disciplinary reasons only)	6.0
Expulsion	7.0

The weighted suspension is then determined using the following calculation:

100 * [1 – (Sum of the Individual Weighted Suspension Rates/Total Number of Students are Enrolled at the School)][93]

Student achievement. *Student achievement,* reflecting student learning, was operationalized as the Georgia assigned College and Career Ready Performance Index (CCRPI), which is a measure designed to hold schools accountable for academically preparing their students. CCRPI scores are reported on a scale of 0 to 100, with the potential for 10 additional points after the initial CCRPI calculation.[92] The CCRPI reflects a complex calculation derived from four major subcomponents including achievement, progress, achievement gap, and challenge points.[92] A

variety of data sources were used for the CCRPI score including the End-of-Grade Georgia Milestones (standardized end-of-grade tests), End-of-Course Georgia Milestones (standardized end-of-course tests), and student demographic information.[94]

Table 4. Calculation of Georgia Middle School CCRPI Score[94]

Achievement – 50 points	• Content Mastery Weighted Performance – (possible 20 points) • Post Readiness Weighted Performance – (possible 15 points) • Graduation Rate/Predictor for High School Graduation Weighted Performance – (possible 15 points) • Sum of Weighted Performances x 50 = Points Earned
Progress – 40 points	• Percent Meeting Typical/High Growth / Benchmark = Adjusted Percent Meeting Typical/High Growth • Adjusted Percent Meeting Typical/High Growth x 40 = Points Earned
Achievement Gap – 10 points	• Percent of Higher of Gap Size/Gap Progress x 10 = Points Earned
Challenge Points – maximum 10 additional points	• ED/EL/SWD Performance – Potential Points x % Flag Count for ED/EL/SWD Meeting Subgroup Performance and Participation Rate = Points Earned • Exceeding the Bar - .5 point for each ETB met = Points Earned

Faculty/Staff Characteristics

The construct, faculty/staff characteristics, is proposed to influence IWB. It is also theorized that these characteristics may directly influence strategies to promote student mental health. Last, a reciprocal relationship exists between school characteristics and faculty/staff characteristics. Previous studies have examined associations between individual characteristics such as age, time in position, and training with IWB.[54-59] Consistent with this literature, individual variables in this study include sociodemographic as well as work-related characteristics.

Age. Age was operationalized as age of participant, given in years.

Experience. Experience was operationalized in two ways, both as years employed in present position and as years employed in K-12 education, given in years.

Position. Position was operationalized as faculty or staff role within the middle school environment. Faculty and staff were asked to specify which of the following categories best described their position: administrator, teacher, nurse, other certified staff (not administrator, teacher, or nurse), non-certified staff, or other.

Training. Training was operationalized as level of education. Faculty and staff were asked to specify which of the following categories best described their level of education: some high school, high school graduate, some college/technical training, technical training graduate, bachelors degree, masters degree, specialist degree, doctoral degree (example, EdD, PhD).

Strategies to Promote Student Mental Health

Strategies to promote student mental health include all actions taken by middle school faculty or staff members with the purpose of improving the identification and/or treatment of

diagnosable student mental health conditions or improving the overall mental well-being of middle school students. This term is purposely inclusive of formal, school-wide strategies (such as depression screening or the provision of special education services in association with a diagnosed mental health condition) and informal, individual or group based strategies (such as school nurse-driven group sessions related to prevention of substance use or an alteration in a teacher's classroom management strategy to prevent student behavior problems).

Strategies to promote student mental health. Strategies to promote student mental health was operationalized through faculty and staff perceptions of the quantity, quality, and overall adequacy of student mental health promotion activities within the school environment. Faculty and staff members were asked to respond to a visual analog scale describing their perceptions of the quantity, quality, and overall adequacy of student mental health promotion activities within the school. Responses were coded as a percentage.

Summary

This study focused on contextual characteristics, school characteristics, and faculty/staff characteristics associated with faculty/staff innovative work behaviors and subsequent strategies to promote student mental health. The conceptual model guided the delineation of categories and proposed relationship among the constructs. The review of the literature supported the variables pertinent for this study. The following chapter describes the methodologies employed to meet the aims of the study.

CHAPTER 3

METHODOLOGY

The purpose of this study was to explore faculty and staff IWB related to student mental health in the middle school environment. The proposed study was accomplished through a descriptive design using retrospective data, survey data elements, and interview data. Data collection was aimed at providing a description of IWB among faculty and staff and examining associations between middle school faculty and staff IWB with selected contextual, school, and individual characteristics. Data were obtained from three sources, including a) a survey developed by the principal investigator (PI) b) guidance counselor interviews conducted by the PI, and c) publically available data from the Georgia Department of Education. As described in Chapter 1, the primary goal of the proposed study was to explore middle school faculty and staff IWB. This information can assist middle school leaders in understanding IWB and related factors from their employees. This research will be used as part of a program of research that allows middle school leadership to foster school environments where faculty and staff innovate on a regular basis in order to meet student mental health needs that would not otherwise be met.

Aim One

1. Explore middle school faculty and staff IWB (related to student mental health promotion).
    a. Describe middle school faculty/staff IWB (related to student mental health promotion).

b. Determine associations of middle school faculty/staff IWB (related to student mental health promotion) with selected contextual characteristics, school characteristics, and faculty and staff characteristics.
c. Determine influence of middle school faculty/staff IWB (related to student mental health) with selected contextual characteristics, school characteristics, and faculty/staff characteristics.

Aim Two

2. Explore associations of middle school faculty and staff IWB (related to student mental health) with the quantity and quality of strategies to promote student mental health (formal or informal).

Data Sources

Individual Level Data

A survey instrument was used to collect faculty and staff level data on their perceived IWBs, demographic characteristics, role and employment characteristics.

Faculty/Staff Survey. The study survey incorporated investigator-developed demographic questions along with an adapted version of the Kleysen and Street measure of IWB related to student mental health.[61] Demographic information included age, position, educational level, years employed in present role, and years employed in education. Participants were able to complete the study either digitally through REDCap [95] or by hard copy if the PI was allowed a

site visit by the school leadership. Hard copies were collected during the site visit and remained in a secure location.

Measure of Innovative Work Behavior. A modification of Kleysen and Street's Measure of Innovative Work Behavior[61] was included in the faculty/staff survey. The original multi-dimensional measure, found in Appendix A, consists of 14 questions that assess the ability of individuals within organizations to develop and implement new ideas. This scale was originally tested by a number of professionals, including educators, with an alpha coefficient of 0.945.[61] The scale has since been used in a study of nurses with an alpha coefficient that the author deemed acceptable though did not numerically specify.[58] The modified survey, found in Appendix B, specifically addresses IWB related to student mental health. The alpha coefficient for the modified scale was found to be 0.96 in this study.

The modification required a re-assessment of content validity by this PI. There are a number of strategies to quantify content validity [62] This PI used a well-accepted method outlined by Lynn.[63] This method uses a panel of experts who independently rate each item on a) its relevance to the concept under study and b) its clarity. The resulting content validity index (CVI) allows the operationalized variable (IWB scale) to be compared with the relevant content of the concept (IWB).[64] For this project, a 10-person panel of experts including six teachers, one school administrator, two school social workers, and one school nurse was utilized to assess content validity. All experts had at least a baccalaureate degree and at least three years working in education or mental health fields This method was completed by asking each expert to independently rate each item for relevance and clarity. Ratings are dichotomized into 'relevant' (i.e., rated a 3 or 4) and "nonrelevant" (i.e., rated a 1 or 2). The dichotomized scores for each survey item were summed and divided by the number of experts (n=10), resulting in a CVI for

each survey item.[63] The item CVI for this adapted scale revealed acceptable support. According to Lynn, "the CVI for the entire instrument… is the proportion of total items judged content valid."[63] Each individual item received a CVI demonstrating content validity, resulting in a scale content validity of 1 (14/14).

Individual IWB scores were collected from a survey that had the IWB scale questions completed in their entirety, resulting in 149 usable surveys for this measure. School level IWB scores were later averaged from these summed scores.

School Level Data

Two additional sources were used to collect information at the school level. The first source was employed guidance counselors at the study schools. One-on-one telephone interviews were used to obtain data on selected school characteristics. The second source was the Georgia Department of Education

GA Department of Education Data

The Georgia Department of Education regularly collects data representing the status of schools within the state. Mandated surveys completed by each school provide data used for state calculation of the Safe and Substance Free School score, weighted suspension rate, and CCRPI score. Detailed discussions of each of these data sources can be found in chapter two. School responses for the size of the student population reported through the GA Department of Education were also utilized.

Guidance Counselor Interview

A single interview with a guidance counselor from each participating school was used to gather additional school data. Interviews were conducted by phone at a time convenient for the

interviewee. Participating guidance counselors assisted with obtaining data regarding the number of teachers employed and the percentage of students eligible for free or reduced price meals at each participating school. If the guidance counselor did not know specific answers to questions related to study variables, school principals were contacted to confirm the needed data. Qualitative information regarding school mental health services was also collected for use in later research.

Population/Sample/Setting

There were two groups of subjects for this study, middle schools and faculty and staff employed at middle schools.

All middle schools within two regional school districts in the state of Georgia were invited to participate. These schools represented rural areas. Middle schools were defined as schools serving grades six through eight. Exclusion criterion was any school identified as an alternative program specifically for students who are unsuccessful in traditional school environments. Approval was obtained from 10 schools, representing 10 distinct school districts.

Participants for this study included middle school guidance counselors and middle school faculty and staff who were hired by the school district and based in a particular school, including both full time and part time staff. All faculty and staff at each of the participating middle schools were invited to participate, due to the complex and interconnected nature of innovation within organizations. Middle school guidance counselors were selected for individual interviews due to their unique focus on both academic achievement and student mental health. Specific eligibility criteria were as follows:

- Eligibility criteria for guidance counselor: Current employment as a guidance counselor in a middle school participating in the study. There were no exclusion criteria.
- Eligibility criteria for middle school faculty and staff: Current employment in a study participating middle school. There were no exclusion criteria.

The rationale for not determining specific exclusion criteria was to reflect the importance of collaboration in innovation. Including all faculty and staff in the study acknowledged the role of collaboration, which can often be unpredictable, in an effectively innovating environment. Further, all faculty and staff in a school play a role in creating a mentally healthy environment.

Data Collection Procedures

Middle School Level Data Collection

Middle school level data was collected from three sources. First, free and publically available data from the Georgia Department of Education was used to determine the levels of school violence, student behavior, and school college and career readiness. All schools in the state of Georgia are required to report these indices. Second, telephone interviews with guidance counselors provided further information on school characteristics, IWB, and mental health services provided at the school. Guidance counselors regularly work with students who have mental health problems while at school and with the larger student population. This position was thought to have the best possible perspective on mental health issues at the school level. Guidance counselors were recruited by email and phone calls. Third, individual scores (faculty

and staff surveys) from the IWB portion of the survey were used individually at the respondent level and was summed and averaged by school for a school level IWB score.

Faculty and Staff Level Data Collection

The study survey incorporated investigator-developed demographic questions along with the adapted measure of IWB related to student mental health.[96] Demographic information collected included age, position, educational level, years employed in present role, and years employed in education. Participants were approached by email, flyer, or in person by the primary researcher. Participants completed the survey either digitally through REDCap[95] or by hard copy if the PI was allowed a site visit by the school leadership. Hard copies collected during the site visit remained in a locked box except for use and transport by study investigators. Weekly reminders were sent by the PI to school principals to be forwarded out to faculty and staff weekly until study closure at one month.

Dataset Construction

Two datasets, one for individual-level data and another for school-level data, were constructed to address the specific aims in this study. The individual-level dataset included faculty and staff characteristics and innovative work behavior scores. Descriptions of these variables can be found in Table 5. The school-level dataset included school characteristics (related to the mental health of the student population), organizational characteristics, and school-level IWB scores. Descriptions of these variables can be found in Table 6.

Table 5. Individual-Level Variable Summary

Individual-Level Variables			
Participant	**Faculty/Staff Characteristics**	**Innovative Work Behavior**	**Strategies to Promote Student Mental Health**
Participant ID (N)	Age (C) Years employed in present position (C) Years employed in education (C) Position (N) Educational level (O)	Modified Kleysen and Street Measure of Innovative Work Behavior (C)	Perception of Quality of School Mental Health Services (C) Perception of Quantity of School Mental Health Services (C) Perception of Overall Adequacy of School Mental Health Services (C)

N: Nominal; O: Ordinal; C: Continuous

Table 6. School-Level Variable Summary

School-Level Variables				
School	**School Characteristics**	**Contextual Characteristics**	**Innovative Work Behavior**	**Strategies to Promote Student Mental Health**
School ID (N)	Safe and substance free school score (C) Weighted suspension rate (C) CCRPI score (C)	Student/Teacher Ratio (C) % Students Eligible for Free/Reduced Meals (C) Student Population (C)	Mean of Individual IWB Scores (C)	Mean of Individual Perceptions of Quantity of School Mental Health Services (C) Mean of Individual Perceptions of Quality of School Mental Health Services (C)

N: Nominal; O: Ordinal; C: Continuous

Data Management & Quality Control

Data were analyzed for invalid and absent entries before analysis of study aims. Frequencies were examined to determine if trends in missing data were apparent. Missing data appeared largely at random, except for an increased likelihood of missing later values on the IWB scale, which was located at the end of the faculty/staff survey instrument. This suggests that the survey length was burdensome for participants. List-wise deletion was utilized for surveys with missing IWB values and for other missing data for the relevant analysis due to the lack of precedent for

imputation with the original IWB scale.[96] An alpha of 0.05 ($p < 0.05$) was used for determining statistical significance.

Data Analysis Strategy

Aim One

Frequency distributions were used to summarize nominal and ordinal categorical variables. All of the continuous variables were skewed therefore median and inter-quartile range were used for summarizing those data. Chi-Square Tests of Independence were completed to examine differences between the nominal/ordinal characteristics of participants who completed usable IWB surveys those who did not. Mann-Whitney U tests were used for those respective continuous data comparisons. Pearson correlations were used to assess associations among the faculty/staff characteristics. Unadjusted and adjusted associations of those characteristics with IWB scores were generated using Pearson correlations and multiple linear regression. Square root transformation sufficed to transform the skewed distributions to normal for use in those analyses. Aggregate school-level IWB scores were generated by calculating the average score for each respective school. Spearman's rho coefficients were used to examine associations of school-level variables with aggregate school-level IWB scores. Finally, hierarchical linear modeling was used to further explore associations of the faculty/staff, school, and contextual characteristics with IWB scores while accounting for the nested nature of the data.

Aim Two

In addition to the aggregation of IWB scores to the school-level described above, perceived mental health service quantity and quality scores were also aggregated to school-level. Participants responded to these questions on a visual analog scale indicating the degree to which the school provided adequate quantity and quality of mental health services, with 0 being "completely inadequate" and 100 being "completely adequate". The means of individual-level perceptions of mental health service quality, quantity, and IWB were used to create a school-level measure of each trait by school. Spearman's rho coefficients wwere used to explore associations of perceived adequacy of the quantity and quality of school-provided mental health services with school level IWB values.

Summary

This chapter has summarized details of data sources, population, sample, setting, data management, and analysis. The following chapter provides details regarding analytic results.

CHAPTER 4

RESULTS

This chapter describes the results of this dissertation study. One-hundred forty-nine individual participants within ten schools provided usable data. Individual-level and school-level participants, results from aim one, and results from aim two are described. The conclusion provides a summary of analytic results.

Participant Profile

Individual

A total of 242 participants attempted the faculty/staff survey for this study. Fourteen of these opened the survey, but did not provide any data. An additional 79 provided some data, but did not complete all the survey questions related to IWB, making their information unusable. The remaining 149 participants did provide usable data, though not all participants completed the survey in its entirety. Specific usable sample sizes, description of deletion procedures, and results of each following analysis are described.

Participants (n = 149) ranged in age from 20-65, with an interquartile range (IQR) from 36-51 and a median age of 45. The number of years participants had been employed in their present position ranged from 0 (indicating less than one year) to 40, with an IQR of 2-11 and a median of 5 years. The number of years the participants reported being employed in their present middle school ranged from 0 to 30, with an IQR of 3-12 and a median of 7 years. The

number of years the participants reported being employed in any middle school ranged from 0 – 35, with an IQR from 4-15 and a median of 9 years. The number of years participants reported being employed in any K-12 position ranged from 0 to 35, with an IQR of 7.5-20.5 and a median of 15 years. The majority of participants were teachers (77.9%) and two fifths had a specialist degree (40.9%). Further details on the positions and level of training reported by participants can be found in Table 7.

Table 7. Participant Position and Level of Education (n = 149)

Position	
Administrator	5 (3.4%)
Teacher	116 (77.9%)
Nurse	2 (1.3%)
Other Certified Staff	15 (10.1%)
Non-Certified Staff	10 (6.7%)
Other	1 (0.7%)
Level of Education	
High School Graduate	3 (2%)
Some College / Technical Training	4 (2.7%)
Technical Training Graduate	4 (2.7%)
Bachelors Degree	38 (25.5%)
Masters Degree	38 (25.5%)
Specialist Degree	61 (40.9%)
Doctoral Degree	1 (0.7%)

Testing for Differences Among IWB Responders and Non-Responders

Summaries of the characteristics of the responders with usable IWB survey data and those with non-usable data are shown in Table 8. No statistically significant differences between the groups were observed ($p > .05$) (see Table 8).

Table 8. Chi-Square Testing for Differences in Participants Completing Usable and Non-Usable IWB Surveys

Characteristic	Total Participants	Usable Surveys	Non-Usable Surveys	p-value*
	N (%)	N (%)	N (%)	
Position	228	149	79	.612
Administrator	7 (3.1%)	5 (3.4%)	2 (2.5%)	
Teacher	172 (75.4%)	116 (77.9%)	56 (70.9%)	
Nurse	3 (1.3%)	2 (1.3%)	1 (1.3%)	
Other Certified Staff	23 (10.1%)	15 (10.1%)	8 (10.1%)	
Non-Certified Staff	21 (9.2%)	10 (6.7%)	11 (13.9%)	
Other	2 (0.9%)	1 (0.7%)	1 (1.3%)	
Level of Education	228	149	79	.435
High School Graduate	8 (3.5%)	3 (2.0%)	5 (6.3%)	
Some College/Technical Training	9 (3.9%)	4 (2.7%)	5 (6.3%)	
Technical Training Graduate	5 (2.2%)	4 (2.7%)	1 (1.3%)	
Bachelors Degree	59 (25.9%)	38 (25.5%)	21 (26.6%)	
Masters Degree	56 (24.6%)	38 (25.5%)	18 (22.8%)	
Specialist Degree	90 (39.5%)	61 (40.9%)	29 (36.7%)	
Doctoral Degree	1 (0.4%)	1 (0.7%)	0 (0%)	
	Median (IQR) (N)	Median (IQR) (N)	Median (IQR) (N)	
Age	45 (36-51) (222)	45 (36-51) (146)	46 (37-50.75) (76)	.491
Years in Present Position	5 (2-11) (225)	5 (2-11) (147)	4 (0-11.25) (78)	.236
Years in Present Middle School	5 (2-12) (228)	7 (3-12) (149)	4 (2-12) (79)	.115
Years in Middle School Total	9 (3-15) (226)	9 (4-15) (147)	9 (2-14) (79)	.436
Years in K-12 Education	15 (8-20) (228)	15 (7.5-20.5) (149)	13 (8-18) (79)	.202

* Mann-Whitney U Tests

School

Ten middle schools, each serving grades six through eight, participated in this study. Participating schools came from 10 different rural school districts within the state of Georgia in

the United States. Seven of the 10 schools had Title 1 designation, indicating they served a high percentage of students who were economically disadvantaged. Student/teacher ratios ranged from 1:12 to 1:17. Information regarding the range of participants by school position and level of education can be found in Table 9.

Table 9. Range of Number of Respondents by Category within each School (n = 149)

Position	
Administrator	0-3
Teacher	2-25
Nurse	0-1
Other Certified Staff	0-4
Non-Certified Staff	0-7
Other	0-1
Level of Education	
High School Graduate	0-3
Some College / Technical Training	0-2
Technical Training Graduate	0-4
Bachelors Degree	0-8
Masters Degree	1-7
Specialist Degree	2-12
Doctoral Degree	0-1

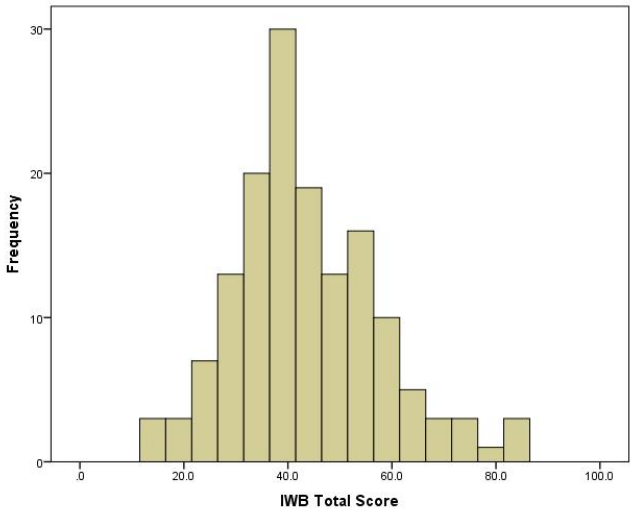
Aim 1 Results

Aim 1-A

Describe middle school faculty/staff IWB (related to student mental health promotion).

The total possible IWB score was 84, indicating a high degree of IWB. Participants' perceived IWB related to student mental health promotion in this study ranged from 14 to 84, with an IQR of 34-52.5 and a median of 41. A histogram describing responses to the IWB related to student mental health promotion scale can be found in Figure 2.

Figure 2. Perceived Innovative Work Behavior Related to Student Mental Health Promotion Histogram



Aim 1-B/1-C:

1-B: Determine associations of middle school faculty/staff IWB (related to student mental health promotion) with selected contextual characteristics, school characteristics, and faculty and staff characteristics.

1-C: Determine the influence of middle school faculty/staff IWB (related to student mental health) with selected contextual characteristics, school characteristics, and faculty/staff characteristics.

Unadjusted and adjusted associations of Faculty/Staff Characteristics with IWB

Results from the unadjusted and adjusted correlations of faculty and staff characteristics with the IWB scores are shown in Table 10. Without controlling for other variables, number of years in K-12 education was inversely associated with IWB scores (*beta* = -0.22, p = .009). Compared to teachers, non-certified staff and other personnel had higher IWB scores (*beta* = 0.26, p = .002); compared to personnel with bachelor's degrees, those that had a lower degree had higher IWB scores (*beta* = 0.22, p = .015). The overall multivariate model of faculty/staff characteristics was statistically significant (*R* = .34, p = .045) and accounted for 12% of the variance in the IWB scores. After controlling for the contributions of the other variables, only then number of years teaching in K-12 education remained statistically significant (*beta* = -.30, p = .029).

Table 10. Summaries of univariate and multivariate associations of faculty/staff characteristics with IWB related to student mental health (n = 144)

	Unadjusted			Adjusted		
Characteristic	***beta***	***p*-value**	***R* (*p*-value)**	***beta***	***p*-value**	***R^2*-Change (*p*-value)**
Age	-.03	.684		.17	.168	
Years in Present Position	-.08	.323		<.01	.989	
Years in K-12 Education	-.22	.009		-.30	.029	
Position (Referent = Teacher)			0.28 (.010)			0.01 (0.609)
Administrator	.02	.817		.05	.572	
Certified Staff/Nurse	.14	.087		.08	.405	
Non-certified Staff/Other	.26	.002		.14	.252	
Education (Referent = Bachelor's Degree)			0.25 (.025)			0.01 (0.867)
< Bachelor's Degree	.22	.015		.09	.481	
Master's Degree	-.07	.452		.02	.888	
Specialist/Doctoral Degree	-.05	.602		.06	.616	

Multiple R=0.34 (p=.045), multiple R^2=0.12, Adjusted R^2=0.06

Note: Square root transformation used to transform IWB, years in present position

Associations of school-level IWB with school and contextual characteristics

Associations among the schools' contextual characteristics and those characteristics with the school-level IWB scores are shown in Table 11. The percentage of students on free/reduced lunch was inversely associated with weighted suspension rate (r_s= -0.68, p = .030) and positively associated with the school Safe and Substance Free School score (r_s = 0.64, p = .046). There were no statistically significant associations of the school and contextual variables with the school-level IWB scores (p > 0.05, see Table 11)

Table 11. Univariate Associations Between School-Level IWB and School/Contextual Variables (n = 10)

	School-Level IWB	CCRPI Score	Weighted Suspension Rate	Safe and Substance Free School Score	Student /Teacher Ratio	School Size (# of students)
CCRPI Score	-.24 (.511)	–				
Weighted Suspension Rate	.14 (.701)	.31 (.385)	–			
Safe and Substance Free School Score	.42 (.229)	-.09 (.803)	-.39 (.260)	–		
Student/Teacher Ratio	-.42 (.229)	.55 (.098)	-.27 (.446)	-.09 (.803)	–	
School Size (# of students)	.48 (.162)	-.44 (.200)	-.13 (.726)	.26 (.467)	.15 (.676)	–
% Students on Free/Reduced Lunch	.40 (.249)	-.61 (.061)	**-.68** (.030)	**.64** (.046)	-.35 (.316)	.28 (.432)

Values in cell are Spearman's rho coefficient (p-value)

Associations of faculty/staff, school, and contextual characteristics with IWB

Results from the hierarchical linear modeling of the association of the individual-level faculty/staff characteristic and the school-level characteristics are shown in Table 12. The overall model was statistically significant (Wald $X^2 = 31.53$, p =.008. Consistent with the findings from the separate models above, after controlling for the effects of the other variables, only the inverse association of the number of years in K-12 education with IWB was statistically significant ($z = -2.37$, p = 017, see Table 12).

Table 12. Hierarchical Linear Model of the Associations of Faculty/Staff, School, and Contextual Characteristics with IWB (n = 144)

Characteristic	Coefficient	z	p-value
Contextual Characteristics			
Student/Teacher Ratio	-.21	-1.89	.059
% Students on Free/Reduced Lunch	.08	0.50	.617
School Size (# students)	.12	1.17	.240
School Characteristics			
Safe and Substance Free School Score	.09	0.92	.355
Weighted Suspension Rate	.14	1.21	.228
CCRPI Score	.15	1.39	.163
Faculty/Staff Characteristics			
Age	.13	1.17	.242
Years in Present Position	-.02	-0.26	.792
Years in K-12 Education	-.29	-2.39	.017
Position (Referent = Teacher)			
Administrator	.02	0.29	.771
Certified Staff/Nurse	.07	0.79	.430
Non-Certified Staff/Other	.11	1.02	.306
Education (Referent = Bachelor's Degree			
< Bachelor's Degree	.11	0.91	.362
Master's Degree	.07	0.71	.476
Specialist/Doctoral Degree	.05	1.19	.234

Note: Square root transformation used to transform IWB, years in present position

Aim 2 Results

Participants responded to questions regarding their perception of the adequacy of the quality and quantity of school mental health services. Quality indicated the degree of excellence of school-provided mental health services, while quantity referred to the adequacy of the amount of services provided by the school.

Summaries of the participants' perceived adequacy of mental health service quantity and quality, along with the perceived student mental health need at the middle school are summarized in Table 13. The median perception of the percentage students needing attention for

mental health issues was 20%, which is consistent with estimates of children and adolescents with mental health problems.[1] Median perceptions of the quantity and quality of mental health services provided by the school fall in the middle of the scale, indicating no strong perception as either adequate or inadequate.

Table 13. Participant Perceptions of Student Mental Health and School Mental Health Services (n = 144)

	Median / IQR
What percentage of students at your school need attention for mental health issues? (n = 129)	20 / 13 - 30
How adequate is the quantity of mental health services provided at your school? (n = 131)	50 / 26 - 75
How adequate is the quality of mental health services provided at your school? (n = 165)	55.5 / 32.5 – 75.5

Overall school-level IWB scores ranged from 34 to 52.1, perception of quantity ranged from 16.5-59.93, and perceptions of quality ranged from 24.5-71.2. A description of these school-level variables can be found in Table 14.

Table 14. School-Level Variables: Average IWB, Perceptions of Mental Health Service Quantity, Perceptions of Mental Health Service Quality by School

School	IWB Score (School average, Min/Max, n)	Perception of Quantity of Mental Health Services (School average, Min/Max, n)	Perception of Quality of Mental Health Services (School average, Min/Max, n)
School 1	39.54, 14/62, 24	57.2, 18/100, 19	58.9, 15/100, 20
School 2	34, 32/38, 3	16.5, 0/33, 2	24.5, 0/49, 2
School 3	47.5, 39/68, 6	59.5, 30/75, 6	59, 33/71, 6
School 4	41.25, 18/77, 24	52.77, 0/100, 22	58.41, 0/100, 22
School 5	39.89, 16/73, 27	42.35, 0/100, 23	42.73, 0/100, 22
School 6	40.89, 22/65, 9	31.5, 12/52, 6	33, 14/50, 6
School 7	52.14, 35/82, 7	57.5, 13/100, 6	60.23, 0/100, 7
School 8	49.44, 25/84, 25	57.17, 0/100, 23	60.39, 0/100, 23
School 9	48.88, 25/76, 8	21.63, 0/60, 8	27.5, 0/60, 8
School 10	44.69, 29/62, 16	59.93, 26/90, 15	71.2, 31/100, 15

Spearman's rho was used to search for associations between school-level IWB and school-level perceptions of adequacy of the quantity and quality of school-provided mental health services (N = 10). A statistically significant intercorrelation among the perceived quantity and quality of mental health services was found (Spearman's rho = .92, $p < .001$). No statistically significant correlations were found between either IWB and perceptions of the

quantity of mental health services (Spearman's rho = .42, p = .229) or IWB and perceptions of the quality of mental health services (Spearman's rho = .55, p = .098).

Additional correlations were examined to further explore the relationship of mental health need and perceptions with IWB at the individual level (n = 144). Correlations among faculty and staff perceptions mental health need and services are shown in Table 15. A strong correlation was observed between perceived mental health service quantity and quality (Pearson correlation = 0.87, p = <.001).

Table 15. Intercorrelations Among Perceived Mental Health Service Need, Quantity, and Quality

	Perceived Mental Health Service Quantity Pearson Correlation (p value, n)	Perceived Mental Health Service Quality Pearson Correlation (p value, n)
Perceived Mental Health Need	-.09 (.334, 120)	-.07 (.443, 119)
Perceived Mental Health Service Quantity		**.87** (<.001, 128)

Results from the regression of these perceptions of service quantity/quality and student need with IWB are shown in Table 16. Pearson's correlations among the variables both perceptions of quantity and quality of student mental health services were statistically significantly associations with IWB scores (r = 0.25, n= 131, p=.005 and r=.21, n=130, and p=.018, respectively). The multiple correlation of all three variables with IWB was statistically

significant (R=0.22, p = .018) and accounted for 5% of the variability in IWB. After controlling for the effects of the other variables and the intercorrelations among them, none of the perceptions contributed a statistically significant association with IWB (p > 0.05).

Table 16. Summaries of univariate and multivariate associations between individual-level IWB related to student mental health and perceived student mental health need, quantity, and quality (n = 117)

	Unadjusted		**Adjusted**	
Characteristic	***beta***	***p*-value**	***beta***	***p*-value**
Perceived Student Need	.04	.066	.06	.505
Perceived Quantity	.01	.007	.21	.276
Perceived Quality	.00	.007	.01	.981

Multiple R=0.22 (p = .018), multiple R^2=0.05, Adjusted R^2=0.02

CHAPTER 5

DISCUSSION

This chapter contains an interpretation of the data reported in chapter four. A discussion of the sample characteristics and each aim is included. Strengths and limitations, implications, and recommendations for future research follow.

Sample Characteristics

A total of 242 surveys were gathered from faculty and staff at ten different middle schools in the Southeastern US. Fourteen of these surveys contained no data and were discarded before data analysis. A further seventy-nine of these surveys contained some data, but did not complete all the questions related to IWB. These surveys were also discarded, as a total IWB score was required for analytic testing. The remaining 149 individual faculty or staff members representing ten different middle schools returned usable surveys.

An analysis of respondents who provided usable surveys and those who did not indicated that there were no statistically significant differences in the groups based on the collected demographic information. Notably, the questions related to IWB were at the end of the survey. Though the survey was designed to be completed in 10-15 minutes, it is possible that the survey length was burdensome for participants working in a busy school environment.

The relatively small sample size indicates limited generalizability for this study. However, since previous research on IWB related to mental health services in schools is lacking,

the data provides a useful first step in understanding how IWB relates to mental health in schools.

Aim One

Description of IWB

The purpose of aim 1-a was to "*describe middle school faculty/staff IWB (related to student mental health promotion."* The potential range for this measure was between 0, indicating that the faculty or staff member did not perceive they engaged in IWB related to student mental health issues at all, and 84, which indicated that the faculty or staff member engaged heavily in IWB related to student mental health issues. The range of reported IWB related to student mental health in this study was between 14 and 84. This indicates that faculty and staff member perceptions of their level of personal innovation related to student mental health ranged from very little to extremely frequently. The median IWB score for this study was 41, with an IQR of 34-52.5. Since this is a first attempt to examine IWB related to student mental health within a school, it is not possible to construct a comparison of this degree of IWB with other faculty or staff at middle schools. It does, however, indicate that the majority of faculty and staff members do perceive that they engage in innovative activities on an individual level to address student mental health issues and that the degree to which faculty and staff engage in this behavior can vary greatly.

The purpose of aim 1-b was to "*determine **associations** of middle school faculty/staff IWB (related to student mental health promotion) with selected contextual characteristics, school characteristics, and faculty and staff characteristics."* The purpose of aim 1-c was to "*determine*

influence *of middle school faculty/staff IWB (related to student mental health promotion) with selected contextual characteristics, school characteristics, and faculty and staff characteristics."* The data for these are presented together in order to facilitate comparisons of unadjusted (aim 1-b) and adjusted (aim 1-c) data.

Faculty and Staff Characteristics Associated with IWB

The associations between faculty and staff reported IWB related to student mental health was examined with reported demographic information. Age, years in present position, role of administrator (as compared to being a teacher), role of certified or school nurse (as compared to being a teacher), highest education at the Masters degree level (as compared to highest education at the Bachelors degree level), and highest education at the Specialist/Doctoral degree level (as compared to the Bachelors degree level) did not show any statistically significant association with reported IWB related to student mental health. Though younger age had been shown to be predictive of IWB in other public service settings[76] it is possible that the age may not have a significant relationship with IWB related to student mental health. It is not clear why this is the case, but it may be related to the differences in the environment and types of interactions between educators and students. The previous study had examined IWB in nursing, where it is possible younger nurses felt more freedom to engage in innovative behaviors due to more structured work environments, whereas younger educators may feel more need to focus on maintaining control in their early professional years. Years in K-12 education, role as non-certified or other staff (as compared to being a teacher), and highest education as lower than bachelor's degree (when compared to having a bachelor's degree) did show unadjusted associations with IWB related to student mental health. However, when all included faculty and

staff demographic information were controlled, only an inverse relationship between years in K-12 education and IWB related to student mental health remained statistically significant. This also remained true in the hierarchical model that accounted for the nesting of variables within the ten schools. Though this association does not appear to be strong (-.30), the lack of prior research on IWB related to student mental health provides no means for comparison.

It is unclear why reported individual-level innovation related to student mental health decreased as years spent working in K-12 education increased. There are a number of potential explanations for this finding. First, it is possible that as faculty and staff spend more time in a school, responsibilities and pressure increase, resulting in less time and energy available to engage in innovative behavior. Personal and structural empowerment, which are concepts related to individual and organizational characteristics that promote the effectiveness of an employee, have been shown in a different study to have a positive association with IWB.[78,79] Though examination of these concepts was beyond the scope of this study, it is possible that these concepts are pertinent to middle school IWB related to student mental health. If structural or psychological empowerment among faculty and staff is limited in middle school environments, it may affect the level of IWB related to student mental health. It is also possible that as faculty and staff spend more time in a school, they determine that IWB related to student mental health is unhelpful or unwanted, and so are deterred from engaging in innovative behaviors.

Contextual Characteristics Associated with IWB

No statistically significant associations were found between IWB and student/teacher ratio, the percentage of students on free/reduced lunch, or school size. These variables had been

selected as indicators of school-level socioeconomic need, which has been associated with mental health disorders in adolescents.[97] Though IWB has been theorized to be more prevalent in areas of higher perceived need[9], in this study, reported IWB related to student mental health did not appear higher or lower in communities with more or less economic resources. It is important to note, however, that all schools did have teachers engaged in various levels of IWB. This implies that no evidence supports variation in the amount of attention given to IWB according to these indicators of community resources. Employees engaged in innovative behaviors in all types of schools in this study. It is possible that the measures chosen did not appropriately capture important aspects of economic need. Measures addressing perceived relative socio-economic need, in particular, may be an important area for future study. Though beyond the scope of this dissertation study, examination of economic indicators in the context of inequality may influence the perception of need by middle school faculty and staff. It is also possible that the perceived need for mental health support is high in middle schools regardless of community socio-economic indicators, due to the high prevalence of mental health problems in early adolescents throughout all socioeconomic strata.[1]

School Characteristics Associated with IWB

No statistically significant associations were found between IWB and the Safe and Substance Free School Score, the weighted suspension rate, and the CCRPI score. These variables had been selected as proxies for school-level indicators of student mental health and achievement. Though need has been theorized to be associated with IWB[9], these particular proxies did not show a relationship in this setting. This indicates that IWB related to student mental health is not more prevalent in schools with more discipline, behavioral, or achievement

challenges, and is instead reported throughout all types of school environments. This indicates that all types of schools may gain from better understanding how to effectively leverage the naturally occurring IWB related to student mental health in their schools.

Aim Two

The purpose of aim two was to *"explore associations of middle school faculty and staff IWB (related to student mental health) with the quantity and quality of strategies to promote student mental health."*

This aim was examined at both the individual level and the school level. Consistent with the theoretical framework, perception of need was hypothesized to be predictor of individual-level IWB. School-level IWB was hypothesized to be a predictor of the perceived quality school-level mental health services.

No statistically significant associations were found between the unadjusted or adjusted individual-level IWB and the hypothesized variables of perceived mental health need, perceived quantity of mental health services, and perceived quality of mental health services. This was unexpected as perceived need has been hypothesized as a predictor of IWB.[9]

No associations were found between school-level IWB and the perceptions of mental health service quantity or quality at the school-level. It is possible that employee perceptions of mental health services did not provide an adequate measure of school mental health services. The low sample size may have impeded this analysis, making this is an area for future study.

Strengths and Limitations

This study was an initial step to better understand faculty and staff IWB and activities specific to student mental health in middle school environments. Little evidence exists to guide middle school leadership seeking to understand the variations in behavior among faculty and staff engagement in student mental health need. This study provides evidence to fill this research gap, and provides initial information on the perceptions among faculty and staff on the amount of individual-level innovative activity related to student mental health within middle schools. The specificity of the IWB measure to student mental health is novel and provides a first attempt to examine IWB related to a specific need.

This study, being an initial examination of mental health-specific innovation, is subject to a number of limitations. These limitations were primarily related to 1) recruitment/sampling, 2) analysis, and 3) methodology.

Recruitment/Sampling

The small sample size and limited number of participating schools limits the external validity of results. This was particularly true for school-level variabilities. Further, the low sample size and variability among responses were significant limitations to the creation of school-level variables from average responses by school. Results should be interpreted with caution.

Analysis

Both linear regression and multi-level modeling were utilized to examine associations among faculty and staff, school, and contextual variables with IWB related to student mental health. Though accounting for the nested nature of the variables was a strength of this study, the ideal model would include more school sites. However, the agreement between the linear model and the multi-level model strengthen the validity of these findings.

Methodology

The cross-sectional nature of this study provided a useful perspective on IWB in middle schools; however, it is not clear how engagement in innovative behavior may change over time. It is possible that faculty and staff reported IWB may vary and this would ideally be taken into account in future studies. Also, the modification of the IWB measure to student mental health may have decreased the ability to effectively capture point-of-service innovations that related to student mental health broadly, encompassing both well-being and treatment of disorders. Though effort was made to define mental health for survey participants as encompassing both mental health wellness and mental health problems, it is unclear if faculty and staff conceptualized the term as intended.

Implications

Several important findings resulted from this study. The first is that individual-level innovation related to student mental health is present in middle school faculty and staff. Middle school leadership should be aware that IWB exists in varying amounts in middle schools. The second important finding is that no statistically significant association was found between IWB

related to student mental health and school or contextual characteristics, meaning that no evidence supports that there is more or less IWB related to student mental health in schools with more or less resources, need, or achievement. IWB appears to have a notable presence in all types of schools. Finally, an inverse relationship between IWB related to student mental health and years in K-12 education was found. It is unclear why innovation related to student mental health appeared to be lower among those who reported the longest employment in K-12 education. It may reflect a sampling bias, the longitudinal nature of employment with increasing roles and responsibilities or it may simply reflect the phenomenon of employee burnout. Nevertheless, it is important for middle school leadership to be aware that variation in innovative behavior may exist among their employees. It is also notable that two variables, younger age and longer experience in present position[76], were found to predict increased general IWB in the scientific literature but were not found to be associated with or influence IWB related to student mental health in this study.

Recommendations for Future Research

Adequate attention to early adolescent mental health promotes healthy individual development and ultimately a health society. The examination of middle school faculty and staff individual-level innovation through the scientific concept of IWB is a novel way to address the mental health needs of students. Primary foci for further research can be categorized as 1) descriptive study of IWB, 2) exploration of further measurement opportunities and timing of data collection, and 3) impact on students and employees.

Descriptive Study of IWB

This study revealed a number of areas for further research. Primarily, since it is clear that IWB does exist in middle schools, more needs to be understood about what these innovative behaviors consist of and how the concepts are best quantitatively described. The IWB scale may not truly reflect how individual faculty and staff members conceive of IWB as it relates to student mental health needs. Further qualitative research may reveal how individual faculty and staff members identify and utilize individual-level innovation and suggest other student or school variables that may be used to quantitatively measure IWB.

Exploration of Further Measurement Opportunities

Further research on how to measure innovation at different levels (individual and school) within middle school environments could provide useful information to further the scientific examination of innovation in schools. Obtaining school-level data through methods other than surveying faculty and staff would allow for a more comprehensive study of innovation without burdening busy faculty and staff members.

Studies that utilize a longitudinal approach to the study of IWB may provide further information on the nature of individual innovation within schools. This approach may also illuminate further associated facilitators and barriers to IWB within middle schools.

Impact of IWB on Student and Employee Outcomes

Ultimately, the degree to which faculty/staff IWB can impact not only student outcomes but also employee outcomes warrants further work. Studies of other organizations have demonstrated the positive impact IWB has on organizational goals and outcomes.[98] Similarly,

IWB could have the same effect in the middle school environment. Once measurement issues, barriers and facilitators have been ascertained, then targeted interventions to enhance faculty/staff IWB can be implemented and tested for efficacy and effectiveness.

Conclusion

Aim One: IWB related to student mental health is present in middle school environments. A moderate inverse association (-.30) between reported IWB related to student mental health and years spent in K-12 education was found. No associations were found associating the level of IWB within schools with school characteristics indicating mental health need and student achievement or with contextual community characteristics indicating community resources and economic disadvantage. *Aim Two:* No associations were found between individual or school-level IWB and individual or school level perceptions of mental health service quantity or quality.

This study indicates that faculty and staff engage in individual-level innovation to address student mental health needs, but these efforts were not associated with any studied school level outcomes. This study indicates there may be differences in variables associated with middle school faculty and staff related to student mental health and other types of general IWB in other environments. Further research is needed to better understand the nature of these individual-level innovations and better understand what effect, if any, they have on school and student outcomes.

Appendix A. Original Measure of Innovative Work Behavior [96]

In your current job, how often do you…

1. Look for opportunities to improve an existing process, technology, product, service or work relationship?
2. Recognize opportunities to make a positive difference in your work, department, organization, or with customers?
3. Pay attention to non-routine issues in your work, department, organization or the market place?
4. Generate ideas or solutions to address problems?
5. Define problems more broadly in order to gain greater insight into them?
6. Experiment with new ideas and solutions?
7. Test-out ideas or solutions to address unmet needs?
8. Evaluate the strengths and weaknesses of new ideas?
9. Try to persuade others of the importance of a new idea or solution?
10. Push ideas forward so that they have a chance to become implemented?
11. Take the risk to support new ideas?
12. Implement changes that seem to be beneficial?
13. Work the bugs out of new approaches when applying them to an existing process, technology, product or service?
14. Incorporate new ideas for improving an existing process, technology, product or service into daily routines?

Appendix B. Modified Measure of Innovative Work Behavior

In your current job, how often do you…

1. Look for opportunities to improve an existing process, technology, product, service, or work relationship related to student mental health?
2. Recognize opportunities to make a positive difference in student mental health in your work, department, school, or with individual students?
3. Pay attention to non-routine student mental health issues in your work, department, school, or the educational system?
4. Generate ideas or solutions to address student mental health problems?
5. Define student mental health problems more broadly in order to gain insight into them?
6. Experiment with new ideas and solutions to student mental health needs?
7. Test-out ideas or solutions to address unmet student mental health needs?
8. Evaluate the strengths and weaknesses of new ideas to address student mental health needs?
9. Try to persuade others of the importance of a new idea or solution addressing student mental health needs?
10. Push ideas related to student mental health needs forward so they have a chance to become implemented?
11. Take the risk to support new ideas related to student mental health?
12. Implement changes that seem to be beneficial to student mental health?
13. Work the bugs out of new approaches to student mental health when applying them to an existing process, technology, product, or service?
14. Incorporate new ideas for improving an existing student mental health process, technology, product or service into daily routines?

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