EXAMINING THE DIFFERENTIAL EFFECTS OF A UNIVERSAL SEL CURRICULUM ON STUDENT FUNCTIONING ON A DUAL CONTINUA MODEL OF MENTAL HEALTH

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Abstract

Examining the Differential Effects of a Universal SEL Curriculum on Student Functioning on a Dual Continua Model of Mental Health

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Social emotional learning (SEL) is being promoted as a universal approach to preventing mental health problems and promoting academic success. Indeed, SEL curricula have been shown to produce positive outcomes for students. However, many studies indicate that SEL curricula work the best for students who at baseline need it the most. These findings raise questions regarding whether SEL programs are associated with universal benefits across the full spectrum of students. Considering this, the purpose of this study was to utilize a theoretically-informed approach to constructing groups of students according to their baseline status on mental health-related measures and examining the degree to which a widely adopted SEL program is associated with positive outcomes for

each of these sub-groups of students. Specifically, the dual continua model of mental health was used to create four categories by assessing functioning on two intersecting dimensions (well-being and psychopathology). As part of a larger study, data from teacher surveys measuring student mental health functioning (N = 7,185) of early elementary age students were collected, and this dissertation examined how student functioning changes on both continua in response to receiving universal SEL instruction from the *Second Step®* curriculum. Chi-squared tests and generalized logistic regression modeling with mixed effects were performed to analyze data and examine differential treatment outcomes based on student functioning at baseline. Results indicated that universal effects were not as strong as expected across dual continua groups, and students with low well-being at baseline benefited the most. Students with high well-being did not demonstrate significant treatment effects. Future implications about the utility of the dual continua model and universal SEL programs in schools, as well as potential directions in research is discussed.

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Chapter 1: Introduction

There are over 50 million youth attending American public schools, and up to 17 million of these students exhibit behavioral, emotional, or social difficulties that interfere with their ability to succeed in school and in other life domains (Christner, Mennuti, & Whitaker, 2009). Indeed, Lean and Colucci (2010) report that up to 20% of K-12 children experience mental health issues, suggesting that there are approximately four to six students in any given classroom who exhibit a need for mental health services. Further, the number of youth who need mental health services increases as children reach school-age and those mental health needs continue well into adolescence (Desocio & Hootman, 2004). This is troubling considering that psychological distress and mental health disorders act as barriers to children's learning and portend a range of other negative short- and long-term outcomes (Lean & Colucci, 2010).

While more attention and advocacy has shifted to treating children with mental health needs in schools, mental health services remain geared towards clinic-based services (Atkins, Frazier, Abdul Adil, & Talbott, 2003), which take place outside of school. However, school mental health research indicates that schools offer ideal opportunities for therapeutic intervention services at the individual and group levels (LeCroy, 2013). In recent years, there has been a surge of interest and support for school-based mental health (SBMH) services since they are ideal settings that offer convenient access and offset many of the barriers that prevent youth from receiving services (Christner, et al., 2009). Moreover, over 50% of states and 75% of school districts nationwide have explicit policies requiring mental health services (Center for Disease Control and Prevention; CDC, 2009). Unfortunately, the CDC reports that only 57% of

schools offer any form of mental health services to students. This statistic indicates that children in many school systems are unable to access needed mental health services, which highlights a need for continued advocacy for SBMH services.

As school districts across the country work to integrate mental health services into educational settings, there has been a push by researchers to expand the focus of mental health services beyond just mental illness and problems (i.e., a disease-based or "deficit" model) to a more complete perspective of mental health. The importance of mental health (psychological well-being) and focusing on mental health protective factors have long been underplayed in mental health research and practice (Herron & Trent, 2000). Indeed, most mental health services focus solely on mental illness while more positive and protective aspects of mental health have largely been ignored. This bias towards detecting and treating mental illness has resulted in a lack of focus on an entire domain of mental health functioning that has significant implications for service and youth outcomes. In order to broaden the perspective of youth mental health and promote more comprehensive access to services, researchers have proposed a dual continua model of mental health —involving mental health *and* mental illness as two separate yet distinct constructs—as a transition away from the narrow, problem-focused, one-dimensional model (Keyes, 2007). Suldo and Shaffer (2008) have argued that practitioners cannot gain a full understanding of youth mental health functioning across different domains without examining both psychopathology and positive mental health traits. This complete picture of mental health has important implications for both research and practice with regard to intervention development and assessment of youth outcomes. The dual continua

model of mental health will be discussed in the next section and explained in depth later in Chapter 2.

Statement of the Problem

Researchers and practitioners in the field of psychology have long held the view that an individual's mental health status existed on a singular dimension (Jahoda, 1958). This conceptualization posits that mental health exists on single continuum that has two opposing poles—mental illness (distress/psychopathology) and mental health (well-being) Adelman & Taylor, 2010). This traditional conceptualization has focused on identifying and treating mental illness and problems (Levitt, Saka, Romanelli, & Hoagwood, 2007) with far less emphasis on promoting well-being and positive mental health traits. Thus, the field of youth mental health has unintentionally established an assessment and diagnostic process that is unbalanced in the direction of treating illness and problems (Lopez, Snyder, & Rasmussen, 2003).

Although a focus on mental health as a singular dimension has its strengths—such as being intuitive and simple (Renshaw, et al., 2014)—it considers mental health or well-being as a secondary concept and does not provide a complete view of the full spectrum of factors and conditions associated with mental health (Herron & Trent, 2000). Historically, if one's mental health was assessed, the individual fell into a category of either being ill or healthy. Trent (1992) refers to this approach as a "no win situation," as it implies an individual can never experience complete mental health unless they are completely free of mental illness. Further, this model does not allow for individuals who may have varying levels of both well-being and psychopathology. Therefore, to obtain a comprehensive and more global perspective of mental health, it is necessary to include

both mental health *and* mental illness as separate but interrelated constructs (Keyes, 2003). Many researchers and practitioners have proposed incorporating a dual continua model that appropriately accounts for both dimensions (Antaramian, Huebner, Hills, & Valois, 2010; Greenspoon & Saklofske, 2001; Keyes, 2002; and Suldo & Shaffer, 2008).

As a dual continua model of mental health examines mental health and mental illness separately, individuals who traditionally would have gone undetected in the traditional binary system will be identified for needing services (Keyes, 2005). The dual continua model lends itself to a categorical approach in which four groups are constructed based on the intersection between an individual's standing on measures of mental health and mental illness (see Figure 1). These four groups represent four different levels of mental health functioning; based on whether they have high or low levels of well-being and high or low levels of psychopathology. The most common terminology among the literature of the dual continua model refer to the groups as: (1) Complete Mental Health, (2) Symptomatic but Content, (3) Vulnerable, and (4) Troubled (Antaramian, et al., 2010). One with Complete Mental Health experiences high levels of well-being and low levels of psychological distress. Those considered Symptomatic but Content demonstrate high levels of well-being as well as high levels of distress. Vulnerable individuals experience low levels of well-being as well as low levels of distress; and Troubled individuals experience low levels of well-being and high levels of distress. Historically, practitioners and researchers grouped people into either the Complete Mental Health group or the Troubled group, only taking into account data representing the amount of distress or problems an individual experienced. In a dual

continua model, those who fall in the Vulnerable and Symptomatic but Content groups are able to be better identified and receive a broader range of services.

The majority of individuals fall in the Complete Mental Health group, while about 10% to 20% of individuals fall into each of the remaining groups respectively (Suldo & Shaffer, 2008; Antaramian, et al., 2010). Greenspoon and Saklofske (2001) examined group membership in an upper elementary-aged sample and found similar results, extending the research by both Suldo and Shaffer (2008) and Antaramian and colleagues (2010) who examined group membership in middle school students. There have also been consistent findings in late adolescence (Suldo, Thalji & Ferron, 2011), young adulthood (Eklund, Dowdy, Jones, & Furlong, 2011), and adulthood (Westerhorf & Keyes, 2010) populations. While the breakdown of group membership varies slightly across studies, it is apparent that in addition to the many individuals experiencing Complete Mental Health, there are many who have varying levels of functioning on both dimensions. In middle school students, Lyons, Huebner, and Hills (2013) found positive mental health and high levels of well-being to be predictive of cognitive, behavioral, and emotional engagement in school. In upper elementary school students, high levels of well-being was associated with positive school and social outcomes (Greenspoon & Saklofske, 2001). This recurring finding implies that regardless of psychopathology level, positive mental health and high levels of well-being serve as protective factors and are associated with better life outcomes. Taken together, a significant amount of research has provided empirical support for the validity of the dual continua model. However, no research to date has explicitly examined its implications for evaluating the impact of prevention programs and interventions to determine whether a child's group membership leads to

differential effects. Implications for this line of research will be reviewed more thoroughly in later chapters.

To more comprehensively examine the impact of universal prevention programs, researchers should take advantage of existing theories—such as the dual continua model—that help explain and classify children's functioning according to their baseline status. This information can then be incorporated strategically into a data analytic plan that involves independence tests and logistic regression. Indeed, adopting this approach has been advocated by researchers, particularly when theory-driven predictions can be made on an a priori basis (Pagano, 2013). Essentially, theories help predict and explain how the nature of the effect will likely depend on the baseline status of the child. However, rarely do researchers employ a priori theoretically-informed criteria to classify or categorize children's baseline status and subsequently conduct more precise analyses based on said classification. As a result, a relatively novel and potentially productive line of research involves utilizing an extant theory, like the dual continua model, to classify children's baseline status and then formulating and conducting comparisons within theoretically constructed groups. This approach will be utilized in examining whether there are differential effects of a universal prevention program for the four mental health groups constructed at baseline. First, stratified chi-squared tests and Cochran-Mantel-Haenszel Tests (or "location shift" tests) will be conducted to detect any differences based on condition. This initial step in the analytic process will determine only whether there are differences in outcome of group membership at the second time point based on baseline group membership and condition; it will not necessarily demonstrate direction or intensity of any effects. Observation of the descriptive statistics can allow for

interpretation; however, more complex analyses are required. Then, more complex regression models will then be developed to further account for other noteworthy variables, nested data, and clustering effects, as the movement of students to more advantageous groups will be measured as a tool for identifying those effects. This line of work will help the field take a step in the direction of examining whether universal prevention programs produce truly universal effects.

Purpose of the Current Study

Considering the above, the purpose of the present study is to examine whether early elementary students respond differently to a universal prevention curriculum depending on their group membership according to the dual continua model. There is a growing amount of literature regarding the dual continua model, group membership breakdown, and the stability of membership over time; however, there are not many studies investigating how individuals from the four groups respond differentially to prevention programs and interventions. This research could not only provide additional evidence supporting the utility of the dual continua model, but also lead to more effective prevention programs and interventions that target different dimensions of student mental health. This is particularly important for universal prevention programs that are designed to benefit all children (i.e., produce truly universal effects). Below, gaps and limitations in the field, an overview of the current study, and SBMH implications are presented.

Current Limitations in the Field

Nearly all of the extant research focusing on the dual continua model has either focused on examining the outcomes associated with each of the groups or stability of group members over time. For example, there are only a few studies examining the

longitudinal stability of group membership using the dual continua model in youth samples (Kelly, Hills, Huebner, & McQuillin, 2012; Lyons, et al., 2013; McMahan, 2012), and none included elementary school students. Generally, those in the Complete Mental Health Group demonstrated the most stability, while those in the other groups showed less stability. Those in the Vulnerable and Symptomatic but Content groups were most likely to move to Complete Mental Health group than show a decrease in well-being or significant increase in psychopathology. Related studies examine the stability over time, whereas there are no studies examining trajectories of group membership as an effect of intervention, treatment, or universal prevention mental health programs.

While there has been some emphasis of utilizing the dual continua model in schools, many of the major studies include middle school samples (Suldo & Shaffer, 2008; Greenspoon & Saklofske, 2001; Antaramian, et al., 2010). As the initial research demonstrating evidence of the dual continua model is promising, there remains much need for research at the elementary, middle, and high school levels. There also is a need for research understanding how the dual continua model could be used to evaluate the impact of universal prevention programs and monitor student progress. The dual continua model can be implemented to establish baseline for sample populations and again to measure treatment effects. As universal school mental health prevention programs are more widely adopted in schools, practitioners would be able to identify the most effective programs.

Overview of the Current Study

The current study intends to understand whether group membership in the dual continua model differentially impacts intervention effects associated with a widely used

universal social-emotional learning curriculum—*Second Step*®—in an early elementary sample. Based on prior research discussed above, individuals are predicted to respond differently to an intervention aimed at promoting positive mental health and reducing negative behaviors and distress. Cross-tabulation procedures will determine descriptive statistics and differences between conditions; and logistic regression modeling will be necessary to account for student level variables and nesting effects. Thus, the four groups of the dual continua model represent four hypotheses representing differential intervention outcomes. To address each research question, three methods will be utilized: 1) multiple stratified chi-squared tests, 2) a Cochran-Mantel-Haenszel test, and 3) generalized logistic regression modeling with mixed effects. Because of the implications associated with falling into certain mental health groups, outcomes or changes in functioning on each dimension will be determined by mental health group membership at the second time point. The following are the four main research questions that will guide this study:

Hypothesis #1. For students classified in the Complete Mental Health group (i.e., low problems and high well-being), to what extent are students in the intervention condition more likely to maintain status in that category at post relative to their counterparts?

Hypothesis #2. For students in the Symptomatic but Content group (i.e., high problems and high well-being), to what extent do students in the intervention condition demonstrate significantly greater reductions in problem behaviors relative to those in the control group? General differences will be demonstrated through movement to the Complete Mental Health group.

Hypothesis #3. For students in the Vulnerable group (i.e., low problems and low well-being), to what extent do students in the intervention condition demonstrate significantly greater improvements in well-being indicators relative to those in the control group? General differences will be demonstrated through movement to the Complete Mental Health group.

Hypothesis #4. For students in the Troubled group (i.e., high problems and low well-being), to what extent did students in the intervention condition demonstrate significantly greater improvements in well-being indicators and reductions in problem behaviors relative to those in the control group? As the least advantageous group, differences on both continua will be demonstrated through movement to the Complete Mental Health group. As there is some evidence showing well-being is a buffer to various problems, movement to the Symptomatic but Content group will also be examined.

Implications for School-Based Mental Health Practitioners

Mental health is not merely the absence of mental illness, but also includes social, emotional, and behavioral health that helps children effectively cope in life (NASP, 2006). Further, the American Psychological Association (APA; 2008) recommends an ecological approach in order to improve child outcomes and increase effectiveness of children and adolescents' mental health services. Since students spend most of their waking hours in the school setting, schools are ipso facto an ideal setting for delivery of universal SBMH services. However, critical mental health factors have long been neglected in the education system, including the promotion of positive mental health and identification and of strengths and assets that optimize well-being (Suldo, Bateman, &

Gelley, 2014). School success and life satisfaction, and the positive indicators of these constructs, remain overlooked—and thus undetected—in students.

Additionally, assessing strengths and positive mental health functioning is imperative for educators and psychologists to better inform and provide preventative and promotional support for students' well-being and social and emotional strengths. As Lopez and Snyder (2003) succinctly write, "Strengths are the springboards for healthy processes and life fulfillments" (p. 463). Positive psychologists continue to call upon use of the dual continua model in mental health services as it places an increased attention on positive mental health, regardless of whether or not symptoms of mental illness is present (Keyes, 2003). By building and fostering protective factors—in addition to treating problem behaviors—schools can successfully begin combatting some of the barriers to learning currently facing many students.

The benefit of adopting a dual continua model of mental health is that it detects both the positive and negative dimensions of mental health. Further, once students are identified as demonstrating varying levels of mental health and mental illness, school psychologists and other SBMH professionals are in a better position for developing and implementing treatment plans. Specifically, SBMH professionals will be better able to target positive and negative aspects of mental health. As described above, the treatment of mental illness alone is not sufficient to effectively serve students who present with a myriad of mental health strengths and weaknesses. Thus, this study will further contribute to the body of research that identifies which mental health factors are best targeted in universal school mental health programs. In addition, it is proposed that this study will better illuminate *for whom* and *to what extent* does school mental health universal

curriculum benefit. Such research will better inform and streamline effective universal mental health practices and provide more insight into how to best target negative aspects of mental health and promote well-being in early elementary students.

The primary goal of most parents is not necessarily just to prevent distress and mental illness, but to also promote skills for their child to develop a productive life (Gilman, Huebner, & Furlong, 2014). Over half of all families consider their school to be the primary source of mental health services for their child (United States Department of Health and Human Services; USDHHS, 1999). Clearly, implementing effective universal mental health services that utilize the dual continua model of mental health is a socially valid practice for both educators and the receiving families. Thus, more comprehensive and well-informed SBMH practices should be thoroughly studied and developed to allow for optimal service delivery and offer more access to all students, but especially those who need it most.

Chapter 2: Literature Review

The literature review for this dissertation is meant to cover the background research and trends in education and that drive the current study, and elaborate on the contributions of this dissertation to the field. This literature review begins with a general overview of the purpose of this study. Then, the call for attention to children's mental health is reviewed. Following this, a discussion of the need for the delivery of evidence-based practices (EBPs) via a multi-tiered system of support will be provided, with a specific emphasis on Tier I universal prevention. Next, there will be a focus on social-emotional learning (SEL) as a critical component of the universal level of supports, with a discussion of the limitations of school-based prevention that build the case for this dissertation study. Next, the strengths and limitations of the traditional disease-based approach to mental health will be discussed followed by a review of the shift towards the inclusion of positive mental health alongside mental illness and a two dimensional model (the dual continua model of mental health). The implications of the dual continua model will be expanded upon and considered in the context of prevention science. Lastly, an argument will be made for the present study in which the dual continua model is utilized within a prevention science perspective. The goal of this dissertation is to shed light on the mental health-related factors that would impact children's response to school-based preventative services, as well as highlight the limitations of existing research as it pertains to universal prevention and promotion of mental health in schools. By utilizing a dual continua model of mental health, the manner in which elementary school students of various levels of mental health functioning respond to social emotional intervention is highlighted. Thus, this dissertation can contribute to the field by offering a model to

evaluate the impact of universal prevention programs and push the field of prevention science forward by attending to both psychological difficulties and strengths when constructing and evaluating prevention programs.

Overview of the Present Study

Schools are inherently social institutions that place significant demands on students' social, emotional, and behavioral (SEB) functioning. From the time they begin school, students must regularly interact with peers and teachers as well as regulate their attention and emotions in the face of academic demands. Unfortunately, a troubling number of students exhibit SEB problems that hinder their school success and that of their peers (Bushaw & Lopez, 2010; Reinke, Stormont, Herman, Puri, & Goel, 2011). Moreover, SEB problems frequently result in more substantial issues within a classroom that compromise the learning environment and impair student outcomes. Thus, students need to acquire social-emotional skills in order to successfully navigate through school, and consequently life, successfully (Gilman, Huebner, & Furlong, 2014; Ruini & Fava, 2015; Cefai & Cavioni, 2014). However, students vary considerably in their SEB readiness entering elementary school, and those who lack these core competencies experience greater risk for future academic, behavioral and social impairments (Dowdy, Furlong, Eklund, Saeki, & Ritchey, 2010; Gettinger, Ball, Mulford, & Hoffman, 2010; Tran, Gueldner, & Smith, 2014).

Implementing social-emotional learning (SEL) curricula in elementary years has been suggested as a promising solution to this dilemma. In fact, promoting social-emotional competence has been linked both to improved academic outcomes and higher well being. SEL has also been associated with better self- and peer-related attitudes,

positive displays of prosocial behavior, and reduced emotional distress (Durlak, Weissberg, Dymnicki, Taylor & Schellinger et al., 2011). A meta-analysis by Durlak and colleagues showed an 11% academic increase among students who took part in SEL curricula. Conversely, lacking mastery in social- and emotional skills has been linked to more severe problems in adolescence, including chronic academic disengagement and high-risk behaviors such as substance abuse, sexual activity, depression, suicide attempts, and violence in high school (Durlak, Dymnicki, Weissberg, Taylor, & Schellinger, 2011).

Given the importance of SEB functioning for students' academic and life success, state and local governments are adopting statewide policies to drive the implementation of SEL curricula. A total of eleven states have established SEL standards to integrate within an existing framework of academic standards (CASEL; Dusenbury, Weissberg, Goren, & Domitrovich, 2015). For example, Washington state has created SEL standards to promote positive social relationships in K-3 students (CASEL; Dusenbury, et al., 2015). Additionally, Illinois has adopted comprehensive guidelines along with SEL benchmarks for students from preschool through 12th grade (CASEL; Dusenbury, et al., 2015). These policies reflect the increasingly common understanding that SEL is an important feature of effective schooling and a key contributor to students' academic success.

Currently, SEL is being implemented as a universal support within schools in order to prevent SEB problems and promote well-being and success. However, a finer look at the literature indicates that students with the highest SEB needs at baseline (e.g., high rates of problem behavior) benefit the most from SEL. A longitudinal analysis involving 2,937 children showed larger intervention effect sizes for students that

exhibited higher base levels of aggressive behavior problems at the beginning of first grade than students who started with low levels of aggression (National Institute of Health, 2010). Additional research (Jones, Brown, Hoglund, & Aber, 2010) has revealed differential effect sizes among students, reporting intervention effect sizes of 0.40 for students with high scores on an aggression index versus an effect size of -.05 for individuals with low scores. Another intervention study demonstrated that the SEL program was associated with a significant reduction in externalizing psychiatric disorders and antisocial behavior compared to a control group, but this association was only found for the highest risk kindergarten subgroup (National Institute of Health, 2007). These findings make intuitive sense considering that students with the most need at baseline have the most room for improvement on outcome measures used to evaluate the impact of the SEL curricula (e.g., measures of psychosocial strengths and difficulties). Although these findings are notable and support SEL programming in schools, they beg the question of whether SEL is beneficial and needed for all students. This is important considering the time, energy and resources required to deliver SEL as a universal approach.

In order to more comprehensively examine the impact of SEL programs specifically, and universal programs more broadly, researchers should take advantage of existing theories that help explain and classify children according to their baseline status. This information can then be incorporated strategically into a data analytic plan that informs hypotheses regarding the nature and direction of effects depending on a child's baseline status (e.g., children who at baseline are low in positive indicator of well-being and low in problem behaviors would be hypothesized to demonstrate change only on

measures assessing positive indicators of well-being and not on measures assessing problem behavior) and therefore lends itself to conducting specific planned comparisons. In fact, planned comparisons are the recommended approach to formulating and conducting analyses when theory-driven predictions can be made on an a priori basis (Pagano, 2013). Essentially, an extant empirically supported theory can help predict and explain how the nature of the effect will likely depend on the baseline status of the child. However, rarely do researchers employ a priori theoretically informed criteria to classify or categorize children's baseline status and subsequently conduct more precise analyses based on the classification. As a result, a relatively novel and potentially productive line of research involves utilizing extant theories to classify children's baseline status and then formulating and conducting planned comparisons within theoretically constructed groups. This line of work will help the field take a step in the direction of examining whether SEL programs produce truly universal effects. Why does the baseline status of the child matter? First, the baseline status of the child dictates the nature of the effect to be evaluated. Students who exhibit high behavior problems at baseline have room for improvement, while those with fewer problems would not. Similarly, students who exhibit low levels of well-being at baseline have room for improvement, while those with higher levels of well-being would not. These groups of students could be compared to one another in a more focused and intentional manner across intervention and control conditions. What is needed is a conceptual model or framework that captures the full spectrum of students and can guide evaluative and analytical decisions.

In order to accurately examine the merits of SEL as a universal support, research must first consider *which* students benefit the most from SEL instruction. To effectively

address this question, researchers can employ a theoretical framework to classify students according to their baseline SEB competencies. The chosen framework should guide decisions about how to formulate more precise research questions and facilitate a priori decisions regarding the classification of students in order to identify group of students for whom SEL is most effective. Considering the above, the purpose of the present study was to utilize an established theory of mental health—*the dual continua model*—to classify children according to their baseline status and examine the nature of the impact of an SEL program according to this classification. Before delving into a discussion of the theory that will be utilized to classify children's baseline mental health and formulate specific research questions that attempt to examine whether SEL produces truly universal effects, the background literature on the importance of school-based mental health and the implementation of evidence-based practices according to a multi-tiered system of support is provided.

School-Based Mental Health (SBMH)

Children's Mental Health

Children can present with a myriad of internalizing and externalizing symptoms, which can cause impairment in their school, home, and peer functioning. For example, common internalizing disorders in children include anxiety, depression, and other mood disorders (Macklem, 2014; Tandon, Cardeli, & Luby, 2009). Desocio and Hootman (2004) add that the proportion of children struggling with problems requiring mental health services increases as they approach school age with internalizing disorders, particularly depression, continuing to increase in adolescence. Children with internalizing symptoms can tend to exhibit excessive worry, psychosomatic complaints, insomnia and

a proneness to sadness (Tandon, et al., 2009). Another category of mental health problems is considered to be externalizing in nature. Externalizing behavior problems represent outward-directed behaviors that are disruptive and potentially harmful to the social environment, including bullying others, antisocial behavior, conduct and oppositional behavior, and hyperactivity and attention difficulties (Macklem, 2014). Externalizing behaviors may be easier to observe; while symptoms associated with internalizing disorders may be harder to detect but are no less impactful to the individual (Lane, Oakes, Menzies, & Germer, 2013). Thompson and colleagues (2011) identify relative stability in childhood externalizing behaviors, indicating a more pervasive long-term problem for these children.

With prevalence rates for internalizing and externalizing disorders as high as 20%, or one in five children (DeSocio & Hootman, 2004; Macklem, 2014), SBMH is as important and necessary as ever, as mental health disorders experienced in childhood are likely to continue into adulthood if not adequately treated (US Public Health Service, 2000). In schools, the most common experienced symptoms and psychosocial disorders are related to anxiety (about 5% to 18% of children), with a typical onset age of 11-years old, when most students are transitioning into middle school (Doll & Cummings, 2008; Kessler, Berglund, Demler, Jin, & Walters, 2005; Perfect & Morris, 2011). Prevalence for childhood and adolescent depression is 4.6% and 8.3% respectively (Perfect & Morris, 2011), with the majority of mood disorders having onset during high school years (Doll, 1996). In adolescents, bipolar disorder is seen in 3% of the population (Perfect & Morris, 2011). Further, it was reported that suicide was the fifth leading cause of death for children 14 years old and younger, and the third leading cause for adolescents older

than 14 years old (National Center for Health Statistics, 2002). Across all youth, Obsessive-compulsive disorder is observed in about 2% of children and adolescents, while conduct disorder is prevalent in 1% to 13% of youth (Perfect & Morris, 2011). In addition to experiencing high rates of mental health problems, school-aged children are exposed to a multitude of negative and detrimental environmental factors on a daily basis (Costello, Angold, Burns, Stangl, Tweed, Erkanli, & Worthman, 1996; DeSocio & Hootman, 2004; Perfect & Morris, 2011; Weist, Goldstein, Morris, & Bryant, 2003). Some risk factors are environmental, such as poverty and family conflict, others are student- or individual-based, such as poor self-regulation or internal aggression, while others are an interaction of the two (Biglan, 2009). Milkie and Warner (2011) found that negative environmental factors are related to an increase in learning problems, externalizing symptoms, and interpersonal problems among a first grade sample of students. Other factors and conditions that may act as barriers to a child's learning are specific learning disabilities, psychological distress, or mental health issues (Lean & Colucci, 2010). Lean and Colucci add that the classmates of students experiencing mental health problems are likely to be indirectly impacted through disruptions to their learning experiences (i.e., "multiple ripple effect").

The need for mental health services becomes truly paramount when reviewing the advantages of mental health well-being compared to the numerous adverse impacts that mental health problems have on student functioning. In schools, problem behaviors are negatively predictive of academic achievement (Malecki & Elliot, 2002). Many problem behaviors, such as bullying, begin to show as early as when children first begin forming social groups (Macklem, 2014). Specifically, students who experience bullying in their

first years of school are at higher risk of developing adjustment problems (Arsenaeault et al., 2006). Christener, Mennuti, and Whitaker (2009) conceptualize a cycle involving mental health issues and learning difficulties having a continuous effect on the other. The authors suggest that a student with mental health problems struggling in school may internalize learning difficulties or academic problems, which will further exacerbate a mental health problem, and continue in a cyclical pattern. Lean and Colucci (2010) highlight a concerning statistic regarding students with specific learning disabilities noting that about 40% will drop out of school and up to 10% of students may have some concurrent mental health diagnosis such as oppositional defiant disorder, anxiety, attention deficit/hyperactivity disorder, or depression. Additionally, there are long-term negative outcomes and societal costs associated with adult mental health problems. While individuals with emotional, behavioral, or learning problems may be more likely to drop out of school, they also experience negative effects on one's future health, earnings, and education (Tyler & Lofstrom, 2009). On a systems-level, Tyler and Lofstrom outline that increased drop out rates means higher spending on public assistance, health care, crime prevention and prison costs, and about $36 billion in lost tax revenue.

Lean and Colucci (2010) add that if schools want to produce positive outcomes, they must address the problem behaviors observed. It is when barriers to learning are neglected or ignored that schools witness negative outcomes. Thus, if intervention is going to occur, it must be early, and those implementing services must be cognizant of the effects that these problems have on multiple areas of functioning. There must also be proactive steps taken to identify and prevent problem behaviors before they occur.

Current State of School-Based Mental Health (SBMH)

There is a troubling trend being noted worldwide that demonstrates a shortcoming of mental health service access and delivery. Schools offer unparalleled access to children and a setting in which a range of efficacious supports can be delivered to address their educational, social, emotional, and behavioral needs. Given that schools have ease of access to children during the day, they serve as prime settings for the delivery of SBMH services (Christner, et al., 2009). The Centers for Disease Control and Prevention (CDC, 2009) have revealed explicit policy in over half of all states and three quarters of all school districts that require student assistance programs—including those focused on offering mental health services. However, only 57% of schools reportedly offer any form of mental health services. Consistent with this finding, Merkangas and colleagues (2010) claim that half of those students experiencing mental health issues do not receive needed mental health services. Further, Lean and Colucci (2010) find that 75% of students overall are receiving inadequate mental health services, reflecting a similar estimate (70%) reported by the USDHHS (1999). When considered altogether, these estimates reveal limited progress in addressing student mental health problems in schools. Adelman and Taylor (2003) suggest that public schools may be reluctant to offer services or are unaware of the need because they are not openly in the health business. While schools may support the idea or promise of mental health services, it is not always reflected in their practices (Adelman & Taylor, 2010). Thus, SBMH advocates remain concerned for students who already have diagnoses or are developing emotional or behavioral problems in that some will not receive adequate services. Moreover, SBMH services must be extended beyond just treatment to include preventative services that

prevent mental health problems from developing or provide a foundation of supports that enable treatments to work more effectively (Helton & Smith, 2004). Doll and Cummings (2008) assert that this preventative approach aims to create psychological well-being for all students that is critical for student success, provides nurturing environments that foster children to "overcome minor risks and challenges," supplies protective supports for higher risk groups of children, and remediates SEB difficulties (p.3).

Additionally, access to SBMH services is particularly important for children from historically-disadvantaged groups, with estimates indicating that one-fifth of all children come from low-income families; a number that has slightly increased over time (Chau, 2009). Of all students, youth receiving special education services are associated with the highest rate of mental health problems, yet only roughly one percent of students identified as emotionally disturbed receive mental health related supports (Garland et al., 2001). Providing mental health care in schools minimizes barriers for the whole student population, including those who come from low-income families or are already experiencing mental health difficulties (Hoganbruen, Clauss-Ehlers, Nelson, & Faenza, 2003). In fact, the New Freedom Commission on Mental Health (2003; p.58) reported that schools are in a "key position" to provide mental health screenings, early interventions, and services since over 52 million children attend schools in over 114,000 schools in the US. In order to advance SBMH and promote better outcomes for children, researchers and policymakers have advocated for the translation of evidence-based practices into the educational sector.

Need for Evidence-Based Practice (EBP)

The mention of "evidence-based practice" (EBP) has become ubiquitous across the fields of medicine, psychology, and education over the course of the past decade. Use of the term originated around the turn of the last century with the emergence of increased scrutiny of research support surrounding commonly-used interventions and training approaches within medical settings (Palermo, 2014). Broadly defined, EBP is best described as the thoughtful application and implementation of available empirical research to the assessment and treatment of individuals (Sackett, Rosenberg, Muir Gray, Haynes, & Richardson, 1996). A push for improving the definition and identification of EBPs was triggered by a seminal article in the Journal of the American Medical Association by the Evidence-Based Medicine Working Group (1992). Their framework for EBP presented a shift in the critical appraisal process used in medicine, with increased emphasis on the following steps: 1) Precise definition of patient problem, 2) Review of relevant original research literature pertaining to the patient problems, and 3) Extraction of implications of literature for application to patient problem. Since publication, this concept has gained increased support and dissemination across fields of health care, social services, psychology and education (Montori & Guyatt, 2008; Rahman & Applebaum, 2010) and guiding frameworks for critical appraisal of quality of research evidence and applicability considerations have proliferated (Guyatt, Rennie, Meade, & Cook, 2014).

Although the No Child Left Behind Act (NCLB; 2001) and the Individuals with Disabilities Education Act (IDEA; 2004) call for the inclusion of EBP, the shift in proposed policy has not yet been fully adopted by schools. Like other fields (e.g.,

medicine, psychology, and public health) there is a significant science-to-service gap in education in which there is lackluster adoption and use of EBPs (Wanzek & Vaught, 2006). Despite published policy encouraging schools to implement EBPs, districts—and more likely individual schools—must often take on EBP installation themselves, and trends show that the majority of schools remain in the dark on how to properly do this. Ringwalt and colleagues (2002) find that only 30% of schools in the United States were implementing EBPs. This number was considered unacceptably low for a decade ago, and Macklem (2014) suggests that the statistic is likely to be similar today. As it is necessary and effective, adopting a schoolwide model that emphasizes the implementation of EBPs would help facilitate significant improvements in outcomes across all levels of educational programming. Implementing EBPs is an ongoing process that requires organizational supports and buy in from everyone involved (Wolter, Corbin-Lewis, Self, & Elsweiler, 2011).

While uptake and use of school-based EBPs may remain at a less than desired rate, researchers have noted a heightened awareness and focus on EBPs to improve services to school-aged children (Weist, Lever, Bradshaw & Sarno Owens, 2014). Kratochwill and Shernoff (2003) argue that school-based practitioners are in dire need of functional and adaptable empirical research to inform their practices. Parents and community advocates and leaders are calling for progress in the quality of practices implemented to addressing problems in schools, and they are no longer willing to accept the implementation of ineffective practices (Yell & Bradley, 2009). Rather than allowing time to pass, waiting for students to fail one-by-one, taking an EBP approach allows

schools to provide efficacious services to all students that are likely to address desired outcomes that have traditionally remained the same or gotten worse with time.

Adaptability of Evidence-Based Practices to the School Context. One concern with regard to the delivery of EBPs is whether they are appropriate and capable of being adapted to the school context without compromising the impact or integrity of the program. Schools serve growingly diverse populations of students and face another challenge in adapting EBPs for cultural and linguistic groups that are not included in a given program's norming process (Merrell & Gueldner, 2010). Thus, providing optimal services to students from different backgrounds can require a bit of adaptation and translation of materials and curriculum. Graczyk and colleagues (2003) question how much modification can occur before the effects can no longer be attributed to the intervention implemented. Some researchers (Lever, Lindsey, O'Brennan, & Weist, 2013) comment on the difficulty of finding interventions that have demonstrated effectiveness in both controlled and natural environments, due to the perceived disparity in laboratory and school settings. A lot of time can pass between the release of empirical findings and availability of an intervention for school-based implementation (Kratochwill & Shernoff, 2003). During this time, legislation, policy, standards, or school dynamics can drastically change, rendering an otherwise strong intervention ineffective or inapplicable. Raines (2008) cautions school professionals against loosely interpreting the adaptability of a program as an opportunity to do whatever one wants in their practices. Practitioners should aim to implement all evidence-based interventions and assessments exactly as they were designed, which would reduce the likelihood of straying too far from

the theory or changing the program to the point where key elements and principles are unrecognizable.

School-Based Prevention

It has long been commonplace for schools to adopt a reactive approach to student mental health, and focus mostly on delivering supports to correct externalizing behaviors that negatively impact learning environments. Galassi and Akos (2007) recognize the significance of problem prevention and problem behavior reduction, and they suggest a stronger emphasis on the promotion of skill development and established strengths. In an ideal educational environment, there is a system implemented that provides safety, early detection, prevention, and intervention of mental health problems, with buffers in place to promote overcoming adversity and psychosocial stressors (Merrell, Gueldner, & Tran, 2008). Adelman and Taylor (2010) claim that student behavioral problems can interfere with a school achieving long-term goals. Therefore, for this system to be successful, the school must see the genuinely realistic mental health goals and utilize existing and proposed resources to achieve these goals (Macklem, 2014). This approach is commonly referred to as a "systems framework," where all aspects and departments of a school are joint in creating a setting where preventative, among other mental health and academic enrichment services, efforts take place (Strein & Koehler, 2008).

Adoption of a Multi-Tiered System of Support (MTSS) Framework

A multi-tiered system of support (MTSS) has been advocated as a way to organize and deliver a spectrum of evidence-based practices to address students' SEB needs (EBPs; Cook, Burns, Browning-Wright, & Gresham, 2011). An MTSS approach to SBMH allows for schools to address the needs for all students. When delivered

appropriately at all levels, students who are at-risk and those who are not all receive mental health services (Christner, et al., 2009). Although MTSS is often used in schools for academic/achievement purposes, this same approach can be used to promote students' mental health and social-emotional functioning (Farrell, 2009). A MTSS model is a proactive, prevention-oriented service delivery framework that aims to meet all students' needs through the implementation of a continuum of EBPs via data-driven decision making (Strein, Hoagwood, & Cohn, 2003). The array of EBPs consists of delivering universal (i.e., Tier 1) supports for all students, selected (i.e., Tier 2) interventions for some students, and indicated (i.e., Tier 3) treatments for a few students. In an MTSS framework, students are seen as falling into a tier representing their level of functioning and need. As their level of need increases, students are provided with increasingly more intensive and tailored services. Different fields utilize this model but use different terminology in referencing the tiers. The public health model refers to the tiers; primary, secondary and tertiary (Macklem, 2014). The medical model uses the terms; universal, selective or targeted, and indicated. School-based and Response to intervention (RTI) models have tier I, tier II, and tier III. For the purposes of this dissertation, language from the medical and RTI service models will be utilized.

Universal Prevention

In an MTSS model, 80 to 90% of students are found to have no behavioral or mental health problems, and are unlikely to develop any (Farrell, 2009). These students represent the first tier, as they benefit from and only need to receive universally provided curriculum. These students are identified through the use of universal screeners, which are assessments administered to all students. Assessing the entire student population

eliminates a lot of bias compared to direct referral and student nomination processes that have long been the norm (Dvorsky, Girio-Herrera, & Sarno Owens, 2013). Rather than relying on negative or data-less referrals, schools can make informed decisions based on school-wide student outcome data. Screening tools are utilized to identify students who are in the at-risk or clinically significant range; and those who are in the average range or not at-risk range make up the first tier. Those identified make up the second and third targeted tiers.

Assessment tools must be aligned with previously mentioned behavioral, social, and emotional goals and expectations of students defined by schools. The tools must also be brief, empirically supported, and easy to administer to all students in a school (Parisi, Ihlo, & Glover, 2014). They should also identify strengths and the presence of skills rather that just difficulties and deficits, as schools will monitor progress and improvement in skill areas as well. To assess validity and reliability within a school, alternate forms of the assessments should be administered in addition to other data collection methods. Teachers and school staff can also collect useful data by universally screening students multiple times throughout the year to inform teaching practice and address specifically targeted needs for individual students (Sailor, 2009). Widely used and accepted universal measures include the Behavioral Emotional Rating Scale (BERS-2; Epstein, 2004), the Social Skills Improvement System (SSIS; Gresham & Elliot, 2008), the Devereux Student Strengths Assessment (DESSA; LeBuffe, Shapiro, & Naglieri, 2009), Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001), The Positive and Negative Affect Scale for Children (PANAS-C; Laurent, et al., 1999) and the Strengths and Difficulty Questionnaire (SDQ; Goodman, 1997).

Because tier I supports are at the universal level, they end up being valuable resources for schools , as they are more cost-efficient per student, and (Grant, Van Acker, Guerra, Duplechain, & Coen, 1998). Since all students receive universal supports—not just tier I students—the primary goal is to increase all students' competencies and basic social- and emotion-regulating skills (Brehm & Doll, 2009). The data collected at this initial step informs a school as to what is working and what is not; thus, changes based on data can be made (Parisi, et al., 2014). Collecting data through universal screening also puts schools in a prime position to provide universal prevention and promotion of skills to students, and overarching goal of schools implement MTSS frameworks (Kamphaus, Reynolds, & Dever, 2014). Christner and colleagues (2009) present three primary goals to universal social-emotional intervention: promoting protective factors to reduce the vulnerabilities to developing mental health problems, preventing other problems before students experience them, and teaching resources to students who may already by at some risk or have some vulnerabilities. All teachers and staff should be trained in the school's chosen program or intervention curriculum.

One example of a universal intervention is a system of schoolwide positive behavior supports (PBS). Schoolwide PBS is the implementation of positive behavioral interventions with the goal of achieving significant change (Sugai & Horner, 2002). The school is transformed into an environment that allows for and maintains implementation of empirically supported interventions that lead to improvement and benefit for all students. The key to utilizing universal programs such as schoolwide PBS is that it addresses a target area—behavior, social, emotional, or learning—for all students. The interventions implemented target problem behaviors demonstrated by the students in tiers

II and III, and aim to prevent those behaviors by those at the tier I level (Yell & Bradley, 2009). Yell and Bradley suggest that the behavioral interventions in PBS can be intensified for students in greater need, so PBS fits nicely in the MTSS framework. Additionally, screening data on all students can inform school staff on who is benefitting and who has further or continuing needs. Those requiring more intense intervention continue to receive tier I interventions such as PBS, but they will also be matched with more targeted intervention in tier II. While five to 20% of students fall in Tier II and five percent require Tier III services (Farrell, 2009), the implications of Tier II and III are not discussed in this dissertation. The focus of the present study will primarily be on a universal prevention program as part of Tier I service delivery.

Social and Emotional Learning (SEL)

One field that has recently developed into its own with high applicability to MTSS frameworks is the previously mentioned social and emotional learning (SEL). SEL has had a rather rapid evolution as it has kept pace with the emergence of positive psychology. Merrell and Gueldner (2010) believe that SEL is actually one of the four primary components of providing a safe, effective, and caring school experience for students. Accordingly, SEL is as essential as academic instruction, a caring and nurturing school environment, and the implementation of positive behavioral interventions and supports (PBIS). Generally, Merrell and Gueldner (2010) state that by addressing the needs met by SEL (i.e., social competency, positive youth development, violence prevention, character education, mental health promotion), schools can begin to stray away from the typical practice of focusing all the energy, time, and resources on students traditionally requiring the most intensive supports.

Although there are numerous definitions as to what SEL officially is, they all generally agree on the same principles. Greenberg and colleagues (2003, p. 468) define SEL as, "The developmentally and culturally appropriate classroom instruction and application of learning to everyday situations. SEL programming builds children's skills to recognize and manage emotions, appreciate the perspectives of others, establish positive goals, make responsible decisions, and handle interpersonal situations." More simply, "SEL is a process through which we learn to recognize and manage emotions, care about others, make good decisions, behave ethically and responsibly, develop positive relationships, and avoid negative behaviors (Zins, Bloodworth, Weissberg, & Walberg, 2004). Because SEL consists of many observable behaviors and well-established human constructs, researchers and practitioners are able to use these constructs to develop SEL programs and test them in both highly controlled and real world field studies. Basing these programs on theoretically supported constructs and proven instructional strategies, school-based professionals are presented with already packaged empirically-based programs to implement in the classroom (Merrell & Gueldner, 2010). One example of a pre-packaged SEL curriculum is *Safe and Caring Schools: Skills for School, Skills for Life* (Peterson, 2005), a commonly used program in schools. While it addresses research-based constructs important to the success of elementary and middle school students, the program itself is not empirically supported (Merrell & Gueldner, 2010). This is not the case for all widely used programs that employ theoretically based principles in their approach. Another example is *Second Step®: A Violence Prevention Curriculum* (Committee for Children, 1988). Also a widely used program developed for elementary and middle school students, *Second Step®* has

gone through various editions (currently on its fourth edition published in 2011), and has been rigorously evaluated with control trials and various efficacy studies. Studies have found strong evidence for its effectiveness in improving skills related to perspective taking and problem solving, as well as decreasing socially aggressive acts such as gossiping and insulting and excluding others (Merrell & Gueldner, 2010). While it is necessary for schools to utilize SEL programs, it remains important to implement only those that are evidence-based in practice, not just in theory.

Outcomes and Effects on Well-being and Psychopathology. While there remains a need for relevant research evaluating the effectiveness and efficacy of universal SEL programs, there are plenty of promising findings pertaining to the outcomes of implementing these programs. First and foremost, the most robust effects of SEL implementation were evident in students who presented with highest need (Schonfeld, et al., 2015; McCartney & Rosenthal, 2011). Further, students who receive SEL instruction are found to benefit across a number of domains, including school attitudes, school behavior, and school performance (Zins, Bloodworth, Weissberg, & Walberg, 2004). With regards to school attitudes, students were found to have a stronger sense of community, increased coping skills, improved attitude toward school, higher motivation to learn and succeed, and a better understanding of behavioral consequences. Students also showed behavioral gains, including increased prosocial behavior, reduced suspensions and absenteeism, reduced aggressive behaviors, and higher levels of engagement and classroom participation. Lastly, SEL was related to higher achievement in several academic subjects (Schonfeld, et al., 2015; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011), as well as an increase in higher-level thinking strategies

such as motivation, conflict-resolution skills, perspective taking, and awareness (Merrell & Gueldner, 2010). Additionally, in two meta-analyses (Wilson, Gottenfredson & Najaka, 2001; Durlak & Wells, 1997), researchers found reduced delinquency, substance abuse, school drop out, and absenteeism, as well as increased cognitive and behavioral forms of self-control and self-competency. There were also small, but meaningful gains, with regards to academic achievement, significant gains in communication skills, and significant decreases in internal and externalizing behavior problems (including depression, anxiety, and disruptive behaviors). The most significant student gains were students aged 7 or younger, which further supports the need for early intervention and an emphasis on early elementary age student mental health. Notably, while SEL has been shown to have overall positive effects, it appears that SEL most benefits those students who were identified as being at-risk on internalizing and externalizing screeners. It is unclear if SEL provides robust positive effects for more typically developing children who do not present with internalizing or externalizing problems. Future research will want to explore more closely how SEL implementation affects typically developing children, especially in light of the fact that school have limited resources and time, as such there may be an unfavorable cost-benefit to universal SEL implementation. Thus, the purpose of the present study is to examine more closely *for whom* and *to what extent* does SEL universal prevention benefit. Such research could provide imperative implications to the amount (i.e., dosage) and delivery models of SEL implementation.

Limitations of SEL Research

There are some limitations in universal SEL prevention research. Specifically, much of the SEL research has focused on younger children, not other at-risk age groups

(Covington Smith et al., 2011). It will be important for future SEL research to expand to other age groups, so that researchers can further develop efficacious universal supports. Additionally, practitioners must take caution when using universal screeners, as over identification of behavioral or mental health problems can create unnecessary or harmful labels, and lead to overuse of valuable or limited resources (Levitt, et al., 2007). Misidentification can lead to inappropriate treatment, medication, and even placement that can have adverse impacts in other areas of the student's life, such as academic, social, and family functioning. Historically, some schools have had the tendency to haphazardly implement preventative programs, only to make decisions based on invalid data (Kamphaus et al., 2014). Identifying the students who could benefit the most from a given intervention or program is key when planning to provide services. It is only when screening and supports are implemented with fidelity that a strong foundation for an effective MTSS school mental health program can be built.

Implications for School-Based Prevention

If school is one of the most crucial environments for influencing early social skills in youth (Weare, 2000), then it is time for mental health professionals to turn their focus back to supporting student mental health. Traditionally, specialists such as school psychologists could attend to mental health and provide intervention to students; however, their role is now defined by a large list of students needing assessment, limiting the part they can play in providing SBMH (Flaherty & Osher, 2003). SBMH practitioners should generally have the freedom to not focus so heavily on academics and test scores, and rather emphasize the factors that affect achievements (Galassi & Akos, 2007). While it is acceptable to set goals for children that they will be successfully functioning adults,

their present needs must also be met to establish positively functioning current states (Roberts, Brown, Johnson, & Reinke, 2002). Too often, teachers and mental health practitioners are solely focused on future functioning and fail to address the challenges the students are currently facing. From a SBMH perspective, emphasizing SEL means two things: 1) skills are taught, modeled and then practiced in multiple natural settings, and 2) a positive school environment is put in place to emphasize the development of these skills (Lazarus & Sulkowski, 2011). Further, Ysseldyke and colleagues (2006) find school psychologists are tasked with two goals regarding mental health; promoting methods to improve competencies for all students regardless of circumstance and fostering a school system that can allow for these efforts to meet the needs of students. Utilizing SBMH professionals' full potential and optimizing the effectiveness of a systems approach are key to successfully implementing school-based prevention programs.

Traditional Disease-Based Approach to Mental Health

Historically, researchers in the field of psychology have viewed an individual's mental health status as existing on a singular dimension. Holding this approach implies that an individual's mental health exists between two polar opposites—either mentally ill or mentally healthy. In doing so, mental health has been operationally defined as the absence of mental illness represented by psychological problems or distress (Adelman & Taylor, 2010). For years, this was the predominant perspective in psychology, which manifested in a disease-based approach to research and practice. This led researchers and practitioners to focus their attention on problematic symptoms that could be associated with previously established and well-formed mental disorders (Levitt, et al., 2007).

This disease-based approach was derived from the traditional medical model (Rubin & Balow, 1971), which categorizes individuals as either being sick/injured/unwell or healthy/well (Doll, Spies, & Champion, 2012). As in the medical field, the primary goal is to identify, diagnose, and then treat diseases or conditions as efficiently as possible to return the person back to health. This approach has resulted in the development of many evidence-based treatments across medicine and behavioral health, which partly explains why it has dominated research and practice for so long.

Strengths and Virtues of the Traditional Model

Although providing insufficient coverage of a person's mental health, the disease-based approach to mental health that emphasizes a singular dimension enables the development of effective practices that target specific problems (Renshaw, et al., 2014). For many years, psychologists adopted a similar approach as medical physicians by identifying those individuals who exhibited symptoms of psychopathology (psychological distress and social and emotional problems) and targeted the reduction of those symptoms via treatment. During this time, there was a heavy emphasis on the problematic symptoms or negative indicators that undermine mental health, and the field was able to make great gains in building the knowledge base of various disorders and methods of treatment. In fact, the disciplines of abnormal psychology, clinical psychology, and developmental psychopathology have produced a substantial body of research on mental health problems, leading to a disease-based approach to treatment (Buckley & Saarni, 2014).

Decades of research focused on alleviating mental illness and psychological distress unearthed several EBPs for practitioners to implement in clinical and treatment

settings. For example, individual cognitive-behavioral therapy (CBT) has been found to be effective at treating childhood depression, and more beneficial than anti-depressants alone (Perera, 2008). CBT is generally considered one of the most overall effective treatments for other affective and behavior disorders (Reinecke, Dattilio, & Freeman, 2003), such as anxiety disorders (Flannery-Schroeder and Kendall, 2000) and obsessive-compulsive disorder (OCD; Franklin, et al., 1998). Additionally, multi-system therapy (MST)—treatment involving multiple different interventions—was developed to effectively address serious juvenile criminal problems in children and adolescents with disturbances in behavior conduct (Bourduin, et al., 1995). These examples demonstrate why the traditional disease-based approach served psychologists so well and was regarded as best practice for a long time before researchers began to push for a shift towards a more balanced and complete view of mental health. While modern conceptualizations of mental health urge for a broader conceptualization of mental health, the disease-based approach has provided for an expansive understanding of mental illness. Therefore, rather than abandon this approach for something entirely new, it should be expanded upon with updated models representing more complete views of mental health.

Limitations of the Traditional Model

With the one-dimension model of mental health, there is an implied relationship between mental illness and positive mental health as embodying an inverse relationship. Keyes (2007) argues that if a one-dimension model of mental health was accurate, then a reduction in an individuals' psychological distress would be equivalent to a concomitant increase in their well-being, and the same would also true when those two factors are

reversed. Wang, Zhang, and Wang (2011) refer to this approach as “negative psychology,” as there was limited to no focus on the strengths or positive indicators of well-being, only problems and difficulties. Although there is intuitive appeal to this assumption, contemporary research has revealed that it is not an accurate conceptualization of mental health. Indeed, well-being has long been ignored or treated as a secondary concept to psychopathology (Herron & Trent, 2000), and its important role in the complete mental health of a person has been greatly underplayed. Viewing mental health as secondary creates an unbalanced perception that an individual with mental illness cannot achieve positive mental health qualities. This inherent bias can be detrimental when providing well-rounded mental health services to people, regardless of any pre-existing mental illnesses.

There are several limitations of the traditional, single dimension approach to mental health. First, it has been argued that it focuses on a narrow subset of outcomes from a broader lifespan developmental perspective (Westerhof & Keyes, 2010). The focus on psychological problems and distress has resulted in a lack of emphasis on positive traits or strengths that enable people to flourish. Second, the disease-based approach suggests that the key to functioning in life is preventing and treating one’s problems, rather than pushing for the promotion of positive strengths, skills, habits, and routines that result in enhanced well-being and life satisfaction. Third, as Herron and Trent (2000) discuss, the traditional approach viewed mental illness and mental health as concepts on opposite ends of the same continuum. Consistent with the perspective at the time, mental health simply represented the absence of mental illness, which limited the development of innovative practices that target promoting and optimizing human well-

being and potential. There was no established understanding of what mental health meant as a distinct construct, rather, it was defined in terms of mental illness.

The disease-based model provides an incomplete view of mental health and is limited in its scope because it does not entertain practices and supports that are amenable to all individuals (Seligman, 2008). Thus, there has been a significant push for a focus on strengths, assets and positive attributes while assessing and treating one's psychopathology, or promoting the well-being and overall life satisfaction of individuals who may not have mental illness but have room for improving optimizing their mental health. Suldo and Shaffer (2008) state that practitioners who assess psychopathology without examining positive mental health traits cannot possibly gain a full understanding of the individual's functioning in several important life domains. Therefore, they could drastically underestimate or overestimate a patient's well-being by focusing only on their psychological distress. This oversight can adversely impact the mental health diagnoses or services one might be receiving. Additionally, there are many people who are overlooked and do not receive supports because of the absence of mental health problems, but who could benefit from supports that help them optimize their well-being and flourish (Keyes, 2005). If individuals are assumed to be more dynamic than just sick or healthy, researchers and practitioners must incorporate a broader conceptualization of mental health that examines both mental illness and mental health as different yet inter-related dimensions.

A Complete State: The Dual Continua Model of Mental Health

To shift the conceptualization of mental health to a more complete and dynamic view of a person's functioning, there must be greater consensus regarding the distinction

and overlap between mental health and mental illness. Indeed, Keyes (2003) and others (Doll, 2008; Suldo & Shaffer, 2008) contend that it is necessary to include both mental illness and mental health when referring to a global perspective of mental health. Although it took some time to gain traction, researchers as early as the 1950s have contended that assuming that mental health and mental illness occupy different poles of a single continuum impedes progress in mental health research and promotion (Korner, 1958). Korner argued that mental health and mental illness must be represented as lying on two different continua. Jahoda (1958) concurred and advocated that mental health cannot appropriately be defined in terms of mental illness or the absence of disease; rather, he postulated that mental health also includes the presence of something positive. A complete state of mental health must contain both concepts and many in the field have proposed fully integrating both aspects—positive and negative—of mental health into a more comprehensive framework that is far more encompassing than the traditional model. The acknowledgement of positive factors in mental health assessment was critical to establishing positive psychology as a field, with researchers and practitioners beginning to agree on the inclusions of strengths and positive aspects within psychological functioning.

Positive Psychology

Many researchers and practitioners hold varying theories on what defines mental health, and these differing theoretical orientations often collide in the research or practice settings (Adelman & Taylor, 2010). However, for the field to continue to make significant advancements and contributions, it is imperative that mental health be treated as a complete state of being (Wang, et al., 2011), with the integration of both problem-

oriented and positive-oriented perspectives. This is where positive psychology comes into play. Positive psychology is the study of strengths, positive traits, and valued subjective experiences—such as well-being, satisfaction, hope, optimism, flow, and global happiness (Seligman & Csikszentmihalyi, 2000). One approach to moving beyond the traditional model involves integrating empirically supported frameworks and conceptual models developed for mental illnesses and psychological disorders along with the relevant literature and knowledge gained from the positive psychology movement. Keyes (2007) believes that the transition away from a one-dimensional approach in theory and practice means abandoning "a truly inexplicably untested empirical hypothesis: the absence of mental illness is the presence of mental illness" (p. 95). The work by positive psychologists and other psychologists who emphasize the well-being and life satisfaction of individuals offer a fresh perspective to broadening the concept of mental health.

Seligman (2003) puts it quite simply; the traditional disease-based model does not fully realize the range of positive outcomes for individuals in the current system of mental health services. For example, a practitioner who only focuses on the negative aspects of mental health unintentionally promotes a culture of stigmatization and predisposed biases and attitudes towards individuals with mental health issues (Clauss-Ehlers & Weist, 2002). When this is embedded in one's practice, it creates negatively perceived labels, and those experiencing mental illness may not receive the appropriate of adequate services. Instead, a broader focus on promoting complete mental health is proposed, through the acquisition of skills, habits, and routines that minimize distress, as well as focus on optimizing aspects of a person's well-being.

Keyes (2003) states that while clinical researchers must no longer ignore mental health; positive psychologists must also not ignore mental illness. A comprehensive view of mental health that includes a focus on psychological strengths and difficulties has implications for both assessment and intervention. The focus on psychological strengths has been primarily viewed as promoting subjective well-being and enabling people to flourish in their relationships and other aspects of life.

Subjective Well-Being and Flourishing. While there are often strict criteria for measuring psychological distress and diagnosing mental health disorders, the scientific literature on subjective well-being is still emerging, particularly as applied to children. Seligman (2011) proposes that the construct of well-being is based off of five key factors: positive emotion, engagement, meaning, accomplishment (achievement), and positive relationships. Others define subjective well-being as the presence of one's positive emotions, absence of negative emotions, and the subjective evaluation of their life (Oishi, Deiner, Suh, & Lucas, 1999). These three components—positive affect, negative affect, and life satisfaction—are critical in assessing one's subjective well-being (Antaramian, et al., 2010). Frederickson (2001) also notes the strong relationship between positive emotions and well-being, and finds that the presence of positive emotions can lead to a significant increase in one's well-being. The area regarding goal achievement and success is noted by Emmons (2003) as playing a crucial role in the way one develops favorable perceptions of his or her life. People often consider their status in life when expressing how happy they are, but many don't necessarily quantify the value of their successes or achievements. There are countless combinations of traits that can be used to construct a well-being dimension, as long as they represent strengths and positives within the

individual and their interaction with their environment. In congruence with Fredrickson's (2001) findings, Seligman (2011) believes that well-being is not completely set for life, and one's status can fluctuate over time and be intervened upon in order to sustain change in level of well-being. Just as mental illness can be treated, well-being functions on its own continuum can be strategically increased through skill development, lifestyle choices, and cognitive appraisal training (e.g., optimistic thinking patterns). Eventually, the end goal for positive psychologists is to design interventions for school, work, and home environments that promote high levels of subjective well-being to help people not just live with minimal distress but to optimize their well-being and flourish.

From a global mental health perspective, society benefits from having a population of flourishing (high well-being and low psychopathology) citizens—not just ones with limited distress—as they are more likely to be productive and contributing members of society (Keyes, 2007). With a strong emphasis on studying individuals with mental illness, Keyes has lead efforts to broaden conceptualizations of mental health to include positive mental health and those who are flourishing. The inclusion of subjective well-being and flourishing has created the impetus for a more comprehensive model of mental health that has implications for both research and practice.

Adoption of a More Comprehensive Model of Mental Health

Traditionally, a single point on a continuum signified either the presence or absence of mental illness. Now, positive psychologists recognize that mental health—represented by positive factors and functioning—falls on one continuum, while mental illness or diagnoses fall as a point on another continuum (Doll, 2008). This dual continua conceptualization of mental health (well-being) inserts a second dimension or continuum

that intersects with the original illness-based continuum (distress) (Keyes, 2003). Therefore, a plane is created where two distinct but interrelated continua can coexist and interact. A visual for the dual continua model of mental health can be seen in Figure 1.

The dual continua model of mental health was born out of repeated calls for mental health services that emphasize the promotion of positive outcomes and flourishing in addition to prevention of illness (Dugdill & Herron, 1995). A framework that assesses and accounts for both well-being and psychopathology can lead to a more accurate picture of an individual's mental health status and better identify appropriate interventions and supports (Suldo & Shaffer, 2008). Various researchers have used a variety of names over the years to refer to this broader conceptualization of mental health, including the dual continua model, the dual-factor model, the two-factor model, and the dual-continua model of mental health. However, as Wang and colleagues (2011) note, despite the different contextualized phrasing, all of the aforementioned phenomena fall under a unifying concept of a dual continua model. Thus, for the purpose of the literature review and research presented here, the model will be referred to only as the dual continua model of mental health.

The dual continua model addresses the most significant limitation of the disease-based model, in that it takes an individual's subjective well-being into account, and creates a more accurate and complete portrayal of mental health functioning. Some have argued that this helps balance the negatively skewed aspects of prior mental health conceptual models that will eventually help advance research and practice (Keyes, 2003). In the model, Keyes (2002) suggests utilizing validated diagnostic instruments to assess the presence of symptoms or indicators of mental disorders, while Keyes (2003)

operationally defines mental health as the emotional, social, and psychological wellness of an individual. For example, Keyes (2002) used criteria for major depressive episodes from the revised third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III R; APA, 1987) to represent the mental illness continuum. To accurately assess functioning on the mental health continuum, Suldo and Shaffer (2008) recommend psychometric measures of subjective well-being or indicators of positive psychological functioning. Other researchers recommend using tools based on constructs from the Character Strengths and Virtues Handbook (Peterson & Seligman, 2004) to measure functioning on the well-being continuum, and the DSM-V (APA, 2013) for mental illness. Under the definition of a singular dimension of mental health, individuals could not demonstrate different levels of mental health and mental illness. Under a dual continua model, individuals with the same level of psychological distress could experience completely differing levels of well-being (Keyes, 2005). According to the previous model, a focus on differing levels of well-being was not emphasized and therefore not intentionally pursued. Research has showed that adults and youth alive have demonstrated both low levels of distress and well-being, consisted with the dual continua model and view that mental health and mental illness are not mutually exclusive (Keyes, 2005). The implications of an expanded model create the possibility for mental health and mentally illness to coexist within a single person. This presents an opportunity to utilize a more encompassing model; one that no longer employs a binary method for distinguishing one's mental health functioning.

Group Membership in the Dual Continua Model. The dual continua model lends itself to constructing groups of individuals based on their standing on measures of

both mental health and mental illness. Utilizing a cut-off procedure consistent with population norms for a given measure, researchers split each dimension into a high category and a low category (Suldo & Shaffer, 2008; Keyes, 2005). The intersecting design of the dual continua and the high and low distinction is what makes up the model's four mental health groups (see Figure 1). The most common terminology among dual continua model literature for the groups are: (1) Complete Mental Health, (2) Symptomatic but Content, (3) Vulnerable, and (4) Troubled (Antaramian, et al., 2010). These quadrant groups represent four different conditions of mental health functioning. An individual who is believed to possess a state of Complete Mental Health demonstrates high levels of subjective well-being and low levels of psychological distress. Ideally, this is the group that all individuals would fall within, as it is the most advantageous to living a fulfilling life that is characterized by low rates of distress or psychopathology. This combined with high well-being indicates that the individual is functioning at an optimal level. This is the group that Keyes (2003) would refer to as "flourishing."

An individual in the next group, Symptomatic but Content, concurrently experiences high levels of well-being and high levels of distress. In the traditional one-dimension model, this would not be considered possible, as high levels of distress implied low levels of well-being, and vice versa. In this group, an individual is able to demonstrate high levels on both dimensions. Members of this group are considered content, because they are believed to possess the positive attributes that contribute to mental health, which potentially offset and help mitigate the negative effects of high levels of psychological distress. Conversely, while those in the Vulnerable group are considered to be at-risk because of low levels of well-being, Symptomatic but Content

individuals are believed to function better, experiencing high levels of subjective well-being similar to those in the complete mental health group. This speaks to the influence of well-being and positive mental health on life functioning.

Another previously undetected group, Vulnerable, refers to individuals who experience low levels of well-being as well as low levels of distress. While someone in this group could take solace in the fact that they are not experiencing significant mental illness, they do not necessarily possess positive traits, lifestyle habits, or routines that contribute to enhancing subjective well-being. Members of this theoretically constructed group are perceived as Vulnerable, because even though there are minimal indicators of mental illness, the person experiences low levels of positive indicators of mental health. These are the individuals who are overlooked under the traditional disease-based model of mental health, because they are not suffering from or do not have noticeable symptoms of mental illness. While vulnerable individuals may not receive treatment to address symptoms of psychological distress and maladaptive behaviors, they would benefit from receiving supports that promote the acquisition of positive skills, habits, and routines that enhance well-being.

Lastly, those who experience low levels of well-being but high levels of distress are considered to fall in the Troubled group. Members of this group have been shown to be the most in need of therapeutic supports that minimize distress and enhance well-being. They experience high levels of mental illness symptoms or meet criteria for psychiatric disorders, without the protective aspects of having high mental health. Falling into this quadrant is considered to be associated with the most disadvantageous outcomes,

as Troubled individuals are most adversely impacted by mental illness and often require the most intense clinical attention.

Research has supported of the validity of the four groups and provided evidence supporting a focus on both mental health and mental illness (Antaramian, et al., 2010). An individual's mental health status appears to fall among multiple continua and is perhaps best represented as a point falling on a plane, rather than on a single line. Westerhof and Keyes (2010) recognize the long-term implications of one's mental health, and they argue that mental health and illness follow these distinct but interrelated trajectories over an individual's lifespan. Though inter-related, individual functioning on both dimensions can be independent of each other, which makes differential diagnoses and evaluation all the more necessary. Therefore, by expanding to four mental health groups, psychologists can more effectively assess an individual's functioning on both dimensions at particular points in an individual's development. Next, research examining the dual continua model across the lifespan is reviewed that provide evidence supporting its validity and utility in research and practice.

Validity of the Dual Continua Model. Research supporting the dual continua model has been considerably steady across multiple age groups, indicating that the framework should be treated as a reliable assessment framework. In upper-elementary aged children—third to sixth grade—Greenspoon and Saklofske (2001) found that over half of their sample demonstrated Complete Mental Health. In two separate studies of middle school students, similar results were produced. Suldo and Shaffer (2008) found that 57% of their early adolescent population fell in the Complete Mental Health quadrant; while 13% were Vulnerable, 23% were Symptomatic but Content, and 17%

were Troubled. The other study, involving seventh and eighth graders identified 67% of their sample as having Complete Mental Health, 8% as Vulnerable, 17% as Symptomatic but Content, and 8% as Troubled (Antaramian, et al., 2010). Though the data from these studies do not align perfectly, the distribution across groups presents a similar story. Additionally, there has been some research with adult samples (Westerhof & Keyes, 2010), where the group formatting is a bit different than the conventional dual continua model used for this study. Westerhof and Keyes utilize a three group model where they include a moderate level of well-being as one of their groups; and found that 32% of their adult sample had complete health, 57% had moderate mental health, and 11% had complete illness. The slight discrepancies in the group percentages can be attributed to a number of factors, including differing demographics, varying sample sizes, and possible developmental differences and experiences. Though the breakdown and layout of the groups is not exact, it remains clear that a majority of people, regardless of age, appear to be functioning with complete mental health (i.e., minimum psychological distress and well-being).

Longitudinal Stability of Group Membership and Outcomes. While literature related to the longitudinal outcomes of utilizing the dual continua model is still emerging, the findings have been promising and of interest to practitioners (Lyons, Huebner, & Hills, 2013). For the framework to be worth using in clinical and school settings, those implementing it must be convinced that the findings yielded by this tool are reliable. Some studies have examined mental health stability specifically utilizing a dual continua model, while others did so more in comparison of the two dimensions. Those studies which assessed the relation between well-being and psychopathology (Suldo & Huebner,

2004; Huebner, Funk, & Gilman, 2000) found that subjective well-being and symptomology for mental illness were relatively stable over time. However, two studies, which have addressed both factors using the dual continua model specifically, tracked movement between the four classification groups: complete mental health, symptomatic but content, vulnerable, and troubled.

In a middle school population utilizing the same dataset as Greenspoon and Saklofske (2001), students were assessed on the dual continua model at two points during the school year, five months apart (Kelly, Hills, Huebner, & McQuillin, 2012). At the second time point, 85% of students initially classified as having Complete Mental Health remained in the group. The remaining students moved to the other three groups: Symptomatic but Content (9%), Vulnerable (6%), and Troubled (1%). For those who were Symptomatic but Content at the first time point, 42% remained in the same group, while 43% moved to the Complete Mental Health group, 7% moved to the Vulnerable group, and 7% moved to the Troubled group Of the Vulnerable students at the first time point, only 29% remained in the Vulnerable quadrant, 46% moved to the Complete Mental Health group, 14% moved to the Symptomatic but Content group, and 12% moved to the Troubled group. Lastly, of those who began in the Troubled group, 47% remained Troubled, 18% moved to the Complete Mental Health group, 23% moved to the Vulnerable group, and 12% moved to the Symptomatic but Content group. Students in groups which are classified as having high subjective well-being (Complete Mental Health and Symptomatic but Content) were more likely to improve or maintain high well-being than those in the Vulnerable or Troubled group. As the Troubled group had the least amount of movement into the Complete Mental Health group, and along with

the movement from the Symptomatic but Content group, it is further implied that having high well-being can act as a buffer for experiencing psychopathology.

In a high school sample, this design was also examined, this time utilizing assessment points one year apart (McMahan, 2012). The findings of this study are in line with those in the middle school population (Kelly, et al., 2012). The Complete Mental Health group was found to be the most stable, while the Troubled group was the second most stable. Similarly, over 40% of students in the Symptomatic but Content group were classified as having Complete Mental Health at the second time point, again indicating that well-being acts as a buffer factor in adolescence.

School-Based Mental Health Implications. Some implications of the dual continua model revolve around other individual factors that are observed in the four mental health groups. For example, Suldo and Shaffer (2008) note that students in their sample with low SES and unmarried parents were overrepresented in the Troubled group and underrepresented in the Complete Mental Health group. Antaramian and colleagues (2010) find that students with low levels of mental health had lower-rated teacher-student relations and less peer support for learning than those in the Complete Mental Health and Symptomatic but Content groups. Greenspoon and Saklofske (2001) identify high levels of neuroticism and low levels of internal locus of control as an indicator of being in the troubled group. They propose intervention targeted at these specific aspects of functioning to guide students from one group to another. It is critical that practitioners recognize trends among the students in their groups, so they can implement wider services that would be beneficial to them. Students experiencing more distress were also found to have lower achievement and academic engagement outcomes, indicating that

subjective well-being is important in facilitating learning (Antaramian, et al., 2010). Practical implications of positive mental health promotion and intervention would go beyond mental health and can impact additional aspects of a student's life.

Limitations of the Dual Continua Model. There are several limitations of the current research on the dual continua model of mental health that are noteworthy and greatly influence the directions of future research. One limitation of the model is its categorical, cut-off approach to constructing groups, which means some individuals appear to arbitrarily fall in a "high" level group while others with very similar scores may fall into a "low" level group. This can be addressed utilizing a number of different data analytical approaches. First, analyses could be conducted utilizing continuous data and examining interaction effects between measures of psychological distress and well-being. Moreover, this can be addressed with the introduction of a third level on the two dimensions, allowing for high, moderate, and low levels of mental illness and mental health. Keyes (2007) suggests that by separating the dual continua in this manner, those with moderate mental illness and/or mental health will be more appropriately identified and eventually served. In the current four-group design, individuals with moderate levels of mental health continue to not necessarily fit the model; and including two additional group should be even more effective for mental health assessment and implementation of services. The construction of nine groups is lively to capture more of the variability across the two dimensions and be more applicable to certain individuals or practitioners' needs. Therefore, if both continua were segmented into three or more categories, to create more specific identification of functioning, more advanced—and possible more informative and useful—models can be developed with individuals falling into more

mental health groups. For example, treatment approaches for students who have high distress and low well-being may differ widely from those students experiencing high distress and moderate levels of well-being. Moderate levels of well-being can indicate that a student possesses some foundation of positive social and emotional regulation skills and would have a different baseline at the start of intervention. Students with low levels of well-being might require intervention starting at the very basic level to build up to a moderate level of well-being. Further, the student with moderate well-being would need more intense and explicit skill-building intervention than a student with the same distress level but high well-being. In the dual continua model, the student in this example with moderate well-being would fall into the same category group as one of the other two students, even though their profiles imply different levels of overall functioning and needs. More specific methods of identifications would be useful in serving students who might be on the border of the cutoffs used in the four-group design. While greater specificity and expansion would be appreciated, there is still plenty to learn from the current development of the four group framework.

A second limitation is not of the design itself, but reflects the dearth of research examining the dual continua model in early elementary-age, or younger, children. There is substantial literature on the utilization of the model in upper elementary, early adolescence, and upwards to adulthood. However, consistent with mental health research in general (Reback, 2010), there appears to be a large gap in the extant body of research for young children. In response to this limitation, Gilman, Huebner, and Furlong (2014) encourage researchers to investigate “the good life” (i.e., positive mental health factors) in children.

Integration of the Dual Continua Model in SEL. Researchers in the field are still coming to a consensus on the developmental period where prevention of illness and promotion of mental health are most impactful, and early childhood may prove to be the most fruitful period. Reynolds and Ou (2010) found that students who report having more positive early school experiences have higher levels of mental and physical health when assessed as young adults. This research suggests that young children are often "sponges" whose environment and experiences have long lasting impacts well into young adulthood. Thus, schools are the most opportune avenues to promote positive mental health given that young children are impressionable and this is an optimal time to begin mental health promotion. An example of early childhood health promotion is Seligman's (2011) "positive education," which involved actively teaching young students about well-being and positive mental health in school. Seligman (2011) reported that learning is significantly enhanced by increased mental health well-being. Thus, early childhood mental health promotion serves two functions: promoting positive mental health and promoting learning, the latter of which is generally considered to be the focus and primary goal of education. As the dual continua model is more widely utilized, it is likely that more research will conducted with early childhood populations, and longitudinal research that studies how early mental health impacts children later in life will continue to grow. From a prevention science perspective, the inclusion of the two distinct constructs alters how the field approaches developing mental health services for implementation in different service sectors including schools, as well as how it evaluates effectiveness of universal prevention programs. Preventative efforts are often not individualized and SEL programs can be directed and can be directed to those not at most

risk (Dynarski & Gleason, 2002). By embracing a dual continua model, researchers of prevention science can more accurately identify those who most need the promotion of positive mental health and skill development, and those who need prevention or early intervention for emerging symptomology. While universal SEL programs are intended to be accessible for all students, it is evident that some students have more need for them and should be accommodated appropriately.

Purpose of this Dissertation

Recent research has begun to demonstrate the importance of addressing both psychological distress and psychological well-being equally, recognizing that the optimal level of functioning occurs when there are high levels of well-being and low levels of psychopathology (Suldo & Shaffer, 2008; Antaramian, et al., 2010; Greenspoon & Saklofske, 2001; Keyes, 2005). In the current research base of SBMH, there are no known studies exploring the use of the dual continua model of mental health to assess level of functioning in early elementary school students, nor examining treatment effects of universal prevention programs utilizing this model. As previously stated, there are only a few existing studies examining the utility of the dual continua model in schools; these studies have focused on the stability of group membership (Kelly, et al., 2012), determinants of group differences (Lyons, et al., 2012), school-related outcomes (Lyons, et al., 2013), and other areas of interest (McMahan, 2012; Renshaw & Cohen, 2014). Review of these dual continua model studies and the expanded SMBH literature implies that group membership is indicative of different outcome trajectories and more advantageous for students who are in a group with high levels of well-being (e.g., Complete Mental Health or Symptomatic but Content). Additionally, group membership

according to the dual continua model has significant implications for how individual students respond to universal prevention programming such as SEL.

The present study is to examine how universal SEL prevention curriculum (*Second Step*®, 4th Edition; Committee for Children, 2011) treatment outcomes differ for students across four different sub-groups of students constructed based on the dual continua model of mental health. This is informed by a need to expand current SEL research to examine whether universal programs, such as *Second Step*®, are associated with truly universal effects for full the spectrum of students. Overall treatment effects of universal prevention and intervention programs can be misleading if they do not account for baseline levels of functioning. Through multiple methods of cross-tabulations and chi-squared testing, associations (between condition and group membership differences between Fall and Spring) can be detected. Further inspection of the descriptive statistics can reveal further implications of potential treatment effects based on group membership at baseline. Because the first two methods used are quite simple and do not control for variables such as student gender, socioeconomic status (SES), and school and class enrollment, more complex analyses are required. By utilizing logistic regression modeling to address nesting effects at the site, district, and school level, growth and changes in functioning across the dual continua of mental health will be measured for each of the four groups to assess how and to what extent each group benefits or responds to the SEL program. Because membership in certain groups is more advantageous than in others, improvement on either continuum (increase in well-being or reduction in distress/psychopathology) will be measured via movement to the Complete Mental

Health group. The specific research questions of the present study, which will be addressed by utilizing various packages of the statistical program R, are provided below.

Hypothesis #1. It is predicted that students in the Complete Mental Health group will not show significant changes in their group membership from fall to spring; with students in the treatment group maintaining Complete Mental Health status at a higher rate than those in the control group. Students in this quadrant are already considered to have optimal functioning and are in the most advantageous group (Antaramian et al., 2010). For students who demonstrate high well-being and low levels of distress, a program promoting positive mental health may offer effective strategies. However, they already possess appropriate levels of functioning and their status on each mental health dimension are unlikely to show measurable change. For reference, Kelly and colleagues (2012) also found this group to be the most stable with 85% of students across one academic year (no treatment was present).

Hypothesis #2. It is predicted that students in both conditions in the Symptomatic but Content group will show no changes in well-being, while students in the treatment group will demonstrate a greater reduction in levels of distress compared to those in the control group. This would be demonstrated by greater movement of students in the treatment condition to the Complete Mental Health quadrant in spring than those in the control condition. As stated previously, students in this group have the advantage of having high levels of well-being, despite possessing some problem behaviors or distress. In one sample, Kelly et al. (2012) found that 85% of students in this group maintained high well-being, and 50% moved to groups with low levels of distress. Similar to those students in the Complete Mental Health group, there is not much room for change on the

well-being dimension; however, students have the potential for reduction in psychopathology.

Hypothesis #3. Overall, Vulnerable students are not expected to demonstrate significant changes on the distress dimension. It is then predicted that students in the treatment condition will demonstrate greater improvements in well-being in comparison to those in the control group. Similar to those in the Symptomatic but Content group, positive significant change will be measured through movement to the Complete Mental Health group. As reference, in a middle school population, only 26% of students moved to groups with high levels of distress, while 75% maintained low distress (Kelly et al., 2012). At the same time, 60% of students in Kelly and colleagues' sample demonstrated high well-being at the second time point, demonstrating the potential for positive change. It is hypothesized that promoting positive social and emotional development will benefit this group immensely, while also buffering against the development of problem behaviors.

Hypothesis #4. It is predicted that in the Troubled group, students in the treatment condition will demonstrate greater effects than those in the control group in two areas: improvements in well-being and reductions in distress. From being in the Troubled group in the Fall (baseline), increase in well-being and reductions in distress can be regarded as movement to the Complete Mental Health quadrant. As well-being is considered a potential buffer, there may be some interest in student movement to either the Complete Mental Health and Symptomatic but Content quadrants. Though it tends to be the smallest group across the various studies utilizing the dual continua model (Antaramian, et al., 2010; etc.), this group is traditionally the most disadvantaged. Along with

experiencing mental health problems and distress, they do not possess as many positive mental health buffers as their classmates in the complete mental health and symptomatic but content groups. Programs that promote positive mental health are made to provide the necessary skills to students in this group, and it is hypothesized that they will show growth on the well-being dimension as well as a lower level on the distress dimension.

Chapter 3: Methods

In this section, a description of the larger study and dataset is provided; participant recruitment and demographics are discussed, as well as the measures used and the data collection process. Additionally, the construction of the mental health groups is explained followed by a description of the proposed statistical analyses.

Research Design

Setting and Participants

This study included students in kindergarten through second grade enrolled in five school districts across the Puget Sound area of Washington and in one district in Mesa, Arizona. School districts ranged from rural to urban settings and were recruited in spring 2012 after approval from the Institutional Review Board (IRB). School districts, teachers, students, and parents of the students consented to participate in accordance with IRB procedures.

Recruitment and retention. The Washington State site was able to secure and maintain the participation of 41 schools across five school districts. On average, 6 randomly selected classrooms per school participated in data collection. A total of 224 teachers agreed to participate and passive parental permission was obtained for 4,891 students, whereas 1.4% of parents declined. The Arizona site was able to secure and maintain participation from 20 schools from the Mesa School District. An average of 5 classrooms per school participated in data collection in Mesa, with a total of 97 teachers. Passive parental permission was obtained for 2879 students. In Arizona, approximately 1% of parents declined.

Student- and teacher-level demographics and descriptive information are displayed in Tables 1 and 2 with statistical tests (t-tests and crosstabulations with $\chi 2$ tests) comparing teachers in the *Second Step*® condition with teachers in the control condition. The total child sample was N=7,419, with n=3,727 students in *Second Step*® condition and n=3,692 students in the control condition. There were more students in the *Second Step*® condition who were in Kindergarten, and fewer who were in 1st grade. With regard to socioeconomic status, 50% and 78% of participating students in Washington and Arizona, respectively, received free and reduced lunch. The racial and ethnicity breakdown of the students was as follows: 45.8% (WA) and 40.1% (AZ) Caucasian, 18.2% (WA) and 0.3% (AZ) Asian, 8.1% (WA) and 5.9% (AZ) African American, 14.7% (WA) and 47.1% (AZ) Latino/a, 1.6% (WA) and 6.3% (AZ) Native American, 1.7% (WA) and 0.3% (AZ) Native Hawaiian or Pacific Islander, 9.9% (WA) and 0% (AZ) reported more than one race, and 20.4% (WA) and 10.1% (AZ) were unknown. This sample of students was relatively representative of the ethnicity distribution of school-age children in the United States (US Census, 2011).

The total teacher sample was N=310 with n=159 *Second Step*® teachers and n=151 control teachers. Teachers' average age was 43.78 (SD = 12.33) and years of teaching experience was 15.24 (SD = 9.97) and 88% were Caucasian, 0.6% Black or African American, 2.8% Asian, 0.9% Native Hawaiian or Pacific Islander, 0.6% American Indian or Alaska Native, 4.3% more than one race, and 2.2% other. In addition, 6% of teachers reported they were Hispanic or Latino/a.

Procedures and Design

Overview. The study used a large-scale, matched, randomized-controlled design with 61 elementary schools randomly assigned within their district to either the early start (treatment; n= 31) or delayed start (control; n = 30) conditions (see Figure 2). The delayed start condition did not receive *Second Step*® curriculum during the time period of this study. Schools within Washington and Arizona were matched on free and reduced lunch and percent of non-White students for design purposes (Murray, 1998). There were no significant differences between treatment and control groups on baseline outcome measures (see results section). The present study includes data from the fall (T1) and spring (T2) assessments gathered in Year 1. The overall study represents an evaluation of the impact of implementing two consecutive years of *Second Step*®.

Training participation. Two separate brief trainings were provided to participating early start/treatment schools: the *Second Step*® curriculum (1 hour) and Proactive Classroom Management (PCM; 3 hours). *Second Step*® training was consistent with standard support operations provided by Community for Children, and intended to increase motivation to implement the program, allow teachers to become familiar with the content, and provide specific examples of how to deliver the program with fidelity. All early start schools participated in the training, and all Kindergarten, 1st, and 2nd grade teachers involved in data collection participated in the *Second Step*® webinar, as determined by attendance sheets collected by school personnel.

The PCM trainings are not standard practice in *Second Step*® implementation, but were a response to district needs at the time of recruitment. A very brief overview of classroom strategies were presented to meet the needs of schools without providing a

sufficiently strong dosage that one would anticipate having a strong impact on classroom behaviors. Specifically, PCM strategies were delivered either via DVD or in-person and focused on skills that would help support, reinforce, and facilitate the engagement in lessons and use of skills covered in *Second Step*®. In particular, the PCM training focused on reviewing and modeling five strategies: (a) positive greetings at the door to pre-correct problem behavior, (b) providing opportunities to respond, (c) employing effective cueing system to regain attention, (d) strategically and intentionally establishing relationships with all students, and (e) teaching, modeling, and reinforcing expected behaviors. These strategies were selected based on prior research demonstrating their efficacy to improve classroom behavior and student engagement (Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008; Sutherland & Wehby, 2001). For greater description of the PCM training see Low, Cook, Smolkowski, & Buntain-Ricklefs (2015).

Supporting Implementation. To support the integrity of implementation of the *Second Step*® curriculum and PCM strategies, monthly tips and reminders were developed and disseminated to teachers. Two tips and reminders were sent per month: one for the *Second Step*® curriculum and the other for PCM strategies. This process began at the beginning of December 2012 and continued until May 2013 for a total of 12 tips and reminders. The tips and reminders were distributed to early start teachers in two ways: (a) email with attachment and (b) school liaisons putting printed copies of tips and reminders in teachers' mailboxes.

Compensation. Participating schools were given a financial stipend for their involvement in the study and school liaisons were given $250 a year for their support in communicating with teachers, distributing materials, coordinating data collection times,

and tracking implementation. Liaisons served as the point person within each school to coordinate research activities and monitored implementation, but they did not directly implement the *Second Step*® curriculum. Teachers were compensated $5 per student per online survey with a $25 bonus for completing the survey on all the students within a three-week window of time. Teachers were also compensated $75 for completion of implementation logs. Early start schools (treatment) were provided the curricula at no-cost, and delayed start schools (control condition) were scheduled to receive the free curricula at the end of data collection period.

Measures

As stated above, data was collected at two time points during the academic year. The fall (T1) academic and behavioral outcome data were collected between October 10th and November 6th 2012. The same data collection procedures were repeated in the spring (T2) data between April 22nd to May 31st 2013. Trained graduate research assistants collected the outcome data.

School demographic and archival data. For the present study, the researchers collected school-level data from publically available on-line sources (e.g., NCES website, school district websites) on the type of school (e.g., public vs. private), number of students, racial/ethnic composition of students, and percentage of students receiving free or reduced-price lunch. These data are potentially useful as covariates in complex statistical models.

Teacher assessment of student behavior and functioning. Teachers completed a number of online surveys of student behavior via the DatStat Illume system (DatStat Inc., Seattle, WA). The first was the teacher version of the Devereux Student Strengths

Assessment – *Second Step*® Edition (DESSA-SSE; Devereux Center for Resilient Children, 2012). The DESSA-SSE is a 36-item standardized, norm-referenced behavior rating scale that assesses the social-emotional competencies that serve as protective factors for children in kindergarten through the eighth grade and map onto the *Second Step*® program and include: (a) skills for learning (α =.95), empathy (α=.95), emotion management (α=.91), problem solving (α=.94), and social-emotional composite (α=.94). The Skills for Learning scale measures a child's ability to use the skills of listening, focusing attention, self-talk, and assertiveness. The Empathy scale assesses a child's ability to identify and label emotions in his/herself and others to take on others' perspectives. The Emotion Management scale measures a child's ability to cope with strong emotions and express in them in socially acceptable ways), and the Problem Solving scale examines a child's ability to effectively handle personal and interpersonal challenges in prosocial ways. An overall Social-Emotional Composite score is also calculated, which is a combination of the four previously described scaled, to indicate the overall strength of a student's social-emotional competence. The DESSA scale, from which the DESSA-SSE was derived as a tool matched specifically for the *Second Step*® curriculum, has been shown to have acceptable reliability and validity evidence (Nickerson & Fishman, 2009).

Teachers also completed the Strengths Difficulties Questionnaire (SDQ; Goodman, 1997) which is a brief 25-item behavior rating scale for 3-16 year olds that assesses functioning in four domains: peer problems (α = .54), hyperactivity (α = .93), conduct problems (α = .85), and emotional symptoms (α = .82). A Total Difficulties score is calculated to represent overall challenges, after empirical support found that the

Emotional Symptoms and Peer Problems scales form an internalizing problems subscale, and the Conduct Problems and Inattention-Hyperactivity scales form an externalizing problem subscale (Goodman, Lampin, & Poloubidis, 2010). Research has shown that it possesses evidence in support of the reliability ($\alpha = .81$) and validity of the obtained scores (Goodman & Scott, 1999).

Construction of the Dual Continua Model Groups

To answer the foregoing research questions by conducting within group analyses, the first step will consist of using the statistical program R to classify each student into one of the four dual continua model groups according to high or low distress/psychopathology and high or low subjective well-being. High psychopathology will be defined according to published norms for the Total Difficulties score on the SDQ (Goodman, 1997) with cut-off points selected as whole numbers closest to the 70th percentile (i.e., high scores above, low scores below). As the Total Difficulties score represents internalizing and externalizing problems and behavior, it will serve as an appropriate representation of the distress continuum.

Average to high well-being will be defined according to published norms for the Emotion Management scale on the DESSA-SSE (LeBuffe, et al., 2011) with cut-off points selected as whole numbers closest to the 30th percentile (i.e., high scores above, low scores below). Emotion management is a primary feature in emotional intelligence, which has a strong positive correlation with psychological well-being (Burrus, et al., 2012). The procedure for determining cut-off values for each dimension was modeled to be consistent with prior dual continua model research with school-aged children (Suldo & Shaffer, 2008). Finally, a variable representing a new mental health group will be created

based on individuals' dichotomized psychopathology and SWB scores at each time point (Time 1 and Time 2). After designating students to one of the four mental health groups (Complete Mental Health, Symptomatic but Content, Vulnerable, and Troubled), descriptive analyses will be employed to summarize the proportion of students who remained in the same group and the sample proportions that changed groups. Preliminary findings at baseline indicate that group membership is consistent with prior research (Antaramian et al., 2010; Suldo & Shaffer, 2008; Greenspoon & Saklofske, 2001) with regards to the breakdown of the dual continua model groups with the majority of students falling in the Complete Mental Health Group and approximately 10-20% falling in each of the remaining groups.

Proposed Quantitative Analyses

For the current study, data are presented for individual students, teachers/classrooms, and schools. To examine the effectiveness of the treatment condition (universal SEL curriculum; *Second Step*®) on student mental health functioning according to group membership on the dual continua model, the proposed plan must account for appropriate analysis of non-independent observations, such as nesting effects within schools and classrooms; and address certain demographic variables and students being evaluated by survey at multiple time points (Raudenbush & Bryk, 2002). By accounting for nested data and clustering effects, the standard error of the models is adjusted, and therefore minimizes the likelihood of a Type I error (false positive of an effect; Gay, Mills, & Airasian, 2009). Additionally, due to mobility and absences on the day of data collection, there are missing data in the sample. Data appear to be missing at random because there are no significant differences between those with complete data and those

with incomplete data on demographics, grade taught, and student assessment scores at fall and spring. To preserve statistical power, multiple imputation (MI; Rubin, 1987; Schafer, 1999) was performed using the MICE packages in the statistical program R, to create datasets with estimated scores replacing the missing data, constrained at the minimum and maximum of valid data (Graham, 2009; Raghunathan, 2004). Further, the algorithm for imputation is predictive mean matching (PMM), which replaces the missing value with the mean value from observations that are similar to the observation with a missing value. Variables used for comparison include student grade, school, reading level in fall, reading level in spring, math level in fall, math level in spring, free-and-reduced lunch status (representing SES), and gender, among others.

Method 1: Stratified Chi-Squared Test

To address the research questions guiding this study, multiple analyses will be performed. First, a stratified chi-squared test (Method 1) was conducted to examine whether there is an association between condition and group membership outcomes in spring (T2), based on group membership in fall (T1). Thus, the null hypothesis of the chi-squared tests are that the row variable (condition) and the column variable (dual continua group membership at T2) are independent given dual continua group membership at T1. Because this data analytic plan uses only part of the data set for each dual continua group (i.e., to examine group movement of the Complete Mental Health group, only students in that quadrant are used for the specific test) multiple tests must be performed. Multiple comparison inflates the Type I error rate, which is usually 5% for a single test and increases when three more tests are added. Therefore, a similar, but stronger, approach to confirm the findings of Method 1 is presented in Method 2.

Method 2: Generalized Cochran-Mantel-Haenszel Test

As basic chi-squared tests are generally only applicable to data that is not clustered (De Silva & Sooriyarachchi, 2012), the generalized Cochran-Mantel-Haenszel test (Cochran, 1954; Mantel & Haenszel, 1959) was used as a more powerful alternative for Method 2. The Cochran-Mantel-Haenszel test is also a more appropriate analytic approach because dual continua group membership outcome variables are more ordinal than categorical and are handled in a way that a rank score is assigned to each variable, and there are more levels than a usual 2x2xk table (Landis, Heyman, & Koch, 1978). The null hypothesis for each research question will be that there is no association between condition (treatment vs. control) and group membership at T2, with group membership at T1 used as stratum, to account for differences at baseline amongst the groups. While this test can guide implications of the research, one limitation of the Cochran-Mantel-Haenszel test is that in some instances, rejecting the null hypothesis does not always imply that the alternate hypothesis is reasonable (Lang & Iannario, 2013). For this reason, only an association between condition and response can be detected, but the nature and direction of that association is not revealed. Along with the findings from Method 1, information can be gathered from the results of this test for each dual continua group by reviewing the descriptive statistics and proportions of group movement, and are presented in text and in tables in the next chapter.

Method 3: Generalized Logistic Regression Modeling with Mixed Effects

To further examine whether the treatment condition was associated with favorable outcomes for each of the dual continua groups, generalized logistic regression modeling with fixed and random effects (a form of generalized linear mixed modeling) was

performed using the statistical package “glmm” in R. After conducting analyses aimed at detecting associations between predictor and outcome variables, additional follow-up analyses are required to understand detailed information about any differences. Additionally, Methods 1 and 2 do not adequately control for potential confounding covariates such as student gender, SES, district, and school and classroom enrollment. Because some of these covariates were used in the assignment process, they must be reflected in the analysis (Rubin, 2008). In order preserve the assumption of independence of the data; the nested nature of the data must be accounted for. Variables of interest at the student level are included in the model as fixed effects, and classroom and school enrollment are entered as random effects, to account for baseline similarities within these clusters. To maintain an acceptable Type 1 error rate, logistic regression requires only one test, where one level of a categorical or ordinal dependent variable is used as a reference (results will be the same regardless of level chosen as reference). A simple logit model will estimate the log odds-ratio for the probability of obtaining a desired outcome, whereas logistic regression will simultaneously estimate the effects of multiple covariates and interaction terms on the odds of the response (Lachin, 2000). For the present study, generalized logistic regression modeling provides the odds-ratio (exponentiated log-odds) of producing a specific outcome (i.e., being in the Complete Mental Health group at T2), and predictor variables effects are presented as a coefficient (i.e., β_o, β_1, β_2, etc. in the formula below) which represents the “change in the odds-ratio” assuming that all other covariates are held fixed. As a formula is created, specific effects and outcomes can be calculated (and presented with standard error, 95% confidence intervals, and p-value) to examine probability of group movement and outcomes can be compared for students in

different groups and conditions at baseline. The first model (Model 1a; 1b) below identifies only if there is a treatment effect on the dependent variable—group membership in the Complete Mental Health group at T2 (or not). The first model proposed is as follows (note: SBC = Symptomatic but Content; V = Vulnerable; and T = Troubled):

$$\text{Logit}(Yijk) = \beta_0 + \beta_1(\text{CONDITION}) + \beta_2(\text{SBC.at.T1})ij + \beta_3(\text{V.at.T1})ij + \beta_4(\text{T.at.T1})ij + \beta_5(\text{Gender})ij + \beta_6(\text{SES})ij + \sim\beta_7(\text{District}) + b^{(1)}_{ij} + b^{(2)}_{i}$$

Where $i = 1, \ldots, 61$ for school i; and $j = 1, \ldots, n_i$ for class j in school i; and $k = 1, \ldots, n_{ij}$ for number of students in class j in school i. Random effects presented below:

$b^{(1)}_{ij} \sim N(0, \sigma_c^2)$, controls for correlation within classrooms, a random effect.

$b^{(2)}_{i} \sim N(0, \sigma_s^2)$ controls for correlation within schools, a random effect.

The second model (Model 2a; 2b) presented below includes the interaction term between condition and group membership at T1, examining differential treatment effects within each subgroup. The outcome measured is the odds-ratio of being in the Complete Mental Health group at T2, based on condition and group membership at T1. This model is presented as follows.

$$\text{Logit}(Yijk) = \beta_0 + \beta_1(\text{CONDITION}) + \beta_2(\text{SBC.at.T1})ij + \beta_3(\text{V.at.T1})ij + \beta_4(\text{T.at.T1})ij + \beta_5(\text{CONDITIONxSBC.at.T1})ij + \beta_6(\text{CONDITIONxV.at.T1})ij + \beta_7(\text{CONDITIONxT.at.T1})ij + \beta_8(\text{Gender})ij + \beta_9(\text{SES})ij + \sim\beta_{10}(\text{District}) + b^{(1)}_{ij} + b^{(2)}_{i}$$

Where i = 1, …, 61 for school i; and j = 1, …, n_i for class j in school i; and k = 1, …, n_{ij} for number of students in class j in school i. Random effects presented below:

$b^{(1)}_{ij} \sim N(0, \sigma_c^2)$, controls for correlation within classrooms, a random effect.

$b^{(2)}_{i} \sim N(0, \sigma_s^2)$ controls for correlation within schools, a random effect.

Because of the advantages of having high well-being observed in previous studies using the dual continua model (i.e., Suldo & Shaffer, 2008; Greenspoon & Saklofske, 2001; Antaramian, et al., 2010, etc.), the two models above will be performed again, with the outcome of interest being membership in either the Complete Mental Health or Symptomatic but Content groups at T2. Although the results of these analyses are of interest, the primary method for measuring positive treatment effects is movement—or maintenance—from baseline group to the Complete Mental Health group.

Research Questions and Anticipated Results

For Method 1, four analyses were conducted, and each one was associated with different predictions. For Method 2, there was also specific a prior hypotheses for each of the dual continua mental health groups. Additionally, it is predicted that there will be an overall association between condition and group membership at T2. General predictions for Method 3 are also consistent with .

Hypothesis #1: Complete Mental Health. As the most advantageous group, possessing high levels of well-being and low levels of distress (Antaramian, et al., 2010), students with Complete Mental Health would likely not be able to demonstrate growth on either dual continua model dimensions or improve as a result of a universal SEL

program. Using the classification system in both fall (T1) and spring (T2), the proportion of students maintaining Complete Mental Health status will be examined for both Early Start (treatment) and Delayed Start (control) conditions. To evaluate the effect of the universal SEL program, it is predicted that a higher proportion of students in the treatment condition will maintain Complete Mental Health membership status compared to those in the control condition. Students in this group at baseline are not expected to demonstrate significant change on either continuum, therefore, it is predicted there will more stability in this group for those in the treatment group relative to those in the control group.

Hypothesis #2: Symptomatic but Content. Similar to the Complete Mental Health group, students in the Symptomatic but Content group are perceived as having little to no room for improvement on the well-being continua. Thus, it is predicted that the proposed analyses will demonstrate that students in the treatment group will be associated with significantly greater reductions on measures of problem behavior than students in the control group. Therefore, in this quadrant, it is expected that students in the treatment condition are more likely to move to the Complete Mental Health quadrant, due to improvements on the distress dimension.

Hypothesis #3: Vulnerable. Individuals in the Vulnerable group are characterized for low levels of problems but also demonstrate low levels of positive indicators of well-being. Considering this, it is predicted that analyses will find a greater increase in measures of positive indicators of well-being for students in the treatment group when compared to students in the control group. This will be observed via group membership change to quadrants represented by high well-being, Complete Mental

Health and Symptomatic but Content. While well-being is believed to be a protective factor, movement to the Complete Mental Health group represents a more desirable outcome.

Hypothesis #4: Troubled. As members of the most disadvantageous group, students in the Troubled group are characterized as possessing low levels of well-being and high levels of distress. Anticipated results of the analyses for the Troubled students are that those in the treatment group will be associated with significantly favorable change on both dimensions—reductions in psychopathology and increase in well-being—compared to the control group. Change on both continua will be represented through movement from the Troubled quadrant to any of the other three quadrants, with the most beneficial outcome being membership in the Complete Mental Health group in spring.

Chapter 4: Results

The purpose of this chapter is to present the findings of the statistical analyses performed for study's four proposed hypotheses. The methods utilized to address missing data will be discussed followed by a presentation of the sample sizes and descriptive statistics relevant to the present study. Then, a review of the results for each research question will be provided.

Missing Value Imputation

As any missing data in the dataset was determined to be missing at random (MAR), it could be assumed that missing values are not directly dependent on themselves. Using the statistical package "MICE" in R to prepare multiple imputation (Rubin, 1987; Schafer, 1999), distributions of missing values per observation were examined for all subjects in the dataset. The percentage of missingness per variable (including those not relevant to the current study but collected as part of the larger study) and observation was also examined. Due to the nature of this study—comparisons across two time points—missing value imputation was performed with a data subset for each time point. Because imputation becomes less reliable as there is more missing data, a threshold of missingness must be set for a single observation (Gurka & Edwards, 2008; Graham, 2009; Raghunathan, 2004). Using a critical threshold of 100 missing values, observations with missing values greater than 100 in both the Fall and Spring data subset were excluded. It was determined that 234 cases were to be excluded, creating a new total sample size (N = 7,185). 53 cases were excluded from the treatment group (n = 3,674), and 181 cases were excluded from the control group (n = 3,511).

Group Membership Baseline and Descriptive Statistics

As mentioned previously in Chapter 3, the four mental health groups were constructed (see Figure 1) using the Emotion Management scale on the DESSA-SSE (LeBuffe, et al., 2011) for the subjective well-being dimension and the Total Difficulties score from the SDQ (Goodman, 1997) representing the psychopathology dimension. For the overall sample (N = 7185), quadrants were established using cut-off points nearest to the whole number at the 30th percentile for well-being and the 70th percentile for psychopathology (see Table 3). 61.85% (n = 4444) of students in the overall study sample were found to be in the Complete Mental health group, indicating high levels of well-being and low levels of psychopathology. 10.83% (n = 778) were in the Symptomatic but Content group, which is characterized by high levels of well-being as well as high levels of psychopathology. 9.05% of students fell in the Vulnerable group, experiencing low levels of both well-being and psychopathology; and 18.27% (n = 1,313) were in the Troubled group, experiencing low levels of well-being and high levels of psychopathology. These findings are consistent with previous research examining dual continua mental health group membership (Antaramian et al., 2010; Suldo & Shaffer, 2008; Greenspoon & Saklofske, 2001).

Because the intention of this study is to conduct planned comparisons between those receiving the *Second Step*® curriculum and those in the control condition, it was necessary to be more specific and view the four mental health groups for each of the two levels of condition (see Tables 4 and 5). For the treatment condition (N = 3,674), the group membership breakdown of students was 62.07% (n = 2,281) in the Complete Mental Health group, 11.65% (n = 482) in the Symptomatic but Content group, 7.73% (n

= 284) in the Vulnerable group, and 18.53% (n = 681) in the Troubled group. For the control condition (N = 3,511), the group membership breakdown of students was 61.61% (n = 2,163) in the Complete Mental Health group, 9.97% (n = 350) in the Symptomatic but Content group, 10.42% (n = 366) in the Vulnerable group, and 18.00% (n = 632) in the Troubled group. Across conditions, the mental health groups are similar in make-up to each other as well as the larger study sample as a whole and are comparable across the two experimental conditions. To begin, one could take the raw data at face value and perform an informal side-by-side comparison of group membership breakdown for each experimental condition at T1 and T2 (See Tables 4, 5, 6, and 7). In the treatment condition, there is a slight reduction in the number of students in the Troubled quadrant compared to the control condition, as well as a higher proportion in the Complete Mental Health group. While this may give the general impression of the benefits of the universal curriculum, this approach is only a simple comparison that ignores actual movement from one dual continua group to another between T1 and T2. Presented below are findings for the three methods utilized for data analysis: 1) stratified Chi-Squared test, 2) Cochran-Mantel-Haenszel test, and 3) generalized logistic regression modeling with fixed and random effects.

Method 1: Stratified Chi-Squared Test

As a simple and straightforward test, a chi-squared test of independence examines the relationship between two variables (Tabachnick & Fidell, 2013). The null hypothesis of the chi-squared test is based on expected frequencies against what is actually observed, and if what is observed is similar to what was expected, the value of χ^2 is small, and the null hypothesis is retained. If what is observed is significantly different from what was

expected, then the value of χ^2 will be large, and the null hypothesis is rejected. A 2x4 table is created with one variable placed as the row (condition; two levels) and the other as the column (Group Membership at T2; four levels), and observed frequencies are organized to examine independence (see Tables 8, 9, 10, and 11 for observed frequencies). As there are four separate chi-squared tests being performed, an association between condition and mental health group membership at T2 may be detected for each sample of students based on mental health group membership at T1. When evaluating the results of chi-squared test, a retained null hypothesis implies independence; while a rejected null hypothesis demonstrates a relationship between the two variables. The results of the four tests are presented for each sample of students, corresponding to their group membership at T1 (also see Table 12). Further observations will be noted within the narrative of Method 2.

Complete Mental Health: The findings of the first analyses, for students in the Complete Mental Health quadrant in fall, was, $\chi^2(3) = 6.33$, $p = .09$. These results imply that there is not a relationship detected between condition and group membership status in Spring.

Symptomatic but Content: For students in the Symptomatic but Content group in fall, the results of the test was, $\chi^2(3) = 5.01$, $p > .17$. This finding indicates that there was not a statistically significant difference between the proportions in each of the dual continua groups at Spring according to the experimental conditions.

Vulnerable: For students who fell in the Vulnerable quadrant in fall, an association was found between condition and group membership in spring, $\chi^2(3) = 14.40$, $p < .05$. A difference between the observed frequencies and expected frequencies

indicates that those in the Vulnerable group in fall differ in their mental health functioning in spring, based on condition. This significant finding was followed up by examining the descriptive data and findings indicated that students in the treatment group (54.58%) were significantly more likely to change into the Complete Mental Health group than students in the control group (40.71%).

Troubled: Lastly, there was also a significant association found for the Troubled group, $\chi^2(3) = 15.84$, $p < .05$, indicating differences in outcomes in spring based on experimental condition. Inspection of descriptive data indicated that students in the treatment condition (18.94%) were significantly more likely to improve on measures of distress and well-being, and, therefore, move to a more desirable dual continua group at spring than students in the control condition (14.08%).

A disadvantage of the chi-squared test is that it only produces a statistic that examines whether there is a relationship between condition and spring group membership. Method 2 was then employed to confirm these findings while conducting only a single test, using each baseline dual continua group membership as a stratum—representing four non-overlapping subgroups of the overall sample, each based on a specific criteria (mental health group).

Method 2: Generalized Cochran-Mantel-Haenszel Test

For the Generalized Cochran-Mantel-Haenszel Test, similarly to Method 1, each dual continua group (at T1) is treated as a stratum, and the comparisons can be performed in a single analysis instead of multiple tests. By reducing the number of tests conducted to one, the Type I error rate is minimized. While the observed frequencies are the same as in Method 1 (see Tables 8, 9, 10, and 11), the expected frequencies are different using

this approach, as the whole sample is included in the analysis. Rather than the four separate 2x2 tables produced for output in Method 1, a Cochran-Mantel-Haenszel test would utilize a single 4x2x4 to test the independence of three categorical variables. Because mental health group membership (four levels) could be interpreted as being more of an ordinal variable than categorical, they are ordered by rank and a generalized Cochran-Mantel-Haenszel test is used (Landis, Heyman, & Koch, 1978). Though this analysis is more comprehensive than those used in Method 1, the null hypothesis remains the same; if there are significant differences between the observed and expected frequencies, the variables are not independent. One reason the data are reviewed in addition to the test results at face value is that the alternative hypothesis—the variables are not independent—is not always reliable (Lang & Iannario, 2013). Thus, it is necessary to thoroughly examine the descriptive statistics and proportions of group membership at T2 beyond simply accepting the chi-squared value or *p*-value. If both the test result and the proportions are consistent, the findings become more defensible.

For the overall sample—students across all four mental health groups—there was a relationship found between condition and group membership at T2, $\chi^2(3) = 27.00$, $p < .05$. The outcome for dual continua group at baseline (also seen in Table 13) are presented below along with descriptions and initial conclusions of the observed frequencies.

Complete Mental Health: Consistent with Method 1, the generalized Cochran-Mantel-Haenszel test did not find an association between condition and group membership at T2, $\chi^2(3) = 6.33$, $p > .05$. Although there were no significant differences detected in the results, it remains worthwhile to review the output data for trends or

relevant information. In Table 8, side-by-side review of outcomes at T2 show that there is not much difference between the proportion of students who maintain Complete Mental Health status in the treatment condition (77.38%) and those in the control condition (76.19). Similarly, there is little difference in movement to the Symptomatic but Content (treatment = 8.33%; control = 7.49%), Vulnerable (treatment = 8.24%; control = 10.31%), and Troubled quadrants (treatment = 6.05%; control = 6.01%). Without controlling for possible covariates and accounting for nested data, there does not appear to be differences in outcome based on condition.

Symptomatic but Content: For students in the Symptomatic but Content quadrant at baseline, there was no association found between condition and group membership at T2, $\chi^2(3) = 5.01$, $p > .05$. Although the null hypothesis is retained, a review of proportions of group membership in spring (see Table 9) suggests there may be some benefits experienced by students receiving the SEL curriculum compared to those who did not. First, students in the treatment condition demonstrated a slight advantage by being in a group characterized with high subjective well-being at T2. For maintaining status in the Symptomatic but Content group, more students remained in the group for the treatment condition (32.48%) than the control condition (30.57%). Additionally, a higher proportion of students in the treatment condition (35.75%) moved to the Complete Mental Health group than in the control condition (32.00%). Movement to the Complete Mental Health group represents an improvement for students in the Symptomatic but Content group, as the shift demonstrates a significant reduction in psychopathology. Possible benefits of receiving the treatment are also demonstrated by slightly lower proportions of movement to the Vulnerable (treatment = 3.97%; control = 7.14%) and

Troubled (treatment = 27.80%; control = 30.29%) groups. As students who possess high well-being as well as high psychopathology have often been overlooked in mental health services, it is necessary to further examine potential treatment effects in Method 3.

Vulnerable: As in Method 1, the null hypothesis was rejected for Vulnerable students, as the generalized Cochran-Mantel-Haenszel test found a relationship between condition and group membership at T2, χ^2 (3) = 14.37, $p < .05$. Because this group demonstrates low levels on both the well-being and distress continua, improvement is best demonstrated as movement to the Complete Mental Health group. In Table 10, a significantly higher proportion of students in the treatment condition (54.58%) are seen moving to the Complete Mental Health group at T2, while only 40.71% of students in the control condition move there. Similar proportions of students move to the Symptomatic but Content group (treatment = 4.23%; control = 3.55%), while there are considerable differences in maintaining Vulnerable status (treatment = 26.76%; control = 33.33%) and movement to the Troubled group (treatment = 14.44%; control = 22.40%). Just as those in the Symptomatic but Content group, students in the Vulnerable group tend to be overlooked in the realm of SBMH. Because they share a quality with those in the Complete Mental Health group—low levels or an absence of mental illness—they have traditionally been assumed to be “healthy,” and not in need of mental health services. While more complex analyses will be performed to examine the nature of possible treatment effects, the generalized Cochran-Mantel-Haenszel test presents evidence that students in the Vulnerable group may benefit from universal SEL programs than those already demonstrating high levels of well-being.

Troubled: For students in the Troubled group at T1, an association was also found between condition and group membership at T2, χ^2 (3) = 15.82, $p < .05$. As viewed in Table 11, similar proportions of students were in the Vulnerable group at T2 (treatment = 8.22%; control = 7.75%), while less students in the treatment condition (53.01%) maintained Troubled status than those in the control condition (63.45%). Additionally, movement to the Complete Mental Health (treatment = 18.94%; control = 14.08%) and Symptomatic but Content groups (treatment = 19.82%; control = 14.72%) indicates an improvement on both continua for students in the treatment condition. As the group generally considered to be the most disadvantaged, identifying interventions and programs that can have positive effects is instrumental in SBMH.

Given significant differences for students in the Vulnerable and Troubled groups at baseline, there is evidence for an effect of the universal SEL curriculum on group membership at T2. In addition to statistically significant test results, a review of the proportions and descriptive statistics indicated that students with low levels of well-being are in a better position to benefit from the treatment in the present study. There are slight differences in the outcome of the Symptomatic but Content group; however, the analysis does not support it as significant. Students with Complete Mental Health did not demonstrate differences based on condition.

In both Method 1 and Method 2, results yielded indicate that there may be an effect of condition, and a breakdown of the proportions of group movement imply that certain students within the treatment condition may respond differently to the universal program. More complex analysis is required to examine the nature of any treatment effect

and to account for nested data and possible covariates; and will be discussed in the next section.

Method 3: Generalized Logistic Regression Modeling with Mixed Effects

One benefit to utilizing generalized logistic regression modeling with fixed and random effects is that the analyses can provide more detailed information about the associations detected in more simple tests of independence. This approach is also more flexible than other models and levels of the dependent variable (dual continua group membership at T1) do not need to be ordered (Tabachnick & Fidell, 2013). Relative to Methods 1 and 2, this method includes potential covariates (i.e., student gender, SES) and random effects (i.e., school and classroom enrollment), which accounts for nested data. Logistic regression allows for an emphasis on the probability of a specific outcome for each case of interest. The model produces the logit (log-odds), which can be exponentiated (e^x) and converted to an odd-ratio. With this, results can be presented and compare cases based on which condition they are in, or an interaction of their condition status and baseline mental health group membership (e.g., a student in Condition A is five times more likely to have outcome of interest than a student in condition B). Model 1a will predict the odds-ratio of a student being in the Complete Mental Health group at T2, based on condition. Model 1b will predict the odds-ratio of a student in either the Complete Mental Health or the Symptomatic but Content group at T2, based on condition. For Model 2a and 2b, the interaction between group membership at T1 and condition will be tested, and the odds-ratio predicted for being in the Complete Mental Health group (Model 2a); or for being in either the Complete Mental Health or Symptomatic but Content group (Model 2b).

As presented early in this chapter (see Tables 8, 9, 10, and 11), side-by-side comparisons of proportions of group membership at T2 (based on condition and group membership at T1) indicated some differences in response to the universal SEL curriculum by students the treatment condition. Tables 14 and 15 display the mean and standard deviation of scores on the well-being and distress dimensions for T1 and T2, along with the average change in scores over the academic year. On the well-being dimension (see Table 14), for the treatment condition, students in the Vulnerable (treatment = 6.286; control = 5.123) and Troubled (treatment = 5.686; control = 4.590) groups at T1 appeared to have greater improvement than students in the control condition. For the Complete Mental Health (treatment = 1.145; control = 0.690) and Symptomatic but Content (treatment = 1.161; control = 0.674) groups, students in the treatment condition demonstrated greater improvement at T2, but it is noticeably less of a difference between conditions than the other two dual continua groups. Also, across conditions, students in the Vulnerable and Troubled group generally demonstrated much greater improvement than those in the Complete Mental Health and Symptomatic but Content groups, indicating those with low well-being may shower greater response to this intervention. This was not surprising, as students in the Vulnerable and Troubled group have more room for improvement on the well-being dimension. On the Psychopathology dimension (see Table 15), there does not appear to be a significant difference in response by students within the Complete Mental Health group at baseline (treatment = 0.473; control = 0.834), regardless of condition. Students in the Symptomatic but Content (treatment = -2.211; control = -2.152) group also do not show differential responses based on condition, although they demonstrate greater reduction in psychopathology than

students in the Complete Mental Health group. These students also experienced greater reductions on this dimension than those in the Vulnerable (treatment = -0.648; control = 0.590) group. Although Vulnerable students showed little change overall, students in the treatment condition evidenced slightly greater improvement than those in the control condition. Students in the Troubled (treatment = -3.587; control = -2.556) group demonstrate the greatest reduction in psychopathology of all mental health groups, with those in the treatment condition experiencing more change than those in the control condition. As Troubled and Symptomatic but Content students have the most room to improve on this dimension, greater change is expected compared to the other groups. The models presented below will test for main effects of condition as well as differential effects for each dual continua group.

Model 1a: Main Effect of Condition on Outcome (Complete Mental Health status)

For Model 1a, the dependent variable is membership in the Complete Mental Health group at T2. A treatment effect was detected for the entire sample (see Table 16), with students in the treatment condition benefitting from the universal SEL program more than those in the control condition. The change in odds-ratio for condition is 1.254, 95%CI (1.002, 1.569), $p = .048$. This means that a student in the treatment condition is 1.254 times more likely to be in the Complete Mental Health group at T2 than if they were in the control condition. There also appear to be some effect of gender on the outcome, as males were only 0.709 times as likely to be in the Complete Mental Health group as females. Additionally, students who received free and reduced lunch (FRL) services were 0.871 times as likely to be in the Complete Mental Health group in Spring than those not receiving FRL services. The advantages of being female and not receiving

FRL were found in most of the logistic regression models, and implications of this will be discussed in Chapter 5. This model examines an overall treatment effect, and does not breakdown the sample according to dual continua group membership at T1. This will be examined below in Model 2a.

Model 1b: Main Effect of Condition (Secondary Model)

Because of the advantages and protective-factors of possessing high levels of well-being (i.e., Suldo & Shaffer, 2008), a secondary model to Model 1a examines treatment effects on group membership at T2 of either Complete Mental Health or Symptomatic but Content versus membership in one of the other groups. This creates a wider range for what is accepted as improvement or significant response to the universal SEL curriculum than the parameters of Model 1a. Predictably, Model 1b produced a significant treatment effect (see Table 17), as students in the treatment condition are 1.520 times more likely to be in the Complete Mental Health or Symptomatic but Content group at T2 than those in the control condition. The 95% confidence interval for the odds-ratio is (1.122, 2.061), $p = .007$. As in Model 1a, covariates gender and SES appear to demonstrate some differences on the outcome of interest, and the implications of this will be discussed in Chapter 5. These results are for an overall treatment effect, and differential treatment effects based on group membership at T1 are examined in Model 2b.

Model 2a: Interaction Effects Within Dual Continua Groups

While initial logistic regression models found overall treatment effects on being in the Complete Mental Health group at T2, there is interest in examining treatment effects within each dual continua group. Based on previously presented results and

observations, and interaction of condition and group membership at baseline is expected, and was found (p = .046, see Table 18) when this regression model was performed. Gender differences (i.e., males less likely to be in the Complete Mental Health group) were again noted, and will be discussed in Chapter 5. See Table 19 for the intervention effects within each dual continua group for Model 2a. (Dependent variable: Odds-ratio of being in Complete Mental Health group at T2).

Complete Mental Health: For this group at baseline, students in the treatment condition were found to be 1.160 times more likely to be in the Complete Mental Health group at T2 than those in the control condition, 95%CI (0.893, 1.508), p = .265. Although the differences are not significant, students in the treatment condition were slightly more likely to maintain their group status.

Symptomatic but Content: For this dual continua group at baseline, students in the treatment condition were found to be 1.210 times more likely to be in the Complete Mental Health group at T2 than those in the control condition. 95%CI (0.820, 1.786), p = .338. While the results are not significant, movement to the Complete Mental health group was slightly more likely in the treatment condition.

Vulnerable: For students who were in the Vulnerable group at T1, those in the treatment condition were 2.054 time more likely to move to the Complete Mental Health group than those in the control condition, 95%CI (1.340, 3.149), $p < .001$. Vulnerable students have more room to improve on the well-being dimension than the Complete Mental Health and Symptomatic but Content groups, and that improvement is demonstrated more for those in the treatment condition.

Troubled: For students in the Troubled group at T1, those in the treatment condition were 1.428 times more likely to end the year in the Complete Mental Health group than those in the control condition, 95%CI (0.975, 2.093), $p = .067$. Although the difference is not large enough to be significant, there is a marginal effect and students in the treatment condition appear to benefit on both dimensions. Across groups, there were stronger treatment effects within the Vulnerable and, to a lesser extent, the Troubled group.

Model 2b: Interaction Effects Within Dual Continua Groups (Secondary Model)

When the dependent variable was membership at T2 in the Complete Mental Health or Symptomatic but Content groups versus not being in that group, there were also treatment effects found. With an interaction test finding significant treatment effects within dual continua groups ($p = .004$, see Table 20), those specific effects will be examined and presented below (see Table 21). As with Model 1b, Model 2b sets a wider range of functioning that is considered optimal—or desired—level of functioning. Covariate effects will be discussed in Chapter 5. (Dependent variable: Odds-ratio of being in either Complete Mental Health or Symptomatic but Content group at T2).

Complete Mental Health: For this group at T1, students in the treatment condition were 1.368 times more likely than those in the control condition to be in the Complete Mental Health or Symptomatic but Content group at T2, 95%CI (0.980, 1.909), $p = .066$. This is a marginal effect, and although not statistically significant, indicates that students in the treatment condition maintained their level of well-being at a higher rate than those in the control condition.

Symptomatic but Content: Similar to the previous group, students in the treatment condition did not demonstrate statistically significant improvement compared those in the control condition, although they were 1.336 times more likely to be in one of the two groups of interest, 95%CI (0.864, 2.064), $p = .193$. This means students in this group in the treatment condition at T1 maintained high levels of well-being at a slightly higher rates than those in the control condition.

Vulnerable: As with Model 2a, treatment effects were found within the Vulnerable group, 95%CI (1.392, 3.620), $p < .001$. Students in the treatment condition were 2.245 times more likely to be in the Complete Mental Health or Symptomatic but Content group at T2 than those in the control condition. An effect that more than doubles the likelihood of experiencing a significant improvement in well-being is definitely evidence of students who fall in this dual continua group being in a position to benefit more from a universal treatment than those who already possess high levels of well-being.

Troubled: While there was a marginal effect within the Troubled group for Model 2a, a significant effect is found when the parameter of the outcome is expanded to include membership in both the Complete Mental Health and Symptomatic but Content group at T2, 95%CI (1.155, 2.487), $p = .007$. Thus, for students in the Troubled group at T1, those in the treatment condition were 1.695 times more likely than those in the control condition to be in either of the two groups mentioned above at T2. Although stronger when the outcome includes both groups with high levels of well-being, there is still evidence that students in the Troubled group at baseline experience more change on both dimensions than the other groups. Along with students in the Vulnerable group, these

students appear to benefit more from those in the Complete Mental Health and Symptomatic but Content group, who may already possess what the universal SEL curriculum is teaching those in the Vulnerable and Troubled group.

Chapter 5: Discussion

Currently, there is a gap in the current body of literature regarding whether SEL programs are associated with universal effects across the full spectrum of students. Many universal prevention programs demonstrate overall effects on student outcomes (i.e., Durlak et al., 2011; Dusenbury et al., 2015, etc.). However, these positive effects are often not examined closely based on student functioning at baseline to examine with whom universal prevention programs work. There is some evidence in the research base that some students benefit from SEL curriculum more than others (NIH, 2007), as those who are most at-risk for developing emotional, behavioral, or psychological problems have the most room for improvement. For example, Jones and colleagues (2010) also found differential intervention effects on problem behavior based on varying levels of aggression. To conduct research examining with whom universal prevention programs work, it is necessary to employ a theoretically informed approach to inform a priori hypotheses regarding the nature of effects associated with universal prevention programs, such as SEL curriculum. One theoretically-informed approach to measuring student functioning at baseline is to utilize the dual continua model of mental health (i.e., Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008; Keyes, 2005). This model stipulates that children are likely to fall into one of four groups according to their standing on two dimensions of mental health: negative indicators of mental health /psychopathology and positive indicators of mental health/well-being.

The purpose of the current study was to evaluate whether *Second Step*® curriculum—a universal prevention program—was associated with universal positive effects across the full spectrum of students. To accomplish this, the dual continua model

of mental health was used to construct groups at baseline and examine whether there were differential treatment effects of treatment according to these groups. It was predicted that some students might benefit more from the universal SEL curriculum than others due to their group membership at baseline. Students in the Complete Mental Health group are in the most advantageous circumstance (i.e., high on well-being and low on distress), and, thus, have limited room to show improvement on either measures of well-being or distress. Students in the Symptomatic but Content, Vulnerable, and Troubled groups experience less than optimal functioning on one or both dimensions, and do have room for significant for improvement. However, the nature of the improvement depends on the particular group (e.g., Symptomatic but Content has room for improvement on measures of problem behaviors but not on measures of strengths). The present research asks the questions: Are the effects of SEL truly universal across the full spectrum of students? If not, which students at baseline are most likely to benefit from a universal SEL curriculum, and to what extent? The overall impression of the results, discussed below, are that the *Second Step®* curriculum produces favorable changes in those in the Vulnerable and Troubled groups, and marginal effects or positive trends for those in the Complete Mental Health and Symptomatic but Content groups.

Review of Key Findings

When testing for the presence of an association between condition and dual continua group membership in the spring—based on group membership at baseline—a significant relationship was found. This was confirmed with a secondary test of independence as well as observation and side-by-side comparisons of the proportions of movement across groups. Generalized logistic regression modeling was performed and

found a treatment effect, indicating students in the treatment condition were 1.254 times more likely to be in the Complete Mental Health group post-treatment than those in the control condition. When the outcome of interest was expanded to include both the Complete Mental Health and the Symptomatic but Content groups, the effect was stronger. Students who received the universal SEL curriculum were 1.520 times more likely to be in one of two more favorable groups (characterized by well-being) than those in the control condition. Then, an interaction test was performed and a significant interaction was found between condition and group membership at the first time point, indicating that students responded differently to the universal SEL curriculum according to their levels of functioning at baseline based on the dual continua model of mental health.

Complete Mental Health: Students in the Complete Mental Health group already experience optimal levels of functioning, and were not expected to demonstrate significant change. While students in the treatment condition did not experience statistically significant differences compared to those in the control condition, they were slightly more likely to maintain Complete Mental Health status. When the outcome of interest was expanded to also include Symptomatic but Content in spring, there is a marginal treatment effect, indicating that those in the treatment condition are were slightly more likely to maintain high levels of well-being than those in the control condition. Otherwise, proportions of group movement were relatively similar across conditions, providing evidence indicating that not all students are demonstrated benefit from the SEL curriculum.

Symptomatic but Content: Treatment effects were not detected for students in the Symptomatic but Content groups, regardless of outcome. Although not significant, students in the treatment condition were slightly more likely than those in the control condition to move to the Complete Mental Health group or maintain Symptomatic but Content status. This was also reflected in a side-by-side comparison of the proportion of group movement (See Table 9).

Vulnerable: Students in the Vulnerable demonstrated significant treatments effects. Those in the treatment condition were more than twice as likely to be in the Complete Mental Health group in spring than those in the control condition. Although they already displayed low levels of distress, they showed improvement on that continuum as well. When examining the treatment effects across different dual continua groups, those experienced by the Vulnerable group provide argument that the effects are not universal and rather only certain groups of students will benefit from the intervention.

Troubled: In the Troubled group, students in the treatment condition demonstrated greater improvement on both continua, being 1.428 times more likely than those in the control condition to be in the Complete Mental Health group in spring. They were also 1.695 times more likely to be in either the Complete Mental Health or Symptomatic but Content groups, experiencing significantly greater change on the well-being continuum.

Summary: Although students in the treatment condition demonstrated more change in the predicted direction, only those in the Vulnerable and Troubled groups at baseline experienced statistically significant improvements compared to their counterparts in the control condition. Students in these dual continua groups appear to benefit from the universal SEL curriculum more than those in the Complete Mental

Health and Symptomatic but Content groups. These findings do not necessarily imply that this type of intervention is redundant or not needed for students in these groups—the Complete Mental Health group, specifically—but it calls into question if the program can truly be considered universal, as it does not demonstrate universal effects. Across all groups, students in the treatment condition experience better outcome than students in the control condition. However, differential treatment effects based on varying levels of functioning at baseline have important implications for SBMH practitioners and the further development and implementation of evidence-based universal programs.

Implications of the Findings

School mental health services have traditionally reflected more reactive and intensive interventions—targeting identified and established mental health problems—with limited emphasis on the proactive promotion of well-being and universal prevention of mental health problems (Weist & Evans, 2011). SEL researchers are heading a concerted effort to incorporate universal prevention and a focus on well-being as part of the foundation in an MTSS in schools. Prior research suggests that SEL, specifically the curriculum used in this study (*Second Step*®), should be implemented as a universal prevention program that benefits all students receiving it (Durlak, et al., 2011; Dusenbury, et al., 2015). However, if all students are not experiencing benefits from the program, changes may be required to optimize impact and efficiency of delivery—either in the development and/or delivery process.

Findings from this study support the notion that it is important for professionals who support the delivery of universal SEL programs to ask the question: for whom and to what extent does a universal SEL program work? The findings of the present study

suggest that the implementation of SEL may need to be differentiated based on students' baseline level of functioning. Granting more opportunities within general education classrooms for differentiated SEL instruction may lead to more equitable and efficacious outcomes for students (Tran, et al., 2014).

Moreover, the findings have significant implications for the implementation of SEL programs. Universal effects are only likely to be observed if programs are implemented with fidelity, meaning precisely as planned and intended. Millions of dollars have been invested in the development of SEL curricula, which is aimed at producing universal benefits for students (Belfield, Bowden, Klapp, Levin, Shand, et al., 2015), and for that investment to be successful, implementation with fidelity is key. Individual schools and districts are often responsible for the costs of purchasing and dispersing materials for universal programs, and generally must make decisions with limited resources (i.e., time, budget, staff/personnel) for addressing mental health. To receive their money's worth, successful implementation can produce universal effects that lead to the prevention of future problems, requiring less intensive services going forward. In a larger sense, promotion well-being in individuals is seen as benefit to society as a whole, as flourishing citizens are more likely to be productive and contributing members of society in their lifetime (Keyes, 2007). Because implementation is paramount to the overall success of a program's efficacy, implementation scientists should continue to examine the following methods: integration of mental health in education policy and practice; the transition between controlled- and field-settings; intensity, frequency, and duration of dosage; and the adoption and implementation of universal SEL programs by educational professionals. The time for this research is now,

as federal laws no longer mandate teaching academics alone, but expand legislation to include mental health and well-being.

One of the most noteworthy findings from this study that warrants further discussion and has implications for practice are those positive outcomes observed for the sub-groups of students who had low levels of well-being. Findings indicated that students with low levels of well-being are in a position to benefit the most from SEL programming. For students with high distress at baselines, although findings were trending toward significant, no significant effects were found. The goal of this dissertation was to utilize the dual continua model to include students in the Symptomatic but Content (i.e., high well-being and high distress) and Vulnerable (i.e., low well-being and low distress) groups, as they were mostly overlooked in traditional disease-based models (Jahoda, 1958; Suldo & Shaffer, 2008). For Vulnerable students, the SEL instruction appeared to prevent the development of psychopathology at a higher rate than for those in the control condition, as well as improve well-being. Those in the groups characterized as having low well-being seemed to display the most growth from participation in the *Second Step*® program; therefore, those with lacking indicators of personal strengths are positioned for the greatest benefit. For the Symptomatic but Content group, high levels of well-being were maintained at expected rates, but there were not significant treatment effects on reduction of distress levels. This is noteworthy, because compared to students in the Complete Mental Health group, students in the Symptomatic but Content group are in greater need of services and have more room for improvement. Future research should focus on identifying the motivations of this dual continua group, assessing whether they are less engaged in SEL curriculum due to

already possessing strengths; whether well-being is just that powerful of a buffer against distress, or if they really are "content" with their current levels of functioning.

Going forward, SBMH practitioners utilizing the dual continua model can better anticipate and identify students who may not be fully benefiting from universal prevention programs and take further action. Options include but are not limited to increasing implementation fidelity and deliberate pairing of universal SEL instruction with evidence-based tier II interventions for individual students or small-groups.

Limitations

One major limitation of the current study is in regards to the generalizability of the findings. While the implications are important in informing adoption and implementation of universal SEL curriculum, only a single SEL curriculum (*Second Step*®) was examined for differential treatment effects within the dual continua model of mental health. *Second* Step® is just one of the many SEL curricula that exists in the field and only addresses a portion of the spectrum of constructs related to psychological well-being. Future studies should utilize multiple curricula or a comprehensive combination of programming that encompasses a higher volume of recognized constructs of student mental health. Additionally, the sample in this study was limited to early elementary age students, and all behavior and social-emotional surveys were completed by teacher report. Due to these aspects of the research and data collection processes, it may not be valid to assume these findings will be seen in curricula that do not share all of the same components as the *Second Step*® curriculum, or if the population of interest is a different age as the sample used here. For example, older students in elementary school, or middle and high school age students may have more accurate impressions of their own

functioning on the two continua and self-report data would be more appropriate in assessing internalizing symptoms (Michael & Merrell, 1998) for future research. Additionally, potential teacher biases were not accounted for, as it was not examined how teacher behavior or perspectives were changed as a result of interaction with the *Second Step*® curriculum. Without proper analyses, it is impossible to disentangle the potential teacher impact on the findings of the study from treatment effects, and is a limitation worth examining in future research.

As for the specific measures used in this study, other researchers or practitioners may have strong preferences towards other universal screeners or emotional/behavioral assessments and utilize them in their studies. There is long-standing debate as to whether there is one pure method to capturing the construct of subjective well-being (Krueger & Schkade, 2008). Here, a strengths-based measure (Deveraux Center for Resilient Children, 2012) is used as an indicator of well-being, although there are many other psychometrically valid measures (Ryff & Singer, 1996; Diener, Emmons, Larson, & Griffin, 1985) that have been used in studies. A composite of observed difficulties (Goodman, 1997) was used to represent a student's psychological distress, and similar to well-being, there are plenty of alternatives in the field that could be more appropriate for a given population or outcome of interest. Some studies have based the psychopathology dimension on the actual presence of a mental health disorder or the criteria met for a diagnosis (Keyes, 2007).

Further, others have developed measures that aim to assess functioning on both continua (i.e., PANAS-C; Laurent, et al., 1999; and MHC-SF; Keyes, 2002) and which may be of relevance in this line of research. As the present findings may be an artifact of the

measures utilized, the results should be replicated with similar measures assessing students' strengths and challenges.

Another limitation of this study is that the research questions of interest only examine a small portion of the data collected for the larger study being conducted. While complex analyses were performed to address covariates and potential confounding variables that simple analyses could, there were broader aspects of the study that were not accounted for. For example, the present study did not account for the additional proactive classroom management training teachers in the treatment condition schools received, nor did it account for implementation surveys completed by teachers, which may provide some insight into teacher motivation or implementation fidelity. Other data collected include teacher experiences (years teaching), teacher age, student grade level, and academic skills; and the role these variables play in mental health functioning should be examined as more studies stem from the larger research project. While the current study did include gender and socioeconomic status (SES), their effects were not addressed in the research. All generalized logistic regression models performed found a gender effect, indicating that girls are more likely to be in the Complete Mental Health group (or the Symptomatic but Content group, depending on which model). As boys have generally been found to be more likely to exhibit problem behavior at school age (Magee & Roy, 2008), differential treatment effects of a universal SEL curriculum within gender is an intriguing research topic and should be further explored. Just as students in the Vulnerable and Troubled groups have more room to improve when receiving SEL instruction, so might young boys who are already at-risk. Further, students from low-income families are at more risk of experiencing mental health problems, and have more

potential to improve from SEL (Brackett & Rivers, 2014). With this knowledge, future studies examining interaction terms with gender and SES based on treatment condition, can uncover any potential moderating effects ignored by the scope of this study.

Lastly, the statistical analyses performed in this study ranged from simple and straightforward to complex and expansive to account for random effects and potentially relevant demographic information. Other methods used to analyze nested data could be hierarchical linear modeling (HLM; Raudenbush & Bryk, 2011), which would further examine the data broken down at each level (i.e., student, classroom, school, etc.). Another approach would be to utilize latent class analysis (LCA; Hagenaars & McCutcheon, 2002), which is used for examining class membership and clustering effects among subjects. These methods may be appropriate as this study progresses and the two year longitudinal effects of the *Second Step*® curriculum are studied. As more universal treatments are evaluated using the dual continua model of mental health, researchers should strongly consider utilizing either HLM or LCA to obtain more detailed information on differential treatments within the mental health groups.

As one of the few studies to examine the degree to which SEL is associated with universal effects across the full spectrum of students in a school. The findings here should be taken into consideration by schools when adopting and implementing universal prevention programs. A large number of students benefit from the promotion of positive mental health as well as the attention to reducing social, emotional, and behavioral problems. Using the dual continua model of mental health to determine who benefits and to what extent, practitioners can be better informed in the development and implementation of universal prevention as part of the foundation of a multi-tiered system

of support in schools. Assuming the foundation of these results generalize, SEL should be considered as part of a comprehensive approach, utilizing teacher instructed curriculum aimed at universal prevention, targeted services for at-risk students, and systems-wide services do address those not being benefited by universal efforts. There are calls for collective efforts to combatting the ongoing problem of SBMH problems, and students are relying on advocates and professionals from all directions to work together to develop, disseminate, and implement the best available services to optimize student mental health functioning.

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Appendix A: Figures

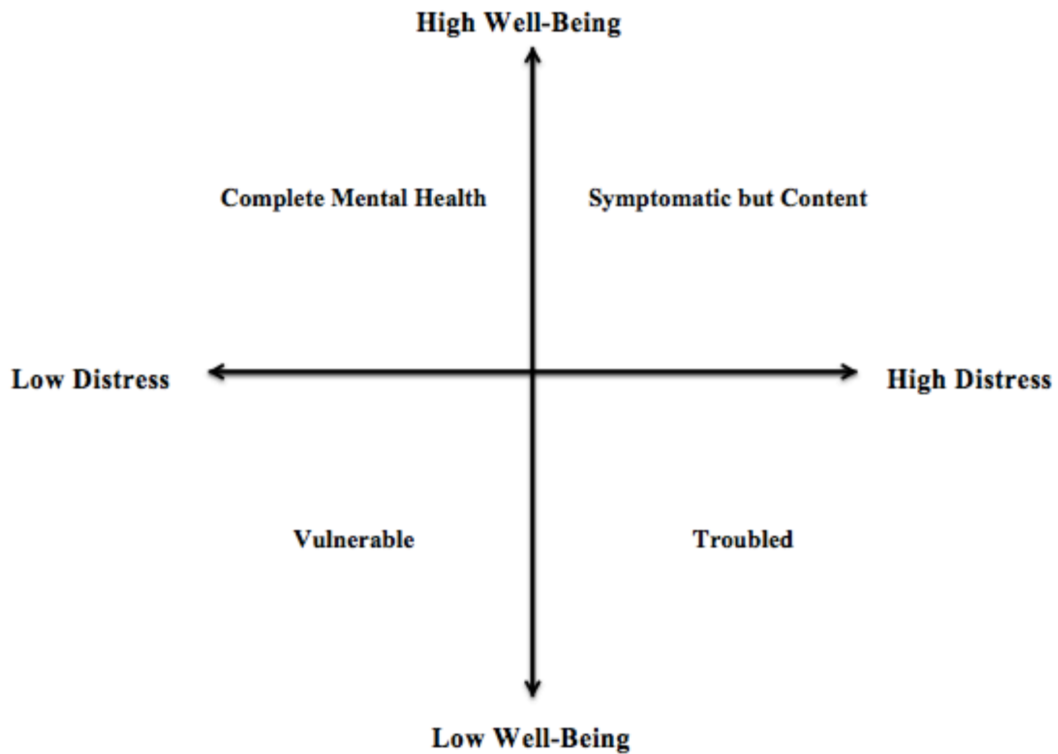

Figure 1. Placement of mental health groups on the two continua—well-being/mental health and distress/psychopathology. Dual continua model design, group names, and descriptions adapted from Suldo & Shaffer (2008).

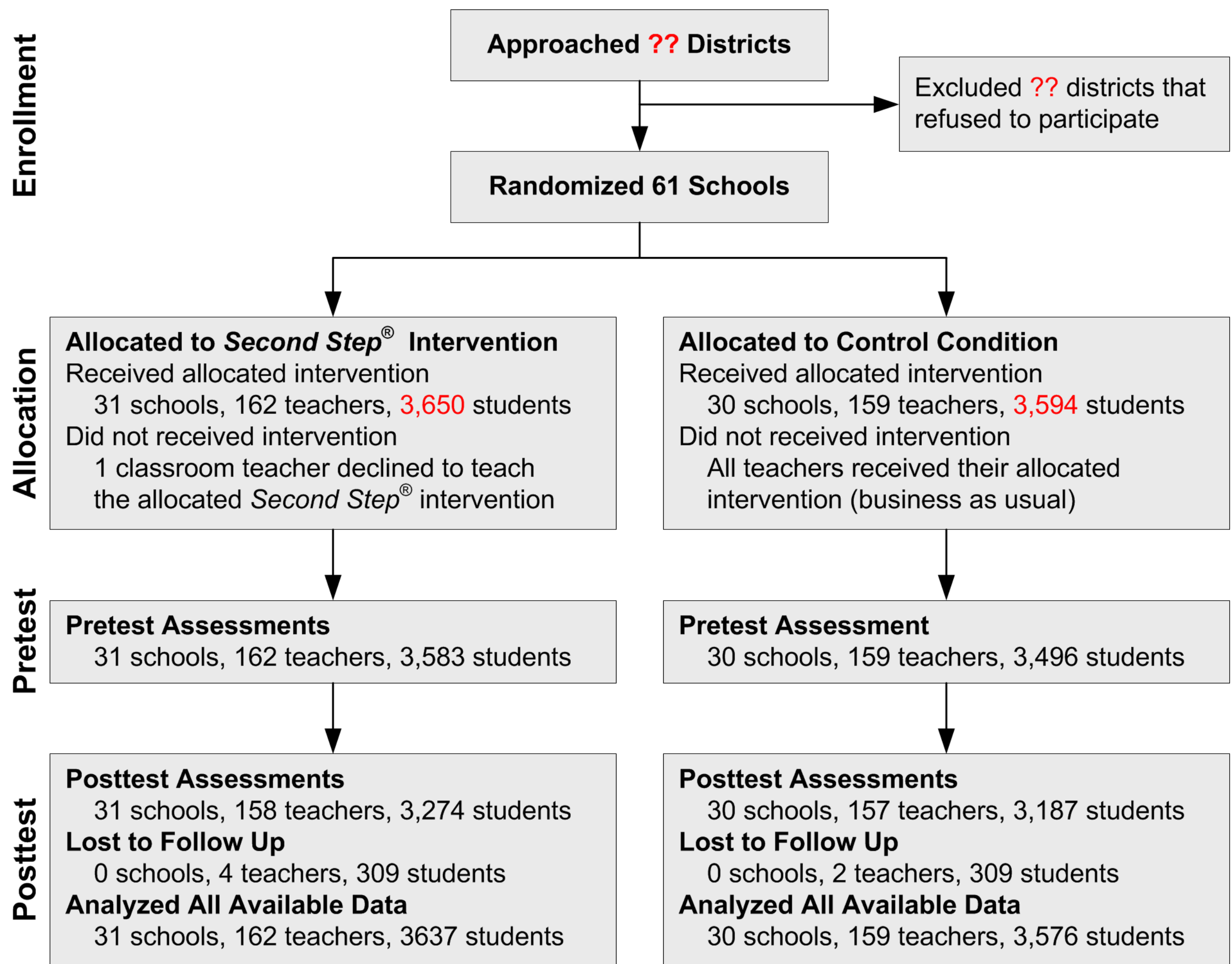

Figure 2. Research design and participant flow for schools, teachers, and students throughout the cluster-randomized evaluation of *Second Step*® over two academic years.

Appendix B: Tables

Table 1. Child-level sample descriptive information at fall quarter

Variable	**Control** n (%)	*Second Step®* n (%)	**Total sample** n (%)
Total students	3692	3727	7419
Grade*			
Kindergarten	1482 (40.1)	1653 (44.4)	3135 (42.3)
1st	1991 (53.9)	1863 (50.0)	3854 (51.9)
2nd	219 (5.9)	211 (5.7)	430 (5.8)
Sex			
Male	1772 (48.0)	1788 (48.0)	3,560 (48.0)
Female	1657 (44.9)	1704 (45.7)	3,361 (45.3)
Missing	263 (7.1)	235 (6.3)	498 (6.7)
Race*			
Asian	368 (10.0)	333 (8.9)	701(9.4)
Native Hawaiian or other Asian/Pacific Islander	25 (0.7)	46 (1.2)	71 (1.0)
Black or African American	232 (6.3)	212 (5.7)	444 (6.0)
American Indian or Alaska Native	86 (2.3)	123 (3.3)	209 (2.8)
Caucasian/White, non-Hispanic	1137 (30.8)	1542 (41.4)	2679 (36.1)
More than one Race	196 (5.3)	183 (4.9)	379 (5.1)
Hispanic	908 (24.6)	761 (20.4)	1669 (22.5)
Missing	740 (20.8)	527 (14.1)	1267 (17.1)
Student Special Education Status			
Not in special education	2418 (65.5)	2524 (67.7)	4942 (66.6)
Special Education	321 (8.7)	309 (8.3)	630 (8.5)
Missing	953 (25.8)	894 (24.0)	1847 (24.9)
Student English Language Learner Status*			
Not an ELL	2075 (56.2)	2221 (59.6)	4296 (57.9)
ELL Student	829 (22.5)	716 (19.2)	1545 (20.8)
Missing	788 (21.3)	790 (21.2)	1578 (21.3)
	Control ***M (SD)***	*Second Step®* ***M (SD)***	**Total sample** ***M (SD)***
Age	6.2 (0.7)	6.2 (0.8)	6.2 (0.8)
Number of school days missed	9.0 (7.7)	9.2 (7.7)	9.2 (7.8)
Fall percent intervals academic engagement*	83.3 (20.1)	81.9 (20.6)	82.6 (20.4)
Fall percent intervals disruptive behavior	8.8 (14.3)	9.5 (15.4)	9.1 (14.9)
Fall oral reading fluency words reading correct per minute	24.2 (33.4)	22.8 (33.8)	23.63 (33.6)
Fall math percent correct	28.2 (27.2)	26.9 (27.7)	27.5 (27.5)
Spring percent intervals academic engagement	80.1 (22.5)	79.7 (22.6)	79.9 (22.5)
Spring percent intervals disruptive behavior*	9.6 (16.5)	8.6 (14.7)	9.1 (15.6)
Spring oral reading fluency words reading correct per minute	48.5 (42.3)	48.8 (45.2)	48.7 (43.7)
Spring math percent correct	55.9 (32.2)	54.3 (33.4)	55.1 (32.8)

*t-test or chi-square $p < .05$

Note: Descriptive information for sample prior to missing imputation.

Table 2. Fall Quarter teacher-level sample descriptive information.

Variable	**Control** **n (%)**	**Early Start** **n (%)**	**Total sample** **n (%)**
Total teachers	151	159	310
Site			
ASU	48 (31.8)	48 (30.2)	96 (31.0)
UW	103 (68.2)	111 (69.8)	214 (69.0)
Sex			
Male	9 (6.0)	3 (1.9)	12 (3.9)
Female	142 (94.0)	156 (98.1)	298 (96.1)
Hispanic or Latino/a?			
No	142 (94.0)	149 (94.3)	291 (93.9)
Yes	9 (6.0)	9 (5.7)	18 (5.8)
Missing	0	1 (0.7)	1 (0.3)
Race*			
Asian	6 (4.0)	3 (1.9)	9 (2.9)
Native Hawaiian or other Asian/Pacific Islander.	0	3 (1.9)	3 (1.0)
Black or African American	0	2 (1.3)	2 (0.6)
American Indian or Alaska Native	1 (0.7)	1 (0.6)	2 (0.6)
Caucasian/White	128 (84.8)	143 (92.3)	271 (87.4)
More than one race (please specify):	10 (6.6)	3 (1.9)	13 (4.2)
Other	6 (4.0)	0	6 (1.9)
Missing	0	4 (2.6)	4 (1.3)
Highest degree received			
Bachelor's degree	48 (33.8)	64 (42.1)	115 (37.1)
Master's degree	87 (61.3)	85 (55.9)	185 (59.7)
Professional degree	6 (4.2)	3 (2.0)	9 (2.9)
Doctorate degree	1 (0.7)	0	1 (0.3)
Grade(s) taught			
Kindergarten	61 (40.4)	70 (44.0)	131 (42.3)
Kindergarten / 1st Grade Split	4 (2.6)	1 (0.6)	5 (1.6)
1st Grade	75 (49.7)	79 (49.7)	154 (49.7)
1st Grade / 2nd Grade Split	4 (2.8)	2 (1.3)	6 (1.9)
2nd Grade	7 (4.6)	7 (4.4)	14 (4.5)
	Control ***M (SD)***	*Second Step®* ***M (SD)***	**Total Sample** ***M (SD)***
Age	42.9 (11.9)	44.3 (12.8)	43.67 (12.38)
Missing	2	5	7
Number of years teaching	14.4 (9.4)	15.9 (10.5)	15.19 (10.04)

*t-test or chi-square $p < .05$

Note: Descriptive information for sample prior to missing imputation.

Table 3

Proportions of Group Membership of Total Sample (N = 7,185) in Fall (T1)

	Level of Psychopathology	
Level of Well-Being	High	Low to Average
Average to High	II. Symptomatic but Content n = 778 (10.83%)	I. Complete mental health n = 4,444 (61.85%)
Low	IV. Troubled n = 1,313 (18.27%)	III. Vulnerable n = 650 (9.05%)

Table 4

Proportions of Group Membership of Treatment Condition (N = 3,674) in Fall (T1)

	Level of Psychopathology	
Level of Well-Being	High	Low to Average
Average to High	II. Symptomatic but Content n = 428 (11.65%)	I. Complete mental health n = 2,281 (62.07%)
Low	IV. Troubled n = 681 (18.53%)	III. Vulnerable n = 284 (7.73%)

Table 5

Proportions of Group Membership of Control Condition (N = 3,511) in Fall (T1)

	Level of Psychopathology	
Level of Well-Being	High	Low to Average
Average to High	II. Symptomatic but Content n = 350 (9.97%)	I. Complete mental health n = 2,163 (61.61%)
Low	IV. Troubled n = 632 (18.00%)	III. Vulnerable n = 366 (10.42%)

Table 6

Proportions of Group Membership of Treatment Condition (N = 3,674) in Spring (T2)

	Level of Psychopathology	
Level of Well-Being	High	Low to Average
Average to High	II. Symptomatic but Content n = 476 (12.96%)	I. Complete mental health n = 2,202 (59.93%)
Low	IV. Troubled n = 659 (17.94%)	III. Vulnerable n = 337 (9.17%)

Table 7

Proportions of Group Membership of Control Condition (N = 3,511) in Spring (T2)

	Level of Psychopathology	
Level of Well-Being	High	Low to Average
Average to High	II. Symptomatic but Content n = 375 (10.68%)	I. Complete mental health n = 1,998 (56.91%)
Low	IV. Troubled n = 719 (20.48%)	III. Vulnerable n = 419 (11.93%)

Table 8

Proportions of Group Membership in Spring (T2) for Data Subset of Students in the Complete Mental Health Group in Fall (T1)

Treatment Condition (N = 2,281)

	Level of Psychopathology	
Level of Well-Being	High	Low to Average
Average to High	II. Symptomatic but Content n = 190 (8.33%)	I. Complete mental health n = 1,765 (77.38%)
Low	IV. Troubled n = 138 (6.05%)	III. Vulnerable n = 188 (8.24%)

Control Condition (N = 2,163)

	Level of Psychopathology	
Level of Well-Being	High	Low to Average
Average to High	II. Symptomatic but Content n = 162 (7.49%)	I. Complete mental health n = 1,648 (76.19%)
Low	IV. Troubled n = 130 (6.01%)	III. Vulnerable n = 223 (10.31%)

Table 9

Proportions of Group Membership in Spring (T2) for Data Subset of Students in the Symptomatic but Content Group in Fall (T1)

Treatment Condition (N = 428)

	Level of Psychopathology	
Level of Well-Being	High	Low to Average
Average to High	II. Symptomatic but Content n = 139 (32.48%)	I. Complete mental health n = 153 (35.75%)
Low	IV. Troubled n = 119 (27.80%)	III. Vulnerable n = 17 (3.97%)

Control Condition (N = 350)

	Level of Psychopathology	
Level of Well-Being	High	Low to Average
Average to High	II. Symptomatic but Content n = 107 (30.57%)	I. Complete mental health n = 112 (32.00%)
Low	IV. Troubled n = 106 (30.29%)	III. Vulnerable n = 25 (7.14%)

Table 10

Proportions of Group Membership in Spring (T2) for Data Subset of Students in the Vulnerable Group in Fall (T1)

Treatment Condition (N = 284)

	Level of Psychopathology	
Level of Well-Being	High	Low to Average
Average to High	II. Symptomatic but Content n = 12 (4.23%)	I. Complete mental health n = 155 (54.58%)
Low	IV. Troubled n = 41 (14.44%)	III. Vulnerable n = 76 (26.76%)

Control Condition (N = 366)

	Level of Psychopathology	
Level of Well-Being	High	Low to Average
Average to High	II. Symptomatic but Content n = 13 (3.55%)	I. Complete mental health n = 149 (40.71%)
Low	IV. Troubled n = 82 (22.40%)	III. Vulnerable n = 122 (33.33%)

Table 11

Proportions of Group Membership in Spring (T2) for Data Subset of Students in the Troubled Group in Fall (T1)

Treatment Condition (N = 681)

	Level of Psychopathology	
Level of Well-Being	High	Low to Average
Average to High	II. Symptomatic but Content n = 135 (19.82%)	I. Complete mental health n = 129 (18.94%)
Low	IV. Troubled n = 361 (53.01%)	III. Vulnerable n = 56 (8.22%)

Control Condition (N = 632)

	Level of Psychopathology	
Level of Well-Being	High	Low to Average
Average to High	II. Symptomatic but Content n = 93 (14.72%)	I. Complete mental health n = 89 (14.08%)
Low	IV. Troubled n = 401 (63.45%)	III. Vulnerable n = 49 (7.75%)

Table 12

Results of Method 1: Stratified Chi-Squared Tests (N = 7,185)

Group Membership at T1	n	χ^2	*df*	*p*-value
Complete Mental Health	4,444	6.33	3	0.097
Symptomatic but Content	778	5.01	3	0.171
Vulnerable	650	14.40	3	0.002*
Troubled	1313	15.84	3	0.001*

*$p < .05$

Note: Four separate analyses performed, each using a subset of the sample based on group membership at T1.

Table 13

Results of Method 2: Generalized Cochran-Mantel-Haenszel Test (N = 7,185)

Group Membership at T1	χ^2	*df*	*p*-value
Overall Sample	27.00	3	< .001*
Complete Mental Health	6.33	3	0.097
Symptomatic but Content	5.01	3	0.171
Vulnerable	14.37	3	0.002*
Troubled	15.84	3	0.001*

*$p < .05$

Note: Single analysis performed.

Table 14
Pre- and Post-Scores of the DESSA-SSE (Measure of Well-Being Continua)

	Emotion Management Score				Average
	Fall (T1)		Spring (T2)		Change
Group	Mean	SD	Mean	SD	
Complete Mental Health					
Early Start	27.395	4.126	28.540	4.977	1.145
Delayed Start	27.098	4.005	27.788	4.802	0.690
Symptomatic but Content					
Early Start	24.227	2.830	25.388	5.362	1.161
Delayed Start	24.029	2.809	24.703	5.089	0.674
Vulnerable					
Early Start	17.915	2.309	24.201	4.755	6.286
Delayed Start	17.404	2.384	22.527	5.543	5.123
Troubled					
Early Start	15.699	3.983	21.385	5.786	5.686
Delayed Start	14.872	4.250	19.462	6.260	4.590

Table 15
Pre-and Post-Scores of the SDQ (Measure of Psychopathology Continua)

	Total Difficulties Score				Average
	Fall (T1)		Spring (T2)		Change
Group	Mean	SD	Mean	SD	
Complete Mental Health					
Early Start	3.705	2.797	4.178	4.059	0.473
Delayed Start	3.460	2.775	4.294	3.963	0.834
Symptomatic but Content					
Early Start	12.551	2.651	10.340	5.595	-2.211
Delayed Start	12.486	2.840	10.334	5.488	-2.152
Vulnerable					
Early Start	6.243	2.256	5.595	4.039	-0.648
Delayed Start	5.306	2.762	5.896	5.016	0.590
Troubled					
Early Start	16.383	4.844	12.796	6.498	-3.587
Delayed Start	16.687	5.138	14.131	6.636	-2.556

Table 16

Results of Method 3: Model 1a – Main Effects of Condition Estimates (N = 7,185)

Fixed Effects	Estimate	Standard Error	*p*-value
(Intercept)	1.161	0.151	< .001*
Condition (Early Start)	0.226	0.114	.048*
Symptomatic but Content	-1.861	0.086	< .001*
Vulnerable	-1.267	0.090	< .001*
Troubled	-2.788	0.085	< .001*
Gender	-0.343	0.056	< .001*
Socioeconomic Status	-0.138	0.066	.038*
Random Effects	**Variance**	**Standard Deviation**	
Classroom (Intercept)	1.126	0.991	
School (Intercept)	0.148	0.385	

*$p < .05$

Notes: Complete Mental Health group at T1 used as a reference group. Log-odds table on dependent variable (Complete Mental Health group at T2). When log-odds is exponentiated, the odds-ratio for Condition (Early Start) is 1.254, 95%CI (1.002, 1.569), $p = .048$*.

Table 17

Results of Method 3: Model 1b – Main Effects of Condition (N = 7,185)

Fixed Effects	Estimate	Standard Error	*p*-value
(Intercept)	1.597	0.201	< .001*
Condition (Early Start)	0.418	0.155	.007*
Symptomatic but Content	-1.311	0.098	< .001*
Vulnerable	-1.369	0.109	< .001*
Troubled	-2.523	0.085	< .001*
Gender	-0.302	0.063	< .001*
Socioeconomic Status	-0.104	0.076	.171*
Random Effects	**Variance**	**Standard Deviation**	
Classroom (Intercept)	0.964	0.982	
School (Intercept)	0.108	0.329	

*$p < .05$

Notes: Complete Mental Health group at T1 used as a reference group. Log-odds table on dependent variable (Complete Mental Health or Symptomatic but Content group at T2). When log-odds is exponentiated, the odds-ratio for Condition (Early Start) is 1.520, 95%CI (1.122, 2.061), $p = .007$*.

Table 18

Results of Method 3: Model 2a – Interactions of Condition and Mental Health Group Membership at T1 (N = 7,185)

Fixed Effects	Estimate	Standard Error	*p* - value
(Intercept)	1.217	0.167	< .001*
Condition (Early Start)	0.149	0.134	0.265
Symptomatic but Content	-1.950	0.135	< .001*
Vulnerable	-1.385	0.142	< .001*
Troubled	-2.952	0.135	< .001*
Gender	-0.390	0.059	< .001*
Socioeconomic Status	-0.126	0.072	0.078
Condition x SBC	0.041	0.184	0.821
Condition x V	0.571	0.207	0.006*
Condition x T	0.208	0.182	0.254
Random Effects	Variance	Standard Deviation	
Classroom (Intercept)	0.549	0.741	
School (Intercept)	0.070	0.265	

$^{*}p < .05$

Notes: Complete Mental Health group at T1 used as a reference group. Log-odds table on dependent variable (Complete Mental Health group at T2). For overall interaction test, $p = .046$*. Intervention effects within each group presented in Table 19.

Table 19

Results of Method 3: Model 2a – Intervention Effects within each Mental Health Group at T1 (N = 7,185)

Group at T1	n	Odds-Ratio	95% CI	*p* - value
Complete Mental Health	4,444	1.160	(0.893, 1.508)	.265
Symptomatic but Content	778	1.210	(0.820, 1.786)	.338
Vulnerable	650	2.054	(1.340, 3.149)	< .001*
Troubled	1,313	1.428	(0.975, 2.093)	.067

$^{*}p < .05$

Notes: Odds-ratio representative of student in given mental health group in treatment condition (being in Complete Mental Health group at T2) compared to control condition.

Table 20

Results of Method 3: Model 2b – Interactions of Condition and Mental Health Group Membership at T1 (N = 7,185)

Fixed Effects	Estimate	Standard Error	*p* - value
(Intercept)	1.653	0.205	< .001*
Condition (Early Start)	0.313	0.170	.066
Symptomatic but Content	-1.298	0.140	< .001*
Vulnerable	-1.593	0.149	< .001*
Troubled	-2.629	0.122	< .001*
Gender	-0.302	0.064	< .001*
Socioeconomic Status	-0.107	0.077	.163
Condition x SBC	-0.024	0.196	.904
Condition x V	0.496	0.221	.025*
Condition x T	0.214	0.169	.204
Random Effects	**Variance**	**Standard Deviation**	
Classroom (Intercept)	0.958	0.979	
School (Intercept)	0.111	0.334	

*$p < .05$

Notes: Complete Mental Health group at T1 used as a reference group. Log-odds table on dependent variable (Complete Mental Health group at T2). For overall interaction test, $p = .004$*. Intervention effects within each group presented in Table 21.

Table 21

Results of Method 3: Model 2b – Intervention Effects within each Mental Health Group at T1 (N = 7,185)

Group at T1	n	Odds-Ratio	95% CI	*p* - value
Complete Mental Health	4,444	1.368	(0.980, 1.909)	.066
Symptomatic but Content	778	1.336	(0.864, 2.064)	.193
Vulnerable	650	2.245	(1.392, 3.620)	< .001*
Troubled	1,313	1.695	(1.155, 2.487)	.007*

*$p < .05$

Notes: Odds-ratio representative of student in given mental health group in treatment condition (being in Complete Mental Health or Symptomatic but Content group at T2) compared to control condition.