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# Preliminary Evaluation of "Footprints": Motivational Interviewing To Promote Cognitive-Behavioral Skills, Academic Outcomes, and Academic Protective Factors in Middle School Students

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# PRELIMINARY EVALUATION OF "*FOOTPRINTS*:" MOTIVATIONAL INTERVIEWING TO PROMOTE COGNITIVE-BEHAVIORAL SKILLS, ACADEMIC OUTCOMES, AND ACADEMIC PROTECTIVE FACTORS IN MIDDLE SCHOOL STUDENTS

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ABSTRACT

There are high levels of unmet need in youth mental health services. To address this gap there is an increasing emphasis on multi-tiered systems of support involving promotion/prevention (Tier 1), early intervention (Tier 2) and intervention (Tier 3) to promote positive emotional/behavioral functioning in students. While research on these multi-tiered frameworks is increasing, there remains a relative dearth of empirically supported and feasible early intervention Tier 2 programs. To help address this gap, we developed the Tier 2 program, *Footprints,* which utilizes two Motivational Interviewing sessions to promote engagement in six group-based modularized Cognitive-Behavioral Therapy sessions and aims to enhance academic protective factors in students. This manuscript describes the rationale and background for the Footprints program, feasibility and acceptability findings, and impacts from a randomized experimental study to evaluate its preliminary efficacy. Descriptive statistics from both Footprints participants and providers indicate high levels of program feasibility and acceptability. Additionally, compared to a waitlist control group (n = 22), the participants randomly assigned into the Footprints program (n = 21) demonstrated statistically significant and positive changes in self-efficacy for regulating behavior, math grades, academic press, and academic motivation, and showed decreased levels of depression and anxiety. There were no significant effects found for other academic areas and other measures of psychosocial functioning. These data suggest preliminary yet highly tentative support for the

acceptability, feasibility, and effectiveness of Footprints, as a Tier 2 program within a school-based multi-tiered system of support.

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# CHAPTER 1

# INTRODUCTION

The prevalence of youth mental health disorders and need for improvement in mental health service delivery makes the development of acceptable, feasible, and effective intervention approaches an important area for intervention research (President's New Freedom Commission, 2003). Mental health conditions are not unusual in youth, with conditions like anxiety and mood disorders, disruptive behavior disorders, and substance abuse disorders frequently occurring in children and adolescents (Kaiser Commission, 2003; Merikangas et al., 2010; National Institute of Mental Health [NIMH], 2001). At the same time, youth in need of services receive intervention in fragmented systems that are often unable to provide effective care (President's New Freedom Commission, 2003; Mills et al., 2006). School-based interventions that emphasize early support within a multilevel framework offer a promising approach to youth mental health service delivery. However, there are significant challenges in the implementation of school-based early intervention programs, resulting in students who demonstrate the need for early intervention not receiving effective support (Stormont & Reinke, 2013). To address this problem, this study describes the preliminary evaluation of a novel intervention called Footprints. Footprints is intended to be an acceptable and feasible school-based early intervention program that integrates evidence-based treatment

research on Motivational Interviewing, modularized Cognitive-Behavioral Therapy, and Positive Youth Development to provide early support for youth.

**Overview.** The background and rationale for the Footprints program and a randomized evaluation of its preliminary effectiveness are described in this study. First, this manuscript briefly reviews the prevalence and impairment associated to youth mental health disorders. Next, the rationale for service delivery through school mental health is briefly described along with the role of school-based multitier Positive Behavior Intervention and Support programs. After describing the advantages of this service delivery approach, limitations and current gaps in extant early intervention programs are discussed. Then, literature on Positive Youth Development is briefly reviewed as an overarching theoretical framework for the Footprints program. Furthermore, key program principles and elements incorporated into Footprints are described, including: integrated intervention, Motivational Interviewing, modularized Cognitive-Behavioral Intervention, and protective factors. Lastly, we describe the implementation of a randomized experimental study to evaluate the acceptability, feasibility, and preliminary impact of the Footprints program.

**Prevalence of Youth Mental Health Disorders.** Approximately one in four adolescents experience clinically significant levels of symptoms and impairment from mental health disorders with an estimated one in ten experiencing a severe mental illness (Merikangas et al., 2010; National Institute of Mental Health [NIMH], 2001). The lifetime prevalence rates of the mental health disorders that are most prevalent in children and adolescents are anxiety disorders 31.9%, behavior disorders 19.1%, mood disorders 14.3%, and substance abuse problems 11.4% (Merikangas et al., 2010). An estimated

40% of adolescents who meet criteria for one of these mental health disorders also meet the criteria for another co-morbid mental health disorder (Merikangas et al., 2010). Notably, youth mental health problems do not solely exist in the clinically significant or severe range, but instead can be conceptualized as continuous instead of categorical (Schanding & Nowell, 2013). Mental health problems in adolescents can range in severity from mild distress with subclinical impairment of functioning to severe mental illness, meaning youth other than those in the severe range also fall in the realm of intervention (Vander Stoep, & McCauley, 2011; Walker, Kerns, Lyon, Bruns, & Cosgrove, 2010). Thus, a large number of youth are affected by a mental health disorder and effective interventions that ameliorate the symptoms at mild, moderate, and severe levels of distress are needed.

**Impairment from Youth Mental Health Disorders.** Mental health disorders impair the functioning of youth in key areas in their lives. Notably, 52.3% of adolescents 14 years old or older who qualify for an Individual Education Plan with an "emotional disturbance" drop out of high school (U.S. Department of Education, 2009), which in turn significantly increases the future likelihood of a variety of negative life events (Aud et al., 2011; Chapman, Laird, Ifill, & Kewal-Ramani, 2011; Levin & Belfield, 2007). Mental health disorders in youth are also an important consideration for the juvenile justice system where approximately 65% of incarcerated boys and 75% of incarcerated girls meet the criteria for at least one mental health disorder (Teplin, Abram, McClelland, Dulcan, & Mericle, 2002). Most importantly, mental health is an important consideration for the physical safety of youth given that 90% of youth that complete suicide have a mental health disorder, making suicide the third leading cause of death in youth ages 15

to 24 (Shaffer & Craft, 1999). The purpose of this study is to evaluate a novel early intervention intended to reduce the impairment from mental health concerns in adolescents.

**Youth Mental Health and Environmental Risk**. As above, youth with risk from mental health problems are oftentimes simultaneously exposed to serious environmental risk. Youth in need of early support due to mental health concerns may also have environmental risk factors such as poverty, exposure to crime, violence, caregiver substance abuse, and negative peer influences that increase the likelihood of poor outcomes. Data on the environmental risk that youth experience nationally and in South Carolina suggest that youth are frequently exposed to environmental risk factors. For example, the 2012 National Survey of Children's Health indicates that in the U.S. 12% of youth have experienced three or more significant aversive experiences (Child Trends, 2013). Furthermore, data from the 2009 National Survey on Drug Use and Health indicate that in the United States more than six in ten youth were exposed to violence within the past year, including witnessing a violent act, assault with a weapon, sexual victimization, child maltreatment, and dating violence (SAMSHA, 2009). In South Carolina, 24% of youth have experienced two or more aversive family experiences (e.g., socioeconomic hardship, divorce/separation of parent, death of parent, parent served time in jail, witness to domestic violence, victim of neighborhood violence, lived with someone who was mentally ill or suicidal, lived with someone with alcohol/drug problem, treated or judged unfairly due to race/ethnicity; Child Trends, 2013). Accordingly, it is important to be aware of the environmental risks that youth face and

attempt to increase protective factors associated with positive mental health outcomes during mental health intervention.

**Rationale for School Mental Health**. Each day in the U.S. approximately 21% of the population, nearly 61,530,000 students, can be found within the public school system (U.S. Census Bureau, 2014). In this 61,530,000 students there will be approximately 22% or nearly 13,536,600 students that experience some level of symptoms and impairment from a mental health disorder (Merikangas et al., 2010; U.S. Census Bureau, 2014). Despite the prevalence of students in need of mental health support described above, a report by the U.S. Public Health Service (2000) states that only one in ten students (10%) in need of mental health services receive services. Other earlier research reports that in the U.S., approximately only one in six (16.7%) youth with clinically significant diagnosable mental illnesses actually receive mental health services (Burns et al., 1995; Leaf et al., 1996). Moreover, some youth are much less likely than others to receive services. For example, less than one in five (20%) adolescents with anxiety, eating, or substance use disorders are provided intervention; compared to the 59.8% of students with ADHD and the 45.4% of youth with other behavior disorders receiving intervention for those disorders (Merikangas et al., 2011). These data imply that more prevalent, but less conspicuous internalizing disorders, are less treated. Furthermore, Hispanic and African American adolescents are much less likely than their Caucasian counterparts to receive services for mood and anxiety disorders (Merikangas et al., 2011). In this study, the novel *Footprints* intervention is intended to aid the problem of access to care by creating another treatment option that can increase access to services.

Of those youth who do receive mental health services, most receive inadequate services to address their needs (Weisz, 2004). In community-based treatment, there are often long delays between the onset of symptoms and when services are received (President's New Freedom Commission, 2003). Furthermore, when youth do begin receiving services in community-based settings, between 40 and 60% of youth discontinue prematurely from treatment (Baekeland & Lundwall, 1975; Miller, Southam-Gerow, & Allin, 2008). These difficulties in providing treatment for youth are attributed to the disconnection between the mental health system and other systems (President's New Freedom Commission, 2003; Mills et al., 2006). The recognition of these major issues led to the development of the school mental health (SMH) movement. Offering mental health services in public schools has the advantage of increasing access of care to hard to reach youth (Weist & Murray, 2007). SMH systems aim to provide a full array of school-based prevention, early intervention, and promotion interventions for youth in general and special education through collaborative and multidisciplinary partnerships (Weist, 1997; Weist & Murray, 2007). The Footprints program is being developed and evaluated in the context of a school setting and is in line with SMH's goal of increasing access to mental health services.

Mental health programs delivered in the school system can reduce barriers such as time, location, transportation, cost, and stigmatization that are present in other systems (Barrett & Pahl, 2006; Masia- Warner et al., 2006; Weist, 1997). Given the benefits of providing intervention and prevention services in the school setting, research interest in SMH is expanding. Two handbooks on SMH describe the mounting empirical literature and the various applications of SMH programs (Clauss-Ehlers, Serpell, & Weist, 2013;

Evans & Lever, 2003; Robinson, 2004; Weist, Evans & Lever, 2003; Weist, Lever, Bradshaw, & Owens, 2014). Additionally, two peer reviewed research journals *Advances in School Mental Health Promotion* and *School Mental Health* exclusively publish literature on SMH (Weist, Flaherty, Lever, Stephan, Van Eck, & Albright, under review); with an increasing focus on international SMH (Weist, & McDaniel, 2013).

**Proximal and Distal SMH Outcomes.** There is pressure to demonstrate that mental health services improve both mental health outcomes and academic outcomes (Pullmann, Bruns, Daly, & Sander, 2013). Federal legislation like the No Child Left Behind Act, the Individuals with Disabilities Education Act, Race to the Top, and Common Core Standards state that school-based behavioral or mental health interventions should produce positive behavioral and academic outcomes (Fraser, 2013; Hardman & Dawson, 2008; Katsiyannis, Yell, & Bradley, 2001; Tanner, 2013). Notably, a systematic review found that school-based behavioral or mental health interventions tend to have limited effects on distal academic outcomes like Grade Point Average (Iachini, Brown, Ball, & Gibson, 2013). There is a need for school-based mental health interventions that demonstrate positive effects on proximal outcomes like the reduction of mental health symptoms and on distal outcomes like academic grades, discipline referrals, and attendance (Lyon, Borntrager, Nakamura, & Higa-McMillan, 2013). Importantly, the Footprints program targets proximal mental health outcomes and distal academic outcomes by working collaboratively with youth to develop treatment goals for each.

**Positive Behavior Intervention and Support.** In addition to the SMH movement, and ideally working closely with it (see Barrett, Eber & Weist, 2013) is a

comprehensive school wide intervention called Positive Behavioral Interventions and Support (PBIS), which is implemented in more than 19,000 schools in the U.S. in all 50 states (Chitiyo, May, & Chitiyo, 2012; Office of Special Education Programs Technical Assistance Center on Positive Behavioral Interventions and Supports, OSEP TA Center on PBIS, 2013). PBIS typically features a collaborative team-based approach, data-based decision-making, continuous monitoring of student behavior, screening systems, and on-going professional development and support. Importantly, PBIS is a widely disseminated approach that provides a framework for intervention and places emphasis on providing early school-based services for youth.

**PBIS Intervention Framework.** PBIS includes core components and principles to guide practice; however, one myth concerning PBIS is that it is an intervention or a package of treatments (Sugai & Horner, 2010). Instead, PBIS is most accurately described "as a framework or approach that provides the means of selecting, organizing and implementing these evidence-based practices by giving equal attention to (a) clearly defined and meaningful student outcomes, (b) data-driven decision making and problem solving processes, and (c) systems that prepare and support implementers to use these practices with high fidelity and durability" (Sugai & Horner, 2010, p. 4). The Footprints program is designed to be a treatment option for early or Tier 2 intervention that can be employed within the framework of PBIS.

**PBIS Multilevel Approach**. Consistent with a multi-tiered system of support (MTSS) presented earlier, PBIS is based on the public health prevention model and organizes services according to three tiers. Tier 1 is where prevention and climate enhancement for all students is provided, Tier 2 is where prevention and early

intervention for students showing early signs of problems is offered, and Tier 3 is where intervention and case management for students showing more significant challenges occur. In this approach, 80 to 85 % of students are thought to need Tier 1 supports, 10 to 15 % of students are thought to need Tier 2 early intervention, and an estimated 5 % of students will require Tier 3 level intervention (Stormont & Reinke, 2013), with these percentages changing based on community; for example, many more youth may benefit from more intensive intervention in an impoverished community characterized by high levels of violence. For instance, Kamphaus, DiStefano, Dowdy, Eklund, and Dunn, (2010) examined the application of population-based public health models to youth mental health finding that 82.2% of elementary school students are in the normal risk range, 15.5% in the elevated risk range, and 2.3% in the extremely elevated risk range for mental health problems. In contrast, when using the same measure and same cut scores, Renshaw and colleagues (2009) found that 70% fell in the normal range, 18% were rated as elevated, and 12% fell in the extremely elevated range. In their review of these two studies, Schanding and Nowell (2013) described the importance of accurately estimating normal, elevated, and extremely elevated levels of youth mental health problems. While there are differences in current estimates, these data imply that a much larger number of youth have mild mental health problems as compared to more serious levels. Novel interventions, like Footprints, can assist in providing services to this larger population of youth by focusing on early intervention.

**PBIS Prevention Focus**. PBIS uses terminology from public health and the Institute of Medicine to describe both prevention and intervention efforts in this framework. Universal Prevention is similar to Primary Prevention in that it is usually

provided to the entire population and is intended to reduce the rates of new cases; in public health this would be the avoidance of new incidences occurring, whereas prevalence is the current number of cases that are already present in a population (Corrieri et al., 2014). Universal Prevention is usually provided to everyone in the specified population regardless of whether they show preliminary symptoms of a disorder (Corrieri et al., 2014). Selective Prevention may be provided to people that have increased probabilities for developing a disorder in the future (Corrieri et al., 2014). For example, Selective Prevention is provided to students that are already beginning to show signs of a disorder or are at a particular risk for a disorder. Notably, the Footprints intervention would be considered a form of Selective Prevention. Indicated Prevention is intended for individuals at higher risk for developing a disorder and may be showing some symptoms but may not be reaching the level for diagnosis. Indicated Prevention interventions are provided to individuals and groups that already experience a disorder with the aim of limiting more harm and to prevent further deterioration and exacerbation of symptoms. As a selective prevention program, Footprints can be considered a program intended for early intervention at PBIS Tier 2.

**Evidence for PBIS**. School-wide PBIS programs are in the process of gaining empirical support. Chitiyo and colleagues (2012) reviewed 34 PBIS studies from 1990 to 2011, which included 10 experimental studies and 24 descriptive or non-experimental articles. In their review, the authors determined that three studies used randomized designs controlled and used appropriate data analysis techniques (Chitiyo, May, & Chitiyo, 2012). Furthermore, two randomized control studies of PBIS demonstrated significant positive effects in elementary school students (Bradshaw, Mitchell, & Leaf,

2010; Horner, Sugai, Smolkowski, Todd, Nakasato, & Esperanza, 2009). School-wide positive behavior support programs have also demonstrated evidence of effectiveness (Barrett, Bradshaw, & Lewis-Palmer, 2008; Blonigen, B., Harbaugh, W., Singell, L., Horner, R.H., Irvin, L., & Smolkowski, K. 2008). Evaluations of school wide PBIS systems indicate support at the level of school interventions (i.e., Tier 1), but more research is needed evaluating the implementation of programs at each respective level (Hershfeldt, Pell, Sechrest, Pas, & Bradshaw, 2012).

**Interconnected Systems Framework.** Given the rationale for SMH and PBIS, Barrett, Eber, and Weist (2013) propose the combination of these two frameworks into the Interconnected Systems Framework (ISF). The ISF aims to develop a better integration between SMH and PBIS in order to enhance educational outcomes for all students and provide early intervention for those students that may be at risk for developing mental health concerns (Barrett et al., 2013). The ISF is described as an implementation framework that combines SMH and PBIS to increase depth and quality in the three-tiered framework of promotion-intervention. Notably, one current limitation in PBIS is that research on Tier 2 programs has fallen behind compared to research on Tier 1 and Tier 3 programs. As Barrett, Eber, and Weist (2013) state "[t]he logic of the ISF is that together, PBIS and SMH systems are more likely to have the strength to implement a richer continuum of EBPs to achieve positive school and student level outcomes" (p. 6). The ISF framework capitalizes on the framework for effective teaming, data-based decision making and implementation of evidence-based practices to add depth and quality of services, particularly at tiers 2 and 3 through school mental health providers joining with the PBIS team.

**Limitations of Tier 2 Programs.** There are multiple reviews describing effective interventions for youth at risk of developing emotional or behavioral difficulties (Calear, & Christensen, 2010; Neil, & Christensen, 2009). However, these programs often are not implemented effectively within the PBIS framework due to difficulty with a number of practical and logistical difficulties (Hershfeldt, Pell, Sechrest, Pas, & Bradshaw, 2012). For example, often schools do not have interventions in place or are implementing a limited number, insufficient to meet needs of all students who would benefit from Tier 2 intervention (Reinke, Stormont, Clare, Latimore, & Herman, 2013; Stormont & Reinke, 2013; Stormont et al., 2012). In addition, when Tier 2 interventions are provided they typically consist of ongoing programs providing group-based support aimed at providing students assistance with a particular issue, yet do not attend to individual needs within the group (McIntosh, Campbell, Carter, & Dickey, 2009), consistent with a more general concern that Tier 2 programs are generally not tailored to meet the individual needs of students (Reinke, Stormont, Clare, Latimore, & Herman, 2013). Early detection and support can prevent mental health problems from worsening; unfortunately, schools frequently are not meeting the needs of students in need of early intervention (Reinke, Stormont, Clare, Latimore, & Herman, 2013).

Some of the difficulty of implementing programs at the Tier 2 level can be explained by the poor fit between school contexts and the program (Lyon et al., 2014). For example, there are notable differences in the real world as compared to experimental settings in terms of participants, setting characteristics, infrastructure and supports in which programs were originally developed (Kazdin, 2011). Programs that meet the criteria of being evidence-based often do not demonstrate similar effects in schools or

communities as were found in original efficacy studies (Kazdin, 2011). That is, many programs have evidence for their efficacy, but they do not demonstrate significant results in "real-world" application or in effectiveness evaluations (Weist et al., 2007). Furthermore, there are a limited number of interventions that have been developed for and evaluated in school settings (Lyon et al. 2014; Paternite, 2005; Wong, 2008). As a result, programs may encounter numerous barriers to implementation such as personal implementer factors, organizational contextual factors (e.g., limited time, lack of resources, or resistance by administrators or stakeholders), and challenges in organizational policy (Forman et al., 2013).

The manner that services are provided may also contribute to the lack of program fit and effectiveness. Mental health programs are often manualized interventions, which rely on highly structured procedures in a format resembling lesson plans or curriculum intended to be delivered nearly exactly as developed and tested. Intervention developers expect close adherence to manualized procedures as in an efficacy trial, but this is very challenging in real-world environments, especially schools related to generally poor capacity (e.g., not enough providers, facing many competing demands) of schools to provide behavioral and mental health supports (Schaeffer et al., 2005). This problem is facilitating movement toward modularized interventions based on common elements of intervention acknowledged in an extensive literature review to identify practices ubiquitously employed across effective the child mental health approaches (Chorpita, Daleiden, & Weisz, 2005; described below). Mental health providers are given a difficult task when asked to deliver a long manualized intervention to one student in a school setting where they are responsible for a large number of students, deal with frequent

crises, and have significant time constraints (Lyon et al., 2013). Lyon and colleagues (2014) conducted two qualitative studies that examined the effective ways to develop SMH programs within the MTSS framework. Key themes from these two studies were that SMH programs should align with the school context, be flexible and responsive in their service delivery approach, and employ effective data utilization. While there is promise in the movement toward PBIS and its combination with SMH in ISF, there is a current gap in the literature regarding feasible, acceptable, and effective interventions at Tier 2. In summary, there are limited numbers of Tier 2 programs, and of those that exist, they have difficulty demonstrating feasibility and acceptability. Therefore, Footprints is designed to attempt to address these things.

**Positive Youth Development.** Tier 2 programs can benefit from theory that describes positive development of youth. The extensive literature on Positive Youth Development (PYD) can provide an overarching theoretical framework and justification for the program elements found in Footprints. PYD is a multidisciplinary theory that recognizes the strengths of youth and the communities in which they live (Lerner, Almerigi, Theokas, & Lerner, 2005). PYD focuses on universally assisting all youth rather than only "at-risk youth" and recognizes that all youth can benefit from strengthened environments. PYD emphasizes a strength-based view of youth with their own inherent capacities and aims to increase positive development by enhancing factors that function to protect students and increase the likelihood of positive outcomes (Lerner, Almerigi, Theokas, & Lerner, 2005). This approach has been applied to programs aimed at preventing a multitude of problematic behaviors (Dell et al., 2013; Lerner, Almerigi, Theokas, & Lerner, 2005; Tebes et al., 2007). PYD fits well with SMH, PBIS, and ISF by

also being systems focused and acknowledging that youth development occurs within many integrated and interactive contexts, such as family, school, community, and culture.

**Student Protective Factors.** PYD emphasizes the promotion of student protective factors, also known as developmental assets (Dell et al., 2013; Lerner, Almerigi, Theokas, & Lerner, 2005). Extensive research has documented 40 developmental assets that are broken down into external or internal categories. External assets are further subcategorized into four groups: support, empowerment, boundaries and expectations, and constructive use of time. Internal assets are subcategorized into commitment to learning, positive values, social competencies, and positive identity (Scales, Benson, Leffert, & Blyth, 2000). PYD and developmental assets provide a very useful framework for Footprints. Any protective factor that Footprints can identify and enhance could serve to increase the likelihood of a student doing well (Benson, Scales, & Syversten, 2011). For example, by encouraging a student to participate in an extracurricular activity, a program enhances one protective factor, and a corresponding potential risk factor may also be decreased or eliminated (e.g., basketball practice reduces the amount of time spent in a stressful family environment). Research suggests that academic protective factors such as school connectedness, academic expectations for learning (e.g., academic press), and academic motivation may be particular important for intervention (Anderson-Butcher, Amorose, Iachini, & Ball, 2012; Joyce & Early, 2014; Linnenbrink, & Pintrich, 2002). Footprints specifically targets protective factors by having participants identify protective factors by completing a developmental assets checklist and having students create plans to increase protective factors in their lives.

**Integrated Tier 2 Intervention.** As described from above, Footprints incorporates elements from several other interventions. Domitrovich and colleagues (2010) describe an innovative approach to conducting school-based intervention at Tier 2 called integrated intervention. The authors explain integrated programs as programs that "result from the fusing of independent strategies or programs into one enhanced, coherent intervention or strategy. Integrating proven practices that target multiple risk and protective factors in a coordinated fashion could have a synergistic effect" (Domitrovich et al., 2010, p.74). This study aims to conduct a preliminary evaluation of the Footprints program that integrates three separately effective intervention elements. The first strategy, Motivational Interviewing (MI), is a popular intervention employed with adults in community-based settings as a strategy for increasing motivation to engage in treatment (Miller & Rollnick, 2012; Substance Abuse Mental Health Services Administration [SAMHSA], 2014). MI is commonly used as a way to increase motivation for engagement in other effective treatments (Herman, Reinke, Frey, & Shepard, 2014). The second component of this integrated Footprints intervention are common elements; practices ubiquitous across EBP approaches and may permit more brief and efficient intervention to be provided by school personnel (Lyon et al., 2014; Weist et al., 2009). Due to the difficulty implementing manualized interventions, there is a movement to make interventions more feasible and acceptable through treatment that employs modularized common elements (Chorpita, Daleiden, & Weisz, 2005; Weisz et al., 2012). This integrated approach will enhance protective factors for youth by targeting these area for change in individual sessions and offer training in CBT skills and psycho-education on protective factors; particularly academic protective factors for school

connectedness, positive expectations for learning, and academic motivation (Scales, Benson, Roehlkepartain, Sesma, & Van Dulmen, 2006). All of these integrated elements of Footprints have empirical support and are based on a review of literature. The study is the first to integrate these three empirically supported approaches (MI, modular cognitive-behavioral therapy, and enhancing protective factors).

Domitrovich and colleagues (2010) provide multiple rationales for integrated programs at Tier 2. First, most school-based interventions find modest effects and by combining multiple effective programs it is plausible to increase the strength of SMH programs. It is possible that combining proven strategies may have additive or multiplicative effects, because complementary active ingredients interact synergistically (Domitrovich et al., 2010). Second, there is considerable heterogeneity in terms of student mental health needs and the limited number of interventions that a school may have will not address all the various problems of students (Domitrovich et al., 2010). By employing interventions with multiple elements, it may be possible to address the various needs of youth (Domitrovich et al., 2010). Integrated programs may also increase exposure to the intervention by offering additional flexibility in their use of common elements and permitting various program elements to address different needs of youth (Domitrovich et al., 2010).

**Motivational Interviewing.** Student motivation is identified as a student protective factor and is an important consideration for and for attendance and participation in SMH programs (Lyon et al., 2014; Linnenbrink, & Pintrich, 2002; Ratelle, Guay, Vallerand, Larose, & Senecal, 2007). If a student's motivation is low or their attitude about engaging in a SMH program is poor, they may be less likely to attend,

participate, or complete required intervention activities. For this same reason, MI is a popular intervention to treat many different types of problematic behaviors (Miller & Rollnick, 2012; SAMHSA, 2014). Fundamental to MI are the principles of evocation (i.e., evoke desire to change as opposed to educating), collaboration (i.e., client and therapist work together), acceptance (i.e., absolute worth or acceptance, accurate empathy, autonomy support, and affirmation), and compassion (i.e., actively support the other's good) (Miller & Rollnick, 2012). Therapists achieve these goals by expressing empathy, effectively managing sustained talk (e.g., avoiding arguments), developing discrepancies between the client's values and the status quo of current dysfunctional behavior, and supporting the client's self-efficacy for change. In addition, the therapist must evoke and recognize client change talk (e.g., disadvantage of the status quo, advantages of change, optimism for change, intention to change). Footprints uses MI to get students engaged in group-based CBT, increase academic motivation, and increase school engagement.

**Background on Motivational Interviewing.** Clinicians and researchers originally used MI in rehabilitation centers as a brief intervention for substance and alcohol abuse (Miller & Rollnick, 2012). Numerous studies and several meta-analyses demonstrate MI's effectiveness in reducing alcohol and substance use and increasing participation in rehabilitation programs (Lundahl & Burke, 2009; Lundahl, Kunz, Brownell, Tollefson, & Burke, 2010; Britt, Blampied, & Hudson, 2003). The National Registry of Evidence-based Programs and Practices (NREPP) recognizes MI for alcohol treatment as ready for dissemination (i.e., dissemination ratings between 2.4 and 3.9; SAMHA's NREPP, 2012). In addition to treating substance and alcohol abuse,

researchers and practitioners have adapted and implemented MI in a variety of settings, targeting many different behaviors (e.g., health promotion and parenting; Miller & Rollnick, & Bulter, 2008; Leffingwell et al., 2007; Dision & Kavanagh, 2003; O'Leary, 2001; Rao, 1999; Slavert, Stein, Klein, Colby, Barnett, & Monti, 2005).

**Motivational Interviewing in Schools**. The popularity of MI has resulted in an enthusiastic desire for the use of MI in school-based interventions. Some preliminary research on the use of MI in school-based interventions exists; however, at present, MI for intervention with youth is mostly done in an indirect fashion (i.e., engaging parents and teachers; Frey et al., 2011; Herman, Reinke, Frey, & Shepard, 2014). There are only a small number of studies that have evaluated the use of MI in schools directly with youth (Strait et al., 2012; Terry, Strait, Smith, & McQuillin, 2013; Terry, Strait, McQuillin, & Smith, 2014; Terry, Miller, Strait, Smith, & McQuillin, 2014). In the first study, 103 middle school participants were randomly assigned to either MI (n = 50) or a waitlist control (n = 53). Participants in the MI condition demonstrated significant increases in math grades and self-reported participation (Strait et al., 2012). This effect was replicated in a second study using the same MI protocol (Terry, Strait, Smith, & McQuillin, 2013). In this study, students were randomly assigned to either MI (n = 25) or a control group (n = 24). Again, there was a positive effect on math grades (Terry, Strait, Smith, & McQuillin, 2013). In a third study, a second session of MI with performance feedback was added to examine potential dosage effects of MI (Terry, Strait, McQuillin, & Smith, 2014). In this study, participants were randomly assigned to either one session of MI (n = 21) or two sessions of MI with performance feedback (n = 21). In the two sessions of MI with performance feedback, significant effects were found for math, science, and history

grades (Terry, Strait, McQuillin, & Smith, 2014). In a fourth study, a conceptual replication of the MI dosage study, participants were randomly assigned to either one MI session (n = 12) or two sessions with performance feedback (n = 14). The effect size for student grades in the two sessions of MI group were larger than for one session of MI (Terry, Miller, Strait, Smith, & McQuillin, 2014).

**Motivational Interviewing and Integrated Interventions**. MI is commonly used as a way to increase motivation for engagement in other effective treatments (Herman, Reinke, Frey, & Shepard, 2014). For example, MI is used effectively with teachers as part of a consultation program to increase motivation for the use of effective classroom management strategies (Classroom Check-up; Reinke, Lewis-Palmer, & Merrell, 2008) and to motivate parents to engage in behavior management training programs for their children (Family Checkup; Dishion & Stormshak, 2007). Additionally, there is research on programs that combine MI and Cognitive Behavioral Therapy (CBT) for anxiety and depression, as well as for programs combining MI with behavioral activation to treat depression for adolescents in community-based settings (Chu, Colognori, Weissman, Bannon, 2009; Cornelius et al., 2011; Kertes, Westra, Angus, & Marcus, 2011). Given the successful pairing of MI with other effective interventions, it is possible that combining MI with common elements of effective intervention approaches (e.g., behavioral activation, cognitive restructuring) could increase student motivation in what would be a shorter and more flexible intervention. Again, Footprints integrates MI, common elements via modularized CBT (described next) allowing for youth to select relevant skills and research on youth protective factors to increase flexibility of the intervention.

**Modularized Cognitive Behavioral Intervention.** As described above, the difficulty implementing programs at Tier 2 can be attributed to the poor fit between school contexts and the program (Lyon et al., 2014). However, there is a movement within intervention research to decrease the research-to-practice gap through the use of modularized interventions (Chorpita, Daleiden, & Weisz, 2005). Within these modularized interventions, "common elements" are employed to enhance the flexibility of intervention (Chorpita, Daleiden, & Weisz, 2005; Weisz et al., 2012). These common elements were identified in an extensive literature review of the child mental health literature to identify practices ubiquitously employed across effective approaches.

With this approach, intervention can be tailored to the needs of a particular youth by using individual modules that target potential areas of concern. For example, the PracticeWise system (www.practicewise.com) was developed to enable flexible provision of evidence-based youth mental health services by permitting clinicians to select the most appropriate modules for commonly experienced childhood mental health problems (i.e., anxiety, depression, conduct problems, trauma). In this flexibility, providers have rated modularized intervention as more acceptable than standardized treatment manuals (Borntrager, Chorpita, Higa-McMillan, & Weisz, 2009). Thus, modular interventions in SMH may permit more brief, efficient, and feasible intervention to be provided by school personnel at Tier 2 (Lyon et al., 2014; Weist et al., 2009).

Notably, evidence from one randomized experiment found that the use of common elements has been found more effective when compared to manualized or usual care (Weisz et al., 2012). Weisz and colleagues (2012) randomly assigned 84 community clinicians providing services to 174 clinically referred adolescents to one of three

conditions: standard manuals (i.e., cognitive behavioral therapy for depression, cognitive behavioral therapy for anxiety, and behavioral parent training for conduct problems), modular treatment with an integrated approach from three separate modules or common elements, and care as usual (Weisz et al., 2012). The modular treatment condition demonstrated significantly steeper trajectories of improvement and had fewer clinically significant diagnoses than care as usual and standardized treatment. (Weisz et al., 2012) Further, in this study, the standardized manual condition did not differ when compared to the care as usual group (Weisz et al., 2012). Recently, this common element approach is being applied in schools at Tier 2. For example, the Brief Intervention for School Clinicians (BRISC) uses a stepped care approach to allow students the level of support needed in a multi-tiered system (Lyon et al., 2014).

**Summary and Study Purpose.** Mental health disorders are prevalent in youth and there is a high level of unmet need. Barriers to care are being reduced through multi-tiered systems of support in schools, ideally including school mental health (SMH) and Positive Behavioral Interventions and Supports (PBIS) working together (Barrett et al., 2013). However, within this context, there are relatively few empirically supported approaches at Tier 2 that are also feasible to implement for students requiring early intervention. To help address this gap, a novel program called Footprints was developed and is the focus of this dissertation, which intends to evaluate its feasibility, acceptability and impact. Capitalizes on the benefits of integrated intervention, Footprints includes emphases on empirically supported approaches of MI, modular cognitive behavioral therapy, and enhancing student protective factors (Domitrovich et al., 2010).

# CHAPTER 2

# DESCRIPTION OF "*FOOTPRINTS*:" MOTIVATIONAL INTERVIEWING TO PROMOTE COGNITIVE-BEHAVIORAL SKILLS, ACADEMIC OUTCOMES, AND ACADEMIC PROTECTIVE FACTORS IN MIDDLE SCHOOL STUDENTS

**Overview.** This section describes the development of the Footprints program, including a description of key stakeholder input and the revision process for intervention materials. We then provide an overview of the Footprints Individual Sessions and Footprints Group Sessions. After this section, the research design of the study, recruitment of participants, and description of the sample will be discussed.

**Stakeholder Input and Revision of Materials.** The idea for this program was guided by an adolescent who experienced severe life stress growing up in conditions of poverty with very limited protective factors. He worked to improve his emotional/behavioral functioning but was unable to reduce a significant risk factor in his life: a deviant peer group. Under the influence of these peers, he was involved in a crime and is now incarcerated. He is now strongly motivated to help others and worked with USC researchers to develop the Footprints program. He has written a series of letters from jail describing his ideas. After consulting with the incarcerated youth during the initial development phase, the primary investigator (PI) presented an overview of Footprints to a multidisciplinary Adolescent Research Workgroup at USC and the USC School Mental Health Team to receive feedback on program elements and focus.

Feedback from this team was incorporated into the first draft of the Footprints manual. Next, in the spring of 2014, PI Terry worked collaboratively with three graduate students to further refine the Footprints materials through practice rehearsals and feedback sessions.

A small pilot study (n = 5) was conducted to practice program procedures and evaluate if Footprints materials were comprehensible and developmentally appropriate (e.g., appropriateness of language, degree of excitement/interest in students, time required to complete activities). Students from a middle school in the downtown Columbia, South Carolina area were identified by the principal and school guidance staff, and then invited by PI Terry to participate in this study. Parental consent and student assent were obtained after thoroughly explaining voluntary participation.

In the pilot study, the providers of the Footprints intervention were four graduate students enrolled in the Psychology 830 Advanced Child and Family Practicum course in the Department of Psychology at the University of South Carolina. After each group, the graduate students were asked to provide feedback on program activities. The typical feedback was concerned with making worksheets shorter and increasing the amount of time doing practice exercises; Footprints was revised based on their responses.

After the pilot study of this intervention, PI Terry met with a school counselor who observed a Footprints group. She stated that she liked the content of the program and recommended that Footprints take place during the third nine-week period of school to allow for better identification of students and prevent any decline that might occur over winter break. The overall aim of the pilot study was to standardize program procedures and refine the Footprints program. As above, it is noteworthy that Footprints materials

and procedures are based on a modular approach that can be used individually or used in a sequential manner to address common mental health problems experienced by youth.

**Overview of Footprints**. The empirically-based rationale for the structure and number of sessions is established in prior research on mental health interventions in schools. Footprints is novel in its use of two individual sessions providing the opportunity for youth to develop individualized change plans and six group-based sessions intended to increase additional flexibility by offering multiple relevant CBT skills in a stepped care approach. Footprints consists of psychoeducation, values clarification, individual goal setting, behavioral activation, cognitive restructuring, calming/problem solving, tailored individual support, and developing plans to increase protective factors (see Table 1); these are well established intervention components, however the combination of the components in Footprints is unique. Established school-based interventions vary in the number of sessions and modality offered. Eight sessions in Footprints was decided upon to fill the gap in the number of sessions that other SMH programs currently offer (e.g., SEED [12 individual], Coping Cat [16 individual], CBITS [10 group sessions, 1 to 3 individual, 1 teacher, 2 parent], BRISC [4 individual]). Footprints combines multiple effective programs (i.e., MI, modular CBT, and research on protective factors) into both individual and group sessions. However, little is known about the effects of eight sessions that combine individual and group formats, which may offer increased individual support and flexibility.

**Footprints Individual Sessions.** In the two individual Footprints sessions, MI techniques were used to increase student engagement in the Footprints program. In the individual sessions, students had the opportunity to develop a specific goal with their

"Footprints Coach" and create a plan to achieve the goal they selected. These goals were usually academic and focusing on distal academic outcomes. These sessions also provided the opportunity to offer individual tailored support to students by allowing participants to incorporate the skills that they wanted to focus on during the Footprints groups from the modularized CBT skills. The CBT skills that the participant chose targeted proximal emotional or behavioral change targets (See Table 4 for a list of student goals).

**Individual Session One.** The first individual session was based on a single session of school-based MI intervention originally developed by Strait and colleagues (2012) and subsequently replicated by Terry and colleagues (2013). In the first individual Footprints session, students met with a Psychology 830 Child and Family Practicum graduate student provider serving as their Footprints Coach. Graduate students followed a semi-structured interview protocol with questions and statements planned in advance to help guide the discussions; however, they were instructed and trained to flexibly use various MI techniques to respond to the students' answers in a manner consistent with MI (see Appendix A Individual Session One protocol). This session was designed to take approximately 45 minutes to complete in order to be able to be accomplished during one class period.

At the end of the first individual session, students had the option to complete a Footprints Goal Sheet (see Appendix C). Completion of the Goal Sheet was optional in order to be consistent with the principles of MI and to support the students' intrinsic motivation for change (Miller & Rollnick, 2012). Footprints goals focused on specific behavior change targets that the student selected and incorporated specific CBT skills

taught during the Footprints groups, strategies for enhancing protective factors, and goals to increase academics. This goal sheet was returned to the students during the third Footprints group session and used to help the student evaluate their progress towards their goal each week. At the beginning of the third Footprints group, the Footprints Goal Progress Monitoring Sheet was used to provide students feedback on progress towards their goal. It included a bar graph displaying an average of students' current grades in math, ELA, history, and science versus their goal they created for their grades (i.e., getting a B average). Additionally, a line graph comparing students' goal grades and their actual grades over time was displayed. The Footprints Goal Progress Monitoring Sheet also contained a line graph displaying the self-report use of the skills they learned in the program (these data were collected from the Footprints Goal Progress Monitoring Sheet the week before) versus their intended use of the those skills from their goal. The Footprints Goal Progress Worksheet also posed questions similar to the questions asked during the MI sessions intended to solicit change talk responses, such as: *what is your Footprints goal, how would you rate your use of a good attitude this week, how would you rate your use of good habits this week, how would you rate the amount time you were around people, places, or things that help you reach your goal this week, how close are you to completing your Footprints goal, how happy are you with your current progress with your Footprints goal, how much did you use your plan last week, how important is it for you to use your Footprints plan this week, how confident are you that you can reach your Footprints goal, what is something good that would happen if you reached your goal this week, what are some reasons that you think you can reach your Footprints goal?* (see Appendix E).

**Individual Session Two.** The second Individual Footprints Session was based on the second session of school-based MI developed by Terry and colleagues (2014). In the second individual session, the graduate students first provided a summary of the content from the first individual session using reflections on the student's reasons for making their goal. Then the student's goal and information concerning their stated reasons for creating a Footprints goal were reviewed from the first session. Subsequently, the graduate student Footprints Coach reviewed the student's current grades or other data pertaining to the goal that the participant created in order to develop discrepancy between their goal and their present performance (e.g., their self-rated use of CBT skill versus their intended use of those skills) consistent with a core principle of MI (Miller & Rollnick, 2012). Additionally, bar graphs and line graphs displaying the student's progress, similar to those created for the Footprints Progress Monitoring Goal worksheet, were provided to the Footprints Coaches who then asked the participants open-ended change talk questions based on MI techniques (Miller & Rollnick, 2012; see Appendix B).

**Footprints Group Sessions.** The individual sessions used MI to promote engagement in the group-based modularized CBT component of Footprints. In six group sessions, students engaged in the developed curriculum (refined in the Spring 2014 semester) based on common elements of empirically supported cognitive-behavioral interventions -- psychoeducation, goal-setting, behavioral activation, cognitive restructuring, problem solving, social skills training, quick calming/relaxation, (Chorpita, Daleiden, & Weisz, 2005) and psychoeducation about protective factors (e.g., problem solving and planning how to increase protective factors and reduce risk factors). The

CBT skills used in Footprints were selected to address some of the most prevalent difficulties that youth experience. For example, behavioral activation and cognitive restructuring can be helpful for students with high levels of anxiety or depression (Chu, Colognori, Weissman, Bannon, 2009; Cornelius et al., 2011; Kertes, Westra, Angus, & Marcus, 2011; Merikangas et al., 2010) and problem solving and social skills training can be helpful for students with high levels of externalizing behaviors (Chorpita, Daleiden, & Weisz, 2005; Merikangas et al, 2010). Each group session consisted of a check in procedure to have the student evaluate their attainment of a goal and follow up on the use of the CBT skill taught the week before, education on a new skill, skill practice with the group, and assignment of a practice exercise for that week.

**Group Session One.** In the first session, the students were introduced to the Footprints program and there was a discussion of activities that occur during each weekly group meeting. In the "*Footprints Overview*" module, a description of weekly check in procedures was provided. Check in took place at the beginning of each group. During check in, students were asked to review progress towards a Footprints goal they developed. At the beginning of each group session students were also asked to complete a progress monitoring measure that asked students questions about how things are going in their daily life (Quirk, Miller, Duncan, & Owen, 2013; described in next section). At the end of each Footprints group students came up with a weekly goal with encouragement from the coach to complete the goal before the next group session. These weekly goals were intended to reinforce the CBT skill taught during group that week (e.g., homework assignments that focused on values clarification, goal setting, behavioral activation,

cognitive restructuring, calming, problem solving, plans to increase protective factors). The procedures above reoccurred during each Footprints group session.

Group expectations and limitations on students' privacy and confidentiality were explained and informed assent and voluntary participation were reviewed and explained again. Then a description of the background of the Footprints program was provided to students by the coach. A collaborative conversation of program rules (i.e., Participate, Follow Directions, Be Respectful, Communicate Appropriately) was conducted with the students by eliciting feedback on the students' thoughts on appropriate group rules. The first group session also completed psychoeducation on the cognitive-behavioral approach of emotion regulation by describing the relationship between thoughts, behaviors, and emotions by using handouts and other materials created for the student (see Appendix H and Appendix G). During this conversation Footprints staff used open-ended questions to promote participation (e.g., "*why do you think it is important to have a good attitude, what are some reasons you think it may be helpful to develop good habits, why do you think it is helpful to have a lot of people or things in your life to help you reach your goals?*"). At the end of each group meeting, students were instructed to decide on an appropriate goal to practice over the week (see Appendix I).

**Group Session Two.** During check in, students were asked to identify something that went well during their week, there was a brief review of the program rules, and the group reviewed last weeks' practice exercise. During check in procedures there was also the time allotted to problem solve and employ additional practice if needed. This "*Personal Values and Goals*" module provided instruction for students on how to recognize and clarify their personal values and identify accomplishments that are

important to them. Students were asked to complete an activity that involves identifying a role model, which is then used to assist students in identifying their own personal values (e.g., *who is someone that you admire*?). Also, during a second values clarification activity, students were read a story and they were asked to complete its ending. In this story, students were asked to imagine it is the last day of the school year and they at the school awards day. In the story, they are receiving an award and three people that they know very well were on stage to tell the school about their accomplishments. Students were then asked to complete the story with what they want the people reading their description to say (see Appendix J and Appendix K). During the second group meeting, the practice exercise was to record three instances of doing behaviors that are consistent with the values they identified (see Appendix L).

**Group Session Three.** During the third session and each of the subsequent group meetings, the weekly group activities described above reoccurred. In the third group session, in addition to the other check in procedures described above, students began to complete additional progress monitoring measures on the Footprints goal they created. This procedure began after the first MI session with a Footprints staff coach where the student developed a goal of something they want to achieve during the Footprints program. Data from this progress monitoring measure was included in the Footprints Goal Progress Monitoring Sheet (described in the individual MI session earlier). During the third group session a module called "*Work on Yourself: Developing the Best Good Habits Possible,*" the CBT skill of behavioral activation was taught and practiced. This CBT skill describes the relationship between engaging in enjoyable activities and positive changes emotions and behaviors. During this group, students identified a list of enjoyable

activities then rated how they currently felt then had the opportunity to engage in an enjoyable activity for 10 minutes (i.e., play on the air hockey table in the HMS mentoring room, talk with a friend, play a board game, use the computer, etc.) and then rated how they felt after the activity (see Appendix M). For the practice exercise activity, students used the list of enjoyable activities to schedule some times that week to do these the things they enjoy. The leader of the next Footprints group asked if students completed the practice exercise activity during check in the following week (see Appendix N).

**Group Session Four**. During this group session, after the completion of the reoccurring group procedures, the CBT skill of cognitive restructuring was taught in a module called "*Attitude Upgrade: Creating the Best Attitude Possible*." This module used a worksheet to guide an activity teaching participants the relationship between thoughts or attitudes and emotional states (see Appendix O). After teaching students to identify their automatic thoughts, defined as maladaptive thinking styles that have a bidirectional relationship to emotions and behaviors (Beck, 2011), they practiced alternative ways of thinking (i.e., cognitive restructuring strategies) by evaluating automatic thoughts that might occur after common scenarios that students face in schools (e.g., *You get to school and realize you left your homework at home. You're afraid your teacher is going to be mad. How can you change your attitude in this situation?, Two of your friends are fighting and you keep getting pulled in the middle of it. You're getting pretty angry that no one is getting along. How can you change your attitude in this situation?, Your teacher has given you a ton of homework that is really tricky! It's really frustrating because you feel like you have been working on it forever and there are so many other things you would really like to be doing right now. How can you change your attitude in this situation?*). Then students were asked to engage in a practice exercise by using the strategies throughout the week (see Appendix P).

**Group Session Five.** During this group session the module called "*Calming Down and Problem Solving: Feeling Better when you feel Mad, Bad, or Stressed Out*," the CBT skills for relaxation were taught through deep breathing and muscle relaxation exercises. The main purpose of training in these CBT skills was to assist students in regulating their behavior and emotions after becoming angry or frustrated. To practice these skills, students were asked to rate how they felt before engaging diaphragmatic breathing and progressive muscle relaxation, then after several rounds of activity they are asked to rate how they felt again. This is a common practice for teaching relaxation training and calming (Chorpita, Daleiden, & Weisz, 2005) (see Appendix Q). Next, students were taught to use a problem solving strategy to create a plan to deal with frustrating situations by using the problem solving techniques taught in the group session (see Appendix P). Students created a practice exercise to use relaxation and problem solving techniques during the week and were given a worksheet to facilitate practice (see Appendix R).

**Group Session Six.** During this group session the module called "*Protective Factors: People, Places, Things, or Activities that Help You Reach Your Goal and When Times Are Toug*h," provided psychoeducation about protective factors. This concept was taught to students describing protective factors in terms of being people, places, activities, or things that make it more likely for participants to achieve the goals that are important to them and can help them deal with difficulty and using a motivational enhancement approach by asking open ended questions regarding advantages increasing protective factors. Students then engaged in a group activity where they identified protective factors by completing the Developmental Assets Checklist (Watson-Adams,

2006). Developmental Assets Checklist for Adolescents (DACA) was developed for youth aged 12-18 years old and is based on the 40 developmental assets identified by the Search Institute recognized to contribute to positive developmental outcomes. Students were then asked questions to create a plan for how to increasing protective factors (e.g., *what are 3 things that help you the most, how can you increase these 3 things that help you, what are 3 things that keep you from achieving the things that are important to you, how can you decrease these 3 things?*). For a practice exercise, students were asked to create a goal to engage in additional protective factors and think of ways to decrease interaction with environmental risk factors they identified (see Appendix S).

# CHAPTER 3

# STUDY AIMS AND RESEARCH METHODS

**Specific Aims of Study.** As mentioned above, this study is intended to be a preliminary evaluation of the feasibility, acceptability, and preliminary impact of Footprints. To achieve this, a study was conducted with half of the participants randomized to receive Footprints and half the participants serving in the treatment as usual in a waitlist control group. Participants in the treatment as usual in a waitlist control group received school supports and services as they would normally occur plus an abbreviated version of the Footprints program after posttest data collection. The implementation of the Footprints study in the spring of 2015 is described below.

**Footprints Providers and Training.** The providers of the Footprints program were ten doctoral students enrolled in the Psychology 830 Advanced Child and Family Practicum within the Department of Psychology at the University of South Carolina with five doctoral students in the School Psychology Program and five in the Clinical-Community Psychology Program. At the beginning of training and prior to working with any students, all graduate students successfully completed background checks through the South Carolina Law Enforcement Division. Each graduate student completed didactic training on MI, behavioral rehearsal in role-play situations, and two behavioral rehearsals fidelity assessments. The providers had the option of attending up to ten two-hour-long MI trainings offered from October 2014 through January 2015. The average number of

coaches at each of these training was M = 6.70 with a standard deviation of SD = 2.50 and a range of 4 providers in attendance to 10 providers attending. The average amount of time providers spent in training was 13.4 hours. Eight of these trainings were led by PI Terry and two of these trainings were led by another graduate student that participated in multiple previous MI research studies. During the trainings not lead by PI Terry, videos of PI Terry performing the MI protocol were shown with specific MI skills labeled during the video (e.g., building rapport, discussing behavioral activation, cognitive restructuring, importance of making good grades, and developing discrepancy between the student's plan and current behavior). There were a total of 5 videos demonstrating various portions of the first and second Footprints sessions that added up to a total of approximately 45 minutes of training video. At the end of training, Footprints coaches each met with PI Terry individually and completed fidelity assessment role-plays. Coaches demonstrated that they were able to perform greater than 95% of the core components of the individual Footprints sessions before working with participants. This was accomplished by conducting semi-standardized role-plays with PI Terry using the individual session self-report fidelity checklist developed to measure self-report fidelity of the Footprints Coaches.

**Recruitment of Participants.** Prior to any participant recruitment activities, approval for the current study was obtained from the USC Institutional Review Board, Richland School District One's Office of Research, Assessment, and Evaluation, and the principal of HMS. HMS is located in downtown Columbia, South Carolina and serves approximately forty square miles of the downtown Columbia area. According to the (2014) school report card, HMS serves 894 students consisting of 49.2% receiving

free/reduced lunch status, 52.3% African-American, 38.1% White, and approximately 9.6% Asian/Pacific Islander or Hispanic students. Students placed in at least one Advanced Academic Program (AAP) class totaled 39% of participants. HMS describes itself as a PBIS school and has allowed PI Terry to conduct research with HMS students as participants since 2011.

**Participant Consent and Assent**. In the fall 2014 semester, HMS administrators were asked to identify students displaying poor academic performance (i.e., less than a C average) and students demonstrating disruptive behavior (i.e. more than two discipline referrals). In October, HMS students referred by school counselors and administrators were recruited to participate in this study. School guidance staff and the administration at HMS generated a list of 97 students for the Footprints program. After voluntary participation was thoroughly explained, these students were provided consent forms to take home, have signed, and return. PI Terry met with these 97 students over the next few weeks on multiple occasions (i.e., some students up to three times) to explain voluntary participation and provided consent forms to be taken home and signed by a guardian. After a guardian signed the consent form, voluntary participation was explained again and the assent portion of the form was completed. Although each student verbally stated that they wanted to volunteer to participate, initially only 33 students returned their consent forms.

The school did not divulge specific information or data to PI Terry about a child (e.g., exhibits certain problem behavior without parental permission) before consent and assent was obtained. PI Terry met with these students outside the presence of any school officials to thoroughly explain voluntary participation and make it clear to the

participants that there would be no negative effects for not participating in the study. These meeting were held with groups of students in the mentoring room at HMS. Similar procedures were instituted in previous studies at HMS and were done to ensure voluntary participation is upheld and that the students do not feel as if they would get into trouble with the school for not participating (Strait et al., 2012; Terry, Strait, Smith, & McQuillin, 2013; Terry, Strait, McQuillin, & Smith, 2014; Terry, Miller, Strait, Smith, & McQuillin, 2014).

**Randomization**. After recruitment concluded in January, students were randomized and assigned into one of two groups, either the Footprints program or a treatment as usual waitlist control group. Stratified random assignment was performed by creating list of students that returned consent forms then sorting the list by grade and then by gender. Next, a list of randomly generated numbers was used to randomly assign participants to groups. At the beginning of the Footprints intervention, a sample of 43 middle school students was randomly assigned to either the Footprints group or the waitlist control group. After the stratified random assignment, there were 22 middle school student participants receiving the Footprints intervention and 21 participants serving in the treatment as usual waitlist control condition. Demographic information for this sample consisted of 32.56% 6$^{th}$ graders, 32.56% 7$^{th}$ graders, and 41.86% 8$^{th}$ graders along with 83.72%, African American and 16.28 % Caucasian students. Gender consisted of 60.47% male and 39.53% female with 100% of this sample eligible for free lunch status (see Table 5 for demographic information). Per originally proposed recruitment procedures, teachers completed the teacher version of the Pediatric Symptom Checklist screener at pretest and rating the students' current level of cognitive, emotional, and

behavioral symptoms; the participants in this sample averaged a score of M = 18.30 and SD = 12.21, pretest indicating an elevated but sub-clinical sample (i.e., cutoff score of 28 indicating clinical levels of impairment) (Stoppelbein, Greening, Moll, Jordan, & Suozzi, 2012). One student assigned to the Footprints condition did not participate in the study because the participant transferred to another school, however the participant was included in the data analysis due to intent to treat analysis. Conditions were equivalent at pretest (see results section).

**Participant Recruitment and IRB Amendments.** Screening of participants was originally planned to begin after a sample of 80 students completed consent and assent procedures, however significant difficulties were experienced when attempting to have students return consent forms despite reporting wanting to participate. This difficulty in recruiting participants resulted in IRB amendments to the recruiting procedures. Working closely with the faculty research advisor for this project, the PI Terry completed IRB amendments to the recruitment procedures in an effort to increase the sample size of this study. After this initial low response, PI Terry requested and was granted an IRB amendment to mail consent forms home to parents with a prepaid envelope for consent forms to be returned via mail. In early January, again in order to increase the number of participants in the study, a second amendment requesting a change to recruitment procedures was submitted to the IRB. This amendment requested permission to contact the Social Worker/School Liaison at Epworth Children's Home to request referrals for Epworth students attending Hand Middle School. The IRB required responses to several follow up questions regarding concerns over the voluntary participation of Epworth students placed under Department of Social Services custody participating in the study.

These questions were addressed and this IRB amendment was approved. In mid-January, an amendment requesting permission to contact parents of middle school students that had returned consent forms, yet failed to return pretest survey was submitted. The IRB approved procedures involving contacting parents over the phone in order to prompt them to return the student pretest surveys. Despite the countermeasures to increase the sample size, the sample size in this study did not meet the original goal of 80 participants that was intended to make the screening procedures possible. The final sample of 43 participants consisted of 32.56% 6$^{th}$ graders, 32.56% 7$^{th}$ graders, and 41.86% 8$^{th}$ graders along with 83.72%, African American and 16.28 % Caucasian students, 60.47% male, 39.53% female, 100% of this sample eligible for free lunch status (see Table 5). All participants that had completed the consent and assent procedures were included in the study, forgoing the originally proposed participant screening procedures.

**Study Funding and Participant Incentives**. Internal university funding support for this study was provided by the USC Office of the Vice President of Research's Support to Promote Advancement of Research and Creativity (SPARC) Fellowship. All student participants regardless of assignment to the Footprints program or the treatment-as-usual waitlist control group were provided a $40 incentive in the form of gift cards for participating in Footprints and completing survey measures at pretest and protest. A teacher and a parent of each research participant were provided a total of $10 each in the form of gift cards for completing pretest and posttest surveys. The total amount of incentives was $3,520 (i.e., teacher screening measure = $400, student pre-post measures & retention = $2,080, teacher pre-post measures = $520, and parent pre-post measures = $520).

**Measures for Aim 1.** The first aim of this study is to assess the feasibility and acceptability of the Footprints program (see 3 Table for Measurement Timeline). Acceptability ratings from provider and students were collected via surveys after each of the Footprints groups and individual sessions. These surveys included measures of program acceptability, program experiences/satisfaction, and the therapeutic alliance between the Footprints providers and the participants. Additionally, a treatment as usual grid was used to assess any other services that participants may have been receiving outside of the Footprints program. Lastly, a training satisfaction survey was given to the Psychology 830 service providers to measure their satisfaction with the training they received on MI and Footprints procedures. Descriptions of these feasibility and acceptability measures along with information about their psychometric properties are provided below. Descriptive statistics for the feasibility and acceptability measures are provided in the results section (see Chapter 4).

**Footprints feasibility and fidelity assessment.** Footprints program feasibility was assessed by measuring the percentage of groups students were able to attend, the percentage of individual sessions that were able to be completed, and the percentage of core components that were able to be completed by providers during the individual and group sessions.

**Program attendance.** Feasibly gaining access to student participants to deliver services during the school day was assessed by recording participant attendance to both individual and group sessions as well as by measuring the mean time each of these sessions lasted. Approximately three minutes after each class period started, the HMS attendance office was contacted and students were requested to report to the Footprints

classroom. The amount of time that the groups and individual sessions lasted was recorded after each session. The group sessions and individual session were intended to last approximately 40 minutes. However, by recording the amount of time each session lasted, it is possible to understand how feasible it is to gain access to students.

**Self-report fidelity and group observations.** To measure the feasibility of implementing the Footprints program with fidelity, the Footprints group and individual meetings were delineated into core components (i.e., major tasks in each module; see Appendix T) and service providers completed self-report measures on their level of implementation of core program components. Items based on the evaluation of a previous positive youth development program were used for this measure; providers were asked to rate the completion of the each core component using the rating scale: "this activity was used," "this activity was used, but modified," "this activity was not used" (Iachini, Beets, Ball, & Lohman, 2014). The core component items that the Footprints providers self-rated were: *leader had all materials, program rules were reviewed, completed the Outcome Rating Scale* (see description below)*, identified something that went well during the week, reviewed practice exercise from last week, used Footprints review handout, completed practice activity, assigned practice exercise, completed Group Rating Scale* (see description below)*, completed student acceptability measure, completed group leader acceptability measure(s), rated student participation, made session notes.* Both the provider delivering the Footprints group and the facilitator reported the level of completion of core components. The inter-rater reliability between the Footprints group leader and the facilitator was calculated to be Kappa = .62, indicating substantial agreement between raters (Cohen, 1960).

**Student Participation Ratings.** Student participation during each group session was measured by recording student participation ratings in the Footprints sessions by both the service providers and independent observer. The participation ratings consisted of one item (i.e., *how much did each student participate in this group?*) and were on 10% to 100% response scale (See Appendix T). At the beginning of each group, the group leader would operationally define expectations for participating in the group. The inter-rater reliability of these student participation ratings between the group leader and facilitator was calculated to be Kappa = -.008, $p$ = .83 indicating poor agreement between raters for student participation (Cohen, 1960). The Footprints group leader and the facilitator were able to provide observations ratings for 68 pairs of student participation ratings. Student participation ratings between the two raters on 68 pairs of student participation ratings were significantly positively correlated $r$ (67) = .40, $p < 0.001$ in the medium range (Cohen, 1992).

**Program Experiences and Satisfaction Questionnaire (PESQ)**. At the end of each Footprints group and individual session, program experiences and satisfaction were measured using the PESQ (Bartels, Aschbrenner, Rolin, Hendrick, Naslund, & Faber, 2013). During the development of this measure, the PESQ possessed good internal consistency reliability α = .89. This questionnaire consists of 6 items and asked participants to rate: *how much progress did you make toward your goals, how useful were the training materials used in this group, how helpful did you find the role play practice in this group, how convenient was it for you to participate in this group, how satisfied were you with this group, would you recommend this group to other students?* Responses were recorded on five point Likert scale (1 = none at all, 5 = a great deal)_ (Bartels,

Aschbrenner, Rolin, Hendrick, Naslund, & Faber, 2013). Pooling data across the six weeks of the current study (i.e., data from all six weeks of group acceptability ratings), the PESQ items demonstrated an internal consistency reliability of $\alpha = 0.92$ indicating high internal consistency reliability for these items (Cronbach, 1951; George & Mallery, 2003).

**Program Acceptability.** Acceptability was measured using service provider and student ratings on dimensions of ability to integrate into the school, ability of students to easily get to groups or individual sessions, and ability to conduct the session core components using the appropriate amount of effort and time. Four specific questions of interest in this study developed by the PI and research advisor were: *how easily was it to get to the session, how easy was it to do the activities in the individual session, did you have enough time to do the activities in the session, how well does this session fit into the school day?* Each of these dimensions were rated by all service providers using six-point Likert scales, with anchors of 1 "very easy" and 6 "very difficult." In the current study, pooling data across the six weeks of the study (i.e., data from all six weeks of group acceptability ratings), the additional acceptability questions display an internal consistency reliability of $\alpha = 0.84$ indicating high internal consistency reliability of these four items (Cronbach, 1951; George & Mallery, 2003).

**Short Answer Feedback Questions.** At the end of each group and individual session both service providers and student participants were asked to *"identify the three most challenging things about the Footprints group* and *please provide recommendations for overcoming these challenges"* through a written open-ended question format. These responses from participants and service providers were transcribed and are displayed in a

table for each respective session (see Table 6 and Table 7 for transcribed Provider and Participant Responses to Open Ended Questions).

**Group Session Rating Scale (GSRS).** The GSRS is a brief four-item visual analogue scale, designed to be a brief clinical tool to measure group-therapy alliance (Quirk, Miller, Duncan, & Owen, 2013). During the development of this measure, the GSRS possessed good internal consistency reliability $\alpha = .90$ (Quirk, Miller, Duncan, & Owen, 2013). Similar to the Session Rating Scale, the GSRS scores are obtained by measuring the marks made by the client and summing the lengths to the nearest centimeter on each of the four lines rating the degree to which they: *feel respected, talked about what I wanted to work on, leader and the group's approach are a good fit for me, felt like a part of the group*. Pooling data across the six weeks of the current study (i.e., data from all six weeks of group acceptability ratings), the GSRS items demonstrated an internal consistency reliability of $\alpha = 0.87$ indicating high internal consistency reliability for these items (Cronbach, 1951; George & Mallery, 2003).

**Session Rating Scale (SRS).** The SRS is a brief four-item visual analogue scale, designed to be a brief clinical tool to measure therapy alliance was administered after the completion of the individual Footprints sessions (Quirk, Miller, Duncan, & Owen, 2013). During the development of this measure, the SRS possessed good internal consistency reliability $\alpha = .91$ (Quirk, Miller, Duncan, & Owen, 2013). Scores are obtained by measuring the marks made by the client and summing the lengths to the nearest centimeter on each of the four lines rating the degree to which they: *feel respected, talked about what I wanted to work on, therapist's approach was a good fit for me, today's session was right for me*. Pooling data across the six weeks of the current study (i.e., data

from all six weeks of group acceptability ratings), the SRS items demonstrated an internal consistency reliability of $\alpha = 0.91$ indicating high internal consistency reliability for these items (Cronbach, 1951; George & Mallery, 2003).

**Treatment as Usual Grid (TAUG).** In order to assess what additional services students were getting as part of the treatment as usual condition, participants were asked to list any additional services that they received over the past two months. The Treatment as Usual Grid (TAUG) is a brief assessment tool intended to measure additional services that participants are receiving by asking students to endorse if they are receiving any of the following services (e.g. Afterschool program, Tutor, Mentor, School Counselor, Special Education Supports Psychologist, Psychiatrist, Social Worker, Group Home, Medication for Behavior/Attention/Mood, Other). During the development of this measure, the correlation between patients' charts (i.e., record of other treatments) was and the TAUG were highly correlated $r\ (19) = 0.99$, $p > 0.01$, however other psychometric were not reported (Mendenhall, Davidson, & Fristad, 2010). The participants were also asked to rate the length of the time they received these services in days, whether or not they are currently receiving those services, and to rate weather or not the services were helpful on a 1 to 5 scale (1 = Not Helpful at All, 5 = Very Helpful) (Mendenhall, Davidson, & Fristad, 2010). Given the nature of the construct and the response format of the TAUG, no reliability coefficients were conducted.

**Training Satisfaction Rating Scale (TSRS).** Service providers were asked to rate their level of training satisfaction on a Likert scale ranging from 10% of the time to 100%. The TSRS is a 12-items measure using a 1 to 5 scale (1 = totally disagree, 5 = totally agree) (Holgado, Moscoso, García, & Chaves, 2006). During the development of

this measure, the TRSR possessed good internal consistency reliability: α = .89 (Holgado, Moscoso, García, & Chaves, 2006). Service providers rated their training satisfaction on the following items: *in my opinion the planned Footprints training objectives were met, relevant issues were dealt with in as much in depth as the length of the training allowed, the length of the training was adequate for the objectives and content, the training method was well suited to the objectives and content, the training method used enabled us to take an active part in training, the training enabled me to share professional experiences with colleagues, the training was realistic and practical, the training documents given out were of good quality, the training context was well suited to the training process, the training received is useful for me, the training received is useful for my personal development, the training merits a good overall rating.* In the current study, the TSRS possessed an internal consistency reliability of α = 0.88 indicating high internal consistency reliability of these twelve items (Cronbach, 1951; George & Mallery, 2003).

The second aim of this study is to assess the preliminary impact of Footprints. Here, the specific research questions of interest are: 1.) Are there significant and clinically meaningful differences in the Footprints group relative to the treatment as usual group from pre- to posttest on measures of emotional/behavioral functioning? These measures of emotional/behavioral functioning are described below. 2.) Does the program affect student attendance, office referrals for behavioral problems, and suspensions? 3.) Are there significant and clinically meaningful differences in grades for the Footprints students (i.e., distal SMH outcomes)?

**School Record Data (SRD).** SRD for academic grades in math, English language arts (ELA), history, and science were obtained from school transcripts from the second

quarter (pretest) and the third quarter (posttest). All grades are from official transcripts and are reported in percentage points (i.e., 0 to 100). In addition to grades, we also obtained quarterly reports of attendance, tardies, and office referrals for each student in the study.

**Children's Perceived Self-Efficacy (CPSE).** The CPSE assesses children and adolescents' perceived self-efficacy in multiple areas (Bandura, 1990; Pastorelli, Caprara, Barbaranelli, Rola, Rozsa, & Bandura, 2001). In this study, scales for academic self-efficacy and self-regulatory efficacy were utilized. During the development of this measure, each construct possessed good internal consistency reliability: academic self-efficacy $\alpha = .89$ and self-regulatory efficacy $\alpha = .93$ (Pastorelli, Caprara, Barbaranelli, Rola, Rozsa, & Bandura, 2001). The participants are instructed to rate their degree of certainty whether they can do a task on a 10-point scale. For academic self-efficacy, participants were asked their degree of confidence they could: *learn math, geography, science, English, a foreign language, and finish assignments by deadlines*. In the current study, at pretest these academic self-efficacy items processed an internal consistency reliability of $\alpha = 0.86$ indicating high internal consistency (Cronbach, 1951; George & Mallery, 2003). For self-regulatory efficacy, participants were asked their degree of confidence they could: *study when there were other interesting things to do, always concentrate on school subjects during class, take notes during class instruction, use the library to get information for a class assignment, plan school work for the next day, arrange a place to study without distraction, motivation yourself to do school work*. In the current study, at pretest these self-regulatory self-efficacy items scales processed an internal consistency reliability of $\alpha = 0.95$ indicating high internal consistency (Cronbach,

1951; George & Mallery, 2003).

**Perceived School Experience Scale (PSES).** The PSES is a 14-item youth self-report measure of school-related internal protective factors, including school connectedness, academic press, and academic motivation (Anderson-Butcher, Amorose, Iachini, & Ball, 2012). During the development of this measure, each construct possesses good internal consistency reliability: academic press α = .87, academic motivation α = .86, and school connectedness α = .88. The overall PSES scales demonstrate adequate test-retest for school connectedness *r* = .84, academic motivation scale *r* = .83, and academic press scale *r* = .83 (Anderson-Butcher, Amorose, Iachini, & Ball, 2012). For the academic press scale, students were asked: *my teachers provide helpful feedback to students about their academic performance, decisions at my school always focus on what is best for learning, my teachers monitor whether students are learning on a regular basis, my school values student learning.* At pretest, these academic press items possessed an internal consistency reliability of α = 0.83 indicating good internal consistency (Cronbach, 1951; George & Mallery, 2003). For the academic motivation items, participants were asked to rate: *I am confident in my ability to manage my school work, I feel my school experience is preparing my well for adulthood, I have enjoyed my school experience so far, I have a positive attitude towards school, I like the challenge of learning new things in school, I feel I have made the most of my school experiences so far.* At pretest, these academic motivation items possessed an internal consistency reliability of α = 0.84 indicating good internal consistency (Cronbach, 1951; George & Mallery, 2003). For the school connectedness items, students were asked to rate the items: *I am proud to be a student at my school, I feel like I belong to my school, I enjoy*

*coming to my school, I have meaningful relationships with teachers at my school.* At pretest, these school connectedness items possessed an internal consistency reliability of $\alpha = 0.82$ indicating good internal consistency (Cronbach, 1951; George & Mallery, 2003).

**Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS).** The BMSLSS is comprised of five items in which students evaluate their levels of life satisfaction in five domains personal self, family, friends, school, and living environment using a 7-point Likert scale (Greenspoon & Saklofske, 1998). During the development of this measure, the BMSLSS demonstrated good internal consistency reliability $\alpha = .82$ (Huebner, 1991). Students endorsed responses ranging from Strongly Disagree to Strongly Agree for the following items: *my life is going well, my life is just right, I would like to change many things in my life, I wish I had a different kind of life, I have a good life, I have what I want in life, my life is better than most kids'*. At pretest, these life satisfaction items possessed an internal consistency reliability of $\alpha = 0.23$ indicating unacceptable levels of internal consistency (Cronbach, 1951; George & Mallery, 2003). Therefore, this measure was not included in the analysis of the data.

**Short Mood and Feelings Questionnaire (SMFQ).** The SMFQ was developed as a brief measure of depressive symptoms in children and adolescents. The 13-item SMFQ consists of statements relating to the occurrence of low mood and psychological correlates (low self-esteem and self-worth) on a 3-point scale. Importantly, the total score may be dichotomized to classify individuals as depressed or not depressed; a cutpoint of 11 (sum of endorsed items) has previously been shown to have a high sensitivity and specificity (Thapar & McGuffin, 1998; Turner, Joinson, Peters, Wiles, & Lewis, 2014).

During the development of the SMFQ, it demonstrated excellent internal consistency of α = .90 (Thapar & McGuffin, 1998). The SMFQ asked participants to rate: *I felt miserable or unhappy, I didn't enjoy anything at all, I felt so tired I just sat around and did nothing, I was very restless, I felt I was not good anymore, I cried a lot, I found it hard to think properly or concentrate, I hated myself, I was a bad person, I felt lonely, I thought nobody really loved me, I thought I could never be as good as other kids, I did everything wrong.* At pretest, these SMFQ items possessed an internal consistency reliability of α = 0.58 indicating poor internal consistency (Cronbach, 1951; George & Mallery, 2003). Therefore, this measure was not included in the analysis of the data.

**Vanderbilt ADHD Rating Scale (VARS).** The VARS includes DSM-IV-TR based scales with teacher report and parent report forms that includes the 18 disruptive behavior disorder symptoms related to ADHD, which are rated on a 4-point Likert scale. During scale development, the VARS parent/teacher scales possess good internal consistency reliability (Wolraich et al., 2003). During the development of this measure, each construct possessed good internal consistency reliability: inattentive symptoms α = .89, hyperactive Symptoms α = .91, and oppositional-defiant symptoms α = .90 conduct-disorder symptoms α = .86 (Wolraich et al., 2003). For the inattention items from the VARS, participants were asked to rate the student on the following items: *fails to give attention to details or makes careless mistakes in schoolwork, has difficulty sustaining attention to tasks or activities, does not seem to listen when spoken to directly, does not follow through on instructions and fails to finish schoolwork (not due to oppositional behavior or failure to understand), has difficulty organizing tasks and activities, avoids/dislikes/or is reluctant to engage in tasks that require sustained mental effort,*

*loses things necessary for tasks or activities (school assignments, pencils, or books), is easily distracted by extraneous stimuli, is forgetful in daily activities.* At pretest, the VARS teacher rating scale possesses acceptable internal consistency reliability for the inattentive symptoms subscale α = .77. For the hyperactivity items from the VARS, participants were asked to rate the student on the following items: *fidgets with hands or feet or squirms in seat, leaves seat in classroom or in other situations in which remaining seated is expected, runs about or climbs excessively in situations in which remaining seated is expected, has difficulty playing or engaging in leisure activities quietly, is "on the go" or often acts as if "driven by a motor", talks excessively, blurts out answers before questions have been completed, has difficulty waiting in line, interrupts or intrudes on others* (*e.g., butts into conversations/games*), The VARS parent rating scale possesses acceptable internal consistency reliability for the hyperactive symptoms subscale α = .71. For the items related from the VARS related to oppositional behaviors, participants were asked to rate the student on the following items: *loses temper, actively defies or refuses to comply with adult's requests or rules, is angry or resentful, is spiteful and vindictive, bullies/threatens/or intimidates others, initiates physical fights, lies to obtain goods for favors or to avoid obligations (e.g., "cons" others).* The VARS parent rating scale possesses questionable internal consistency reliability for oppositional-defiant behaviors subscale α = .67. Given this, this measure was not included in the analysis. For the items related to conduct disorder behaviors from the VARS, participants were asked to rate the student on the following items: *is physically cruel to people, has stolen items of nontrivial value, deliberately destroys others' property.* The VARS parent rating scale possesses questionable internal consistency reliability for the conduct

disorder behaviors subscale α = .65. Given this, this measure was not included in the analysis.

**Student Pediatric Symptom Checklist.** The PSC is a 17-item questionnaire designed to screen for behavioral and emotional adjustment in children and adolescents that can be completed by youth or their parents (Borowsky et al., 2003; Gardner et al., 1999). The PSC demonstrated good internal consistency α = .89 during its development (Gardner et al., 1999; Stoppelbein, Greening, Moll, Jordan, & Suozzi, 2012). In this study, participants were asked to rate if they were: *fidgety/unable to sit still, feel sad/unhappy, daydream too much, refuse to share, don't understand other people's feelings, feel hopeless, have trouble concentrating, fight with others, down on yourself, blame others for you troubles, seem to be having less fun, do not listen to rules, act as if driven by a motor, tease others, worry a lot, take things that do not belong to you.* At pretest, these PSC items processed an internal consistency reliability of α = 0.80 indicating good internal consistency reliability of these items (Cronbach, 1951; George & Mallery, 2003).

**Classroom Performance Survey (CPS).** The CPS is a twenty-item teacher survey to assess a student's academic performance, participation, and behavior within the classroom (Robin, 1998). During the development of this measure, the CPS demonstrated good internal consistency reliability for the two subscales academic competency α = .98 and interpersonal competence α = .91 (Brady, Evans, Berlin, Bunford, & Kern, 2012). For the academic competency scale, the CPS asks teachers to rate*: brings necessary items to class, completes class assignments, completes homework on time, records assignments consistently, turns in completed work, completes long-term assignments, attends to*

*instruction in class, arrives to class on time, performs satisfactory on test, completes assigned work with accurate detail.* At pretest, these academic competency items possessed an internal consistency reliability of $\alpha = 0.66$ indicating questionable internal consistency (Cronbach, 1951; George & Mallery, 2003). Given this, the measure was not included in the analysis. For interpersonal competence, the CPS asks teachers to rate how the student: *relates positively to peers, relates positively to teachers, demonstrates respect for property, communicates own needs or asks questions, accepts assistance when needed or offered*. At pretest, these interpersonal competence items processed an internal consistency reliability of $\alpha = 0.83$ (Cronbach, 1951; George & Mallery, 2003).

**Outcome Rating Scale (ORS).** The ORS is a brief measure of therapeutic progress with specific items on the ORS measuring four areas of participant functioning: individual, relational, social, and overall functioning. These areas of functioning are measured using a visual analogue scale with instructions for participants to place a hash mark on a 10-centimeter line with low estimates to the left and high to the right. During the development of this measure, each construct possesses good internal consistency reliability $\alpha = .93$ (Quirk, Miller, Duncan, & Owen, 2013). The ORS asked participants to rate: *individually-personal wellness, interpersonally-family/close relationships, socially-work-school-friendships, overall-general sense of well-being*. Pooling data across the six weeks of the current study (i.e., data from all six weeks of Footprints group), the ORS items demonstrated an internal consistency reliability of $\alpha = 0.88$ indicating high internal consistency reliability for these items (Cronbach, 1951; George & Mallery, 2003).

In summary**,** to evaluate the feasibility of Footprints the number of groups and individual sessions attended by each student was assessed. To evaluate the acceptability

of Footprints service providers (i.e., Child and Family Practicum students) and middle school students provided feedback in the form of ratings on dimensions of ability to integrate into the school, ability of students to easily attended groups or individual sessions, and ability to conduct the core components of the sessions using the appropriate amount of effort and time. Additionally, at the end of each group session provider and student feedback was obtained including their recommendations for program improvements. Given their limited exposure to the Footprints program, teacher and parent measures for acceptability were not included in the current study.

**Summary of Methods and Data Analysis.** Footprints will be evaluated on feasibility, acceptability, and preliminary impact using the measures above (see Table 3 for Measurement Timeline). In order to address the aims of this study, the following data analytic procedures will be conducted. For evaluating acceptability and feasibility measures, descriptive statistics for the acceptability and feasibility measures described above will be reported. To evaluate preliminary impact, Multiple Regression analysis examining the effect of the Footprints program will be performed on the survey measures and school record data (see Table 3 for Measurement Timeline). Prior to conducting these analyses, descriptive statistics and distributional properties (i.e., skew and kurtosis) will be examined to look for major deviations from assumptions of each statistical model. A Multivariate Analysis of Variance test will be completed to confirm pretreatment equivalence between the two groups at pretest. To control for experiment wise error during the multiple regression analysis, a post hoc error correction will be applied (i.e., Bonferroni correction). Participant variables that are significantly related to the dependent variables at pretest will be included in these tests as covariates (e.g., SES,

gender, age). An intent-to-treat design meaning that all participants regardless of program attended or early attrition will be used in the analysis.

# CHAPTER 4

# RESULTS

In order to address the research questions of interest in this study the following data analytic procedures were complete. For evaluating acceptability and feasibility measures, descriptive statistics of acceptability and feasibility are reported. To evaluate preliminary impact, planned comparisons between the Footprints program and treatment as usual group were performed for the survey measures collected from pre- (i.e., end of second quarter in January) to post (i.e., end of third quarter March).

**Training Satisfaction.** Each of the providers that participated in the Footprint training completed the Training Satisfaction Rating Scale. Service providers were asked to rate their level of training satisfaction on 12-items using a 5-poin Likert scale (1 = totally disagree, 5 = totally agree) (Holgado, Moscoso, García, & Chaves, 2006). Providers (n = 10) reported being overall satisfied with the Footprints training reporting total scores in the "totally agree" range M= 4.58, SD = 0.28 to the training satisfaction items.

**Individual Session Attendance.** For individual session attendance, 20 out of 22 students in the intervention group (i.e., 90.90%) were able to complete the first individual Footprints session with a graduate student provider. For the second individual Footprints session, 19 out of the 20 students that completed the first individual Footprints session (i.e., 95.00%) were able to meet with their graduate student staff member to review

progress on their individual goal and complete the second MI protocol. If a student did not complete an individual session, they were still included in the analysis per the intent-to-treat design.

**Footprints Group Attendance.** For group session attendance, all six Footprints group sessions were implemented with the majority of students attending each session. For week one 95.45% of students attended the first Footprints Group Session. For week two 90.91% of students attended Footprints Group Session 2. For week three 68.18% of students attended Footprints Group Session 3. For week four 50.00% of students attended Footprints Group Session 4. For week five 72.73% of students attended Footprints Group Session 5. For week six 72.73% of students attended Footprints Group Session 6 (see Figure 2). The mean percentage of attendance across the six weeks of the intervention was 75.00%. Within the Footprints condition, 4.35% received only 1 group session, 8.70% received 2 group sessions, 17.39% received 3 group sessions, 17.39% received 4 group sessions, 26.09% received 5 group sessions, and 26.09% received all six group sessions. It is noteworthy that in mid-March a weather related two hour delayed start at the middle school and a field trip for all sixth graders negatively affected attendance to the Footprints group session four. This meant that there were too many individual make up sessions to feasibly complete before the posttest and HMS Spring Break. Thus, the procedure was changed and to provide a group-based make up session to participants that miss more than two Footprints groups instead of the originally proposed individual make up sessions (IRB amendment approved this change to procedure).

**Individual Session Self-Report Fidelity.** For the individual session one, service providers reported that they completed a mean of 98.4% of the core components of the

protocol with a SD = 3.4%. Service providers were asked to time how long (in minutes) the MI sessions lasted; these data indicate that the average time for session one was M = 37.5 minutes with SD = 5.7 minutes and ranged from 22.4 to 50.7 minutes. During individual session two, all service providers reported that a mean of 97.3% of the core components of the intervention were completed with a SD = 2.1% and that the average time of these sessions was M = 33.2 minutes, SD = 4.6, and range from 19.5 to 42.5 minutes.

**Group Session Self-Report Fidelity and Observations.** For the majority of group sessions, both the leader of the group session and a second graduate student that served as a facilitator reported the implementation of core program components. The graduate student facilitator was present at five out of the six group sessions and completed independent fidelity ratings of the group leader. The leader of the Footprints group reported that on average across all groups 87.53% of the core components were completed. The second rater reported that on average across all group M = 87.84% of the core components of the group intervention were completed (see interpreter reliability data presented above in Chapter 3). After the group sessions, the group leader recorded the time of each sessions and reported that the groups lasted M = 29.34 minutes, SD = 7.58, and ranged from 19 to 50 minutes.

**Student Participation Ratings.** The leader of the Footprints group reported that across all group, the students participated (as operationalized at the beginning of each group) in the group an average of 70.65% of the time with at SD = 17.43% of the time. The second rater reported across all group that student participated (as operationalized at

the beginning of each group) in the group session an average of 89.73% of the time with a SD = 16.83% (see interpreter reliability data presented above in Chapter 3).

**Program Experiences and Satisfaction Questionnaire (PESQ)**. Both research participants and providers completed the PESQ. This questionnaire consists of 6 items and asked participants to rate each item on a five point Likert scale (1 = none at all, 5 = a great deal). The mean response on the PESQ by participants pooled across all six group sessions was M = 4.18, SD = 0.43 indicating that the participants were mostly satisfied with their experience with the Footprints program. The mean response on the PESQ by providers pooled across all six sessions was M = 3.26 SD = 0.73 indicating that the providers were moderately satisfied with the Footprints program.

**Session Rating Scale (SRS).** The SRS uses a four-item visual analogue scale. Scores are obtained by measuring the marks made by the client and summing the lengths to the nearest centimeter on each of the four lines rating to create a total score (Quirk, Miller, Duncan, & Owen, 2013). The mean response for the SRS during individual session one was M = 36.91, SD = 5.43 and during individual session two was M = 37.59, SD = 1.34 (highest total score possible = 40) indicating that the participants experienced a high level of therapeutic alliance with the Footprints program providers (Quirk, Miller, Duncan, & Owen, 2013).

**Group Session Rating Scale (GSRS).** The GSRS uses a four-item visual analogue scale. Scores are obtained by measuring the marks made by the client and summing the lengths to the nearest centimeter on each of the four lines rating to create a total score (Quirk, Miller, Duncan, & Owen, 2013). The mean response for the GSRS

was M = 33.40, SD = 7.59 pooled across all six group sessions (highest total score possible = 40), indicating that the participants experienced a high level of therapeutic alliance with the Footprints program providers during the group sessions.

**Treatment as Usual Grid (TAUG).** At post-test, participants were asked to endorse if they received any services outside besides the Footprints program during the previous two months (e.g. Afterschool program, Tutor, Mentor, School Counselor, Special Education Supports, Psychologist, Psychiatrist, Social Worker, Group Home, Medication for Behavior/Attention/Mood, Other). The entire sample (i.e., both treatment and control) reported that 21.2% received an afterschool program, 12.4% received a tutor, 9.5% received a mentor, 11.4% reported received services from a school counselor, 34.48% received some level of special education supports (e.g., resource teacher, individual education plan), 4.2% received services from a Psychologist, 3.1% received services from a Psychiatrist, 13.21% received services from a Social Worker, 11.4% received services from a group home, 14.4% took psychotropic medication, and 4.2% reported receiving services classified as other. A multivariate analysis of variance was conducted on these variables comparing the amount of services that the Footprints group was receiving to the treatment as usual waitlist control group; no significant differences between the treatment as usual waitlist control group and the Footprint groups at posttest were found.

**Checking of Assumptions**. Descriptive statistics and checking of assumptions were conducted for each of the respective statistical tests. Descriptive statistics were used to examine distributional properties and evaluate compliance with the assumptions of the models. Skew and kurtosis were examined for the school record data as well as the

student and teacher survey data. All absolute values of skew were below 2 and kurtosis statistics were below 3 and were not regarded as severe deviations from normality. A multivariate analysis of variance (MANOVA) test on the participant demographic information and was completed and confirmed pretreatment equivalence between the two groups. There were no statistically significant group differences at pretest. Regression diagnostics were performed on this data in order to determine if any case processed problems with leverage, distance, and influence; none were outside acceptable limits for this analysis.

**Intent-to-Treat.** Given the small sample size in this study and brief nature of this intervention, dosage effects could not be analyzed. An intent-to-treat design, meaning that all participants regardless of number of sessions attended or early attrition, was used in the analysis (the participant did have to complete the pretest to be included). Due to the small sample size in this study, differential attrition rates based on participant characteristics (e.g., age, gender, sex) were not be able to be assessed. However, over the course of the Footprints program, four students withdrew from the school. Three of the students that withdrew were assigned to the treatment as usual control group and the other from the Footprints group (Pretest Footprints n = 21, Posttest Footprints n = 20; Pretest Waitlist Control n = 22, Posttest Waitlist Control n = 19).

**Power Analysis.** An a priori power analysis to detect significant and large-size effects for the Footprints program estimates that a sample size of n = 24 is needed for statistical power to be at the suggested level .80 (Cohen, 1992) with an effect size $f = .30$, alpha = .05, two groups, two measures, and a correlation of $r = .50$ between the repeated measures (Faul, Erdfelder, Lang, & Buchner, 2007). In order to detect significant and

medium sized effects of Footprints a sample size of n = 52 is needed for statistical power to be at the suggested level .80 (Cohen, 1992) with an effect size *f* = .20, alpha = .05, two groups, two measures, and a correlation of *r* = .50 between the repeated measures (Faul, Erdfelder, Lang, & Buchner, 2007).

**Experiment-Wise Error Correction.** To control for experiment wise error across these multiple regression analysis, the Bonferroni post hoc error correction was applied. In total, 16 separate hypothesis tests were conducted, resulting in a corrected alpha level of 0.003. (Bonferroni correction; 0.05/16 = 0.003). Only one dependent variable was found to be significant when applying the experiment-wise error correction.

**Academic Grades.** Two-level Hierarchal Linear Models (HLM) analyses were conducted in order to address the non-independent data structure of the dependent academic grade variable (Peugh, 2010). To control for differences in teacher grading, we added a random effect variable to control for clustering within classes. However, due to the small sample size of this study, there were less than five participants per classroom resulting in the HLM models for math, science, history, and ELA failing to perform appropriately. Therefore, Multiple Regression analysis was performed utilizing a simultaneous regression approach to evaluate the effect of Footprints on academic grades. For the students assigned to the Footprints condition, a significant effect was found for math grades after controlling for pretest math grades, SES, enrollment in at least one advance placement class, sex, and age. The overall variance predicted by this regression model was found to be significant $F(5,36) = 7.513$, $p < 0.001$. The standardized regression coefficient examining the unique variance explained by assignment to the

Footprints condition was found to be significant $B$ = .268 (2.33), t = 2.09, $p$ = 0.045, $d$ = .54.

**Outcome Rating Scale (ORS).** The ORS is a brief measure of therapeutic progress with specific items on the ORS (Quirk, Miller, Duncan, & Owen, 2013). The mean response for the ORS during group session one was M = 31.81, SD = 5.43 and during group session six was M = 36.78, SD = 3.09 indicating that the participants had a mean change score of 4.97 while in the Footprints program. Change in a positive or negative direction by 5 points is considered reliable and clinically meaningful change (Jacobson & Truax, 1991; Quirk, Miller, Duncan, & Owen, 2013).

**Self-regulatory self-efficacy.** Multiple regression analysis was performed utilizing a simultaneous regression approach to evaluate the effect of Footprints on student self-efficacy to regulate their behavior while controlling for pretest self-regulatory self-efficacy, SES, sex, and age. The overall variance predicted by this regression model was found to be significant F (4,38) = 3.855, $p$ = 0.01. The standardized regression coefficient examining the unique variance explained by assignment to the Footprints condition was found to be significant $B$ = .433 (0.59), t = 2.89, $p$ = .007, $d$ = .18.

**Academic press**. The PESE includes a variable for academic press (expectations for learning). Multiple regression analysis was performed utilizing a simultaneous regression approach to evaluate the effect of Footprints on academic press while controlling for pretest academic press, enrollment in at least one advance placement class, and age. The overall variance predicted by this regression model was found to be

significant F (4,38) = 8.957, $p < 0.01$. The standardized regression coefficient examining the unique variance explained by assignment to the Footprints condition was found to be significant $B = 0.70$ (0.196), t = 5.269, $p < .001$, $d = 1.32$.

**Academic motivation.** Multiple regression analysis was performed utilizing a simultaneous regression approach to evaluate the effect of Footprints on academic motivation while controlling for pretest academic motivation, enrollment in at least one advance placement class, and age. The overall variance predicted by this regression model was found to be significant F (5,38) = 5.245, $p = 0.01$. The standardized regression coefficient examining the unique variance explained by assignment to the Footprints condition was found to be significant $B = 0.402$ (0.197), t = 2.99, $p = .005$, $d = .72$.

**Student Pediatric Symptom Checklist**. Multiple regression analysis was performed utilizing a simultaneous regression approach to evaluate the effect of Footprints on student self-report of their emotional functioning on the PSC while controlling for pretest PSC scores, enrollment in at least one advance placement class, and age. The overall variance predicted by this regression model was found to be significant F (4,38) = 1.426, $p = 0.02$. The standardized regression coefficient examining the unique variance explained by assignment to the Footprints condition was found to be significant $B = -.334$ (.165), t = -2.05, $p = .048$, $d = .41$.

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# CHAPTER 5

# DISCUSSION

There is a high level of unmet need for preventing and treating mental health disorders in youth. Movement towards providing school-based early intervention services within a PBIS framework is promising; however, there are currently limited options for empirically supported and feasible Tier 2 or early intervention services within this framework. Extant evidence-based programs experience significant difficulty with acceptability and feasibility in their implementation (Calear, & Christensen, 2010; Reinke, Stormont, Clare, Latimore, & Herman, 2013; Stormont et al., 2012). To help address this gap, Footprints was developed to be an acceptable and feasible Tier 2 option for the implantation within a school setting. Footprints integrates MI with group-based modularized CBT and academic protective factors to promote student engagement and individualized support for students. This study examined the acceptability, feasibility, and preliminary impact of the Footprints program. The current study found a significant effect for math grades, self-regulatory self-efficacy, academic press, academic motivation, and on the student PSC. Taken together, these findings provide preliminary support for the Footprints intervention with middle school students. However, the emphasis is on *preliminary* support since when controlling for experiment wise error, all effects except for one (i.e., academic press) were not significant.

**Summary and Study Purpose.** Mental health disorders are prevalent in youth and there is a high level of unmet need. Barriers to care are being reduced through multi-

tiered systems of support in schools, ideally including school mental health (SMH) and Positive Behavioral Interventions and Supports (PBIS) working together (Barrett et al., 2013). However, within this context, there are relatively few empirically supported approaches at Tier 2 that are also feasible to implement for students requiring early intervention. To help address this gap, a novel program called Footprints was developed and is the focus of this dissertation, which intends to evaluate its feasibility, acceptability and impact. Capitalizes on the benefits of integrated intervention, Footprints includes emphases on empirically supported approaches of MI, modular cognitive behavioral therapy, and enhancing student protective factors (Domitrovich et al., 2010).

**Study Strengths.** This study contains several methodological and practical strengths. The manner in which Footprints was developed attempted to overcome some of the current Tier 2 implementation difficulties by ameliorating the poor fit between school contexts and the program. By working closely with key school personnel and administrators and receiving feedback from providers and participants during a pilot study, barriers to implementation were potentially decreased (Forman et al., 2013; Lyon et al., 2014). This approach to program development may potentially be helpful since current evidence-based programs frequently do not produce comparable effects in effectiveness evaluations as efficacy studies (Kazdin, 2011; Weist et al., 2007).

This study attempts to follow the recommendation from the literature on integrated programs for Tier 2intervention (Domitrovich et al., 2010). Current Tier 2 interventions normally consist of programs providing group-based support aimed at providing students assistance for a particular issue and do little to provide assistance to individual needs within the group (McIntosh, Campbell, Carter, & Dickey, 2009).

Students receiving Tier 2 services do not receive tailored interventions to meet their needs, instead receive one-size-fits-all approaches to group-based intervention (Reinke, Stormont, Clare, Latimore, & Herman, 2013; Stormont et al., 2012). This is particularly important given the heterogeneity of student mental health needs and the often-inadequate number of interventions that a school may have (Domitrovich et al., 2010). Interventions with multiple elements may increase the likelihood of addressing the various needs of youth (Domitrovich et al., 2010). Footprints is intended to be an integrated intervention because it incorporates MI and allows students to select the modularized CBT and academic protective factors that they would like to change. This study included students presenting with a variety of different presenting concerns and offers tailored support in individual sessions and during group-based program modules. Footprints endeavored to provide tailored invention to meet the needs of students by allowing students to create their own goals and select the appropriate strategies to achieve them.

To our knowledge this is the first study using MI, group-based modularized CBT, and research on protective factors to treat students in need of early intervention within the school setting. The significant effects of Footprints on important distal outcomes that are germane to providing mental health intervention in schools. Previous studies of school-based MI interventions provide support for the efficacy of MI as interventions to improve math performance in middle school students (Strait et al., 2012; Terry, Strait, Smith, & McQuillin, 2013; Terry, Strait, McQuillin, & Smith, 2014; Terry, Miller, Strait, Smith, & McQuillin, 2014). This study is the fifth time in a row that an MI based intervention has found significant effects for math; however previous studies based on MI did not include

a group component (Strait et al., 2012; Terry, Strait, Smith, & McQuillin, 2013; Terry, Strait, McQuillin, & Smith, 2014; Terry, Miller, Strait, Smith, & McQuillin, 2014). Phipps (2011) presents data on the significant relationship between math performance and multiple salient developmental outcomes and discusses the relevance of math achievement in youth. While this is not a replication of these other interventions, consistent significant results in similar effect size ranges for math is encouraging. Additionally, in this study there is a more clinically elevated sample than the previous studies that included students mostly in the Tier 1 range.

This study uses adolescent self-reports in the context of other information provided by multiple raters such as teacher ratings, school record data, and participant behavior observed by Footprints staff. Additionally, two separate raters were able to observe the majority of group sessions to measure the level of core program elements implemented. These fidelity ratings indicate high inter-rater reliability and describe a high level of fidelity. Furthermore, the Child and Family Practicum students reported a high level of satisfaction with the training offered on MI and Footprints procedures. In the school setting, this amount of time for intervention may be justified given the significant results on distal academic outcomes like math grades.

In this study, a large effect of the Footprints intervention was found on the academic press variable. Anderson-Butcher, Amorose, Iachini, & Ball (2012) provide a review of this variable in the context of the development of the PSES. These authors state that academic press is defined as the extent to which school members, including teachers and students, experience a ‘‘normative emphasis on academic success and conformity to specific standards of achievement’’ (Lee & Smith, 1999, p. 912; McDill, Natriello, &

Pallas, 1986; Anderson-Butcher, Amorose, Iachini, & Ball 2012). Initial research on this concept identifies academic press as a critical component of effective schools and important for overall student achievement (Bryk, 2010; Murphy, Weil, Hallinger, & Mitman, 1982). In a sample of sixth and seventh grade students, Lee & Smith (1999) found that academic press positively impacts students' effort and time spent on academic tasks. In a later study, Henderson and colleagues (2005) found academic press positively predicts middle school students' self-regulation and self-efficacy for learning in math, science, social studies, and language comprehension.

**Limitations**. The current study has several major methodological limitations that threaten internal validity of these results and generalization to other settings. Academic grades as well as several constructs of theoretical interests were measured, but only some of these variables were found to be significant. It is unclear why the Footprints intervention appears to affect math but not other academic areas. However, there were no significant results for several other measures used in this study. Additionally, some of the significant effects in this study are from adolescent self-reports of behavior and psychosocial function. Self-reports of behavior are problematic because participants may know what is being measured. Given that some of the items in this study have high content validity (e.g., how important is it for you to make good grades), this could result in an increased chance of biased responding. Due to the small sample size HLM modeling of academic grade data failed to operate appropriately even after alternative coding strategies were attempted. This study only compares the Footprints intervention to a waitlist/treatment as usual control group, which does not allow for a stronger inference of comparing Footprints to other effective interventions. This study uses an intent to treat

design where each student was assigned to a group and then analyzed the same regardless of whether they received less than the full intervention. This design is a more conservative test of the interventions' treatment effects and specific information regarding dose-response effects is lost.

Another important consideration was that this program of research has, so far, relied on psychology graduate students, as opposed to school personnel, to provide MI and the Footprints Program. The supply of university students to provide Footprints is limited, thus threatening the reach of Footprints. To address this issue, future studies should address the acceptability and feasibility of recruiting other providers to implement Footprints. This may include school personnel (including teachers, school administrators, school counselors, school mental health staff), or paraprofessional volunteers to provide Footprints.

A final limitation to this study is that difficulties during participant recruitment and participant screening resulted in changing recruitment procedures and a smaller sample size than originally intended. Originally participant screening was supposed to be undertaken after parent or guardians of the participant reviewed and signed the consent/assent forms. Participants with a PSC total problem score considered to be in subclinical range, participants displaying poor academic performance with less than a C average, or participants with more than two discipline referrals were originally intended to be included in the study. This approach was consistent with identifying students in need or early intervention; however this screening procedure could not be completed due to the low response rate of middle school participants returning consent forms. After implementation of the study began, an additional change occurred resulting in an IRB

amendment. Students that missed two or more Footprints groups were originally supposed to be provided a third individual session to provide additional support for any elevated concern measured on their pretest assessment. However, due to inclement weather and a field trip that a significant amount of Footprints participants attended, there were too many student absences to offer the individual make up session. The inability to offer a third individual session is an important lesson learned concerning the feasibility of Footprints and is a consideration that should be taken into account in future iterations of Footprints program procedures.

**Conclusion and Future Directions.** This study examined the initial acceptability, feasibility, and preliminary impact of the Footprints program finding significant effects for important proximal and distal SMH outcomes such as math grades, self-regulatory self-efficacy, academic press, academic motivation, and the PSC (without application of the post hoc error correction). Taken together, these findings provide very tentative support for the Footprints intervention. Further investigations along with replication of these findings are needed before the Footprints intervention can be disseminated (Flay et al. 2005). Footprints is still considered an experimental intervention and should only be offered in the context of research with all IRB and informed consent procedures applying. Future studies should choose constructs that aid in the investigation of potential mechanisms of action and are aimed at developing stronger theories of how the intervention may produce change. Furthermore, randomized experiments comparing Footprints to other programs need to be conducted to compare the relative effectiveness of Footprints to current interventions. Comparisons to other Tier 2 programs should taking program acceptability, feasibility, and cost considerations into account. Finally,

the quantitative data reported above and the qualitative feedback form participants and providers should be used to refine the Footprints program and enhance its feasibility, acceptability, and effectiveness in future studies.

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