TEACHER ACCEPTABILITY OF TRAUMA-INFORMED APPROACHES

FOLLOWING FOUNDATIONAL PROFESSIONAL DEVELOPMENT TRAINING

AN ABSTRACT

SUBMITTED ON THE TWENTY-THIRD DAY OF MAY 2017

TO THE DEPARTMENT OF PSYCHOLOGY

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

OF THE SCHOOL OF SCIENCE AND ENGINEERING

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BY

Elizabeth M. McIntyre

APPROVED:

Stacy Overstreet, Ph.D.
Advisor

Courtney Baker, Ph.D.

Bonnie Nastasi, Ph.D.

## Abstract

Although the theoretical basis supporting the use of trauma-informed approaches in schools is promising, evidence for mechanisms of facilitating their acceptability among teachers is limited. Findings from implementation science indicate that foundational professional development training during pre-implementation activities can generate teacher support for a new approach, which is essential to successful formal implementation. Theoretical models point toward enhanced teacher knowledge of the approach as a predictor of such support. The current study examined whether foundational professional development training increased teacher knowledge of a new school-wide initiative, trauma-informed approaches, and evaluated that knowledge growth as a predictor of teacher perceptions of acceptability for trauma-informed approaches. Feasibility and system fit, two domains of perceived social validity of trauma-informed approaches, were assessed as potential moderators of the association between knowledge growth and acceptability. Although the training significantly increased teachers' knowledge of trauma-informed approaches, knowledge growth did not predict acceptability ratings. Feasibility and knowledge growth did not interact to predict acceptability ratings. However, individuals providing higher ratings of system fit demonstrated a positive relationship between knowledge growth and acceptability. When system fit ratings were lower, knowledge growth predicted lower acceptability ratings. Findings provide partial support for foundational professional development training as a pre-implementation tool and identify factors that influence pre-implementation acceptability of trauma-informed approaches among teachers.

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## Introduction

Childhood traumatic exposure is highly prevalent in the general population. As revealed in the Adverse Childhood Experiences (ACEs) study, over half of thirteen thousand respondents indicated that they had experienced at least one traumatic event before age eighteen; a quarter had experienced two or more (Felitti et al., 1998). Traumatic exposure in childhood is associated with increased risk for internalizing and externalizing symptoms that can lead to school performance deficits (National Child Traumatic Stress Network Schools Committee, 2008; Overstreet & Mathews, 2011). Exposure to and effects of chronic trauma appear to be concentrated in populations of low-income, racial and ethnic minority youth (Busby, Lambert, & Ialongo, 2013; Collins, 2010; Listenbee et al., 2012; Snyder & Sickmund, 2006). There is a critical need for prevention and intervention efforts that combat trauma in the most affected communities.

With appropriate interventions and supports, it is possible to facilitate healing from posttraumatic impacts (SAMHSA, 2014). The majority of the evidence base for trauma-focused services has centered on clinical treatments provided by mental health professionals (e.g., Cohen, Mannarino, & Deblinger, 2006). Such treatments have been offered in schools with demonstrated benefits for trauma-exposed youth (e.g., Jaycox et al., 2010). However, contextual factors such as school policies and teacher attitudes can augment or attenuate the effects of universal, targeted, and intensive student mental health supports (Domitrovich et al., 2008; Greenberg et al., 2005). Various models for school-based mental health services promote integrated, multitiered systems of

educational and mental health support that extend through school-wide organizational systems and practices (Cowan, Vaillancourt, Rossen, & Pollitt, 2013; Domitrovich et al., 2010; Eber, Weist, & Barrett, 2015).

Trauma-informed approaches represent one such systems-level framework for realizing, recognizing, and responding to the impacts of trauma on individuals (SAMHSA, 2014). In schools, foundational knowledge of trauma and its impact is interwoven into the staff knowledge base and systems of response in the school. Successful implementation of a new school-wide initiative like trauma-informed approaches is promoted when teachers perceive the approach to be acceptable (Bloom, 1995; Damschroder et al., 2009; Han & Weiss, 2005). Pre-implementation activities that enhance teacher knowledge of the background, procedures, and rationale of a new approach can facilitate such perceptions (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). Foundational professional development training is a common strategy for creating this knowledge base among teachers, and teacher knowledge has been associated with increased acceptability of new academic and behavioral approaches in schools (McKee, 1984; Vereb & DiPerna, 2004). However, few studies evaluating implementation of school-based trauma-informed approaches have examined knowledge as a product of foundational professional development trainings, and have not yet examined knowledge as a predictor of acceptability among teachers. The current study evaluated foundational professional development training as a tool for enhancing teacher knowledge of trauma-informed approaches. Knowledge growth was evaluated as a predictor of post-training teacher acceptability ratings for trauma-informed approaches. The study also assessed whether perceived alignment of trauma-informed approaches with teachers' resources

and system-level values influenced the proposed association. Feasibility and system fit are two constructs that indicate this alignment. In this study, feasibility and system fit were assessed for moderator effects on the association between knowledge growth and post-training acceptability ratings for trauma-informed approaches.

## Trauma: Definition, Prevalence, and Impact

A multitude of terms and descriptions reference the facets of trauma. Traumatic events are physically or psychologically threatening events that elicit varied reactions from individuals based on their experience and interpretation of the event. These reactions are typically considered to represent the adverse effects of the experience (SAMHSA, 2014). Terms such as chronic stress or toxic stress describe persistent experiences of threatening events, such as exposure to community violence (Hamoudi, Murray, Sorensen, & Fontaine, 2015). Empirical studies of trauma often focus on specific types or characteristics of traumatic events and outcomes. For example, the landmark Adverse Childhood Experiences (ACEs) study, which examined associations of adverse experiences with negative health outcomes, focused on instances of abuse and household dysfunction and left out other types of trauma such as accidental injury, violence outside of the home, and natural disasters (Felitti et al., 1998).

While the varying foci of the trauma literature can complicate our understanding of the prevalence of trauma, national estimates of exposure are consistently high. The Attorney General's National Task Force on Children Exposed to Violence reported that of the 76 million children living in the United States in 2012, up to 46 million experienced psychological traumas, crime, abuse, and violence (Listenbee et al., 2012). Studies of youth community samples have found that between 25% and 67% report

exposure to at least one traumatic event during childhood (Burke, Hellman, Scott, Weems, & Carrion, 2011; Copeland, Keeler, Angold, & Costello, 2007; Duke, Pettingell, McMorris, & Borowsky, 2010); these rates are consistent with findings from large-scale studies of national samples (Finkelhor, Turner, Ormrod, & Hamby, 2009; Saunders & Adams, 2014). Furthermore, accumulation of traumas appears to be a common phenomenon after initial trauma exposure. Dong and colleagues (2004) found that youth who have been exposed to one type of trauma are two to seventeen times more likely to report experiencing additional traumas. Similarly, Finkelhor, Ormrod, & Turner (2007) found that in a nationally representative sample of over two thousand youth, victimizing experiences of trauma were associated with increased risk for further experiences of multiple types of traumas.

Together, these findings indicate that traumatic exposure in childhood is a common and chronic experience. Further research has demonstrated that trauma exposure is particularly concentrated in low-resource urban communities. A number of studies identify overwhelming rates of trauma exposure for inner-city children living in poverty, affecting up to 90% of youth in some cities (see review in Collins, 2010; Cooper, Masi, Dabanah, Aratani, & Knitzer, 2007). Concentrated poverty is associated with a number of factors that increase the likelihood of childhood traumatic exposure, including higher incidences of previous exposure to trauma, parental distress, and community violence (Collins, 2010; Snyder & Sickmund, 2006). Children from racial and ethnic minority groups disproportionately live in urban areas with concentrated poverty and therefore tend to be at higher risk for trauma exposure. The U.S. Census Bureau reported that in 2002, Black and Hispanic children were over three times more likely to live in poverty

than White children (Proctor & Dalaker, 2003). Further studies directly link children from racial and ethnic minority groups and urban, low-income backgrounds to heightened risk of trauma exposure (e.g., Koenen, Roberts, Stone, & Dunn, 2010).

Heightened trauma exposure places children at significant risk for various profiles of psychopathology. For example, traumatic exposure can instill a persistent state of anxiety that engenders traumatic stress symptoms such as hypervigilance and preoccupation with potential threats (Collins et al., 2010). These emotional and behavioral symptoms are associated with the development of externalizing and internalizing behavior disorders that have significant implications for school success (Overstreet & Mathews, 2011). Externalizing disorders are characterized by oppositionality, delinquency, and aggression, all of which can limit a student's capacity to respond to the academic and social demands of the school setting. Likewise, symptoms of internalizing disorders include depression, impaired concentration, difficulty with intrusive thoughts, lack of motivation, and lethargy, which are also associated with negative educational implications (Schwartz & Gorman, 2003). Other studies suggest additional pathways linking traumatic stress symptoms and negative school outcomes, including deficits in coping skills, neurobiological functioning, social skills, and self-regulation; reduced perceptions of school connectedness; and increased absenteeism (Basch, 2011; Blair & Raver, 2012; Collins, 2010; Compas, 2006; Gunnar, Fisher, & the Early Experience Stress and Prevention Network, 2006; Hamoudi, Murray, Sorensen, & Fontaine, 2015).

## Addressing Trauma in Schools

Given the educational and developmental ramifications of trauma exposure, it follows that school-based supports targeting trauma could significantly bolster learning and mental health outcomes for students. Schools are a valuable venue for contacting, identifying, and treating trauma-exposed youth. Children with mental health difficulties often demonstrate them in response to the academic and behavioral demands of the school setting. Furthermore, childhood trauma is prevalent in populations that experience unique and complex barriers to accessing and successfully completing treatment; often, schools are the main avenue of access to mental health services for children (Atkins, 2002; Collins, 2010; Rones & Hoagwood, 2000). School also provides a naturalistic environment for monitoring academic, social, and emotional functioning of students (Cappella, 2008; Fitzgerald & Cohen, 2012). Indeed, school-based trauma-focused treatments are gaining a strong evidence base for ameliorating traumatic symptoms. Several trauma-focused interventions have yielded positive outcomes when provided in the school setting. Two such interventions, the Cognitive Behavioral Intervention for Trauma in Schools (CBITS) and the Grief and Trauma Intervention, have been widely associated with reduced symptoms of PTSD, anxiety, and depression, as well as improved academic performance (Kataoka et al., 2011; Rolfosne & Idsoe, 2011; Salloum & Overstreet, 2008).

Offering these interventions in schools has increased student access to effective clinical treatments. However, various ecological factors in the school can support or limit the effects of school-based mental health supports. These factors include macro-level factors, such as public policy and legislative action, school-level factors, such as the

alignment of mental health goals with the mission and policies of the school, and individual-level factors, such as teacher attitudes toward school-based mental health supports (Domitrovich et al., 2008). These factors interact across and within ecological levels to influence staff receptivity to, implementation of, and outcomes of a new practice or intervention (Figure 1). Best-practice guidelines for creating safe and supportive school systems emphasize integrating comprehensive systems of support for academic and mental health needs within and across the levels of the school system (Cowan, Vaillancourt, Rossen, & Pollitt, 2013; Greenberg et al., 2005).

Increasingly, educators and policymakers are recognizing the merits of integrating psychological and academic supports in schools. For example, the integrated multi-tiered model School-Wide Positive Behavioral Interventions and Supports (SWPBIS) has been adopted in over 19,000 schools and is associated with significant effects on schools' organizational health and student discipline referrals (Bradshaw et al., 2008; Office of Special Education Programs, 2013). On a national level, the recent authorization of the Every Student Succeeds Act (ESSA; 114th Congress, 2015) provides significant allocations for evidence-based mental health practices in schools and represents a shift in federal education policy toward practices that support the psychological needs of students (Cowan & Vaillancourt-Strobach, 2015). In light of this shift, approaches that provide guidance for incorporating mental health initiatives into educational systems are increasingly valuable.

## The Movement toward Trauma-Informed Schools

Trauma-informed approaches represent one promising systems-level framework that can be adapted for integrating education and mental health supports in schools.

Trauma-informed care is a model for organizations to apply knowledge of the persistent biological, psychological, and social sequelae of trauma to their systems of student support (Baker, Brown, & Wilcox, 2011; SAMHSA, 2014). Trauma-informed systems apply this understanding to the entire organizational structure so that the whole system may ameliorate the effects of trauma. Such organizations ensure that all individuals involved in operating the system realize the potential impact of trauma for the consumers of the system. There is a national movement to adopt trauma-informed practices across a variety of child-serving systems, including juvenile justice, community mental health, early childhood programs such as Head Start, and schools (Listenbee, 2012).

In schools, trauma-informed approaches require a system-wide understanding of how trauma impacts learning and development. All school staff are knowledgeable about the prevalence of trauma and understand the potential for student behavioral and academic difficulties to result from traumatic experiences. School staff can then recognize potential signs of trauma through typical interactions with students, as well as through procedures that promote prevention and early identification of behavioral and emotional symptoms such as universal screenings. This foundational trauma knowledge is also formally interwoven through the systems of response in the school, including discipline policies and school-based mental health services, in order to meet the specific needs of trauma-exposed youth and resist practices that might inadvertently intensify those needs (SAMHSA, 2014).

School-based trauma-informed approaches hold great promise for supporting student academic success and psychological well-being. Models for trauma-informed schools emphasize that all staff apply trauma-informed approaches with all students and

across all classrooms; that organizational structures and systems, such as school-wide discipline policies, reinforce application of the new approach; and that leadership continually work to align school practices and policies with trauma-informed approaches (Cole, Eisner, Gregory, & Ristuccia, 2013). Anecdotal reports of trauma-informed approaches in schools tout their positive impact. For example, a San Francisco elementary school saw an 89% drop in suspensions one year after the adoption of trauma-informed approaches (Dorado, Martinez, McArthur, & Leibovitz, 2016). The suspension rate at a Connecticut high school dropped by two-thirds within three years of adopting trauma-informed approaches, and other schools using trauma-informed approaches have reported 30% to 90% reductions in suspensions (Dorado, Martinez, McArthur, & Leibovitz, 2016; Kolodner, 2015). Trauma-informed schools are increasingly cited at state and federal policy levels as a necessary response to the public health epidemic of childhood trauma (Children's Law Center of Washington, D.C., 2015; Department of Education: NCSSLE, 2015; The Ferguson Commission, 2015).

Despite this initial enthusiasm for creating trauma-informed schools, schools rarely report on the complex process of introducing trauma-informed approaches into their systems. The contextual influences in schools that make integrated systems of support so necessary can also impede their development if implementers do not execute an ecologically-informed implementation process (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). For some schools, the heightened academic accountability standards of the No Child Left Behind Act have propagated a narrow focus on academics and inadvertently resulted in underdeveloped systems of school-based mental health support (Klehr, 2009). These perspectives manifest in the macro-level, school-level, and

individual-level factors that can interact to hinder staff receptivity to school-based mental health initiatives (Domitrovich et al., 2008). For example, individual teachers may have varying perceptions of the utility of mental health practices in schools, school policies and beliefs about discipline may clash with such practices, and school leadership may devalue initiatives that are not directly tied to academics. These perceptions have been specifically associated with decreased teacher support for school-based trauma interventions (Nadeem & Ringle, 2016). Implementation science provides a methodology for navigating these contextual features and establishes processes through which implementation efforts can be maximized. However, studies of school-based initiatives inconsistently measure and report on implementation processes. In a recent review examining over two hundred studies of school-based interventions, almost half of the studies in the sample did not monitor implementation at all (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Accordingly, while the trauma-informed framework delineates key features and theoretical approaches to navigating implementation processes, methods of installing these features in schools require additional study.

## Implementation of Trauma-Informed Schools: A Stage-Based Approach

Trauma-informed approaches orient an entire system toward a collective understanding of trauma and its effects. Sandra Bloom, creator of one of the earliest models for trauma-informed care, described a distinct organizational culture in trauma-informed systems that demonstrates “a shift in the way all human problematic behavior is perceived,” where the organization understands difficult behavior as a product of adverse experiences that can be addressed and healed (Bloom, 1985; p. 51). She maintained that a

truly trauma-informed system would demonstrate this understanding across its consumers, providers, leaders, and operational systems.

Implementation science provides a stage-based approach for moving schools toward a trauma-informed organizational culture that permeates every ecological level (Fixsen, Blase, Naoom, & Wallace, 2009; Han & Weiss, 2005; Metz, Naoom, Halle, & Bartley, 2015). The stages begin with exploration, when the school evaluates a new approach, decides to adopt it, and begins to develop a plan and timeline for implementation. This stage lays the groundwork for the installation stage, in which structures and resources to support carrying out the initiative are developed. Gradual formal implementation stages follow as these structures develop, in which implementation is attempted in a subset of the school (initial implementation) and then school-wide (full implementation). Finally, implementation moves to the innovation and sustainability stages as the school demonstrates chief ownership of developing, sustaining, and integrating the new approach into its foundational systems and structures (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005).

Implementation science frameworks describe the stages before initial implementation as the “pre-implementation” period and highlight their formative role in the overall implementation process (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Han & Weiss, 2005). The pre-implementation stage of exploration provides a critical foundation for the subsequent implementation stages, as attempting a new initiative before staff are knowledgeable and prepared for it attenuates the integrity and maintenance of implementation efforts (Greenberg et al., 2005). Accordingly, pre-implementation activities unify staff, particularly teachers, in identifying the need for

change, evaluating the proposed initiative as a mechanism for that change, and committing to carrying out the initiative to achieve change.

The current study evaluated one pre-implementation activity, foundational professional development training in trauma-informed approaches, as a potential mechanism for acceptability via knowledge of trauma-informed approaches. The foundational professional development training was carried out within the exploration stage of the Trauma Informed Schools Learning Collaborative (TISLC) coordinated by the New Orleans Health Department. Within the TISLC, six schools applied and were selected to engage in a two-year partnership with the goal of building schools' organizational capacity to implement, sustain, and improve the delivery of trauma-informed approaches. In the implementation science literature, foundational professional development training appears to be associated with various benefits in the later implementation phases (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Greenberg et al., 2005; Han & Weiss, 2005). However, the current study evaluated foundational professional development training in trauma-informed approaches as a tool for enhancing specific pre-implementation variables that have been associated with later implementation success, and did not evaluate associated implementation behaviors themselves. The current study reports on pre-implementation foundational professional development training as a tool for generating knowledge and acceptability of trauma-informed approaches among teachers.

## Fostering Pre-Implementation Knowledge

During exploration, the baseline readiness to adopt the new initiative is evaluated and strategies to increase staff, leadership, and system-level capacity for supporting the

initiative are implemented. A key determinant of this capacity is staff knowledge of the new initiative (Flaspohler, Duffy, Wandersman, Stillman, & Maras, 2008). Pre-implementation is critical for facilitating staff knowledge of the background and rationale for the approach so that they can evaluate whether it is an appropriate and effective school practice (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005).

A common pre-implementation strategy for facilitating knowledge of a new approach is foundational professional development training. Foundational professional development training in trauma-informed approaches fosters knowledge of trauma's prevalence and impact in the lives of students and presents theoretical bases for trauma-informed care. Bloom (1985) stated that foundational professional development training facilitates use of a trauma lens among staff, where staff consider that problematic behavior could be rooted in traumatic exposure and require healing. During foundational professional development training in schools, educators discuss how the effects of trauma critically influence academic and social performance, as well as how strengthening relationships with their students can facilitate student healing and promote academic and behavioral success (Cole, Eisner, Gregory, & Ristuccia, 2013). Perry and Daniels (2016) credited foundational professional development training as "the core of school transformation" in their implementation of school-based trauma-informed approaches, as it provided teachers and other school staff with opportunities to understand and apply knowledge of trauma to their interactions with students (p. 179).

Two recent case studies on trauma-informed schools indicated that foundational professional development training facilitates knowledge of trauma-informed approaches among school personnel. Dorado and colleagues (2016) provided a foundational

professional development training as part of their Healthy Environments and Response to Trauma in Schools (HEARTS) program. Although the authors did not directly assess knowledge immediately following the training, end-of-year teacher evaluations of program outcomes included self-reports of perceived increases in their own knowledge of trauma-informed approaches. Teachers reported increases in their knowledge about several domains of trauma-informed approaches including trauma and its effects on children, how to help traumatized children learn in school, general trauma-sensitive practices, and vicarious traumatization. Similarly, Perry and Daniels (2006) provided foundational professional development training at the outset of implementation of trauma-informed approaches in an urban Connecticut school. Following the training, 91% of teachers indicated that their knowledge of trauma-sensitive practices increased.

These case studies provide preliminary evidence for changes in knowledge following foundational training in trauma-informed approaches. However, both studies are limited by the subjective self-report methodology used to assess knowledge, which may not accurately reflect true knowledge acquisition (Wickstrom, 1995). Additionally, staff reports of knowledge in the study by Dorado and colleagues (2016) were not collected immediately after the foundational professional development training and may reflect more gradual changes over the course of the intervention rather than changes resulting specifically from the training. There is a need for targeted evaluation of foundational professional development training as a tool for increasing staff knowledge of the core content of trauma-informed approaches.

The current study examined foundational professional development training as a pre-implementation tool for facilitating objective teacher knowledge of trauma-informed

approaches. Teachers responded to a measure assessing their knowledge of the principles and procedures of trauma-informed approaches before the training and immediately following the training. Content analysis of the core components of the foundational professional development curriculum informed the items on the knowledge measure. Training content was structured around the Substance Abuse and Mental Health Services Administration (SAMHSA)'s four key assumptions of a trauma-informed system to provide critical domains of knowledge of trauma-informed care (2014). The "four R's" that comprise these assumptions include school-wide *realization* of the prevalence of trauma and its widespread impacts on students; *recognition* of the signs of trauma and the need for learning supports; and integration of the principles of trauma-informed care into classroom practices in order to *respond* to the needs of trauma-exposed students while *resisting re-traumatization*. To guide efforts for achieving these four R's, the training incorporated SAMHSA's six key practice principles that can be used to structure school-specific trainings: Safety; Trustworthiness and Transparency; Peer Support; Collaboration and Mutuality; Empowerment; Voice, and Choice; and Cultural, Historical, and Gender Issues. Content also drew from existing resources that offer comprehensive guidelines for creating trauma-informed schools (Cole, Eisner, Gregory, and Ristuccia, 2013). Table 1 illustrates the various training components designed to expose school staff to the relevant literature on trauma and education, as well as school-based applications of trauma-informed approaches.

## Fostering Pre-Implementation Perceptions of Acceptability

As foundational professional development training in trauma-informed approaches increases teacher knowledge, that knowledge may increase their enthusiasm and motivation to implement the approaches. Knowledge of the principles and procedures for trauma-informed approaches helps staff understand how trauma-informed approaches could connect to current school practices and student needs, increasing the likelihood of staff support (Allinder & Oates, 1997; Han & Weiss 2005; Harris & Fallot, 2001; Vereb & DiPerna, 2004). The Health Action Process Approach (HAPA) model depicts a link between this understanding and the primary goal of pre-implementation activities, adult motivation to change behavior. HAPA is an evidence-informed model of adult behavior change from health psychology that has been applied in implementation of school-based interventions delivered by teachers. School applications of HAPA maintain that teacher perceptions of the problem, outcome expectancy, and expectations of their own self efficacy in implementation shape behavioral intention to adopt a new approach (Sanetti, Kratochwill, & Long, 2013). Foundational professional development training provides information that informs teacher perceptions within all of these domains.

The notion that implementer perceptions of an approach matter, can be measured, and can critically influence intervention outcomes is rooted in the literature on applied behavioral analysis. During the 1900s, psychology evolved from a psychodynamic orientation toward behaviorism, which emphasizes what is objectively observable. However, psychology scholars have also championed the significance of implementer judgments in determining implementation behaviors. Subsequently, several constructs have emerged that can indicate the extent to which individuals support, or like, an

approach to practice, including social validity and treatment acceptability (Eckert & Hintze, 2000). Social validity refers to perceptions of the overall value of a treatment or approach in society, and is defined by Wolf (1978) as the collection of three dimensions of judgments: "(a) the social significance of the goals; (b) the social appropriateness of the procedures; and (c) the social importance of the effects" (p. 207). These judgments represent perceptions that a treatment or approach targets meaningful change, that its procedures are appropriate for achieving the intended change, and that it has meaningful effects on consumers. Judgments of these three dimensions of a new treatment or approach drive whether individuals view it favorably.

A narrower construct is treatment acceptability. Judgements of acceptability indicate the value of a treatment or approach in the context of the problem it is intended to address. Kazdin (1980) defined treatment acceptability as "judgments of lay persons, clients, and others of whether the procedures proposed for a treatment are appropriate, fair, and reasonable for the problem or client" (p. 259). In schools, treatments perceived as unacceptable are unlikely to be adopted, even in the face of clear evidence of outcomes (Eckert & Hintze, 2000). In contrast, pre-implementation teacher perceptions of acceptability are associated with increased adoption efforts by teachers, fidelity of implementation, and sustainability of the approach in teaching practices over time (Allinder & Oates, 1997; Dart, Cook, Collins, Gresham, & Chenier, 2012).

The school psychology literature has supported the relatedness of teacher knowledge and acceptability. For example, in one study examining teacher acceptability of behavioral techniques, teachers who demonstrated more knowledge of behavioral principles rated a behavioral intervention as more acceptable than teachers with low

knowledge (McKee, 1984). Another study found that teachers' knowledge of ADHD positively related to their ratings of acceptability for ADHD treatments (Vereb & DiPerna, 2004). Self-reported teacher knowledge of curriculum-based assessment has also been significantly related to perceived acceptability (Eckert, Shapiro, & Lutz, 1995).

Despite the support for an association between knowledge and acceptability for student assessment and intervention methods, this association has not been thoroughly explored as related to foundational professional development training in trauma-informed approaches in schools. The five-year HEARTS program evaluation included staff satisfaction surveys that only modestly evaluated staff knowledge and acceptability of the approach (Dorado et al., 2016). Similar to their data collection method assessing knowledge of the HEARTS program, the authors only evaluated peripheral indicators of teacher perceptions of acceptability through end-of-year surveys. Teachers rated the impact of the program on student outcomes (student time on task, student time spent in the classroom, and student attendance), representing some evaluation of "the social importance of the effects" (Wolf, 1978; p. 207), but did not report on whether they actually liked the program. Perry and Daniels (2016) used brief surveys following their foundational professional development training to assess staff satisfaction. Teachers completed five-item surveys indicating their overall satisfaction with the training and whether the training felt useful, but did not complete any of the established acceptability measures that exist in the school psychology literature. Potential predictors of this satisfaction, such as knowledge gained in the training, were not assessed, creating ambiguity in the mechanisms by which foundational professional development training promotes staff satisfaction.

Both studies gathered preliminary information that is valuable to the formative research involved in formalizing the framework for applying trauma-informed approaches in schools. Yet, these case studies reported limited data relating to acceptability and did not evaluate elements of foundational professional development training that might facilitate such positive perceptions. As developing models for trauma-informed schools consistently emphasize foundational professional development training, it is necessary to evaluate its value in the pre-implementation process. Barriers to implementation of system-level approaches in schools, such as trauma-informed care, uniformly include finite time and competing priorities. It is necessary to establish the value of dedicating training resources to foundational professional development training in trauma-informed approaches. Acceptability ratings may suggest that professional development training promotes teacher intention to change during pre-implementation. Furthermore, assessing proximal outcomes of the training and how they relate to acceptability ratings could provide support for foundational professional development training as an effective pre-implementation activity. Knowledge gained in the training, as indicated by the difference between pre-training and post-training teacher knowledge, represents one such outcome.

The current study evaluated the association between teacher performance on the knowledge measure and the perceived acceptability of trauma-informed approaches following the foundational professional development training. Acceptability was measured using the Usage Rating Profile-Intervention Revised (URP-IR; Briesch et al., 2013). This measure includes nine items assessing whether teachers think trauma-informed approaches will be effective, fair, and appropriate for addressing problems and

their willingness to implement the approaches. In comparison to common treatment acceptability measures, the URP-IR is notable for the specificity with which it evaluates acceptability. In the school psychology literature, some researchers have held that perceived alignment of an approach with aspects of the larger school system, such as broader system practices and resources, cannot be parsed out from an individual's acceptability judgment. These investigators measure acceptability as a composite construct that includes these culture-specific influences. However, others conceptualize that such perceptions represent distinct constructs and complement acceptability to comprise overall social validity. These authors, including Briesch and colleagues (2013), argue for the measurement of acceptability in narrower terms, focusing on perceived effectiveness and appropriateness of the approach for the specific problem, and measure it as just one of many significant constructs representing implementer perceptions.

While both conceptualizations of acceptability are represented in the school-based literature, it is valuable to distinguish the narrower concept of treatment acceptability first defined by Kazdin (1980) from the complex contextual influences that exist in the school system. Ecological features can be improved and even leveraged to promote implementation if there is initial buy-in and motivation to do so. However, if implementers simply do not like an intervention or approach, it will be difficult to motivate behavior change without changing the intervention itself. The current study therefore assessed acceptability of trauma-informed approaches among teachers using the Usage Rating Profile – Intervention Revised (URP-IR) Acceptability scale, which aligns with the narrower conceptualization of acceptability promoted by Kazdin (1980).

### Potential Moderators of an Association between Knowledge and Acceptability

Various factors have the potential to influence the relationship between knowledge of a new approach and teacher perceptions of the acceptability of the approach (Han & Weiss, 2005). Perceived feasibility of implementing the new approach could moderate an association between knowledge and acceptability. Feasibility represents implementer perceptions that they could carry out a new approach as intended. It is often measured through assessing perceptions of time, resource, and effort requirements of the new approach (Witt & Martens, 1983). Similar to the varying conceptualizations of acceptability and social validity described above, there is some divergence in the field around how to conceptualize feasibility (American Psychological Association, 2002). The American Psychological Association defined feasibility to include "factors such as…. acceptability of the intervention, compliance with the requirements of the intervention, ease of dissemination of the intervention, ease of administration of the intervention, and the cost of the intervention," suggesting that feasibility is a more general construct that subsumes acceptability (2002; p. 1057). Others hold that feasibility represents a dimension of individual perceptions of social validity that parallels acceptability. Indeed, Wolf (1978) referenced this concept in his initial definition of social validity, which included implementer perceptions that the procedures of the approach were *possible to carry out*. Several researchers have operationalized a construct of feasibility, or staff perceptions of their own abilities and access to the necessary resources to carry out a new practice's procedures, as distinct from the construct of acceptability, or staff perceptions that they like a new practice and its procedures (Briesch et al., 2013; Han, 2012; Odom, McConnell, & Chandler, 1994). The current study embraces this distinction and treats the two as separate but related

constructs, where acceptability strictly represents how much a teacher believes that she likes trauma-informed approaches, and feasibility indicates how much a teacher believes that she can carry them out.

This conceptualization of feasibility provides information on a teacher's appraisal of resources and complexity of the intervention, which may be at odds with how much he or she personally likes trauma-informed approaches. Studies often examine feasibility as a predictor of implementation behaviors, such as treatment integrity. Bosworth, Gingiss, Potthoff, and Roberts-Gray (1999) developed a Bayesian probability model to determine eight predictors of implementation success. Two of these factors that speak to feasibility issues, resources and innovation characteristics, indicated that initiatives with complex procedures and high requirements for time, money, facilities, supplies, and staffing had low probabilities of implementation success. Knowledge similarly described elements of feasibility, including materials costs, preparation time for teachers, and use of student time, to influence future implementation quality.

Despite the established relevance of feasibility for formal implementation, little is known about how feasibility influences pre-implementation acceptability among teachers. Concerns about feasibility may limit the effectiveness of pre-implementation activities before formal implementation has even begun, jeopardizing the utility of pre-implementation efforts such as foundational professional development training and perhaps attenuating enthusiasm for the approach. Dart and colleagues (2012) pointed out that "a teacher is likely to be dissatisfied with an intervention if it takes longer to implement, costs more, and fits less well within the classroom structure, which would likely result in decreased treatment acceptability" (p. 469). Indeed, Noell and Gresham

(1993) reported that teachers were likely to reject new initiatives that they perceived as too costly.

As foundational professional development training introduces teachers to a new approach, apparent feasibility can influence how teachers envision themselves using the approach with their students. If, upon learning about a new approach, a teacher is able to envision himself implementing a new approach with integrity and achieving the intended outcomes, he might evaluate the approach as appropriate and effective for addressing the target issue. Perceptions of feasibility may bolster his enthusiasm to deliver the approach, enhancing the relationship between knowledge and acceptability (Briesch et al., 2013). Alternatively, while foundational professional development training promotes understanding the rationale of an approach as an appropriate and effective tool, it may also highlight aspects of the approach that would pose implementation challenges for the teacher. If a teacher learns that an approach requires significant advanced preparatory time or substantial development of materials for students, or includes little guidance on tangible strategies for using the approach with students, her perceptions of feasibility may be low. In turn, she may experience skepticism toward the approach and evaluate the approach as minimally acceptable. In this way, feasibility could weaken or even change the direction of the relationship between foundational knowledge and acceptability.

These scenarios illustrate how perceptions of feasibility could temper or boost the benefits of knowledge on perceived acceptability of a new approach. Teacher perceptions of feasibility of trauma-informed approaches have received little examination in the literature, yet have significant implications for pre-implementation motivation to change. As teachers learn about trauma-informed approaches, teachers may find them appealing,

yet their perceptions of their abilities to deliver it to students as intended may vary and can attenuate or augment how acceptable they consider trauma-informed approaches to be. The current study collected teacher ratings for feasibility of trauma-informed approaches based on perceived time, resources, and effort required to implement. These dimensions of feasibility reflect those that are most commonly evaluated in the school-based literature and are considered relevant to garnering pre-implementation staff support (Briesch et al., 2013; Fixsen et al., 2005).

The relationship between knowledge gained in foundational professional development training and acceptability may also be moderated by how much trauma-informed approaches appear to fit with current school practices and norms. Domitrovich and colleagues (2008) highlighted the significance of a new approach's alignment with the school's mission and policies, job and administrator expectations, overall work environment, and day-to-day operations of the school. Empirical studies have identified elements of system fit as predictive of teacher implementation of preventive socioemotional programs that are closely related to trauma-informed approaches (Bosworth et al., 1999; Sanetti, Kratochwill, & Long, 2013). For example, one study found that perceptions of fit with administrator expectations influenced teacher beliefs and use of school-wide practices that incorporated a character development program (Beets et al., 2008). In another study examining influences of various systems-level factors on implementation of a social emotional learning curriculum, almost 70% of teachers cited lack of principal support as their largest barrier to implementation (Wanless, Patton, Rimm-Kaufman, & Deutsch, 2013). In both instances, more negative teacher perceptions of system fit were associated with attenuated implementation efforts

during formal implementation. Perceived fit may similarly influence the pre-implementation judgments of acceptability that are so critical for garnering system-wide motivation to change.

The relationship between knowledge and acceptability of trauma-informed approaches may be moderated by system fit through pathways that are conceptually akin to the moderating effect of feasibility. A teacher may connect new knowledge of an approach to the school's mission statement, leadership expectations, or her job description. These positive perceptions of fit between trauma-informed approaches and leadership or school-wide goals may strengthen the relationship between knowledge and acceptability. Alternatively, if the teacher perceives the approach to misalign with system practices or norms, benefits of knowledge on acceptability may be attenuated. Researchers have not explicitly examined staff reports of system fit toward the acceptability of a new approach as a potential moderator of the relationship between knowledge and teacher perceptions of acceptability during the pre-implementation stage. While system fit can encompass many contextual influences in the school, the current study assessed perceived fit of trauma-informed approaches with teachers' job expectations, work environment, school mission, administrative support, and procedural norms (Briesch et al., 2013).

## Rationale for the Current Study

School-based trauma-informed approaches draw from the evidence base of trauma-focused mental health services and a strong theoretical rationale to systematically reduce and prevent the widespread negative impacts of trauma on students. Examining mechanisms of effective implementation processes for systems-level mental health

initiatives in schools has implications for translating evidence-based mental health frameworks into the school setting. This study examined foundational professional development training as one mechanism for generating staff knowledge and perceptions of acceptability of trauma-informed approaches. The study measured the association between knowledge growth and acceptability to determine whether, and how, foundational professional development training generated the consensus emphasized in the pre-implementation stages. The study further examined teacher perceptions of feasibility and system fit of trauma-informed approaches as potential moderators of the association between knowledge growth and acceptability.

The current study utilized archival data that draws from a sample of classroom and special education teachers that represent a span of grades from multiple schools. The diversity of specialties and developmental stages taught by teachers in this sample suggests that results of the current study will have implications for educators of students across developmental stages. The current study tested the following hypotheses (see Figure 2 for conceptual models of hypotheses):

1. It is hypothesized that school staff will demonstrate increased knowledge of trauma-informed approaches following foundational professional development training.
2. It is hypothesized that teacher growth in knowledge of trauma-informed approaches following foundational professional development training will be positively associated with teacher ratings of acceptability for trauma-informed approaches.
3. Teacher perceptions of the feasibility of trauma-informed approaches will moderate the relationship between knowledge and acceptability for trauma-informed approaches, such that teachers with higher perceptions of feasibility will

demonstrate a stronger or more positive relationship between knowledge and acceptability, and teachers with lower perceptions of feasibility will demonstrate a weaker or more negative relationship between knowledge and acceptability.

4. Similarly, teacher perceptions of system fit will moderate the relationship between knowledge and acceptability for trauma-informed approaches, such that teachers with higher perceptions of system fit will demonstrate a stronger or more positive relationship between knowledge and acceptability, and teachers with lower perceptions of system fit will demonstrate a weaker or more negative relationship between knowledge and acceptability.

# Methods

## Participants

The current study used archival data from a foundational professional development training in trauma-informed approaches provided for 210 primary (K-8$^{th}$ grade) and secondary (9$^{th}$ -12$^{th}$ grade) teachers from six New Orleans charter schools in July and August of 2015. All six schools were participating in a Trauma-Informed Schools Learning Collaborative coordinated by the New Orleans Health Department. Teachers provided information regarding their age, gender, race, education, experience in the field of education, experience at their current school, and pre-training familiarity with trauma-informed approaches. The current study sample represented the 183 teachers who completed measures at both pre- and post-training. These teachers and those excluded from the sample did not differ significantly by race, gender, school, teaching experience, education, or pre-training familiarity with trauma-informed approaches. However, those excluded from the sample were more likely to be older and more experienced teachers. The majority of participants identified as women (N = 129; 70.5%), college-educated (N = 94; 51.4%), and new to teaching within the last five years (N = 136; 74.3%). Most participants identified as White/Caucasian (N = 102; 55.7%) or Black/African American (N = 68; 37.2%). Overwhelmingly, teachers were new to their school within the last five years (N = 175; 95.6%). See Table 2 for further demographic information.

**Procedures**

The participating schools were members of the New Orleans Trauma-Informed Schools Learning Collaborative, a joint initiative of the New Orleans Health Department and several community agencies/institutions, including Tulane. All New Orleans public schools were invited to respond to a Request for Applications (RFA) in the spring of 2015. Each of the six participating schools was selected in April 2015 based on preliminary indicators of readiness such as prior implementation of a social-emotional learning curriculum and leadership commitment to the new approach. School leaders signed a memorandum of understanding delineating their school's commitment to the activities of the learning collaborative, including a pre-implementation all-staff two-day foundational professional development training in trauma-informed approaches during the summer of 2015. The training was developed and delivered by faculty representatives of the New Orleans Trauma-Informed Schools Learning Collaborative.

Prior to beginning the training, the evaluation aspect of the professional development training was explained. Evaluation packets were distributed to all staff present at their school's training. Pre-training evaluation packets included informed consent and demographic forms, as well as an objective assessment of knowledge of trauma and principles of trauma-informed approaches. Day 1 and Day 2 of the professional development training were conducted. Immediately upon completion of Day 2 training, study participants completed the knowledge assessment and the URP-IR Scale assessing perceptions of acceptability, feasibility, and system fit related to trauma-informed approaches. This study was approved through a University Institutional Review Board (IRB).

## Measures

**Demographic information.** Teacher demographic information was collected on several variables, including: age, gender, race, prior familiarity with trauma-informed care, years teaching, grade level taught, years spent working in the current job role, years spent working at the current school, and years spent working in the education field.

**Acceptability, feasibility, and system fit.** The current study used three scales from the Usage Rating Profile-Intervention Revised (URPI-R; Briesch et al., 2013). The URP-IR contains 29 items that ask implementers to assess potential facilitators and barriers to usage of an intervention. The items comprise six subscales that reflect various dimensions of social validity and have demonstrated adequate reliability and validity in a study sample of over 1,000 K-12 teachers (Briesch et al., 2013). The measure was slightly adapted for use with the foundational professional development training, as items were tailored to specifically ask about perceptions relating to trauma-informed approaches (e.g. "the ***trauma-informed approach*** is an effective choice for addressing a variety of problems"). Participants rated items on a Likert scale ranging from 1 to 6, with 1 indicating "Strongly Disagree" and 6 indicating "Strongly Agree." Subscale scores are calculated by totaling ratings on subscale items. Internal consistency statistics are reported in Table 4.

The 9-item Acceptability subscale assesses an individual's enthusiasm for implementing an approach, appropriateness of the approach for an identified need, and general acceptability of the approach (e.g. "I would implement the trauma-informed approach with a good deal of enthusiasm"), with higher scores indicating positive perceptions of acceptability of the approach. Briesch and colleagues (2013) reported that

the Acceptability subscale demonstrated a high level of internal consistency (α=.95; mean inter-item correlation: *r* = .68). In the current study, this subscale likewise demonstrated sufficient internal consistency (α=.85; mean inter-item correlation: *r* = .45).

The 6-item Feasibility subscale assesses an individual's perception that he or she can implement a new approach as intended (e.g. "The total time required to implement the trauma-informed approach would be manageable"), with higher scores indicating greater perceptions of feasibility. This subscale indicates perceived demands of implementation due to the complexity of the approach, as well as those due to time and resource requirements for delivery. This subscale demonstrated a high Cronbach's alpha and acceptable mean inter-item correlation in the Briesch study (α=.88; mean inter-item correlation: .55) and the current study (α=.80; mean inter-item correlation: *r* = .41), indicating acceptable internal reliability of the subscale.

The 5-item System Climate subscale indicates perceived system fit of the approach (e.g. "the trauma-informed approach is consistent with the way things are done in my school"). The System Climate subscale demonstrated sufficient internal reliability in the Briesch sample (α=.91; *r* =.68) and the current study sample (α=.73; *r* = .36). Although the subscale is termed "system climate," the items that comprise this subscale do not capture all twelve dimensions of school climate laid out by the National School Climate Council (2007) and the National School Climate Center (2017). Rather, the subscale items focus on administrative support, procedural alignment of a new approach with system and job expectations, and alignment with the mission of the school. As these items represent only three of the NSCC dimensions relating to staff and institutional

environment, the author understands this subscale to represent “system fit” of trauma-informed approaches.

**Knowledge of trauma-informed approaches.** This 14-item multiple choice measure was adapted from the knowledge measure developed by Brown and colleagues (2012) using content delivered in the foundational professional development training. Items assessed teacher knowledge of local prevalence rates of trauma (2 items), the biological impact of trauma on child development (2 items), recognizing and addressing behavioral manifestations of trauma in the classroom (4 items), the key principles of trauma-informed approaches as laid out by SAMHSA (3 items), and vicarious trauma and teacher self-care (3 items). Pre-training and post-training knowledge scores were calculated by totaling the number of correct responses provided at each time point. Knowledge growth was represented by a continuous knowledge test difference score, which was calculated for each participant by subtracting the pre-training knowledge test score from the post-training knowledge test score. Positive difference scores represented knowledge growth from pre-training to post-training, with larger values representing more growth. Although difference scores have been critiqued as unreliable indicators of growth on educational and psychological tests, authors have defended difference scores as inherently reliable to the specific populations completing the measures, particularly when a pre-test and post-test do not have completely identical distributions (Rogosa & Willett, 1993; Williams & Zimmerman, 1996). As post-test scores for the knowledge test represented diminished variance from pre-test scores, knowledge difference scores were considered an appropriate measurement of change. Another prevalent critique of difference scores characterizes them as misrepresentative of participant abilities. For

example, participants who scored low at pre-test but demonstrated great growth might appear equivalent to participants with high pre-test and high post-test scores (Dimitrov & Rumrill, 2003). The current study addressed this concern by including pre-training knowledge score as a control variable in all regression analyses.

## Results

Prior to conducting analyses, data were screened to identify missing cases. In total, there were 12 instances of missing data, representing 0.13% of the total possible number of item responses. Missing data were determined to be missing completely at random, as chi square tests of independence indicated that missingness was not related to school, gender, education, race, ethnicity, prior familiarity with trauma-informed approaches, time at the school, time in their teaching role, or time in the field. Independent-samples t-tests indicated that missingness was not related to knowledge test score. Missing data was excluded using pairwise deletion, which is recommended over listwise deletion when less than 10% of the sample will be excluded and data demonstrates acceptable reliability (Tsikriktsis, 2005). Data were also screened for outliers and normality. One outlier score was detected for acceptability, feasibility, and post-training knowledge test scores respectively. Winsorizing allows the researcher to change an extreme score to reflect the next most extreme, maintaining the distribution of extreme scores (Kline, 2011). Winsorization was applied to each of the three outlier scores. Skewness and kurtosis statistics were examined for the knowledge measure, acceptability, feasibility, and system fit ratings to evaluate for normal distribution of the key study variables. Pre- and post-training knowledge scores, acceptability, feasibility, and system fit ratings all demonstrated moderate negative skewness but did not exceed skewness values greater than 2 or less than -2, indicating that the distribution of these items did not violate the assumption of normality (Curran, West, & Finch, 1996).

Knowledge test difference scores demonstrated moderate positive skewness within the bounds of ±2.

Analyses examined associations between pre- and post-training performance on the knowledge test with ratings of acceptability, feasibility, and system fit of trauma-informed approaches. Table 3 presents descriptive information on the study variables, including the mean, standard deviation, and possible range, as well as zero-order correlations between the variables. Zero order correlations between acceptability, feasibility, and system fit all fell below .70, suggesting acceptable discriminant validity between URP-IR subscales.

*Changes in Knowledge and Prediction of Post-Training Acceptability Scores.*

*Hypothesis 1:* A paired samples t-test examined growth in knowledge of trauma-informed approaches. It was hypothesized that performance on the knowledge measure immediately following the foundational professional development training would significantly and positively differ from pre-training performance. Post-training knowledge test scores ($M$ = 11.91, $SD$ = 1.74) were significantly higher than pre-training knowledge test scores; ($M$ = 7.10; $SD$ = 3.49; $t(182)$= -20.51, $p < .01$).

*Hypotheses 2, 3, and 4:* It was hypothesized that knowledge growth would predict acceptability ratings, and that feasibility and system fit would each influence the relationship between knowledge growth and acceptability. One simple regression analysis assessed the association between knowledge growth and acceptability. Two moderated multiple regression analyses examined the separate moderating effects of feasibility ratings and system fit ratings on the relationship between knowledge growth and acceptability. Pre-training knowledge score was entered first in all regression analyses to

control for initial performance on the knowledge measure. For each moderated multiple regression analysis, the knowledge test difference scores, acceptability ratings, feasibility ratings, and system fit ratings were mean centered. Interaction terms were created by multiplying the centered terms for the two predictors in each analysis (knowledge growth by feasibility rating and knowledge growth by system fit rating). The knowledge growth term, moderator term, and interaction term for each analysis were subsequently entered after the control variable. Results for the regression analyses are presented in Tables 5, 6, and 7 and include the percentage of variance accounted for by each variable, the amount of change in $R^2$ and the corresponding *F* value for that change, and the standardized beta weights for each predictor.

Hypothesis 2 was not supported, as knowledge growth did not significantly predict acceptability ratings in this simple regression or subsequent moderated regression analyses ($\beta = .20$, *n.s.*). The first moderated regression analysis examined feasibility as a moderator of the relationship between knowledge growth and acceptability. The overall model explained 43% of the variance in acceptability ratings and was statistically significant ($F$ (4, 171) = 32.43, $p < .01$). There was a significant main effect for feasibility ($\beta = .61$, $p < .01$), which explained 37% of the variance in acceptability ratings. However, the interaction between knowledge growth and feasibility did not significantly predict acceptability ratings ($\beta = .03$, *n.s.*). The second regression analysis examined system fit as a moderator of the relationship between knowledge growth and acceptability. The overall model explained 50% of the variance in acceptability ratings and was statistically significant ($F$ (4, 173) = 42.37, $p < .01$). There was a significant main effect for system fit ($\beta = .67$, $p < .01$), which explained 40% of the variance in

acceptability ratings. There was also a significant knowledge growth by system fit interaction ($\beta = .18$, $p < .01$), which explained 3% of the variance in acceptability ratings.

The significant interaction between knowledge growth and system fit was plotted at the +1/-1 standard deviation values for system fit of trauma-informed approaches. Figure 3 indicates that the relationship between knowledge growth and acceptability ratings varied depending on system fit ratings. Knowledge growth predicted higher acceptability ratings when individuals provided higher ratings of system fit ($t_{4,173} = 2.79$, $p < .01$). When system fit ratings were lower, more knowledge growth was associated with lower acceptability ratings ($t_{4,\ 173} = -2.36$; $p = .02$).

## Discussion

The present study assessed foundational professional development training in trauma-informed approaches as a tool for achieving the goals of pre-implementation. Specifically, this study evaluated whether the training significantly increased teacher knowledge of trauma-informed approaches and tested the association between knowledge growth and acceptability. The study also examined teacher perceptions of feasibility and system fit of trauma-informed approaches as potential moderators of the association between knowledge growth and acceptability. Together, these research questions examine knowledge as a predictor of positive pre-implementation teacher attitudes, investigate how teachers evaluate trauma-informed approaches across various domains of ecological factors, and enhance our understanding of how these domains relate to each other following foundational professional development training.

The goals of pre-implementation activities are to present information that engages teachers in identifying a system-wide need, understanding the new approach as an appropriate response to that need, and feeling motivated to personally carry out the new approach (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). Results from the current study provide partial support for foundational professional development training as a tool for achieving these goals. Knowledge growth represented the first indicator that the training furthered the goals of pre-implementation. Results from the current study indicated that teacher knowledge of trauma-informed approaches grew significantly from pre- to post-training. This finding aligns with subjective teacher reports of knowledge

growth in trauma-informed approaches from prior studies (Anderson, Blitz, & Sastamoinen, 2015; Dorado et al., 2016; Perry & Daniels, 2016) and improves upon prior methods of assessing knowledge of trauma-informed approaches by using a more comprehensive, objective measure and a pre-posttest design. These features allow the current study to contribute a more definitive and objective analysis of knowledge as an outcome of foundational professional development training.

Knowledge of a new approach helps teachers to understand trauma-informed approaches as meaningful and necessary, which is critical for high-quality implementation (Greenberg et al., 2005). Knowledge may also help teachers perceive a new approach as effective and appropriate for meeting a need and increase their acceptance of a new approach (Allinder & Oates, 1997; Han & Weiss 2005; Vereb & DiPerna, 2004). Hypothesis 2 tested the association between knowledge growth and acceptability to assess whether the information provided in the training influenced teacher evaluations of trauma-informed approaches. Regression results indicated that when pre-training knowledge scores were taken into account, knowledge growth was no longer associated with acceptability. Yet, there may be a threshold for knowledge that shapes pre-implementation perceptions of acceptability, where acquiring a baseline level of knowledge helps teachers to evaluate the acceptability of trauma-informed approaches but does not continue to have that impact as knowledge grows. Foundational professional development training may help teachers achieve that level of knowledge. Exploratory analysis of main effects indicated that pre-training knowledge was significantly and positively associated with acceptability, suggesting that more knowledge may contribute to more positive acceptability ratings, regardless of when that knowledge was acquired.

There may also be certain contexts in which knowledge growth matters more for perceptions of acceptability. Perceptions of feasibility and system fit have been regarded as influential in shaping acceptability (see Figure 1, Domitrovich et al., 2008; Dart et al., 2012, Sanetti, Kratochwill, & Long, 2013) and may affect how knowledge growth relates to acceptability. Initial exploratory analyses suggested that feasibility and system fit could have this influence, as both constructs independently related to acceptability. There was a positive main effect of feasibility on acceptability, suggesting that teachers considered whether they felt capable of carrying out the intervention as they evaluated whether they liked trauma-informed approaches. There was also a positive main effect of system fit on acceptability, indicating that apparent alignment of trauma-informed approaches with teachers' job expectations, work environment, school mission, administrative support, and procedural norms contributed to how much a teacher liked trauma-informed approaches. These results indicate that feasibility and system fit influence pre-implementation beliefs about a new approach, which may be a mechanism for their impact on implementation quality that has been established in the literature (Noell & Gresham, 1993; Beets et al., 2008).

As foundational knowledge was the primary proposed mechanism of acceptability in the current study, Hypotheses 3 and 4 examined whether feasibility and system fit moderated the association between knowledge growth and acceptability. System fit interacted with knowledge growth to influence acceptability, such that when system fit scores were higher, knowledge growth was associated with increased acceptability. As teachers learned about trauma-informed approaches, those reporting higher system fit may have seen that fit as a type of support for implementation. In these individuals, the

association between knowledge growth and acceptability was positive. On the other hand, when system fit scores were lower, knowledge growth was associated with decreased acceptability. For these individuals, lower perceptions of system fit may have represented a contextual barrier against successful implementation. Increased knowledge may have highlighted system barriers rather than supports, ultimately leading to decreased acceptability scores. These effects reflect the substantial literature base that cites elements of system fit, including perceived administrator and colleague support, as critical determinants of teacher implementation behaviors (e.g., Beets et al., 2008; Wanless, Patton, Rimm-Kaufman, & Deusch, 2013). The current study extends that literature to the context of teacher attitudes during pre-implementation.

System fit was found to weaken or strengthen the relationship between knowledge growth and pre-implementation acceptability, presumably as knowledge growth highlighted system barriers or supports to future implementation. Though feasibility was proposed to have a similar effect, there was not a significant interaction between feasibility and knowledge growth on acceptability. In part, the pre-implementation context of the current study may have reduced the potential influence of feasibility. Teachers participated in foundational professional development training during the summer, before formal implementation began. As foundational professional development training seeks to orient teachers to the conceptual information underlying trauma-informed approaches, there were no implementation demands associated with the focus of this particular training. Feasibility may bear a distinct influence on acceptability when actual implementation behaviors are expected. Turnbull (2002) found that factors predicting acceptability in the first year of implementation did not have the same

predictive effect later in implementation, providing support for the idea that acceptability may be more influenced by certain factors depending on when acceptability is assessed. In contrast, aspects of system fit may have been more readily apparent to teachers during this training. For example, teachers participated in the training alongside leadership and colleagues, whose opinions of trauma-informed approaches may have served as proximal indicators of system fit. Further, there were some indicators of system fit of trauma-informed approaches before teachers even entered the training, as leadership elected to engage their school in the trauma-informed schools learning collaborative and dedicated significant training time to the foundational training. Regardless, it is evident that teacher acceptability for trauma-informed approaches is shaped by the approaches' apparent alignment with attitudes and practices that are already valued in the system. Importantly, the observed interaction also showed that acceptability for trauma-informed approaches actually decreased with growth in knowledge when system fit ratings were lower, contradicting the intended effect of the training. Initial pre-training planning with school stakeholders that elaborates how trauma-informed approaches align with the current mission and systems governing a school, and facilitates school-wide understanding of that alignment, is recommended to maximize the benefits of foundational professional development training.  The current study includes some limitations that may impact the generalizability of these findings. First, the study sample represented teachers from schools that sought support for implementing trauma-informed approaches and in part were selected due to indicators of acceptability for related approaches such as social-emotional learning. Because the current study did not measure pre-training acceptability, feasibility, or system fit, it is unknown how inclined teachers were to like trauma-

informed approaches already, how important pre-training acceptability was for post-training acceptability, and how much teachers had already formed judgments of feasibility or system fit. Future work should collect pre-training measurements of acceptability, feasibility, and system fit to truly evaluate foundational professional development training as a tool for shifting perceptions.

Second, the study sample was almost entirely new teachers, where 74% of the sample had worked in the education field for 5 years or less. The literature has identified an association between knowledge and acceptability using teacher samples with considerably more classroom experience than the current study participants. For example, the studies by Vereb and DiPerna (1997) and McKee (1984) both reported on teachers with a mean of 13-15 years of teaching experience. More experienced teachers may have a different lens for new approaches than new teachers do (e.g. Orlando, 2014). Further investigation with varied teacher samples could identify consistent predictors of pre-implementation acceptability that could serve as core components of pre-implementation.

Despite the importance of a pre-implementation study focus, several researchers have also commented on the limitations of assessing social validity judgments using pre-implementation self-reports, such as those used in the current study. Dart and colleagues (2012) noted that “assessing treatment acceptability prior to implementation assumes a teacher has had experience with an intervention and developed a feel for implementing it to address a particular problem. This assumption may lead to inaccurate levels of treatment acceptability” (p.469). Here, the authors pointed out that self-reports of acceptability may be more valid after formal implementation has begun. However, the goal of the current study was not to assess acceptability related to formal implementation,

but instead measure early ratings of acceptability. Furthermore, the study of acceptability has historically collected teacher reports of acceptability only after brief exposure to an intervention via case descriptions and vignettes, rather than after actual implementation (Eckert & Hintze, 2000). The current study improved upon these methods by collecting acceptability ratings after a full 2-day training in trauma-informed approaches, providing more opportunity for teachers to develop their perceptions of acceptability than the brief case exposure. However, future studies might consider evaluating the relationship between pre-implementation acceptability and acceptability during implementation to investigate the validity of pre-implementation acceptability in predicting later implementation attitudes.

Finally, the current study included some measurement limitations. Acceptability, feasibility, and system fit were highly correlated, calling into question the independence of the constructs as measured by Briesch and colleagues (2013). Item analysis of the URP-IR might produce more distinct subscales, which would promote more valid analysis of how these important components of social validity relate. Also, while the knowledge measure was designed as a comprehensive, objective assessment, it was developed specifically for the indicated foundational professional development training and has not been validated. Post-training knowledge scores demonstrated a ceiling effect, where 70% of the study sample scored at least a 12 out of 14 on the knowledge measure; this effect may have influenced the current study's findings. The study is also limited by shared method variance, as all measures in the study were based on teacher report.

The current study provides novel analyses of mechanisms of acceptability of trauma-informed approaches in a sample of educators who were mostly new to the field

of education and mostly unfamiliar with trauma-informed approaches prior to training. Foundational professional development training appears to promote the goals of pre-implementation by fostering knowledge and results in largely positive staff attitudes toward trauma-informed approaches. Further study is necessary to identify components of foundational professional development training that foster perceptions of acceptability and to identify additional valuable outcomes of such training.

Table 1

*Training Components of Foundational Professional Development Training in Trauma-Informed Approaches*

| Training Goals and Learning Objectives | Training Component |
|---|---|
| Create a common understanding of trauma and its impacts.<br>• School staff will realize the prevalence of trauma and its widespread impacts. | • National, local, and school-specific prevalence rates of childhood trauma exposure.<br>• Negative impacts of childhood trauma exposure: neurobiological development; psychosocial development; long-term health.<br>• National movement to create trauma-informed schools. |
| Build consensus for trauma-informed approaches.<br>• School staff will recognize the signs of trauma and the need for learning supports. | • Relationship between trauma-triggers and student behavior.<br>• Avoiding and responding to trauma-triggers. |
| Highlight key principles of trauma-informed care and their application to create safe and supportive environments for all students and teachers.<br>• School staff will respond to trauma-exposed students by integrating principles of trauma-informed care into classroom practices that resist re-traumatization.<br>• School staff will respond to own needs for self-care. | • Applying trauma-informed approaches in the classroom.<br>• 6 key principles of trauma-informed approaches (SAMHSA): Safety: Trustworthiness and Transparency; Peer Support; Collaboration and Mutuality; Empowerment, Voice, and Choice; Cultural, Historical, and Gender Issues.<br>• Staff focus: vicarious trauma, self-care, and accessing systems of support. |

Developed from materials provided by Substance Abuse and Mental Health Services Administration (2014) and Cole, Eisner, Gregory, & Ristuccia (2013).

Table 2

*Demographic Characteristics*

| Demographic Category n (%) | **Total (n = 183)** | School 1 | School 2 | School 3 | School 4 | School 5 | School 6 |
|---|---|---|---|---|---|---|---|
| School Level | | | | | | | |
| Primary | **105(57.4)** | -- | 47 (25.7) | 24 (13.1) | 34 (18.6) | -- | -- |
| Secondary | **78 (43.6)** | 21(11.5) | -- | -- | -- | 26 (14.2) | 31 (16.9) |
| Gender | | | | | | | |
| Female | **129 (70.5)** | 14 (66.7) | 33 (70.2) | 19 (79.2) | 26 (76.5) | 17 (65.4) | 20 (64.5) |
| Male | **54 (29.5)** | 7 (33.3) | 14 (29.8) | 5 (20.8) | 8 (23.5) | 9 (34.6) | 11 (35.5) |
| Age Category | | | | | | | |
| 18-24 | **42 (23.0)** | 6 (28.6) | 12 (25.5) | 6 (25.0) | 5 (14.7) | 2 (7.7) | 11 (35.5) |
| 25-34 | **110 (60.1)** | 13 (61.9) | 23 (48.9) | 15 (66.7) | 23 (67.6) | 18 (69.2) | 17 (54.8) |
| 35-44 | **15 (8.2)** | 2 (9.5) | 4 (8.5) | 2 (8.3) | 3 (8.8) | 3 (11.5) | 1 (3.2) |
| 45-54 | **13 (7.1)** | -- | 7 (14.9) | -- | 2 (5.9) | 2 (7.7) | 2 (6.5) |
| 55-64 | **3 (1.6)** | -- | 1 (2.1) | -- | 1 (2.9) | 1 (3.8) | -- |
| Race/Ethnicity* | | | | | | | |
| White/Caucasian | **102 (55.7)** | 10 (47.6) | 30 (63.8) | 14 (58.3) | 12 (35.3) | 17 (65.4) | 19 (61.3) |
| Black/African American | **68 (37.2)** | 10 (47.6) | 12 (25.5) | 9 (37.5) | 21 (61.8) | 7 (26.9) | 9 (29.0) |
| Hispanic/Latino | **17 (9.2)** | 1 (4.8) | 7 (14.9) | 3 (12.5) | 2 (5.9) | 1 (3.8) | 3 (9.7) |
| American Indian/Alaska Native | **6 (3.3)** | 1 (4.8) | -- | 2 (8.3) | -- | 1 (3.8) | 2 (6.5) |
| Asian | **8 (4.4)** | 2 (9.5) | 1 (2.1) | 3 (12.5) | -- | -- | 2 (6.5) |
| Other | **9 (4.9)** | -- | 3 (6.4) | 2 (8.4) | -- | 2 (7.7) | 2 (6.5) |
| Native Hawaiian/Other Pacific Islander | **1 (.5)** | -- | -- | 1 (4.2) | -- | -- | -- |
| Education | | | | | | | |
| Completed high school or GED | **2 (1.1)** | -- | -- | -- | 2 (5.9) | -- | -- |
| Some college | **10 (5.5)** | -- | 1 (2.1) | -- | 4 (11.8) | 1 (3.8) | 4 (12.9) |
| Completed college | **94 (51.4)** | 12 (57.1) | 29 (61.7) | 11 (45.8) | 13 (38.2) | 11 (42.3) | 18 (58.1) |
| Some graduate school | **28 (15.3)** | 1 (4.8) | 6 (12.8) | 6 (25.0) | 8 (23.5) | 4 (15.4) | 3 (9.7) |
| Completed graduate school | **49 (26.8)** | 8 (38.1) | 11 (23.4) | 7 (29.2) | 7 (20.6) | 10 (38.5) | 6 (19.4) |
| Years in Role | | | | | | | |
| <1 | **48 (25.1)** | 4 (19.0) | 10 (21.3) | 8 (33.3) | 10 (29.4) | 6 (23.1) | 8 (25.8) |
| 1-5 | **112 (61.2)** | 12 (57.1) | 29 (61.7) | 14 (58.3) | 19 (55.9) | 16 (61.5) | 22 (71.0) |
| 6-10 | **14 (7.7)** | 3 (14.3) | 5 (10.6) | 2 (8.3) | 3 (8.8) | 1 (3.8) | -- |
| 11-15 | **7 (3.8)** | 2 (9.5) | 1 (2.1) | -- | 2 (5.9) | 1 (3.8) | 1 (3.2) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 16-20 | **2 (1.1)** | -- | 2 (4.3) | -- | -- | -- | -- |
| 20+ | **2 (1.1)** | -- | -- | -- | -- | 2 (7.7) | -- |
| Years in School | | | | | | | |
| <1 | **75 (41.0)** | 8 (38.1) | 17 (36.2) | 13 (54.2) | 14 (41.2) | 8 (30.8) | 15 (48.4) |
| 1-5 | **100 (54.6)** | 13 (61.9) | 26 (55.3) | 11 (45.8) | 17 (50.0) | 17 (65.4) | 16 (51.6) |
| 6-10 | **7 (3.8)** | -- | 4 (8.5) | -- | 3 (8.8) | -- | -- |
| 11-15 | **--** | -- | -- | -- | -- | -- | -- |
| 16-20 | **--** | -- | -- | -- | -- | -- | -- |
| 20+ | **1 (.5)** | -- | -- | -- | -- | 1 (3.8) | -- |
| Years in Field | | | | | | | |
| <1 | **18 (9.8)** | 3 (14.3) | 2 (4.3) | 3 (12.5) | 4 (11.8) | 2 (7.7) | 4 (12.9) |
| 1-5 | **118 (64.5)** | 13 (61.9) | 29 (61.7) | 13 (54.2) | 21 (61.8) | 17 (65.4) | 25 (80.6) |
| 6-10 | **31 (16.9)** | 3 (14.3) | 11 (23.4) | 8 (33.3) | 6 (17.6) | 2 (7.7) | 1 (3.2) |
| 11-15 | **10 (5.5)** | 2 (9.5) | 2 (4.3) | -- | 2 (5.9) | 3 (11.5) | 1 (3.2) |
| 16-20 | **3 (1.6)** | -- | 2 (4.3) | -- | 1 (2.9) | -- | -- |
| 20+ | **3 (1.6)** | -- | 1 (2.1) | -- | -- | 2 (7.7) | -- |
| Pre-Training Familiarity with TIA | | | | | | | |
| Not at all familiar | **71 (38.8)** | 8 (38.1) | 18 (38.3) | 6 (25) | 24 (70.6) | 14 (53.8) | 1 (3.2) |
| A little familiar | **91 (49.7)** | 12 (57.1) | 21 (44.7) | 17 (70.8) | 9 (26.5) | 8 (30.8) | 24 (77.4) |
| Moderately familiar | **19 (10.4)** | 1 (4.8) | 7 (14.9) | 1 (4.2) | 1 (2.9) | 3 (11.5) | 6 (19.4) |
| Very familiar | **2 (1.1)** | -- | 1 (2.1) | -- | -- | 1 (3.8) | -- |

*percentages for racial and ethnic categories sum over 100% as participants could select multiple categories.

Table 3

*Descriptive Statistics and Intercorrelations between Study Variables*

| | Pre-Training Knowledge | Post-Training Knowledge | Knowledge Growth Difference Score | Acceptability of TIA | Feasibility of TIA | System Climate for TIA | *M* | *SD* | *Possible Range* | *Minimum* | *Maximum* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pre-Training Knowledge | -- | .43** | -.87** | .23** | .11 | .12 | 7.10 | 3.49 | 0-14 | 0 | 13 |
| Post-Training Knowledge | -- | -- | .08 | .19** | .02 | .19* | 11.90 | 1.74 | 0-14 | 7 | 14 |
| Knowledge Growth Difference Score | -- | -- | -- | -.16* | -.11 | -.03 | 4.80 | 3.17 | -14 - 14 | -1 | 14 |
| Acceptability of TIA | -- | -- | | -- | .63** | .66** | 5.36 | 0.55 | 1-6 | 3.56 | 6 |
| Feasibility of TIA | -- | -- | | -- | -- | .46** | 4.72 | 0.71 | 1-6 | 2.50 | 6 |
| System Fit of TIA | -- | -- | | -- | -- | -- | 5.31 | 0.58 | 1-6 | 3.40 | 6 |

*Indicates significance at the $p < .05$ level.

**indicates significance at the $p < .01$ level.

Table 4

*Internal Reliability of URP-IR Subscales of Interest*

| URP-IR Subscale | $\alpha$ | Mean Inter-Item Correlation | Corrected Item-Total Correlation | Alpha if Item Deleted |
|---|---|---|---|---|
| **Acceptability (9 items)** | **.85** | **.45** | **--** | **--** |
| Item 1: The trauma-informed approach is an effective choice for addressing a variety of problems. | -- | -- | .60 | .83 |
| Item 7: The trauma-informed approach is a fair way to handle a child's behavior problem. | -- | -- | .58 | .83 |
| Item 9: I would not be interested in implementing the trauma-informed approach. | -- | -- | .38 | .87 |
| Item 11: I would have positive attitudes about implementing the trauma-informed approach. | -- | -- | .69 | .82 |
| Item 12: The trauma-informed approach is a good way to handle a child's behavior problem. | -- | -- | .68 | .82 |
| Item 18: I would implement the trauma-informed approach with a great deal of enthusiasm. | -- | -- | .69 | .82 |
| Item 21: The trauma-informed approach would not be disruptive to other students. | -- | -- | .53 | .84 |
| Item 22: I would be committed to carrying out the trauma-informed approach. | -- | -- | .76 | .82 |
| Item 23: The procedures of the trauma-informed approach easily fit in with my current practices. | -- | -- | .62 | .83 |
| **Feasibility (6 items)** | **.80** | **.41** | **--** | **--** |
| Item 3: I would be able to allocate my time to implement the trauma-informed approach. | -- | | .59 | .76 |
| Item 8: The total time required to implement the trauma-informed approach would be manageable. | -- | | .66 | .74 |
| Item 13: Preparation of materials needed for the trauma-informed approach would be minimal. | -- | | .40 | .81 |
| Item 17: Material resources needed for the trauma-informed approach are reasonable. | -- | | .60 | .76 |
| Item 19: The trauma-informed approach is too complex to carry out accurately. | -- | | .51 | .77 |
| Item 27: The amount of time required for record-keeping would be reasonable. | -- | | .62 | .75 |

| | | | | |
|---|---|---|---|---|
| **System Climate (5 items)** | **.73** | **.36** | **--** | **--** |
| Item 10: My administrator would be supportive of my use of the trauma-informed approach. | -- | | .55 | .67 |
| Item 14: Use of the trauma-informed approach would be consistent with the mission of my school. | -- | | .41 | .71 |
| Item 16: Implementation of the trauma-informed approach is well-matched to what is expected in my job. | -- | | .55 | .66 |
| Item 20: The procedures of the trauma-informed approach easily fit in with my current practices. | -- | | .46 | .70 |
| Item 26: My work environment is conducive to implementation of an intervention like the trauma-informed approach. | -- | | .54 | .66 |

Table 5

*Results of Regression Analysis Testing the Association of Knowledge Growth and Acceptability*

| Variable | Acceptability | | | |
|---|---|---|---|---|
| | $R^2$ | $\Delta R^2$ | $\Delta F$ | Standardized beta weights ($\beta$) |
| Pre-Training Knowledge Test Score | .05 | .05 | 10.17** | .41** |
| Knowledge Growth | .06 | .01 | 1.79 | .20 |

**indicates significance at the $p < .01$ level.

Table 6

*Results of Regression Analysis Testing the Moderating Effect of Feasibility*

| Variable | Acceptability | | | |
|---|---|---|---|---|
| | $R^2$ | $\Delta R^2$ | $\Delta F$ | Standardized beta weights ($\beta$) |
| Pre-Training Knowledge Test Score | .05 | .05 | 9.23** | .35** |
| Knowledge Growth | .06 | .01 | 1.61 | .22 |
| Feasibility | .43 | .37 | 112.12** | .61** |
| Knowledge Growth x Feasibility | .43 | .01 | .24 | .03 |

**indicates significance at the $p < .01$ level.

Table 7

*Results of Regression Analysis Testing the Moderating Effect of System Fit*

| Variable | Acceptability | | | |
|---|---|---|---|---|
| | $R^2$ | $\Delta R^2$ | $\Delta F$ | Standardized beta weights ($\beta$) |
| Pre-Training Knowledge Test Score | .05 | .05 | 9.97** | .17 |
| Knowledge Growth | .06 | .01 | 1.91 | .04 |
| System Fit | .47 | .40 | 130.39** | .67** |
| Knowledge Growth x System Fit | .50 | .03 | 10.28** | .18** |

**indicates significance at the $p < .01$ level.

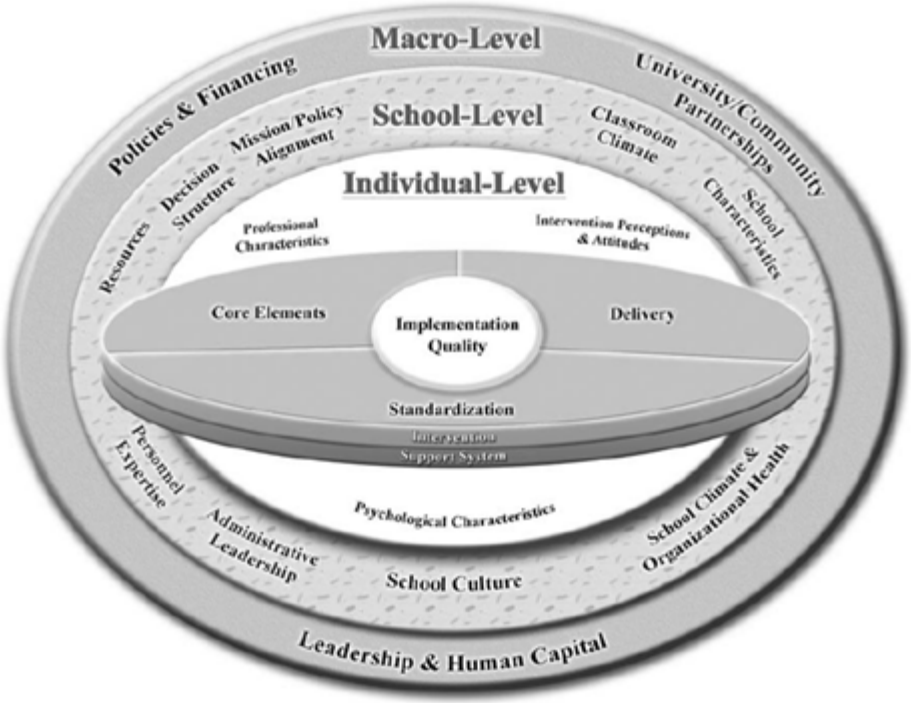


*Figure 1*. Multi-level model for ecological factors in the school setting. Reprinted from "Maximizing the implementation quality of evidence-based preventive interventions in schools: A conceptual framework," by C.E. Domitrovich, C.P. Bradshaw, J.M. Poduska, K. Hoagwood, J.A. Buckley, S. Olin, . . .N.S. Ialongo, 2008, *Advances in School Mental Health Promotion, 1*(3), p. 8.

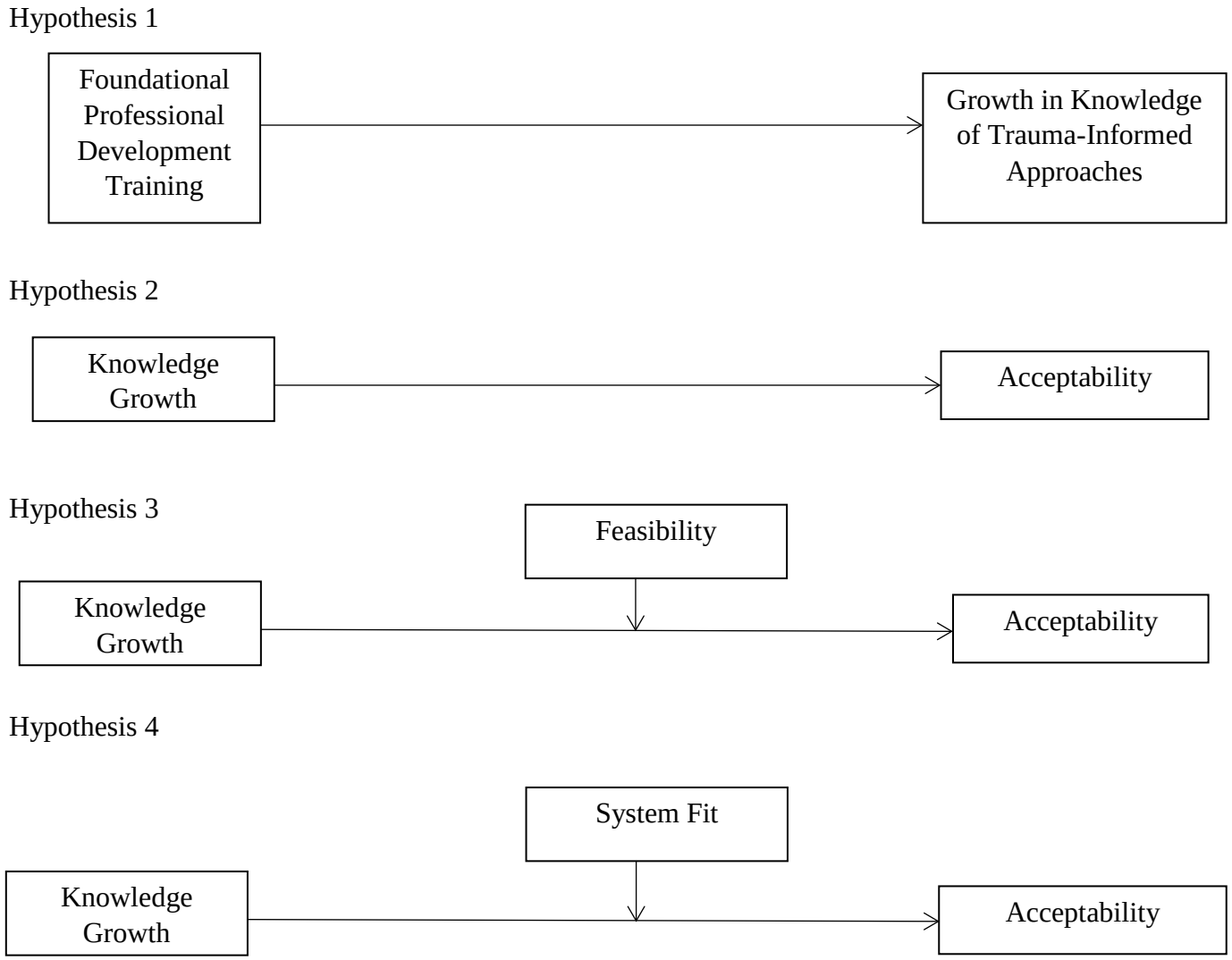


*Figure 2.* Current study model of proposed associations.

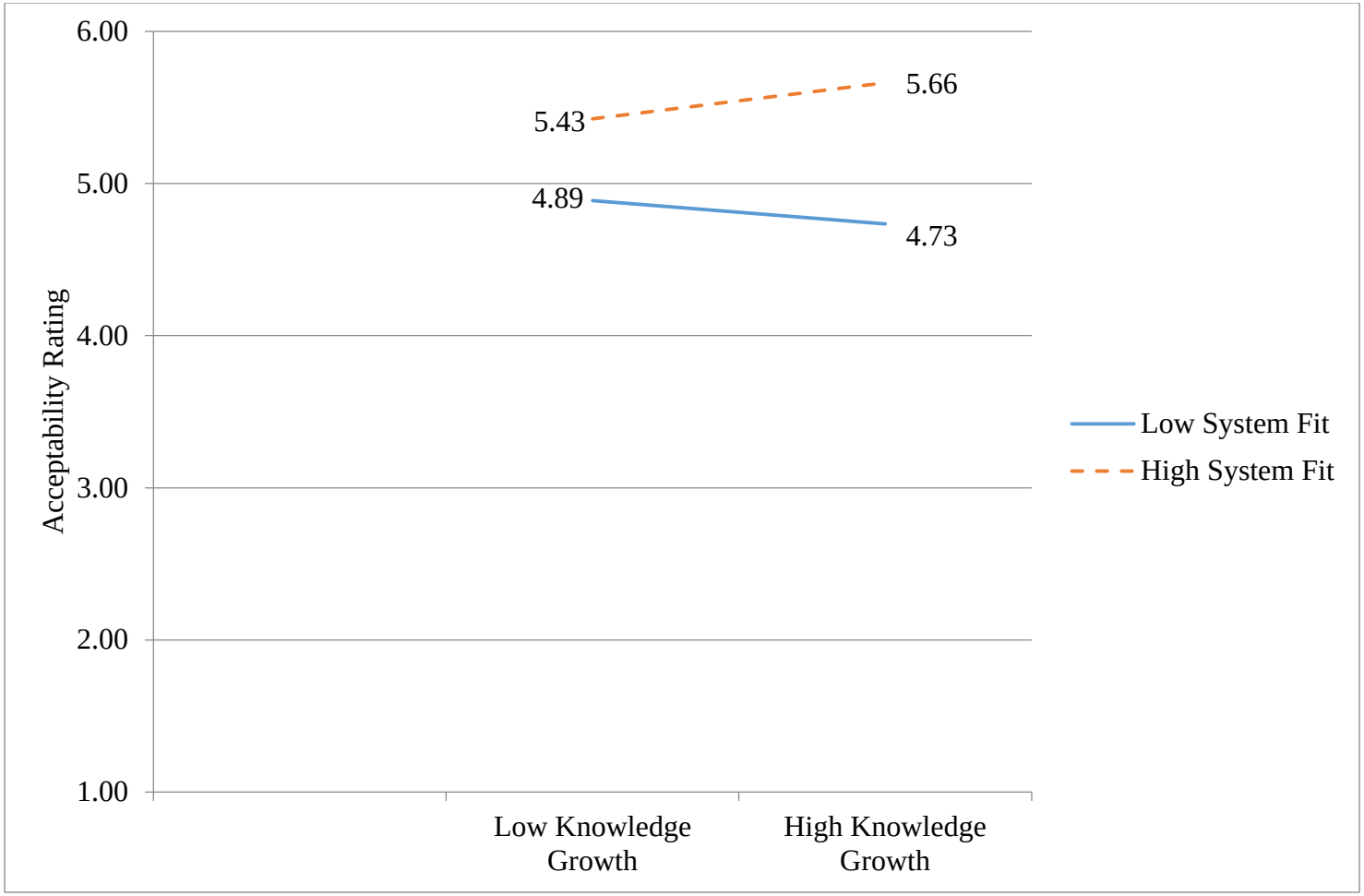


*Figure 3.* Knowledge growth by system fit interaction effect on post-training acceptability ratings.

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# BIOGRAPHY

Elizabeth McIntyre grew up in Chapel Hill, North Carolina. She attended Villanova University, where she earned a Bachelor of Arts in Psychology and minors in Cognitive Science, Spanish, and Peace and Justice Studies. She served with the Jesuit Volunteer Corps in Juneau, Alaska from 2011-2012, where she worked in children's behavioral health. From 2012-2014, she assisted and coordinated several research projects for the Duke ADHD Program and Duke University Center for Child and Family Policy. In 2014, she entered the School Psychology doctoral program at Tulane University.