2020

Improving Outcomes for Children Impacted by Adverse Childhood Experiences (ACEs): A Study of Intervention Effectiveness Guided by Developmental Theory

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This dissertation has been duly read, reviewed, and critiqued by the Committee listed below, which hereby approves the manuscript of Lisa Teachanarong Aragon as fulfilling the scope and quality requirements for meriting the degree of Doctor of Philosophy in Psychology.

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Abstract

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by

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Claremont Graduate University: 2020

Adverse Childhood Experiences (ACEs) is the term often used to refer to a set of negative experiences occurring in childhood that hold high potential for inducing toxic stress and complex trauma in children (Felitti et al., 1998). Studies have shown that ACEs are common, often co-occur, and exhibit a strong dose-response relationship to many developmental outcomes across the lifespan (e.g., Anda et al., 2006; Blodgett, 2014; Dong et al., 2004; Metzler et al., 2017). As public awareness of ACEs, their prevalence, and their impact has spread, public interest in implementing effective prevention and intervention strategies has also increased (Donisch et al., 2016; Ko et al., 2008). While many effective treatments for stress and trauma have been developed for use in clinical settings, far fewer innovations have been developed and tested in non-clinical settings such as schools, though the latter is critically important for advancing our understanding of how to best support children across their many contexts (Stratford et al., 2020).

To advance both research and practice on this topic, three empirical needs were identified: (1) the need for an ACEs-related risk measure, appropriate for use in non-clinical research settings and universal child-serving systems such as schools, (2) the need for effectiveness studies that rigorously test the impact of school-based trauma-focused interventions

on children's outcomes, and (3) the need for intervention effectiveness studies that utilize developmental theory as a guiding framework for research.

The current study addressed these three needs by: (a) developing a proxy measure of ACEs-related risk that attempted to approximate the psychosocial risk associated with ACEs without directly asking children about ACEs exposure, (b) utilizing an experimental design to examine the impact of a comprehensive, school-based, trauma-focused intervention on children's outcomes of self-regulation, executive functioning, and well-being, and (c) examining research questions inspired by Bronfenbrenner's (2006) bioecological theory that moved beyond questions of intervention impact (i.e., is the intervention effective?) to also explore under-investigated research questions related to context, person, and process (i.e., under what conditions is the intervention effective, for whom is it most effective, and why?).

Broadly, results from this investigation demonstrated the following: First, using latent profile analysis (LPA), the proxy measure of ACEs-related psychosocial risk was able to detect categorically different groups of low-, moderate- and high-risk children that mirrored prevalence estimates from current ACEs literature; additionally, membership in these groups was predictive of significant differences across several developmental outcomes and intervention experiences. Such findings might inspire researchers to further pursue the development and validation of an ACEs-related risk proxy measure that could be used in non-clinical settings and research.

Second, contrary to several study hypotheses, the school-based intervention under study was not effective in promoting children's self-regulation, executive functioning, or well-being over time, even when disaggregating results by developmentally relevant variables of context (i.e., whether children's parent and teacher participated in the intervention with them) and person (i.e., whether children were in the low-risk, moderate-risk, or high-risk group).

Given null findings related to program impact, key study variables were repurposed in an effort to explore broader developmental mechanisms and trends, disconnected from intervention participation. These additional analyses, in line with developmental theory, revealed a significant mediation model (in which lower scores on self-regulation and executive functioning partially explained the negative relationship between children's score on the proxy measure of ACEs-related risk and well-being) and a significant moderation model (in which perceptions of a caring adult at school had a promotive effect for low-risk children, but no protective buffering effect for high-risk children). Altogether, by using developmental theory to study intervention effectiveness in schools, this study offers an innovative approach to assessing ACEs-related risk in non-clinical, universal child-serving settings; provides a blueprint for how to incorporate developmental theory into studies of intervention effectiveness; and increases our understanding of how ACEs-related risk impacts children's well-being. Implications for future research and practice are discussed.

Dedication

To my parents, Lucky and Jan Teachanarong, for every single struggle endured and sacrifice made in support of my dreams. The ways in which you love, and show up for those you love, inspires me to be a better human every day. And to my son, Jonah Aragon, I hope you grow to know any dream is possible to achieve with hard work, perseverance, and a mighty crew of loved ones in your corner.

Acknowledgements

To Tiffany Berry, I would have never had the courage to pursue this degree had it not been for your persistent belief in my potential. And I would have never finished this degree had it not been for your mentorship, unyielding support, and tough love. Thank you for never giving up on me, for always challenging me to greater professional and personal heights, and for asking me to trust in you whenever I could not yet trust in myself. My growth as a scholar, an evaluator, and a person, is deeply reflective of your faith in me and your consistent investment in my potential.

To my dissertation committee members, Jessie Borelli, Kendall Cotton Bronk, and Jessica Dym Bartlett, thank you for your commitment to this process during a once-in-a-lifetime pandemic. You prioritized the review of my work during a season in which you had more responsibilities and less time, which means you supported my success even at a cost to you. Thank you for pushing me to think more critically about the content areas you hold great expertise in. You made this an incredible learning process for me and your feedback has improved the quality of my work immensely.

To Susan Ramsundarsingh, Elan Gepner-Dales, and Bill Herman, thank you for trusting in me and my research vision, and allowing me to collaborate with your program, your schools, and the children and families you serve and love. This dissertation would not exist without your partnership, your unwavering support, and your confident approach to problem-solving, every step of the way.

To Shelly Sloper, my light and my love, thank you for your life-changing friendship and for being there for me, always, whether the need was great or small. I am thankful to have crossed paths with you so early on in my academic career and in my life. I have been shaped profoundly by your mentorship and care in more ways than I can count. Thank you for always shining your bright light into my dark spaces and for loving and accepting me just as I am.

To Kathleen Doll, my pandemic graduate soul sister, what an unexpected blessing you were in the final stages of this journey. I will always remember the ways in which you supported me and made me feel less alone as we pushed together to finish this degree in the most unusual of

circumstances. Thank you for lighting the way and for being someone I could lean on in the hardest of times. I am certain this experience has bonded us for life, and for that, I am grateful.

To Laura Liberge, Vicki Spector, and Maggie Kerr, thank you for supporting me and believing in me since day one of our graduate school journey together. You each inspired me to stick with this process until the very end, and I am so thankful for the many ways in which you, and our collective sisterhood, have facilitated my growth as a person, friend, and scholar.

To Manijeh Mahmoodzadeh, Adriana Ariza, Brittany Hite, Haley Umans, Dana Wanzer, and Poom Pitichat, your friendship was critical at a time that I really needed community on a regular basis during my final years at CGU. Thank you for showing up for communal workdays at my home and in our lab with words of affirmation, food for the soul and tummy, and compassionate presence.

To Honey Mendoza, Laura Yanez Aguirre, Rachel Ruiz, and Laura Alten, thank you for being friends outside of my CGU community that I could turn to on a regular basis for soul care needs outside of academia. You were there for me throughout the pursuit of this dream, even when you did not fully understand the journey, and for that, I am particularly thankful.

To my family—the Teachanarongs and the Aragons—thank you for believing in me, sacrificing for me, and supporting me in this journey, no matter the personal cost to you. To my mom, Jan, and my mother-in-law, Gina, in particular—thank you for generously committing your time across three years to provide childcare for Jonah on a weekly basis so that I never had to choose between motherhood and completing this degree. I could not have crossed this finish line without your big-heartedness. I promise to pay this deed forward when the time comes to support your own grandchildren in the pursuit of their biggest dreams.

And lastly, to my husband, Joey Aragon, thank you for loving me in and through the hardest season of my life. You witnessed me in my most vulnerable, emotional, and stressed states, and never once wavered in the way you demonstrated care for me and support for my dreams. I am the luckiest to be known and loved by you. I know, our son, Jonah is too. Thank you for being our rock.

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Chapter I. Introduction

Research has long established the critical importance of attending to the early years in a child's life, as these early years are characterized by rapid and cumulative forms of learning and growth that set the foundation for later cognitive, social, emotional, and physical development (Thompson, 2016). In the last two decades, scholars across multiple fields (e.g., developmental psychology, neuroscience, pediatrics, public health) have demonstrated "with unprecedented certainty" that children need early and enduring interactions with safe, supportive, and responsive caregivers to flourish and thrive (Shonkoff & Meisels, 2000; Thompson, 2016). Scientific breakthroughs in various fields have shown robust links between the quality of a person's early life experiences and many indicators of a person's well-being across the lifespan (National Research Council & Institute of Medicine, 2015). Such research has spurred many mandates initiatives to support children whose early life experiences are characterized by low quality of care, unsafe or unstable environments, and chronic adversity or stress (Redford, 2016).

It is within the context of these broader research findings and public initiatives that great attention has recently been given to Adverse Childhood Experiences, otherwise known as ACEs. Popularized by a landmark study conducted by Felitti, Anda, and their colleagues in 1998, ACEs has become the umbrella term used to refer to a set of negative experiences occurring in early childhood that hold high potential for inducing toxic stress and complex trauma in children (Blodgett & Dorado, 2016). Studies have shown that ACEs are common, particularly for children living in poverty, and negatively impact individuals across developmental domains and across the lifespan, with high financial and economic costs to society (Felitti et al., 1998; Metzler et al., 2017; Sacks et al., 2014). As public awareness of ACEs, their prevalence, and widespread impact

has grown, public interest in prevention, intervention, and treatment to support children's recovery, resilience, and well-being has also increased (Redford, 2016).

Advances in research and practice have resulted in the development of many effective evidence-based treatments (EBTs) for use in clinical settings by highly trained mental health professionals (Cook et al., 2017). However, given the scope of the problem (see Merrick et al., 2019) and a consensus amongst intervention and developmental scientists that the most pervasive and persistent social problems require cross systems-level solutions (Lerner et al., 2005; Shonkoff et al., 2006), interest has shifted to developing approaches and practices that can be implemented in the many other non-clinical settings in which children commonly interact (Stratford et al., 2020). Such a shift requires understanding the mediating mechanisms that account for the effect of ACEs on developmental outcomes, and then devising strategies that intervene on those mechanisms in ways that that are promotive and protective for children (Ko et al. 2008). Related research on cumulative risk, complex trauma, and resilience (to be defined further in sections below) offer such insights-- together, suggesting three protective processes that are most important to target in clinical and non-clinical settings.

Over the last several decades, two complementary but distinct prevention/intervention strategies have emerged in non-clinical settings that attempt to address these protective processes to varying degrees: social-emotional learning (SEL) programs and Trauma-Informed Care (TIC) interventions. Although different in target population and prevention/intervention strategy, both SEL programs and TIC interventions hold unique potential for addressing the effects of ACEs on children's development, particularly when these approaches are combined into a single intervention strategy. To date however, very few studies have examined the effectiveness of such

an intervention, though such an examination could improve our understanding of whether such a blended approach maximizes impact for children affected by ACEs.

In addition to this need, two other underinvestigated areas of research and practice are important to address simultaneously. The first need is related to the current lack of an ACEs-related measure that is appropriate for use in non-clinical settings such as K-12 schools. Indeed, despite an explosion of interest around ACEs as a risk construct, many scholars have discussed the pragmatic and ethical concerns of collecting children's ACEs scores in universal, child-serving systems such as schools, because it would require children (or caregivers on their behalf) to report upon present-day ACEs exposure. Such a direct measure of ACEs is typically not considered appropriate, feasible, or ethical in a school, program, or research context because the collection of such information is highly sensitive, intrusive, and potentially distressing. However, the lack of such a measure precludes the ability of non-clinical intervention studies to determine the extent to which programs, designed to mitigate the effects of stress and trauma on development, are actually effective for children impacted by ACEs.

The second need is related to a consistent disconnect between intervention studies and developmental theory—specifically *a lack of intervention effectiveness studies that utilize developmental theory as a guiding framework for research*. Studies of intervention effectiveness broadly lack critical consideration of three developmental principles that--if operationalized and empirically tested -- could enhance both research and practice on how to improve outcomes for children affected by ACEs. These three principles are aligned with Bronfenbrenner's bioecological theory of human development (2006) and include the consideration of *context* (i.e., testing whether there is any benefit to extending intervention efforts beyond a singular context and into multiple settings of a child's life), *person* (i.e., testing whether theoretically relevant

differences in child participants, such as exposure to ACEs, differentially influences intervention effectiveness), and *process* (i.e., exploring which proximal processes of an intervention explain why a particular intervention yields positive effects for children). As argued by prominent applied developmental psychologists and program evaluation scholars alike (e.g., Donaldson, 2003; Roth & Brooks-Gunn, 2016), such complex investigations are rare, but (1) are critical and necessary for enhancing our understanding of for whom, under what conditions, and why a particular intervention is effective (Chen, 1990; Donaldson, 2003; Weiss, 1995), (2) fostering a bidirectional relationship between research and practice, whereby theory guides intervention strategies and the evaluation of those interventions provides the basis for reformulating theory and modifying future interventions (Lerner et al., 2005), and (3) offering a more complete understanding of how to best support the well-being of children exposed to early, negative life experiences (Roth & Brooks-Gunn, 2016).

The current study aims to address the underinvestigated areas of research described above in two very important ways: First, to contribute to the growing knowledge base on effective non-clinical interventions for ACEs-impacted youth, this study utilizes an experimental design to examine the impact of the Youth Empowerment Seminar (YES) program on children's outcomes (i.e., self-regulation, executive functioning, and well-being) across time. To address the lack of intervention studies that are guided by developmental theory, key research questions were inspired by Bronfenbrenner's bioecological theory (2006) and move beyond questions of intervention impact (i.e., does the program work) to also explore underinvestigated research questions related to context, person, and process (i.e., under what conditions does the program work, for whom, and why). Second, to address a lack of ACEs measurement that is contextually sensitive to the realities of non-clinical settings such as schools, this study attempts to develop a

proxy measure for ACEs-related risk, composed of variables inspired by theoretical and empirical literature, and then to utilize this proxy measure to answer key research questions related to "for whom" does this intervention work? Such a measure could be a value-add for researchers working in applied non-clinical settings by offering an alternative way to assess and study ACEs-related risk in children. Such an investigation could demonstrate the importance of disaggregating intervention results by this developmentally relevant person-centered variable.

As a lead-up to the current study's description, this chapter begins with an overview of ACEs and describes which developmental processes are negatively impacted when children experience cumulative ACEs; the identification of such developmental processes is important, as it clarifies the critical intervention targets that must be prioritized across systems. Next, this chapter summarizes the evidence-based treatments and practices often utilized in clinical settings to restore the efficacy of these developmental processes, while also introducing rationale for expanding such important intervention efforts into the non-clinical settings most frequented by children such as schools. Then, this chapter describes the unique but complementary ways in which Social-Emotional Learning (SEL) programs and Trauma-Informed Care (TIC) interventions have attempted to support children in non-clinical settings while introducing the YES program as a blended-approach to intervention warranting further investigation. Finally, this chapter ends by identifying a lack of intervention studies guided by developmental theory and a lack of contextually appropriate ACEs measurement as the two research areas most in need of empirical attention. A description of the current study is provided, addressing how ACEs measurement, as well as Bronfenbrenner-inspired questions of context, person, and process were developed and investigated within this study.

Adverse Childhood Experiences (ACEs) and its Impact on Developmental Outcomes

ACEs often refers to a set of negative experiences, occurring in early childhood, that hold high potential for inducing toxic stress in children (i.e., stress that is extreme, frequent, and prolonged; Blodgett & Dorado, 2016; Shonkoff et al., 2012). The term "ACEs" was first coined in 1998, following publications from the Adverse Childhood Experiences study conducted by Kaiser Permanente San Diego and the Center for Disease Control (Felitti et al., 1998). The ACEs study asked approximately 17,000 middle-class adults to report on whether they had experienced seven different potentially traumatic experiences in childhood (i.e., three forms of abuse -- physical, emotional, sexual; and four forms of household dysfunction – exposure to substance abuse, mental illness, domestic abuse, criminal behavior) and examined the relationship between these childhood experiences and 18 risky health behaviors / health outcomes in adulthood, strongly linked to leading causes of death in adults (e.g., smoking, severe obesity, depressed mood, suicide attempts, alcoholism; heart disease, cancer, diabetes, etc.).

The study revealed two important findings: The first was that *ACEs are common*—nearly two-thirds (64%) of participants reported having at least one adverse childhood experience. One in five (22%) of participants reported three or more ACEs, while one in eight participants (12.5%) reported having four or more ACEs. Of note, the sample was comprised primarily of white (74.8%), college-educated (75.2%) Americans, a population commonly considered "low-risk." Second, ACEs demonstrated *a strong dose-response relationship with the outcomes examined*. As the total number of ACEs reported by participants increased, so did the risk for negative health behaviors (e.g., alcoholism, substance abuse, suicide attempts, unintended pregnancies, early initiation of smoking or sexual activity, illicit drug use) and poor health outcomes (e.g., chronic obstructive pulmonary disease, heart disease, liver disease, sexually

transmitted diseases). Of note, participants who had experienced four or more ACEs (i.e., 12.5% of the sample), compared to those who had experienced none, had a four to twelve-fold increase risk of engaging in various risky health behaviors or possessing various diseases (depending on the outcome examined).

These findings were groundbreaking for the medical field, as adult health outcomes had never been linked so robustly to adverse experiences occurring in childhood. They were also intriguing to researchers and practitioners in various child and youth-serving fields, as the study suggested that adverse experiences and toxic stress in childhood was a more common phenomenon than previously expected. As a result, the ACEs study inspired a whole host of subsequent studies across disciplines that sought to verify whether ACEs were indeed as prevalent as the seminal study suggested (e.g., Dong et al., 2004; Sacks et al., 2014); whether ACEs were more prevalent in certain demographics than others (e.g., Clarkson Freeman, 2014); and whether ACEs affected other important domains of developmental across the lifespan (e.g., Layne et al., 2014; Metzler et al., 2017). Collectively, subsequent studies suggested the following:

(1) ACEs are not only common, but often co-occur in children aged 0 to 18. Given the experience of one ACE, the likelihood of experiencing another ACE is very high (Dong et al., 2004).

(2) ACEs occur across all ethnicities, socioeconomic classes, and geographic regions; however, rates are significantly higher for individuals living in poverty (Blodgett, 2014; Kiser & Black, 2005; Metzler et al., 2017).

(3) ACEs demonstrate a graded dose-response relationship with a variety of poor developmental outcomes across the lifespan, including poor academic achievement,

adolescent pregnancy, poor work performance, financial stress, risk for intimate partner violence and sexual violence, and low quality of life (Anda et al., 2006; Blodgett, 2014; Clarkson Freeman, 2014; Layne et al., 2014; Lansford et al., 2002).

(4) ACEs are also related to societal outcomes; studies have shown that individuals with high ACE scores are less likely to contribute to society (e.g., have higher rates of high school non-completion, higher rates of unemployment, and are more likely to live in household below federal poverty line; Metzler et al., 2017) and are more likely to have involvement with corrective systems (e.g., have higher rates of being involved with juvenile justice and criminal justice system, child welfare system, etc.; Merrick et al., 2019).

Such consistent findings regarding the prevalence and impact of ACEs on such a wide range of individual and societal level outcomes has inspired what some call "the ACEs movement"—a surge of public interest in developing programs, policies, practices, and systems that might prevent the occurrence of ACEs as well as address its negative impact on the individual and on society (Blodgett & Dorado, 2016; Henderson-Smith, 2018; Stevens, 2017). As with all social problems, researchers, practitioners, and politicians agree that identifying the *critical mechanisms by which ACEs operates* is an important step for developing effective solutions (Dong et al., 2004; Harris, et al., 2017; Masten & Cicchetti, 2010; McLaughlin & Sheridan, 2016). Some claim that little is known about these driving mechanisms and argue that this is where research needs to be focused to move intervention efforts forward (American Academy of Pediatrics, 2014; Harris, et al., 2017). These claims are likely derived from the fact that research on ACEs is relatively new and that the seminal study originated from the medical field, which has traditionally been divorced from psychological study (Redford, 2016).

However, such claims neglect insights gained from scholars in developmental psychology and other disciplines (e.g., psychiatry, neuroscience, child welfare) who have studied related topics (e.g., cumulative risk, complex trauma, resilience) for decades. Research from these fields can and do offer strong, theoretically-grounded explanations of how ACEs as a set of cumulative risk experiences in childhood (1) increase the likelihood of toxic stress and trauma in children, while also (2) damaging or interfering with the protective processes that typically help children to "bounce back" from such adversity (Blaustein & Kinniburgh, 2010; Cook et al., 2017; Masten, 2001). To date, such an integration of literature bases has not been done. However, synthesizing information from these related strands of research is important as it not only clarifies *why* ACEs are so predictive of dysfunction across developmental domains and across time, but also allow us to determine *which developmental processes must be prioritized in interventions* to prevent the negative cascade of developmental effects triggered by ACEs.

Thus, the next two sections of this chapter review these mechanisms by first situating ACEs within three broader, more mature literature bases (i.e., cumulative risk, complex trauma, and resilience), and then utilizes what it known within these literature bases to describe which mechanisms should be prioritized for intervention within clinical and non-clinical settings to promote wellness in children.

Explanatory Mechanisms Suggested by Research on Cumulative Risk and Complex Trauma

The more mature literature bases on cumulative risk and complex trauma bear striking similarity to the more recent research findings on ACEs. While both literature bases overlap substantially with ACEs, neither one is sufficient on its own to provide a full explanation for why ACEs are so disruptive to development. Thus, high-level findings from both literatures are

described below as complementary but distinct ways to deepen current understanding of ACEs as a developmental phenomenon.

The literature base on *cumulative risk* is important to review first because it provides the broader context within which to situate more recent findings on ACEs and its predictable dose-response relationship to outcomes. The findings that ACEs are (a) highly correlated, (b) often co-occur, and (c) pose incremental risk for poor developmental outcomes are not new but fall in line with decades of research on cumulative risk and its negative effect on child outcomes (e.g., Rutter, 1979, 1981; Sameroff et al.,1987). Indeed, developmental psychologists have long known that risk factors (i.e., individual or environmental factors associated with negative or undesirable outcomes) are highly correlated and frequently co-occur; and that children who experience multiple (i.e., cumulative) risks are significantly more likely to experience psychological disorder and poor developmental outcomes than children who experience a single risk (Evans, 2003; Evans et al., 2013; Luster & McAdoo, 1994; Newcomb et al., 1986; Rutter, 1979, 1981; Sameroff, 2006; Sameroff et al., 2004; Sameroff et al., 1987). In fact, the finding that experiencing 4 or more risk factors results in a "multiplicative increase in risk for poor outcomes" dates all the way back to Rutter's (1979) seminal Isle of Wight study. This is one way in which decades of research on cumulative risk are similar to more recent findings on ACEs.

Another way in which the literature on cumulative risk and ACEs are similar is in their state of research on explanatory mechanisms. Similar to ACEs, many researchers have sought to explain why the experience of cumulative risk has such a strong and robust effect on development across domains. The explanatory mechanism offered in most cases is *toxic stress* (i.e., stress that is extreme, frequent, and prolonged) or its physiological indicator, *allostatic overload* (i.e., cumulative wear and tear on the body's physiological stress response systems

because of repeated exposure to high levels of stress; Evans, 2003; Evans et al., 2013; Evans et al., 2007; Evans & Kim, 2012; McEwen, 1998; 2012). In short, the logic connecting cumulative risk to poor outcomes via toxic stress as a mediator is usually presented as follows:

Stress is not always a destructive force; in fact, most developmental experts concur that stress, in small amounts with adequate support from caregivers and other adults, is a necessary precondition for developing healthy coping skills, problem-solving skills, and other important social-emotional competencies correlated with resilience and positive development. Such forms of stress have been classified as "positive" or "tolerable" stress (McGonigal, 2015; Shonkoff et al., 2012). However, when the number of risk experiences accumulates in a child's life (i.e., a child experiences cumulative risk), and the child lacks the necessary support system to cope and recover, the child is more likely to experience stress that is extreme, frequent, and prolonged. This form of stress has been classified as "toxic" stress (McEwen, 1998; Shonkoff et al., 2012). Scholars contend that toxic stress represents high risk for deleterious outcomes because it results in the prolonged activation of the body's stress response systems that in turn, interferes with the normative development of the brains, bodies, and minds of children (Evans et al., 2013; Gunnar & Quevedo, 2007; McEwan, 2012; Shonkoff et al., 2012).

While the discovery of toxic stress as a general mechanism is helpful, many have argued that *more precision and greater specificity of mediating processes is necessary* for specifying intervention targets, particularly targets that can be intervened upon across multiple settings (e.g., Blodgett & Dorado, 2016; McLaughlin & Sheridan, 2016). These scholars have contended that such precision and specificity is difficult to attain in traditional cumulative risk studies, in part, because such studies include *many* categories of risk as predictors and are therefore, too inclusive and broad to generate specific explanations. For example, cumulative risk indicators

often include personal characteristics of the child (e.g., low birth weight, low IQ); characteristics of primary caregivers (e.g., maternal high school dropout status); characteristics of environments proximal to the child (e.g., low housing quality, single parent home, under resourced schools, high rates of crime and violence in the neighborhood); and characteristics of the context at large (e.g., poverty, racial climate). In traditional cumulative risk studies, predictors are combined with little regard for which categories of risk may be more harmful for the child, and whether some risk factors (e.g., those more distal in nature) may be mediated by others (e.g., more proximal forms). While such inclusivity grants cumulative risk studies more predictive power, studies originating from this literature base have been criticized for lacking explanatory power, or the power to explain very specific pathways for observed effects (McLaughlin & Sheridan., 2016).

This is where ACEs—as a *more restrictive set of proximal risks* focused specifically on forms of child abuse, neglect, and chronic forms of dysfunction in the home—is highly aligned with literature on *complex trauma*—which focuses on traumatic experiences that occur repeatedly within the child's caregiving relationships between the ages of 0-18 (Cook et al., 2003). Indeed, ACEs—as it was originally constructed-- overlap considerably with the experiences that often result in complex trauma in that both involve children's experiences of adversity and stress with core caregivers in environments most proximal and enduring to the child.

For over 50 years, complex trauma researchers and clinicians have worked to understand the processes by which damage occurs in an effort to develop treatments and interventions that reduce trauma symptoms and promote healing (Cook et al., 2017). While toxic stress is offered as one explanatory mechanism (similar to cumulative risk studies), more specific, causal mechanisms have been uncovered within complex trauma research, such as disrupted sense of

safety and security, disruptions to caregiver-child interactions, neurobiological disruptions, and difficulties with self-regulation (Blaustein & Kinniburgh, 2010; Cook et al., 2017). Importantly, many of these mechanisms are echoed in research findings on *resilience*, which focuses on understanding the *protective processes* that account for good outcomes in children despite serious threats to their development (Masten, 2001; Masten & Coatsworth, 1998; Masten et al., 1999; Rutter, 1987).

Thus, situating ACEs within the broader research on complex trauma and resilience provides us with more precise explanations of how ACEs affects development and allows us to go beyond accepting toxic stress as the only developmental process to target in children. Rather, we are able to draw inferences about which specific developmental systems and protective processes must be prioritized and supported in interventions that aim to promote resilience and positive development for all children.

Identifying Intervention Targets: A Review of the Protective Processes that Account for Resilience

In her seminal article, *Ordinary Magic*, Masten (2001) reviewed three decades of research on the *protective processes* that most robustly account for resilience in children facing significant adversity. In her review, she identified a set of *basic human adaptational systems* as critically important-- that "if protected and in good working order, development [will be] robust, even in the face of adversity", and conversely, "if impaired, antecedent or consequent to adversity, then the risk for developmental problems is much greater, particularly if the environmental hazards are prolonged" (p. 227).

The basic adaptational systems Masten identified include: (1) normative brain development, (2) secure attachment, and (3) self-regulation. She argued that this set of systems

develops normatively in most cases (hence her claim that resilience is more "ordinary" than extraordinary) and functions to effectively protect children from risk in most cases of stress and adversity. However, she also acknowledges that some adversities, particularly those that occur chronically in early childhood when development is especially sensitive to experience, have strong potential to hinder the development of these systems or challenge their efficacy, and that in these cases-- efforts to promote positive development in children at risk must focus on strategies that protect and restore the efficacy of these basic systems.

As will be demonstrated in the subsections below, ACEs represent a particular set of childhood adversities that are linked by their potential to undermine the development of these three protective systems due to toxic stress and complex trauma. Indeed, concurrent research conducted in the field of complex trauma has consistently highlighted *normative brain development*, *secure attachment*, and *self-regulation* as three primary developmental processes that are damaged when children experience cumulative and complex forms of relational trauma early in life (Bath, 2008; Blaustein & Kinniburgh, 2010; Cook et al., 2003; Cook et al., 2017; van der Kolk & Courtois, 2005). Hence, these three mechanisms represent a critical point of convergence in risk and resilience research: both lines of research suggest that disruptions to these key processes in early childhood explain why individuals with high ACE scores experience social, emotional, cognitive, academic, and behavioral difficulties across the lifespan, and consequently suggest the importance of focusing intervention efforts on protecting or restoring the development of these processes throughout childhood.

While many scholars argue that interventions should be prioritized in early childhood when much of the foundation for later competence is being built (Meisels & Shonkoff, 2000), the task of restoring these protective processes remains relevant and critical in middle to late

childhood, particularly if intervention is not offered earlier in life or remains difficult to access. One reason is that all development (as well as disruptions to development) is cumulative (Masten & Cicchetti, 2010). As well be demonstrated in the subsections below, the disruption of these key protective processes in early childhood continues to negatively impact development in middle to late childhood by interfering with a child's ability to meet the developmental tasks associated with their stage of development (Masten & Coatsworth, 1998). Failure to acquire age-appropriate competencies in childhood has a negative cascading effect, further undermining normative development across domains and across the lifespan in adolescence and adulthood (Masten & Cicchetti, 2010). As such, the protective processes discussed in the sections below are considered *foundational*, as they represent necessary precursors to healthy development. While support for their normative development should be prioritized across the lifespan, interventions timed for early to middle childhood are well-warranted in order to interrupt negative developmental cascades and promote positive trajectories (Masten & Cicchetti, 2010).

Disruption in Normative Brain Development

The human brain mediates all emotion, thought, and behavior, making its normative development critical and universally important to the functioning of all individuals (Perry & Szalavitz, 2006). Though descriptions of brain development can become enormously complex due to the intricacies of this process, several scholars have distilled the basics into simplified language to communicate the most basic principles of normative brain development to lay audiences.

To start, scholars often begin by describing how the brain organizes and develops in a sequential fashion -- from bottom to top and inside to outside – guided by input from the environment across the lifespan (Nelson & Bloom, 1997). While there are many different parts

of the brain, scholars often differentiate the essential functions of the *lower and inner brain regions* (metaphorically referred to as the "downstairs brain" by Siegel & Bryson, 2011) from the upper and outer brain regions (conversely referred to as the "upstairs brain") and describe healthy or normative brain development as the *integration* of those two regions (i.e., the ability of these two regions to communicate successfully and work together as coordinated whole).

Put simply, the "downstairs brain" refers to the lower and most inner parts of the brain that develops in all mammals and includes the brain stem and the limbic region, which houses parts of the brain such as the amygdala (Siegel & Bryson, 2011). These lower areas are often described as more primitive because they are responsible for the most simple and reflexive regulatory functions (i.e., breathing, blinking, regulation of body temperature, and heart rate) as well as our most innate reactions, impulses, and behaviors that account for survival, reproduction, and evolution (Perry, 2006). In terms of developmental order, this part of the brain is well-developed, even at birth, given its essential functions for survival.

Conversely, the "upstairs brain" refers to the higher most outer parts of the brain and includes the cortical structures such as the cerebral cortex and the prefrontal cortex (Siegel & Bryson, 2011). This part of the brain is described as more evolved because it is capable of more sophisticated mental processes and is responsible for more complex functions such as language, reasoning, abstract thinking. This part of the brain is what separate humans from other mammals and explains our more advanced "higher order" cognitive abilities such as planning, critical thinking, problem solving, sound decision making, and impulse control (Perry, 2006). In contrast to the downstairs brain, which is fully mature at birth, the upstairs brain is under constant construction in early life and does not reach full maturation until adulthood (Nelson & Bloom, 1997; Thompson & Nelson, 2001). Furthermore, access to the upstairs brain and all of its "higher

order" functions is contingent upon the lower brain remaining in a state of calm; under conditions of high stress, threat, or emotion, the upper brain is "hijacked" by the lower brain to prioritize the meeting of basic needs related to safety and survival (Siegel & Bryson, 2011) .

Under normative conditions in which a child is provided with a safe, nurturing, and stimulating environment-- particularly in early childhood which is a particularly sensitive time period for brain development and organization-- proper structural growth occurs in the brain across time (Perry & Pollard, 1998; Thompson & Nelson, 2001). The upper brain continues to grow and mature across childhood and adolescence, given ample opportunities to exercise its functions, and the "downstairs brain" and "upstairs brain" become "vertically integrated" by adulthood. Such integration is typically characterized by sound decision making, appropriate control over emotions and impulses, and other indicators of successful regulation. In such individuals, the upper brain monitors the actions of the lower brain, by calming strong reactions, impulses, and emotions that originate from the limbic region; conversely, the lower brain makes important "bottom up" contributions to more sophisticated cognitive processes occurring in the upper brain, by infusing important planning and decision making processes with appropriate input from the brain's more emotional and intuitive centers (Siegel & Bryson, 2011).

However, for children exposed to a high number of ACEs, this normative process may be greatly disrupted due to chronic experiences of high stress and threat, and brain development takes a different course. Indeed, neuroscience research has long shown that being deprived of a safe, nurturing, and stimulating environment in early childhood is highly predictive of damage to the volume, structure, architecture, and function of the brain (for review of studies, see Glaser, 2000), particularly to a set of neural systems involved in helping humans cope with stress and threat (i.e., the stress response system). Studies have shown that when this system becomes

poorly regulated, several critical changes occur to the brain as a result. The first change is the *overdevelopment of the lower and inner parts of the brain* (i.e., the "downstairs brain") that is responsible for protection and survival (Glaser, 2000; Perry, 2006). Given excessive stress and threat, this part of the brain-- particularly the amygdala, which is responsible for quickly processing emotions like fear -- becomes hyperactive and hypervigilant as it constantly scans the environment for threat. Such hyperactivation of the lower parts of the brain contributes to the *underdevelopment of the upper and outer parts of the brain* (i.e., the "upstairs brain") that is responsible for processes related to learning, memory, planning, concentration, and problem solving (Blaustein & Kinniburgh., 2010; Glaser, 2000; Perry, 2006). Because the upper brain regions-- particularly the prefrontal cortex---becomes inaccessible under conditions of threat, stress, or high emotion, "vertical integration" between the lower and upper brain is continuously compromised, thus processes related to normative brain development are disrupted.

It is important to note that such adaptation is considered to be an evolutionary advantage, as it allows the individual to adapt to the specific conditions presented by the environment in which they are embedded within (Nelson, 2003; Perry et al., 1995; Thompson, 2016). Specifically, for children exposed to a high number of ACES, such adaptations to the brain are considered beneficial in the short-term, as it allows them to detect and respond more quickly to perceptions of threat and danger within their high stress environment. However, such disruption to normative brain development may be maladaptive in the long-run, as they not only inhibit the development of more sophisticated cognitive abilities that are critical for success in life, but also makes it difficult for an individual to effectively engage with other environments, such as school, where threat may not be actually present, but still perceived. Such difficulties may reduce a

child's capacity to learn, develop age-appropriate competencies, and reach important developmental milestones across the lifespan (Blaustein & Kinniburgh, 2010).

Disruption to the Attachment/Caregiving System

In basic terms, the attachment system is descriptive of the relationship between a child and his/her primary caregiver(s). The term is derived from Bowlby's (1969/1982) influential theory on attachment, which suggests that primary caregivers play a critical and formative role in children's development because they provide the first context within which children organize their emotional and relational experiences. Broadly speaking, the attachment system that develops normatively results in "secure attachment" between the infant and caregiver, while the attachment system that develops abnormally (i.e., is ruptured or disrupted) results in "insecure attachment" between the infant and caregiver.

According to theory (Bowlby, 1969), a secure attachment system develops according to a two-fold process: (1) infants are innately wired to seek closeness and support from their caregivers, particularly during times of distress, uncertainty, and need as a means for survival and assurance; (2) caregivers consistently and sensitively respond to their infants' requests for proximity and support—offering comfort, assurance, or a tangible meeting of basic needs. When this type of interaction between infant and caregiver is patterned and consistent across time and contexts, the child develops attachment security which fulfills three important needs of the developing child (Ainsworth, 1973; Ainsworth et al., 1978).

First, the attachment system influences the development of positive expectations, or a positive internal working model (IWM) of self, others, and relationships (Bretherton & Munholland, 2008; Main et al., 1985; Kobak & Sceery, 1988). In other words, when an individual experiences caregiving that is consistently supportive and effectively meets basic

needs, that individual develops a positive sense of self ("I am worthy, efficacious, and competent"), positive expectations of others ("Others are safe, dependable, and trustworthy), and positive expectations about relationships ("Relationships are enjoyable, can be helpful sources of support, and therefore important and worthwhile to pursue"). These expectations in turn influence the development of a whole host of intrapersonal and interpersonal competencies, positioning the child well to develop positive and healthy relationships with peers and teachers in early to middle childhood, relationship partners in adolescence and adulthood, and other important figures across the lifespan (Cooper et al., 1998; Laible, 2007; Shaver & Hazan, 1993; Shaver & Mikulincer, 2007; Simons et al., 2001; Volling, 2001).

Second, the attachment system provides the earliest training ground for understanding, managing, and expressing emotions (Cassidy, 1994; Eisenberg et al., 1998; Gottman & DeClaire, 1996; Morris et al., 2007). At birth, children lack the skills needed to independently identify what they are feeling, much less manage or effectively cope with distressing emotions. Instead, they initially rely on caregivers to soothe, comfort, and teach them various aspects of affect regulation through processes of co-regulation (Schore, 2001) or emotional coaching (Gottman et al., 1996). When children experience this type of caregiving, they develop an emotional vocabulary, learn that emotions can be tolerated, managed or expressed effectively, and that distress will eventually subside (Blaustein & Kinniburgh, 2010). When this type of support is provided externally and consistently over time, children eventually internalize these skills and become capable of independently managing their own emotional experiences (Calkins, 2007).

Lastly, the attachment system provides the safe environment (often referred to as 'safe haven' and 'secure base' in attachment theory) necessary for normative and healthy development (Bowlby, 1982; Bretherton, 1985). When the attachment system develops normatively and

results in secure attachment, it provides the psychological safety and emotional support that gives children confidence in approaching key developmental tasks associated with their developmental stage (Blaustein & Kinniburgh, 2010). Thus, the success that children experience in school, relationships, and identity formation, are theorized to stem in part from the support that the attachment system initially provides (Matas et al., 1978).

Research on complex trauma suggests that ACEs have the potential to disrupt the normative development of the attachment system in two critically important ways:

With ACEs involving child maltreatment by a caregiver (e.g., abuse or neglect), the caregiver no longer functions as a source of comfort but becomes the stressor itself (Schore, 2001). In more extreme cases, the caregiver is not only a source of stress, but also a source of fright, resulting in an attachment paradox for the child in which the child may simultaneously experience a desire to run towards and away from the caregiver (Lyons-Ruth & Jacobvitz, 1999). Indeed, research has shown that when abuse or neglect stems from the caregiving system, especially at an early age, the individual develops the base expectation that the world and others are untrustworthy, dangerous, or frightening (Main & Soloman, 1986; Schore, 2001). Again, while this belief is considered adaptive (i.e., if a child has multiple experiences of danger within his/her closest relationships, it is in that child's best interest to believe that all others are dangerous unless proven otherwise), this basic belief is harmful in the long-run because it significantly interferes with the child's ability to build close relationships with potentially safe others. For elementary-aged children, these relationships include those with peers, teachers, and other adults within the child's community (Anthonysamy & Zummer-Gembeck, 2007; Kim & Cicchetti, 2003, 2010). Difficulties forming friendships and relating to key adults outside of the

home further contributes to feelings of incompetence and inadequacy and further solidifies the child's foundational belief that others are rejecting.

With ACEs involving household dysfunction, (e.g., caregiver struggles with mental illness or substance abuse), the caregiver is less likely to provide the sensitive, responsive care so critical for the development of secure attachment (Amato & Keith, 1991; Mayes & Truman, 2002; Teti et al., 1995). Research consistently demonstrates that under such conditions, the caregiver is less likely to be attuned to what the child is feeling, much less be emotionally available to buffer the effects of stress, teach the child how to effectively regulate emotions, or model effective coping strategies (Bridgett et al., 2015; Donovan et al., 1998; Gottman et al., 1996; Wolff & Ijzendoorn, 1997). In the absence of such critical lessons and interactions, the child may rely on more primitive coping techniques such as hyperactivation or suppression of emotions, and also fail to develop the repertoire of skills needed to cope with ongoing stress (Blaustein & Kinniburgh, 2010).

Disruption to Self-Regulation Skills

In the broadest sense, self-regulation is a multifaceted construct that involves the capacity to effectively manage experience on three levels: cognitive, emotional, and behavioral (Bridgett et al., 2015). The ability to regulate attention, emotions, and behavior is considered important because it facilitates positive and meaningful engagement in the environment. For example, for elementary aged children, the ability to direct attention to the subject being taught, manage distracting emotions, and inhibit off-task behaviors in a classroom enhances one's ability to learn and increases one's chances of academic achievement (Nota et al., 2004). Indeed, hundreds of studies conducted over the last fifty years have robustly linked self-regulatory capacities to a myriad of outcomes including better performance in school, better social skills, fewer mental

health problems, and lower likelihood to develop behavior problems across the lifespan (e.g., Duckworth & Carlson, 2013; Moffitt et al., 2011). Furthermore, follow-up studies of participants in the infamous marshmallow study have found that those who demonstrated better self-control as preschoolers had stronger coping abilities as teenagers, higher educational attainment in late adolescence, and fewer psychological problems as adults (Mischel et al., 2010). As a result of such findings, many child development and resilience experts have hailed self-regulation as the most fundamental internal asset to encourage and support in children (Alvord & Grados, 2005; Steinberg, 2018).

According to developmental theory, very few self-regulatory abilities are present at birth; rather self-regulation initially develops in a social context through a process called co-regulation and is particularly sensitive to contextual influences in early infancy when the brain is most malleable (Kopp, 1982). Of all the contextual factors related to the development of self-regulation, the two with most empirical support are *parenting behaviors* and the *broader rearing conditions* in which the child is embedded (Bridgett el al., 2015). Both parenting behaviors and the rearing environment are theorized to affect early brain development (i.e., neural circuitry involved in self-regulatory capacities), which in turn influence subsequent patterns of thought, emotion, and behavior.

Under optimal circumstances, the child is raised in a safe, predictable environment, devoid of chronic chaos, and parents/caregivers consistently engage in co-regulatory behaviors that provide external support for regulating a range of emotional states and behaviors during infancy and toddlerhood (Bridgett et al., 2015). Over time, given repetitive experiences and ample external support, children internalize these regulatory strategies, become capable of independently regulating their own emotions and behaviors, and learn how to effectively and

flexibly use these strategies in different situations (Bernier et al., 2010; Grossman & Grossman, 1991; Spangler et al., 1994). Such circumstances require that parents and caregivers are effective at regulating *their own* emotions, behaviors, and thoughts, and can effectively structure learning opportunities to support the child in ways that promote, rather than hinder, their child's development of self-regulation (Blaustein & Kinniburgh, 2010; Bridgett et al., 2015; Rutherford et al., 2015).

However, when a home is characterized by chaos, unpredictability, and danger (as is often the case with cumulative ACEs) and parents or caregivers themselves lack effective self-regulation abilities, the normative processes that account for the development of self-regulation in children are undermined (Bridgett et al., 2015). As discussed earlier in the section on brain development, excessive exposure to threat and stress, particularly in early childhood, changes the function, structure, and architecture of the brain (Perry, 2006; Schore, 2001). Indeed, scores of studies emerging from the neurosciences demonstrate that children exposed to such adverse rearing environments show abnormalities in the parts of the brain responsible for attentional self-regulation (e.g., Crouch et al., 2012) and behavioral self-regulation (e.g., impulse control, delay of gratification, and behavior inhibition; see Schore, 2001 for review).

Furthermore, hundreds of studies from the developmental sciences underscore the important role that parenting behaviors play in the development of emotional self-regulation (for review, see Eisenberg et al., 1998; Morris et al., 2007). Specific parent behaviors such as reflection (i.e., mirroring of child's experience through facial expressions, words, and actions) and modeling (i.e., demonstrating effective strategies for modulating, coping with, and expressing emotions) continue to be robustly linked to children's emotion regulation abilities (Bridgett et al., 2015). In the absence of such reflection and modeling, children in early to middle

childhood often lack the language with which to interpret their own or others' emotional experiences and lack opportunities to develop more sophisticated self-regulation strategies—both of which are needed in the face of ongoing stress and distress (Evans & Kim, 2012). As a result, the range of potential behavioral expressions in elementary-aged children is wide: at this stage of development, difficulties with self-regulation may manifest as *externalizing* behaviors in which children may act out, behave aggressively, or appear hyperactive, or *internalizing* behaviors in which children may withdraw, constrict, or shut down (Blaustein & Kinniburgh, 2010). Often the core difficulty lies in difficulties with managing physiological arousal in age and socially appropriate ways and limited access to more sophisticated and effective strategies (van der Kolk, 2015).

Promising Interventions in Clinical Settings

Over the last 20 years, many trauma treatments and interventions have been developed for use in clinical settings that address the disruptions to the protective processes reviewed in the previous section (Cook et al., 2017). To date, the National Child Traumatic Stress Network has classified over thirty specific methods as "evidence-based treatments" (EBTs) for trauma, thereby offering many options for mental health professionals in the field. Of the three protective processes highlighted as critically important, the two most frequently targeted in clinical settings using EBTs (with ample evidence of success) are attachment and self-regulation (Bath, 2008; van der Kolk & Curtois, 2005); treatments that intervene directly on brain development are significantly less in number, but a few innovative strategies have emerged with promise for success (Brown & Gerbarg, 2005; Perry, 2006).

While reviewing each EBT and the specific ways in which each intervenes on the key mechanisms described above is beyond the scope of this paper, a few examples are offered

below to illustrate the common strategies utilized across treatments to address disruptions to attachment, self-regulation, and brain development.

Regarding attachment—Attachment quality is nearly always addressed dyadically through parent or caregiver education, training, and therapy. For example, in Parent-Child Interactive Therapy (PCIT; Eyberg & Matarrazo, 1980), which is designed for children who have experienced abuse or neglect by caregivers, every therapy session involves both the parent and the child. Sessions focus on improving the quality of parent-child interactions, with the belief that doing so will better position parents to address their child's behavior (Pearl et al., 2012). In PCIT, parents are taught positive interactions skills (e.g., praise, reflection, enthusiasm) and positive discipline skills (e.g., effective delivery of commands, strategies to increase child compliance) via live coaching by trained clinicians who observe and coach parents using a one-way mirror or camera/monitor and ear bug (Pearl et al., 2012). Specific parenting behaviors are coded and charted on a graph at each session and parents are provided with immediate feedback about progress and mastery of skills. This treatment has shown success in reducing negative parent-child interactions, parental stress, and externalizing behaviors in the child in a variety of randomized control trials and published case studies (e.g., Chaffin et al., 2004; Hood & Eyberg, 2003).

Regarding self-regulation—skills for regulating affect, behavior, and thoughts are typically addressed in one of two ways: (1) directly taught to the child in sessions by the clinician or (2) indirectly targeted by enhancing caregiver's ability to provide quality care and engage in co-regulation opportunities. One treatment that targets self-regulation skills in both ways simultaneously is Trauma-Focused Cognitive Behavioral Therapy (TF-CBT), which is broadly designed for children who have been exposed to singular or multiple types of trauma.

While TF-CBT primarily involves sessions between the child and therapist, standard practice requires that the parent/caregiver be involved in at least half of the therapy sessions (NCTSN, 2012). To directly address self-regulation skills, the child receives direct training from the clinician on a variety of skills, including affect modulation, cognitive coping, and relaxation. To indirectly address self-regulation skills via parent education and training, the parent receives psychoeducation about child trauma and its effect on development; training on developing *their own* relaxation, emotion regulation, and cognitive coping skills; training on how to help their child develop these skills through positive-parent child interactions; and opportunities to participate in conjoint child-parent sessions guided by the therapist.

TF-CBT has the strongest research evidence of any treatment model for children affected by trauma (NCTSN, 2012). Multiple randomized controlled trials and replication studies have found that TF-CBT is effective in improving a range of trauma-related problems in the child, including reduction in depression, anxiety, externalizing behavior, shame, and trauma-related cognitions, and increasing interpersonal trust and social competence (e.g., Cohen et al., 2004; Cohen et al., 2005; Deblinger et al., 1996; Deblinger et al., 2001; Deblinger et al., 2006; King et al., 2000; Weiner et al., 2009).

Regarding normative brain development—very few trauma treatments explicitly target this protective process within their intervention goals. Most commonly, treatments target higher-order executive functioning skills, such as responsible decision-making or problem-solving, with the understanding that trauma has impacted the brain in such a way that has deprioritized the development of these critical skills in children (Arvidson et al., 2011; Greene & Ablon, 2006; Brendtro & Du Toit, 2005). However, two interventions, tested in clinical settings, have demonstrated effectiveness for addressing neurological pathways specifically: (1) the

Neurosequential Model of Therapeutics (NMT) developed by a team of neuroscientists/psychiatrists for severely traumatized children (Perry, 2006), and (2) Sudarshan Kriya Yogic (SKY) breathing developed and taught by the nonprofit Art of Living Foundation to address a wide range of clinical conditions (Brown & Gerbarg, 2005). While both were developed with a deep understanding and appreciation of how the brain is organized and how it changes in response to toxic stress, the latter is most relevant to the current study so is described further below.

In SKY breathing treatments, individuals are taught a type of cyclical controlled breathing practice that involves four breathing cycles: (1) slow breathing cycle of deep inhalation and slow exhalation, (2) rapid cycle of quick inhalation and forceful exhalation, (3) an ohm cycle with a prolonged expiration, and (4) an advanced form of rhythmic, cyclical breathing with slow, medium and fast cycles (Zope & Zope, 2013). When used together, this set of breathing practices is theorized to address normative brain development by using breathwork to calm the "downstairs brain" and "reset" the autonomic nervous system, thus allowing individuals to access "upstairs brain" functions that are deprioritized during sympathetic nervous system activation (Seppala et al., 2014). By manipulating breath patterns, one of the only autonomic functions individuals have active control over (Seppala et al., 2014), SKY breathing moves individuals out of the hyperarousal and hypervigilance state, characteristic of an overactive sympathetic (i.e., "fight or flight") nervous system into a parasympathetic nervous system state (i.e., "rest and digest") so that upper brain functions can be more easily accessed.

While not yet recognized as an evidence-based treatment (EBT), over 70 independent studies have been conducted and published in peer-reviewed journals to date examining the efficacy of SKY breathing practices. Such studies have shown that SKY significantly reduces

stress, depression, anxiety, and post-traumatic stress disorder, and significantly increases well-being for individuals with clinical disorders such as anxiety (Katzman et al., 2012) and depression (Janakiramaiah et al., 2000; Vedamurthachar et al., 2006), survivors of traumatic events such as tsunamis (e.g., Descilo et al., 2010), Vietnam and Afghanistan war veterans with PTSD (e.g., Carter et al., 2013; Mathersul et al., 2019; Seppala et al., 2014), and other highly stressed populations of adults, such as advanced cancer patients (Dhruva et al., 2012; Kumar et al. 2013) and male prisoners (Sureka et al. 2014).

The Need for Expansion of Intervention Beyond Clinical Settings

Collectively, the strategies and treatments reviewed in the section above have demonstrated great success in intervening upon the developmental protective processes affected by complex trauma as well as those most predictive of resilience. This success is partially derived from the fact that these treatments are typically delivered in a clinical setting—where an extremely knowledgeable and highly trained clinician implements the treatment with high quality and fidelity in a very individualized, one-on-one manner (Blodgett & Dorado, 2016). While effective for treating high-risk individuals, such modalities are limited in reach and power, given several factors:

(1) Access to clinical treatments is often dependent upon referral; however, many children who are impacted by stress and trauma caused by ACEs may not exhibit external signs of dysfunction, may not ever be formally referred for treatment, or may not meet clinical cut offs for pathology (Graham-Berman et al., 2012; Lieberman et al., 2011). Such means for receiving treatment preclude many affected children from receiving the support they may need to thrive.

(2) Clinical treatments can be expensive or inaccessible to children in poverty; however, studies consistently show that ACEs, trauma, and many forms of chronic adversity disproportionately affect children in poverty (Kiser & Black, 2005; Metzler et al., 2017). It is important that children are able to receive the support they need to thrive from the myriad of settings and environments in which they are regularly embedded within.

(3) Clinical treatments put the onus of healing and recovery primarily on mental health professionals; however, intervention literature consistently suggests that treatment effectiveness is maximized when a systems-approach is taken (i.e., essential elements of an intervention are delivered across the many contexts in which children are regularly embedded within) and when intervention is supplemented with prevention and promotive efforts (Lerner et al., 2005). While highly trained professionals can and do make a difference in the lives of children, greater potential for impact is accessed when other key adults in a child's life (parents, teachers, and other family and community members) are equipped with the knowledge, awareness, and skills necessary to support prevention, recovery, and positive development.

Given the scope and prevalence of ACEs—many have persuasively argued that interventions in clinical settings are insufficient for supporting the many children affected by stress and trauma (e.g., Bath, 2008; Bath & Seita, 2008; Blodgett & Dorado, 2016; Greenwald, 2005; Ko et al., 2008). Rather, trauma awareness, response, and intervention must be extended to non-clinical settings, across the many systems children are embedded in (e.g., home, school, community), for greater, broader, and longer-lasting impact.

Promising Interventions in Non-Clinical Settings

Comparatively, less research has been conducted on the impact of intervening on developmental protective processes in non-clinical settings, partially due to the fact that such innovations are still emerging. However, there has been much rallying around the idea that this type of work is necessary for promoting resilience in children affected by ACEs, stress and, trauma (Ellis & Dietz, 2017; Garner et al., 2015; Ko et al., 2008). Over the last several decades, two complementary but distinct prevention and intervention approaches have emerged as promising frameworks to support the needs of children within non-clinical settings: social-emotional learning (SEL) programs and Trauma-Informed Care (TIC) interventions. While both differ in their approach to intervention and the degree to which they focus specifically on stress and trauma, both have obtained promising evidence of effectiveness for the different contexts in which they are implemented and the different outcomes that they target.

However, there are several reasons why SEL programs and TIC interventions, both as standalone strategies, may be *insufficient* for addressing the needs of children affected by toxic stress or complex trauma. Rather, a blended approach to intervention that combines key elements of SEL and TIC into a single comprehensive program may represent the most promising strategy. In the subsections below, SEL programs and TIC interventions are first compared and contrasted to demonstrate the unique value of each approach, as well as their unique limitations. Then, the Youth Empowerment Seminar (YES) Program is described as a blended approach to intervention that holds much promise for effectively intervening upon essential protective processes in non-clinical settings. A thorough program description of YES is provided below to a) demonstrate how the program's primary goals, strategies, and activities represent an innovative blend of SEL and TIC and why the combination of approaches is hypothesized to be

more effective than any one strategy alone, and b) justify why the YES program was selected for further investigation within this study and how the study of this particular program can lead to meaningful advances in both developmental research and intervention practice.

SEL Programs

Social-emotional learning (SEL) programs are school-based, universal-prevention programs that are designed to equip children with a set of cognitive, affective and behavioral competencies considered to be important for success in school in life (Zins & Elias, 2007). Broadly, SEL programs are rooted in a Positive Youth Development (PYD) approach to programming that recognizes young people's inherent strengths and aims to foster positive development by building youth's assets, both internal and external (Tolan et al., 2016). While not designed specifically to address the developmental effect of ACEs or trauma in children, SEL programs hold potential for supporting these children to some extent because they often target—through direct instruction and daily practice-- several of the protective processes that both resilience researchers and complex trauma researchers claim are important to promote, including self-regulation and executive functioning skills such as problem-solving and responsible decision making.

Over the last several decades, SEL programs have grown in popularity as several research reviews and meta-analysis studies have demonstrated their positive effect on a variety of behavioral and academic outcomes at post-test for K-12 children (Durlak et al., 2011) and on a variety of well-being indicators, six months to 18 years post-intervention (e.g., Taylor et al., 2017). However, despite growing evidence of effectiveness, it is important to simultaneously note several reasons why SEL programs, as a standalone program or strategy, may be *insufficient* for addressing the needs of children affected by toxic stress or complex trauma.

First, SEL programs are rarely systems-focused, as they are typically delivered in the classroom setting with little attention given to other contexts in children's lives. As such, SEL programs have been criticized for lacking the systems-approach necessary for maximizing intervention effectiveness (Jones & Bouffard, 2012). Second, SEL programs are typically child-focused with less intervention attention given to the primary caregiving adults in children's lives. As such, SEL programs and other skill-based, child-focused programs have been criticized for "injecting youth with a set of skills, only to introduce them back to an environment with inadequate supports" (Modecki et al., 2017, p. 344), a strategy many intervention scientists claim is unlikely to lead to long-term benefits or gains. And third, as a universal-prevention program intended to benefit all children regardless of risk, there is little to no explicit focus on addressing stress and trauma, and therefore may include less targeted intervention around critical developmental processes. Indeed, SEL programs teach a myriad of skills and competencies, with little prioritization as to which may be most necessary or effective for children affected by ACEs (Blodgett, 2014). As such, SEL programs may lack the ability, as a standalone program, to address the deeper, more targeted needs of children affected by ACEs.

TIC Interventions

In contrast, Trauma-Informed Care (TIC) has emerged in more recent years as an organizational approach and framework for intervention that prioritizes a systems-level response for addressing high rates of ACEs, stress, and trauma in non-clinical settings (NCTSN, 2000; SAMHSA, 2012). While SEL programs are child-focused, school context- specific, and generally lack discussion of stress or trauma, TIC interventions are often adult-focused, systems-oriented, and stress/trauma specific, as they are designed to equip the many adults that care for children with trauma-specific knowledge and practices to support recovery and wellness. In

practical terms, this means that within a trauma-informed care intervention, all caregiving adults (particularly those who have frequent, face to face interactions with children such as parents, teachers, and other adults in the family and community) receive training and ongoing support/coaching focused on the "four Rs" (SAMHSA, 2014). The first two Rs are focused on increasing adult knowledge: (1) *realizing* the prevalence of ACEs, toxic stress, and trauma and understanding the widespread effect trauma has on learning, behavior, relationships, and development; and (2) *recognizing* the signs and symptoms of trauma in children, families, staff, and others involved with the system and developing greater awareness and sensitivity to the issue (SAMHSA, 2014). The last two Rs are focused on enhancing adult practice: *responding* sensitively, appropriately, and effectively by integrating knowledge about trauma into organizational policies and procedures, and practices; and (d) *resisting* policies, procedures and practices that retraumatize and exacerbate the problem (SAMHSA, 2014).

While the application of TIC varies depending upon the specific context in which it is implemented in, at the heart of this framework lies the theoretical assumption that children affected by ACEs need ongoing interactions with caregiving adults who are knowledgeable about toxic stress and trauma and consistently engage in practices that both consider its impact and promote recovery and resilience (Bath, 2008; Cole et al., 2013; Greenwald, 2005; Ko et al., 2008). Such an approach is highly consistent with current paradigm shifts occurring in the field of intervention science where researchers have begun to explicitly acknowledge the limits of programs that attempt to "foster particular sets of skills in children without attention also to their contexts" (Luthar & Eisenberg, 2017, p. 344).

To date, TIC frameworks have been applied in a variety of child-serving systems, including those that interact with more universal populations of children, such as K-12 education

(Blodgett & Dorado, 2016; Chafouleas et al., 2016; Cole, Eisner et al., 2013), early childhood care (Blodgett, 2012; Holmes et al., 2015) and healthcare (Purewal et al., 2016), as well as those that interact with child populations who are disproportionately exposed to ACEs and complex trauma, such as the child welfare system (Bartlett et al., 2016; Lang et al., 2016) and the juvenile justice system (Ford & Blaustein, 2013). Evidence of effectiveness is beginning to emerge across these various sectors, suggesting that TIC may be an effective solution for ensuring that children routinely and systematically receive the care, support, and services they need from the many contexts they are regularly embedded within.

However, similar to the limitations noted for SEL programs as a standalone strategy, there are several reasons why TIC interventions may also be *insufficient* for addressing the needs of children affected by toxic stress or complex trauma. First, while TIC interventions typically target the caregiving adults in a child's life, direct intervention with the child may still be warranted to ensure direct developmental benefits to the child, in addition to indirect benefits through the caregiving system. Second, while TIC efforts are employed as intervention strategies for those who have already experienced the adverse effects of trauma, preventative strategies may be warranted, particularly in non-clinical settings like schools that serve more universal populations of children. Such a dual approach to addressing trauma not only ensures that those who are already identified as in need of services receive them, but also that those unidentified receive promotive support regardless.

The Youth Empowerment Seminar (YES) Program: A Blended Approach

The YES program is a school-based intervention designed to equip children and their caregiving adults (i.e., parents and teachers) with the practical tools and skills necessary to manage stress effectively and increase well-being (International Association for Human Values,

2020). The program's four-week experiential curriculum for students as well as the 20-hour training offered to parents and teachers targets several of the developmental protective processes that scholars have indicated are critical to promote in all children, but especially important to restore in children affected by ACEs. As will also be demonstrated below, the YES program intervenes upon these protective processes in ways that are characteristic of both SEL and TIC interventions, thereby representing a blended approach to intervention.

To support *normative brain development* and *self-regulation,* the YES program offers a four-week experiential curriculum to children that includes the direct instruction, demonstration, and practice of restorative breathing practices to equip children with tools to regulate their own physiological responses to stress. Specifically, the YES program teaches children the Sudarshan Kriya Yoga (SKY) breathing practice (reviewed in the clinical treatments section of this paper), a sequence of specific mind-body breathing techniques, that has demonstrated efficacy in reducing negative outcomes (e.g., anxiety, depression, perceived stress, and PTSD) and improving positive outcomes (e.g., emotion regulation, positive affect, social connectedness, gratitude, and life satisfaction) in a variety of clinical and non-clinical populations of adolescents and adults (see Brown & Gerbarg, 2005 for review). Research on why this particular breathing practice is so effective includes neurophysiological explanations, such that these practices effectively activate the body's parasympathetic nervous system (e.g., decrease in heart rate, blood pressure, increase in vagal tone) and deactivate the various stress-response systems in the body (e.g., decreased cortisol; see Brown & Gerberg, 2005 for review). In other words, such practices support the vertical integration of the "upstairs and downstairs brain" by calming the parts of the lower brain associated with threat detection and allowing individuals access to the

upper brain responsible for higher order cognitive functions, such as learning, sustained attention, and problem solving.

These breathing practices are paired with SEL lessons and activities focused on supporting the development of a variety of social-emotional competencies such as self-awareness, self-management, social awareness, relationships skills, and responsible decision making. Lessons also include developmentally appropriate psychoeducation about stress and its impact on learning, behavior, and development so that children themselves become more aware of the impacts of stress and understand the importance of utilizing the YES breathing practices and SEL tools to manage stress, themselves, and their relationships more effectively.

To support *attachment*, several program strategies are employed. First, the YES program is taught by a certified YES teacher whose training and professional development includes education about the effects of stress and trauma on developmental processes and outcomes; personal mastery of the breathing and relaxation practices taught to children to develop their own regulation and coping skills; and extensive professional development and coaching on how to help children develop these skills and practices through positive adult-child interactions. Such training attempts to ensure that the YES teacher is a trauma-informed adult who is equipped with the knowledge and practices necessary to interact positively with all children, but especially those affected by ACEs and chronic stress. As reviewed in the section on attachment, attachment security is facilitated when children interact with safe and nurturing adults who consistently and sensitively respond to their needs for proximity and support. Such training for the YES teacher maximizes the likelihood that children may come to perceive the YES teacher as a safe, supportive, and nurturing attachment figure and gain access to a caring adult in the school context. Such training also enhances the likelihood that the YES teacher, as a secure base

attachment figure, can effectively promote self-regulation and higher order executive functioning skills through curriculum delivery.

Second—and most aligned with the principles of trauma informed care framework-- the YES program attempts to take a systems-approach to intervention by extending YES training to parents, teachers, and other key caregiving adults in children's lives. Such an effort is made with the understanding that intervention effectiveness is maximized when other key adults in children's lives are also trauma-informed and equipped with the knowledge, awareness, and skills necessary to engage in trauma-informed practice. The YES program achieves these goals by offering adult-level YES workshops and trainings to parents, teachers, school staff, and other interested community members. The focus and content of these adult-level trainings are similar to those offered to the YES teacher, but in a much-abbreviated form: Workshop lessons include psychoeducation about the effects of stress and trauma on developmental processes and outcomes to improve awareness and knowledge; training on the same breathing and relaxation practices taught to children to help adults develop *their own* regulation and coping skills; and training on how to reinforce children's use of these practices and skills at home and in school through positive adult- child interactions.

Through these adult workshops and trainings, the YES program aims to ensure that essential elements of their intervention are replicated across the many contexts in which children are regularly embedded, and that all children (but particularly those affected by ACEs and trauma) have the opportunity to experience consistent and enduring interactions with adults in the school and home who are not only knowledgeable about trauma but also skilled at engaging in practices that are promotive of recovery, resilience, and well-being.

Underinvestigated Areas in Research and Practice

While the intervention strategies and approaches discussed above have demonstrated great promise as effective solutions in non-clinical settings, several underinvestigated areas of research and practice still remain. Two needs, in particular, (i.e., the need for an ACEs-related risk measure and the need for effectiveness studies guided by developmental theory) characterize underinvestigated areas of research on the effectiveness of SEL and TIC interventions more broadly, as well as research on the YES program more specifically. Both of these needs are described in greater detail below as justification for the primary aims of this study.

The Need for a Proxy Measure of ACEs-Related Risk for Research in Non- Clinical Settings

The first need is related to ACEs measurement—specifically, the lack of a measure that identifies children with high ACE exposure but is appropriate for use in non-clinical settings such as schools and community-based youth programs. The lack of such a measure precludes the ability of intervention studies, particularly those conducted in universal, child-serving settings, to determine the extent to which programs, designed to mitigate the effects of stress and trauma on development, are actually effective for children who have experienced ACEs and have been negatively affected by their exposure.

For example, despite much evidence of effectiveness for SEL programs in particular, it remains empirically untested whether SEL programs are particularly effective for children affected by ACEs, stress, and trauma. Indeed, to date, such disaggregation of results by this type of risk profile in children has yet to be conducted. This may be due, in part, to the fact that SEL programs are designed to be universal prevention programs, with the intention of promoting essential competencies and positive development for *all children*, regardless of baseline risk (Domitrovich et al., 2017). As such, this type of data may be regarded as irrelevant to the aims of

an SEL program. However, given an explosion of public interest in identifying high-risk children and determining effective solutions for supporting ACEs-impacted children in non-clinical settings such as K-12 schools, such measurement and such investigations may not only be warranted, but timely.

Pragmatically, the greatest barrier for conducting this type of research in school-settings likely stems from the practical and ethical complications of collecting children's ACE score in non-clinical, child-serving systems. Specifically, the collection of this data typically requires asking children (if over the age of 8) to self-report upon the extent to which they have experienced multiple forms of abuse, neglect, and other forms of household dysfunction, or alternatively, asking their primary caregiver to report on their behalf (Bethell et al., 2017). Such a direct measure of children's present-day ACE score is typically not considered appropriate or ethical in a school, program, or community-based setting because the collection of such information is not only highly sensitive, intrusive, and potentially distressing, but also introduces several risks and burdens to the children, families, and service professionals in these settings.

Indeed, researchers who have pioneered the collection of children's present-day ACE score in these settings have noted several risks to children and families that are not nearly as pronounced when asking adults to recall retrospective ACEs from their childhood, the latter of which represents the most common method used in ACEs studies (Blodgett & Lanigan, 2018). Specifically, when ACE and trauma exposure questions are asked of children and families in real-time, particularly in non-treatment community-based settings, several real and perceived safety and ethical risks occur, which include mandated child maltreatment reporting, disruption of professional service relationships, and concerns about follow-up burden that interfere with core service goals (Blodgett, 2012). Other studies also suggest additional harm when inquiring

directly about trauma exposure outside of the context of trusting and empowering relationships, including revictimization and perpetuation of poor self-image (Pennebaker & Susman, 1988). Such concerns have led several researchers to coin the phrase: "the need to ask [about ACEs exposure] must be justified by our need to know", with many researchers concluding that such increased risks to children and families are often difficult to defend outside of formal treatment and clinical research settings. As a result, very few studies collect children's present-day ACE scores in universal child-serving systems and none to date have examined ACEs in relation to program or intervention effectiveness.

However, given public interest in determining effective solutions for supporting children impacted by ACEs in non-clinical settings such as K-12 schools, a study that explores intervention effectiveness by a *theoretically-based proxy of ACE-related psychosocial risk* – using a measure that involves less direct, less triggering questions-- may be warranted. Such a proxy measure has yet to be conceptualized, developed, or empirically examined within a study. However, given the extant literature reviewed thus far in this paper, three constructs in particular could be assessed to *approximate the risk associated with ACEs exposure, given the empirical link between these constructs and the type of internalizations, reactions, and difficulties commonly experienced by children who have experienced chronic adversity, maltreatment, and household dysfunction within their proximal environments*. These constructs include (1) perceived stress, (2) attachment insecurity, and (3) access to emotion regulation strategies, with the empirically-supported rationale that children with higher ACE scores (i.e., four or more) typically evidence a particular constellation of internalized psychosocial distress, including *higher levels of perceived stress,* given cumulative and chronic adversity occurring within their caregiving environment (Shonkoff et al., 2012); *higher levels of attachment insecurity,* given

ongoing disruptions to the attachment system (Blodgett, 2014; Murphy et al., 2014); and *less perceived access to effective coping strategies*, given substantially fewer opportunities to develop a more sophisticated repertoire of regulation strategies with attuned caregivers (Taylor & Stanton, 2007).

While many other constructs could be selected to develop a proxy measure of ACEs-related risk (e.g., SES of parent, single or dual parent household, perceptions of safety, biomarkers of stress), the three constructs listed above may arguably be most worth investigating because they: (a) are *highly face-valid*—as a set, they exemplify the hallmark characteristics of children who have not only experienced a high number of ACEs but have also internalized their negative effects, (b) are *relatively innocuous* to ask children to self-report upon, and therefore would not pose the same practical or ethical complications associated with asking children directly about ACEs-related events and exposure, (c) are *already regularly assessed in non-clinical settings*, such as schools and youth programs, and therefore have some level of acceptance and validation within community samples of children, and (d) are *relatively easy to collect* via self-report questionnaires and surveys, which stands in contrast to other more time-intensive, expensive, or invasive measures such as cortisol samples, behavioral observation, sentinel reporting or genotyping—all of which have been used successfully in previous risk studies, but require massive resources (e.g., Blodgett, 2014; Brody et al., 2013).

In sum, because the field is in need of an ACEs-related measurement tool that could identify high-risk children in a way that is context-appropriate and resource-efficient, the current study attempts to conceptualize, develop, and examine the utility of such a measure. Such a proxy measure will be utilized to identify groups of children most at risk for deleterious outcomes and investigate the extent to which an intervention, operating within a non-clinical

context, is indeed positively impacting this particular subset of children most in need of support. While the present study attempts to take the first step of conceptualizing and developing such a proxy measure of ACEs-related risk, such a tool should not be viewed as diagnostic or a valid replacement for formal screening of ACEs exposure or trauma in children. To be clear, formal diagnostic and screening instruments already exist and should be first choice in ACEs studies whenever these instruments are possible and appropriate to use. However, such tools were considered inappropriate for use in the current study's context (i.e., schools would not allow for research methods asking children and families about specific ACEs-events), further highlighting a need within the field to develop and examine a proxy measure it its place. Regardless, the proxy measure developed within this study should be viewed as exploratory and aspirational in nature, as it is a creative and theoretically-based attempt to approximate the psychosocial risk commonly associated with ACEs without directly asking children or their families about experience with ACEs events. As such, all results associated with this risk measure should be interpreted accordingly.

The Need for Intervention Effectiveness Research Guided by Developmental Theory

The second need is related to the consistent disconnect between intervention science and developmental theory– specifically the lack of intervention studies that examine program or intervention effectiveness with a developmental lens. Indeed, studies of intervention effectiveness often focus exclusively on questions of impact (i.e., does the intervention work?) without appropriate consideration of three key human development principles that-- if specified, incorporated and empirically tested-- could enhance our understanding of how to best support children impacted by ACEs in non-clinical settings. These three principles are aligned with Bronfenbrenner's bioecological theory of human development (2006) and include the critical

consideration of context, person, and process. Each is briefly defined and described in more detail below. Definitions and descriptions of context, person, and process are then followed by a discussion of *why greater consideration of these developmental principles is necessary in intervention effectiveness studies* and how such studies can offer a more complete understanding of for whom, under what conditions, and why an intervention is successful (Astbury & Leeuw, 2010; Weiss, 1995).

Consideration of Context. Considering 'context' in research means conceptually and empirically accounting for the influence of multiple, interrelated environments on human development, particularly the environments most familiar, typical, and lived in for the individuals under investigation (Bronfenbrenner, 1974). According to Bronfenbrenner's (1976, 1978, 1979) ecological model of human development, individuals are shaped by and shape the *many* ecologies (i.e., environments, settings, and systems) they live in (e.g., home, school, neighborhood, community) in bi-directional transactional ways. While every level of ecology is considered influential, the ecologies more proximal to the individual (e.g., contexts such as home and school during childhood) are theorized to exert more influence on an individual's development than do more distal ecologies (e.g., broader social culture), given more regular, frequent, and face to face interactions with people, objects, and symbols in those contexts over time (Bronfenbrenner & Evans, 2000).

Historically, studies of SEL programs have failed to take into account the influence of other important contexts (such as the home, the broader school environment, and other community-based settings) on children's developmental outcomes when examining intervention effectiveness (Jones & Bouffard, 2012; Roth & Brooks-Gunn, 2016). Likewise, while TIC intervention efforts urge for the extension of appropriate trauma knowledge and practice beyond

a singular context (i.e., clinical) and beyond a singular adult (i.e., clinician), it is still unclear from extant literature *which adults* in *which non-clinical contexts* are most critical to intervene upon, *how many* non-clinical contexts must be addressed to promote better outcomes for children affected by ACEs, whether modifying one context to be more trauma-informed can *offset* the cost of children being embedded in other contexts that are not trauma-informed (e.g., trauma-informed school offsets lack of trauma-informed home), and whether it is a specific *combination* of contexts becoming trauma-informed that is most predictive of positive impact (e.g., trauma-informed home plus trauma-informed school). Currently, research on intervention effectiveness in both SEL programs and TIC interventions are decontextualized with very little specificity regarding which additional contexts, aside from the intervention context, matter most and why.

The underinvestigation of context also characterizes studies on the YES program specifically. While the YES program intervenes at the child, parent, and teacher level in a conceptual effort to reflect an ecological and comprehensive approach to intervention, studies have yet to examine empirically whether extending programming to caregiving adults in the home and the school has a booster effect on child outcomes.

Consideration of Person. Considering 'person' in research means giving proper attention to the unique and variable person characteristics that individuals possess as an equally important influence on the process of human development (Bronfenbrenner & Crouter, 1983). Whereas considering 'context' highlights the importance of considering ways in which individual development is influenced by the features of multiple, interrelated environments, considering 'person' gives equal weight to the role that individuals play in the process of their own development, given their own unique set of characteristics, history, and experiences. Such a consideration rejects the idea that "all individuals living in the same environment are equally

affected by it, regardless of their biological or psychological characteristics" (Rosa & Tudge, 2013).

Research that reflects a consideration of person characteristics in intervention effectiveness studies would assess whether *developmentally relevant differences* in the children and/or adults involved in an intervention predictably influences intervention need, experience, and outcomes. Developmentally relevant differences are defined as person characteristics that are psychologically-oriented and theoretically-motivated according to extant developmental literature (Teachanarong, Berry, & Borelli, in prep). Aside from the measurement and consideration of more superficial demographic differences (e.g., gender, age, ethnicity), there is often little consideration of how developmentally relevant person characteristics may relate to intervention efforts and impact (Roth & Brooks- Gunn 2016; Teachanarong et al., in prep).

Developmentally relevant child-level factors that could be incorporated into effectiveness studies on SEL or TIC (more broadly) or YES (more specifically) may include children's experience with ACEs (number, type, timing, duration) or given the complications of collecting this type of detailed information in universal settings, other risk proxies for ACEs, such as the one mentioned above. Such an important variable must be assessed in intervention studies to explore how participants at different levels of ACEs exposure or related risk may differentially respond to or be impacted by the interventions offered.

Consideration of Process. In Bronfenbrenner's most current reformations to his bioecological theory of development, he gives ample attention to *proximal processes*, broadly defined as the "enduring forms of interaction between an individual and the persons, objects, and symbols in his or her immediate environment" (Bronfenbrenner & Ceci, 1994; Bronfenbrenner & Morris, 1998; 2006). He describes proximal processes as the "engine of development",

theorizing that it is the strength (e.g., intensity, duration, frequency) and form (e.g., negative or positive) of proximal processes in an individual's life that most powerfully predicts developmental dysfunction or competence (Bronfenbrenner & Evans, 2000, p. 118). Greater attention to proximal processes in his later theoretical writings urge scholars to move away from conceptualizing person characteristics and contextual influences as separate and independent determinants of development; rather, to conceptualize developmental outcomes as the result of enduring patterns of person-environment interactions and transactions across settings and time (Bronfenbrenner & Evans, 2000).

In this light, SEL programs and TIC interventions could be conceptualized as attempts to intervene on the proximal processes most predictive of positive development in children affected by ACEs. However, to date, SEL programs and TIC interventions rarely explore change in proximal processes as a way to explain change in children's outcomes, though this type of investigation could help elucidate the *process* by which these intervention efforts support children. Three processes are discussed often in the literature as explanatory mechanisms and are relevant to the YES program in the current study: caring relationships with adults, children's daily practices and activities, and positive program or intervention experience.

Caring Relationships with Adults. TIC interventions in particular attempt to ensure that the *relationships* between children and the adults they interface with most frequently across various settings are developmentally supportive and characterized by care, consistency, predictability, and trust (Bath, 2008; Hodas, 2006). Such an approach recognizes that children need adequate support from the many ecologies they are embedded in, and that it is the *quality of the interactions* that children have with the significant others in their most proximal ecologies that will have the most influence on their development (Blodgett & Dorado, 2016; Ko et al.,

2008) . However, current TIC effectiveness studies fail to account for the changes in the relational processes between adults and children that might account for later change in child outcomes. In other words, it is often assumed that enhancing adult knowledge about stress and trauma through workshops or trainings will provoke positive change in adult practice, which in turn will yield significant change in child outcomes, but there is no accounting for (and therefore no measurement of) whether children actually perceive positive changes in the quality of those relationships and whether changes in the quality of those relationships contribute significantly to change in child outcomes.

Daily Practices and Activities. SEL programs are often theorized to be effective on children's development because they are designed to equip children with a set of skills and competencies that change the way that children relate to and interact with the world around them (Zins & Elias, 2007). For example, as part of a self-regulation lesson, a child participating in a SEL program may learn new strategies for regulating his or her negative emotions in a more positive or effective manner (e.g., taking a deep breath before reacting). The extent to which the child then utilizes this learned practice outside of the program context, would be more predictive of positive change in program outcomes than merely a measure of program attendance. Likewise, TIC interventions are often theorized to be effective on children's development because they are designed to equip adults with the knowledge necessary to change the way they practice or interact with children affected by trauma and stress (Bartlett et al., 2017). An adult equipped with trauma knowledge should be aware of the developmental processes that are negatively impacted by ACEs, and therefore might be more active or intentional about providing children with the opportunities necessary to practice skills related to self-regulation or executive functioning. However, current TIC effectiveness studies fail to capture the extent to which adult

involvement in TIC interventions change the frequency or quality of daily practices and activities children engage in.

Positive Program Experience. Recently, scholars have stressed the importance of assessing youth experience in programs as one strategy for better understanding the *process* by which youth develop in this context. In a recent review of the field, Roth and Brooks-Gunn (2016) call for more studies that do so as they note a general lack of quantitative research exploring the relationship between youth experience and youth outcomes in programs. These researchers argued for the importance of assessing program experience as a multi-faceted construct. To date, very few studies examine positive program experience as a mediating mechanism, and even fewer studies examine program experience as a multi-faceted construct that includes pre-intervention buy-in, or post-intervention satisfaction, and perceptions of impact.

The Current Study

The current study aims to contribute to extant research and practice in three important ways:

First, to address a lack of ACEs-related measurement that is contextually sensitive to the realities of non-clinical settings such as schools, this study attempts to develop a proxy measure of ACEs-related risk, composed of psychosocial risk variables inspired by theoretical and empirical literature, and then utilizing it to answer key research questions related to "for whom" does this intervention work? Such a measure, if expanded upon and rigorously validated in future studies, could be a value-add for applied researchers working in non-clinical settings by offering an alternative way to assess ACEs-related risk in children, which would subsequently allow for disaggregation of study outcomes by this developmentally relevant person-centered variable.

Second, to contribute to the growing knowledge base on effective non-clinical interventions for ACEs-impacted youth, this study utilizes a randomized delayed-treatment control group design to examine the impact of the Youth Empowerment Seminar (YES) program on children's outcomes across time. Such a study has the potential to determine whether YES, with its blended approach of SEL and TIC, represents an effective school-based approach to supporting children impacted by ACEs, stress, and trauma.

Third, to address the lack of intervention studies that are guided by developmental theory, this study is guided by Bronfenbrenner's (2006) bioecological theory, moving beyond questions of intervention impact to also explore underinvestigated research questions related to context, person, and process. To date, such studies are rare—not only in investigations of intervention effectiveness (Roth & Brooks-Gunn, 2016), but also in the field of developmental psychology more broadly (Lerner et al., 2005). While Bronfrenner's (2006) bioecological theory of development is considered one of the most prominent theoretical frameworks in the field of developmental psychology, several scholars have noted that the key tenets of his theory--process, person, context, and time (i.e., PPCT) -- are not well studied or tested appropriately, due to several issues including: (a) the model in its full form is difficult to translate into research, (b) such a study is typically large and complex (and therefore expensive and time-consuming), and (c) Bronfenbrenner himself failed to offer a methodological guide or many successful examples of how the PPCT model could be adequately applied to a single research study (Rosa & Tudge, 2013).

However, this study seeks to demonstrate that such research is not only possible to conceptualize but important to conduct, particularly when examining theoretically-grounded developmental interventions for children because it offers developmental scholars the rare

opportunity to test developmental theory in real-world settings (Roth & Brooks-Gunn, 2016). By designing and executing such a study, this paper seeks to demonstrate the many contributions that can be made to both research and practice when studies of intervention effectiveness are guided by developmental theory.

Research Questions and Hypotheses

The current study investigates four primary research questions. The first research question explores the effectiveness of the YES program on children's outcomes across time. The latter three research questions more deeply examine effectiveness from a bioecological perspective. These questions are aligned with the other three central tenets of Bronfenbrenner's (2006) bioecological theory, namely context, person, and process.

RQ 1: Impact of YES Program Participation on Children's Development Across Time

Does participation in the YES program improve children's outcomes from pre-intervention to post-intervention? This research question responds to the importance of testing whether participation in a program designed to target protective processes improves outcomes for children as expected.

Two hypotheses are proposed; one that explores change over time for all child participants, regardless of assignment to treatment or delayed treatment control group, and one that explores change over time for children in a treatment group compared to children in a delayed treatment control group. First, it is hypothesized that children who participate in the YES program will have significant change over time from pre-test to post-test on three sets of outcomes (i.e., self-regulation, executive functioning, and well-being) (H1a). Second, it is hypothesized that children in the treatment group will have greater change over time compared to children in the delayed treatment control group (H1b).

RQ 2: Consideration of Context Effects

Does the YES program have a greater impact on children's outcomes when key adults in children's lives (i.e., parents and teachers) also participate in adult training? In other words, is intervention effectiveness enhanced when the intervention takes a systems-approach and targets the trauma knowledge and practice of the adults in children's home and school context? This research question responds to the importance of exploring whether expanding essential elements of an intervention to other contexts in children's lives enhances intervention effectiveness.

One hypothesis is proposed: Children whose parent and classroom teacher attend the YES adult training will have higher scores on all three outcomes at post-intervention, compared to three other groups of children: children whose parent attends training but not the teacher; children whose teacher attends training but not the parent; children whose parent nor teacher attends (H2a).

RQ 3: Consideration of Person Effects

Does intervention effectiveness vary as a function of developmentally relevant person differences? More specifically, does the YES program have a greater impact on children who score higher on a proxy measure of ACEs-related risk? This research question responds to the importance of disaggregating intervention effects by theoretically meaningful baseline differences in children related to ACEs risk.

Two hypotheses will be tested: First, children who score higher in baseline measures of perceived stress, attachment insecurity, and limited access to emotion regulation strategies (theory-based proxy for ACEs-related risk) will have lower scores on all three outcomes at pre-intervention, compared to children who score lower on these baseline measures of risk, thus demonstrating greater need for intervention at baseline (H3a). However, despite starting with

lower scores at pre-test, these children will demonstrate a greater rate of change on all three outcomes at post-intervention, given greater program effects for children with greater risk and therefore greater need (H3b).

RQ 4: Exploration of Proximal Processes

If the YES program is indeed effective (under certain conditions or for certain groups of children), what proximal processes account for the intervention effect? This research question responds to the importance of exploring theoretically meaningful proximal processes that may help explain the mechanisms underlying program impact, as well as exploring how the strength or direction of those proximal processes differ by developmentally relevant differences in children *as well as* differences in context.

However, if the YES program is *not* effective (under any condition or for any group of children), can the study variables be repurposed to explore other developmental mechanisms or trends? In the event of null findings related to program impact, this research question allows for theoretically-driven explorations of the data to determine whether other contributions to extant research can be made with the data collected.

Under the condition that the YES program is effective, five hypotheses will be tested: First, it is hypothesized that the relationship between children's participation in the program and the three study outcomes (i.e., self-regulation, executive functioning, and well-being) will be partially explained by children reporting higher levels of caring relationships with adults at home and at school (H4a), more frequent use of YES practices at home and at school (H4b), and more positive program experiences in the YES program (H4c). Next, it is hypothesized that all mediational paths will be moderated by differences in children's person characteristics, such that different levels of ACEs-related risk in children will influence the strength and/or direction of the

mediations explored (H4d). Lastly, the mediational relationship of caring relationships with adults will be moderated by the extent to which adults participate in YES (H4e).

Under the condition that the YES program does not impact child outcomes assessed in this study, mediation and moderation models will be tested to explore the relationship between ACEs-related risk, proximal processes, and study outcomes. First, it is hypothesized that self-regulation and executive functioning will mediate the relationship between the ACEs- related risk measure and well-being, such that lower scores in self-regulation and executive functioning will partially explain the relationship between higher scores on the ACEs-related risk measure and lower well-being. Second, it is hypothesized that caring adults at school and caring adult at home will moderate the relationship between ACEs-related risk and children's outcomes, such that higher scores on these protective factors may buffer the negative relationship between ACEs-related risk and outcomes of self-regulation, executive functioning, and well-being.

Chapter II. Methodology

Participants

To investigate the primary research questions associated with this study, approximately 341 upper-elementary age children, 341 of their parents/guardians, and 13 classroom teachers were recruited from three elementary schools in Adano [1]Unified School District. Children and adults from these schools were selected for recruitment for two primary reasons: First, these schools had a long-standing partnership with the YES program and agreed to allow their students, parents, and teachers to participate in the comprehensive YES intervention during the 2019-2020 school year. The majority of students (i.e., 81%) had already participated in the full four-week YES curriculum as 3rd grade students and were invited to participate in the two-week "Refresher Course" in the 2019-2020 school year at the same time that their parents and teachers were simultaneously invited to be first-time participants in the 20 hour YES Adult Workshop. This implementation plan was consistent with several critical aims of this study, one of which was to understand whether adult participation, alongside student participation, would enhance the effectiveness of the intervention.

Second, Adano Unified School District serves populations of children and adults most aligned with the program's target population as well as the proposed study's research goals (i.e., low-income, low-resourced, highly stressed populations). To be specific, the majority of children and families from two of three recruited schools were identified as low-SES in Adano Unified School District's 2017 "School Accountability Report Card". Additionally, according to district reports, participants were also being recruited from schools that were academically underperforming compared to state standards: only 20% of students meet English Language Arts

[1] District name has been replaced with a pseudonym to protect participant identity.

standards and only 14% of students meet Math State standards. Because studies have consistently shown that ACEs, trauma, and many forms of chronic adversity disproportionately affect children and families in poverty (Kiser & Black, 2005; Metzler et al., 2017), recruiting from this sample was purposeful, in hopes of examining those who have a higher likelihood of being affected by ACEs.

Of the 341 students recruited for the study, parent consent and student assent were obtained for 267 students (78% of the total possible sample). Of the 267 students with consent and assent, 227 students (84% of the recruited sample) participated in the intervention and completed at least two time points of data collection, which would allow for longitudinal analyses. Table 1 summarizes the demographic information of the 227 students utilized to examine all study hypotheses. As shown in the table, students were primarily Latinx (85%), split relatively evenly by gender (female = 55.5%), and ranged in age from 8 to 12 years of age (M = 10.05 years; SD = .83). Approximately one-third were 4th grade students (34.8%), slightly over one-third were 5th grade students (38.8%), and approximately one-fourth were 6th grade students (25.1%). Based on student report, 81% of students reported attending the four-week YES program in 3rd grade and had participated in the YES program for a mean duration of one to two years (M = 1.77 years; SD = .80), prior to participation in this study's intervention cycle.

Table 1 also describes the extent of co-occurring adult participation for the 227 students involved in the study. Specific to parent participation, only 17 parents (8% of the sample) actually participated in the intervention (i.e., YES Workshop for adults); a higher percentage of parents (39%; n = 89) completed at least one parent survey. Regarding teacher participation, only 5 teachers (35% of the sample) participated in the intervention; however, 100% (n = 13) of teachers completed at least one teacher survey. For descriptive purposes, Table 2 summarizes the

demographic information of the 89 parents involved in the study while Table 3 summarizes the same information for the 13 teachers involved in the study.

As shown in Table 2, the parent sample (i.e., those who completed at least one survey during the study) primarily self-identified as female (95.2%), as a mother to the child in the study (92.9%), and Latinx (77.9%). A slight majority were parents of 4th and 5th grade students (36.1% and 38.8%, respectively) compared to 6th grade. The level of education obtained by the parent sample ranged from kindergarten completion (8%) to Master's degree completion (2%), with most parents reporting that they had completed college (24.7%) or high school (21.2%). This information makes sense in light of the fact that there was a slightly higher representation of parent participants from [Elementary 1] (40.4%) compared to [Elementary 2] (34.8) and [Elementary 3] (24.7%), the former of which [i.e., Elementary 1] is in a higher SES neighborhood compared to the latter two schools[2].

Additionally, as shown in the Table 3, the teacher sample also primarily self-identified as female (69.2%) and Latinx (38.5%). The majority had completed a Master's degree (76.9%). There was a slightly higher percentage of teachers from [Elementary 2] (46.2%; a school in a lower SES neighborhood) compared to [Elementary 1] and [Elementary 3]. Teachers were relatively evenly split between 4th and 5th grade levels (30% and 30%), with a slightly lower percentage working as a 6th grade or 4th/5th grade combo.

[2] All elementary school names have been redacted to protect participant identity.

Table 1.

Descriptive Demographic Information for the Student Study Sample (N = 227)

		(*N* = 227)	**Percentage (%)**
Gender	Male	101	44.5
	Female	126	55.5
Ethnicity	Asian	14	6.2
	Black	7	3.1
	Latinx	193	85.0
	White	11	4.8
	Other	2	0.9
School	[Elementary 1]	79	34.8
	[Elementary 2]	116	51.1
	[Elementary 3]	32	14.1
Grade	4th	82	36.1
	5th	88	38.8
	6th	57	25.1
Prior Program Participation (*self-reported)*	Yes	185	81
	No	34	15
	No response	7	4
Parent Participation	Completed Adult Survey	89	39.1
	Attended YES Workshop	17	7.5
	Completed Workshop Survey	15	6.2
		(*N* = 13)	**Percentage (%)**
Teacher Participation	Completed Adult Survey	13	100
	Attended YES Workshop	5	35.4
	Completed Workshop Survey	5	35.4

Table 2. *Descriptive Demographic Information for the Parent Study Sample (N = 89)*

		(*N* = 89)	Percentage (%)
Gender	Male	4	4.8
	Female	79	95.2
	No response	6	--
Ethnicity	Asian	7	8.1
	Black	5	5.8
	Latinx	67	77.9
	White	4	4.7
	Other	3	3.5
	No response	2	--
Education	Kindergarten	8	9.4
	Some High School	16	18.8
	High School Graduate	18	21.2
	Some College	21	24.7
	Technical Certificate	7	8.2
	Associate Degree	9	10.6
	Bachelor's Degree	4	4.7
	Master's Degree	2	2.4
	No response	3	--
School	[Elementary 1]	36	40.4
	[Elementary 2]	31	34.8
	[Elementary 3]	22	24.7
Grade	4th	29	32.6
	5th	25	28.1
	6th	35	39.1
Relationship to Child	Mother	78	92.9
	Father	4	4.8
	Other	2	2.4
	No response	5	--
Parent Participation	Completed Adult Survey	89	100
	Attended YES Workshop	17	19.1
	Completed Workshop Survey	15	16.9

Table 3.

Descriptive Demographic Information for the Teacher Study Sample (N = 13)

		(*N* = 13)	**Percentage (%)**
Gender	Male	4	30.8
	Female	9	69.2
Ethnicity	Asian	2	15.4
	Black	2	15.4
	Latinx	5	38.5
	White	2	15.4
	Other	2	15.4
School	[Elementary 1]	5	38.5
	[Elementary 2]	6	46.2
	[Elementary 3]	2	15.4
Grade	4th	4	30.8
	5th	3	23.1
	6th	4	30.8
	Combo 4th 5th	2	15.4
Education	Bachelor	3	23.1
	Masters	10	76.9
Teacher Participation	Completed Adult Survey	13	100
	Attended YES Workshop	5	38.5
	Completed Workshop Survey	5	38.5

Procedure

This study was conducted across a three-month time span from September 2019 to December 2019 and involved three critical tasks: a consent/assent process, three data collection time periods, and two intervention cycles (see Table 4 for a visual depiction of the study procedure timeline).

To examine program effectiveness, the study utilized a *randomized delayed-treatment control group design* in which a total of 13 classrooms (which included a total of 341 students, 341 parents/guardians, and 13 classroom teachers) were randomly assigned to one of two conditions: treatment group or delayed-treatment control group. Students, parents, and teachers from the seven classrooms randomized to the *treatment group* received the YES intervention during the first intervention cycle (i.e., October thru November), immediately following Time 1 data collection, whereas the six classrooms assigned to the *delayed-treatment control group* received the YES intervention during the second intervention cycle (i.e., November thru December), immediately following Time 2 data collection. Time 3 data collection then occurred after classrooms assigned to the waitlist control group had received the program. A more detailed description of each study procedure is provided below.

Table 4.

Study Procedure Timeline

Study Procedure:	Consent Forms	Time 1 Surveys	YES Intervention		Time 2 Surveys	Yes Intervention		Time 3 Surveys
			Adult Workshop	Student Refresher		Adult Workshop	Student Refresher	
Date:	*Sept. 30 - Oct. 4*	*Oct. 7 – 9*	*Oct. 19 – 24*	*Oct. 28 – Nov. 8*	*Nov. 11 – 15*	*Nov. 16 – 21*	*Dec. 2 – 13*	*Dec. 16 -- 19*
Treatment Group 7 classrooms	X	X		X	X	--	--	X
Delayed Treatment Group 6 classrooms	X	X	--	--	X	X	X	X

Consent Forms

At the end of September 2019, informed parent consent forms were distributed to parents in all 13 classrooms. Consent forms asked parents to grant permission for their child to participate in the research study and also invited parents to participate in the research study as well. Parents also received an invitation to participate in the YES Workshop for Adults; those in the treatment group were invited to the October workshops while those in the delayed-treatment control group were invited to the November workshops. Teachers across all 13 classrooms were also invited to participate in the research study. Consents were distributed and signed at an all-staff meeting. During the staff meeting, teachers in the treatment group were invited to the October workshops while those in the delayed-treatment control group were invited to the November workshops

Time 1 Surveys

Students whose parents signed a consent form were then invited to participate in the study via a child assent form. Students who assented to study participation completed a Time 1 survey in early October. As will be described more extensively in the Measures section below, the Time 1 survey assessed a variety of constructs including student outcomes of interest (i.e., self-regulation, executive functioning, and well-being), hypothetically relevant person characteristics (i.e., stress, attachment insecurity, access to emotion regulation strategies to assess ACEs-related risk), hypothetically relevant process variables (i.e., caring relationships with adults, program practice, program experience), and demographics. Surveys were administered online via Qualtrics (an online data collection tool) using students' personal computers in students' classrooms during school hours. Within the same time period, parents and classroom teachers also received a paper-form Time 1 survey that asked them to report basic descriptive

and demographic information about themselves (e.g., gender, age, ethnicity, education level) as well as some outcomes of interest (i.e., perceived stress, access to coping strategies, and satisfaction with life) for further descriptive purposes.

YES Intervention for Treatment Group

Following Time 1 surveys, YES intervention was offered to students, parents, and teachers in the seven classrooms randomized to the treatment group. Specifically, parents were invited to participate in a modified seven-hour[3] *adult workshop* offered at three different times within a one week time span to accommodate varying work schedules: (1) a *weekend* workshop offered on Saturday and Sunday, (2) a *weekday morning* workshop offered Monday thru Wednesday, and (3) a *weekday afternoon* workshop offered Monday thru Wednesday. Teachers were also invited to participate in the adult workshop, but their options were limited to the weekend workshop, as the weekday workshops conflicted with their teaching hours. All workshops were offered on school campuses and taught by one consistent YES teacher. After adult participation in the workshops, students participated in a nine-day *student refresher course* across a two-week period, for 45 minutes each day. Students from these classrooms were invited into a designated YES program space on school campuses and were taught by the same YES teacher who facilitated the YES Workshops.

Time 2 Surveys

Following program intervention for the treatment group, all students, parents, and teachers in all 13 classrooms were invited to complete a Time 2 survey that assessed many of the same constructs assessed at Time 1. As will be described more thoroughly in the Measures section, students, parents, and teachers in the treatment group were also asked additional

[3] Prescribed dosage for YES Adult Workshops is typically 20 hours. The workshop dosage was modified to seven hours given feedback from the parent community about how many hours parent could feasibly attend.

questions related to the YES intervention (e.g., satisfaction, use of breathing practices, perceived impact), given their recent participation in the program. Administration procedures at Time 2 were consistent with procedures at Time 1 in which students completed surveys online via Qualtrics on their personal computers during school hours in students' classrooms; parents completed paper surveys at home; teachers completed paper surveys during school hours at the same time as their students.

YES Intervention for Delayed Treatment Control Group

Following Time 2 data collection, YES intervention was offered to the students, parents, and teachers in the six classrooms randomized to the delayed treatment control group. Intervention procedures for this program cycle were consistent with procedures for the previous cycle. Again, parents were invited to three workshop options (i.e., weekend, weekday morning, weekday afternoon), teachers were invited to one weekend workshop option, and students participated in the nine-day refresher course across a two-week period for 45 minutes a day. All workshops and courses were taught by the same YES teacher as the previous cycle.

Time 3 Surveys

Following program intervention for the delayed treatment group, all students, parents, and teachers in all 13 classrooms were invited to complete a Time 3 survey that assessed many of the same constructs assessed at Time 1 and Time 2. At this time, consistent with Time 2 surveys, students, parents, and teachers in the delayed treatment group only were asked additional questions related to the YES intervention (e.g., satisfaction, use of program practices, perceived impact), given their recent participation in the program. Administration procedures at Time 3 were consistent with procedures at Time 1 and Time 2 in which students completed surveys online via Qualtrics on their personal computers during school hours in students'

classrooms; parents completed paper surveys at home; teachers completed paper surveys during school hours at the same time as their students.

Measures

Measures for the current study included the following: (1) a *child survey* administered to student participants at all three time points, (2) an *adult survey* administered to parent and teacher participants at all three time points (3) an *adult post-workshop survey* that assessed intervention experience for those who participated in the adult workshops at Time 2 and Time 3. Given that the focus of this study was primarily on children's outcomes, the latter two measures that focused on data collection from adults involved in the intervention were utilized primarily for descriptive and exploratory purposes rather than as measures that directly answer any of the proposed research questions. Specifically, these adult-focused measures were included to describe the adult sample (e.g., psychological characteristics beyond typical demographics of gender and ethnicity) and were intended for exploration in the event that null effects were found for hypotheses related to context.

Child Survey

Student Outcomes. On the child survey**,** three student outcomes were assessed at the three data collection points (i.e., Time 1, Time 2, and Time 3): self-regulation, executive functioning, and well-being. Self-regulation and executive functioning were selected because they represent short-term outcomes that are expected to emerge from participation in YES and are directly related to the protective processes' scholars have suggested are important to promote in all children, but particularly those exposed to ACEs. Well-being was selected because it represents a longer-term outcome that may emerge from participation in YES and is an important outcome to assess to determine whether the intervention promotes wellness for students. As a set,

these outcomes not only represent those the YES program could theoretically impact given its program strategies and activities, but also outcomes aligned with research on promoting positive development for children affected by ACEs.

Self-Regulation. Self-regulation was assessed via selected items from Panorama Education's (2017) Self-Management scale. The 10-item measure was developed by education researchers and practitioner for use in the school setting with children in grades 3 - 12 and is currently utilized in over 1,000 schools across the country for formative learning purposes. Consistent with how developmental scholars operationalize self-regulation as a multifaceted construct, (i.e., an ability that involves the capacity to regulate attention, emotions, and behavior) this measure includes items related to each of these three dimensions. This measure has been pilot-tested utilizing data from students in three diverse public and charter school contexts and have strong evidence of reliability and validity (West et al., 2018).

Given survey fatigue considerations and survey administration time restraints, the full 10-item measure was not administered. Rather, a total of six items were selected for inclusion; those aligned with regulation of attention (e.g., "In the last month, how often have you paid attention and ignore distractions?"), regulation of emotion (e.g., "In the last month, how often have you been able to keep your temper under control?") and regulation of behavior ("In the last month, how often have you followed directions in class?"). Participants were asked to indicate how often the descriptions applied to them in the last month by utilizing a 4-point Likert scale from one (*never*) to four (*all of the time*). Following data validation procedures, scores were averaged across all six items to create a single composite score. Higher scores on the composite indicate higher levels of self-regulation while lower scores indicate lower levels of self-regulation.

Across all three time points, items from this scale demonstrated normality with skew and kurtosis values less than the absolute value of two. Additionally, Cronbach's alpha was acceptable across administration periods (Time 1 $\alpha = .66$, Time 2 $\alpha = .71$, Time 3 $\alpha = .74$.) Refer to Appendix A, B, and C for complete item-level descriptive analyses.

Executive-Functioning. To assess two related but distinct executive functioning skills, executive functioning was assessed with eight items from the National Youth Outcome Inventory (NYOI), developed by the Boys and Girls Club of America (2017). The NYOI is currently used with children nationwide to assess developmental change across time, as a result of BGCA participation, and has strong evidence of reliability and validity with children aged 9-12 (Boys and Girls Club of America, 2018).

Again, given survey fatigue considerations and survey administration time restraints, the full eight-item measure was not administered. Rather three items were selected from the NYOI's *responsible decision-making* subscale and three items from the NYOI's *impulse control* scale to represent this construct. Sample items from the *responsible decision-making* scale include descriptions of various behaviors including, "Thinking about what might happen before I make a decision", "Thinking of different ways to solve a problem". Sample items from the *impulse control* scale include items such as, "Thinking carefully about what you say before you speak" and "Staying calm when you feel stressed.". Participants were asked to indicate how hard or easy these behaviors are for them by utilizing a 4-point Likert scale from one (*very hard*) to four (*very easy*). Following data validation procedures, scores were averaged across all six items to create a single composite score. Higher scores on this composite indicate higher levels of executive functioning skills while lower scores on indicate lower levels of executive functioning skills.

Across all three time points, items from this scale demonstrated normality with skew and kurtosis values less than the absolute value of two. Additionally, Cronbach's alpha was high across administration periods: Time 1 $\alpha = .79$, Time 2 $\alpha = .80$, Time 3 $\alpha = .81$. Refer to Appendix A, B, and C for complete item-level descriptive analyses.

Well-Being. Well-being was assessed via selected items from Sterling's Children's Well Being Scale (SCWBS; Liddle & Carter, 2015). The 12-item SCWBS draws upon current theories of well-being and positive psychology and is designed to be a holistic, positively worded measure of emotion and psychological well- being in children. This measure was selected because it was purposefully designed as a field tool to assess the effectiveness of interventions and programs aimed at promoting well-being and positive emotional development in children. The measure assesses *positive outlook on life* (six items) and *positive emotional state* (six items) in children aged 8 to 15. This scale was previously tested for reliability and validity utilizing a sample of 1849 children and yielded strong psychometric properties (Liddle & Carter, 2015).

Again, given the need to limit survey fatigue and survey administration time for the sample of students, the full 12-item measure was not administered. Rather, a total of eight items were selected: four items from each of the two subscales. Sample items from the *positive outlook on life* subscale include: "I think good things will happen in my life" and "I think there are many things I can be proud of". Sample items from the *positive emotional state* subscale include: "I have been feeling calm" and "I have been in a good mood". Participants were asked to indicate how often the statements applied to them in the last month by utilizing a 4-point Likert scale from one (*never*) to four (*all of the time*). Following data validation procedures, scores were averaged across all eight items to create a single composite score. Higher scores on the

composite indicate higher levels of well-being while lower scores indicate lower levels of well-being.

Across all three time points, SCWBS data demonstrated normality with skew and kurtosis values less than the absolute value of two. Additionally, Cronbach's alpha was high across administration periods: Time 1 $\alpha = .81$, Time 2 $\alpha = .86$, Time 3 $\alpha = .87$. Refer to Appendix A, B, and C for complete item-level descriptive analyses.

Student Risk Related to ACEs. Three constructs were selected and assessed to *approximate the psychosocial risk associated with cumulative ACEs:* perceived stress, attachment insecurity, and access to emotion regulation strategies, with the empirically-supported rationale that children with high ACE scores typically evidence higher levels of stress (Shonkoff et al., 2012), higher levels of attachment insecurity (Blodgett, 2014; Murphy et al., 2014), and less access to effective coping strategies (Taylor & Stanton, 2007). As will be further described in the analytic approach and data validation sections of this chapter, it was hypothesized that children who score high on these three risk measures may represent those with higher psychosocial risk, potentially associated with having a higher ACE score. A latent profile analysis (LPA) was conducted to identify typologies of risk based on these three measures and create categorical groups of children who represent low, medium, and high risk, as a way to represent those who may have an ACE score of less than one, two to three, or four or more, respectively.

Perceived Stress. To date, the most widely used psychological instrument for measuring an individual's perception of stress is Cohen and colleague's (1983) Perceived Stress Scale (PSS). PSS items are designed to assess the extent to which individuals perceive their life to be unpredictable, uncontrollable, and overloaded. Several studies have examined the psychometric

properties of the PSS and have found evidence for the scale's reliability, construct validity, and predictive validity.

However, given that the PSS is normed for use with community-based adults aged 18 and older, and no measure currently exists to assess this construct in elementary-aged children, perceived stress was assessed via five items created by the researcher, inspired by Cohen and colleagues' (1983) original scale. Items asked participants to consider how often certain descriptors applied to them in the last month by utilizing a 4-point Likert scale from one (*never*) to four (*all of the time*). Developed items included how often participants: "…felt stressed about something going on at home", "felt stressed about something going on at school", "felt stressed about problems with friends or other kids at school", "felt that something important in [their] life has gone wrong", and "felt angry because of something outside of [their] control". Following data validation procedures, scores were averaged across all five items to create a single composite score. Higher scores indicate higher levels of perceived stress (and therefore greater risk) while lower scores indicate lower levels of perceived stress.

This construct was administered at all three time points, though only Time 1 scores were used for the treatment group and Time 2 scores were used for the delayed treatment group, in an effort to capture pre-intervention scores for both groups. Across all three time points, items from this scale demonstrated normality with skew and kurtosis values less than the absolute value of two. Additionally, Cronbach's alpha was high across administration periods: Time 1 $\alpha = .75$, Time 2 $\alpha = .75$, Time 3 $\alpha = .76$. Refer to Appendix A, B, and C for complete item-level descriptive analyses.

Attachment Insecurity. Attachment insecurity was assessed using Brenning and colleague's (2014) Experiences in Close Relationships – Revised Child (ECR-RC) measure. The

ECR-RC is a 12-item measure that assesses levels of general attachment avoidance (six items) and attachment anxiety (six items) in middle childhood and early adolescence. The ECR-RC is an adapted version of the ECR-R which is one of the most frequently used measures of attachment insecurity in adults. Previous studies have examined the psychometric properties of the ECR-RC and have found that it is a reliable and psychometrically sound instrument for assessing general relationship avoidance and anxiety in children.

Again, given survey fatigue considerations and survey administration time constraints, the full 12-item measure was not administered. Rather, four items were selected to represent attachment avoidance, and three items were selected to represent attachment anxiety. Sample items from the *attachment avoidance* subscale include: "I usually talk to my parent/guardian about my problems and worries" and "When I feel bad, it helps to talk to my parent or guardian". Sample items from the attachment anxiety subscale include: "I am worried that my parent/guardian doesn't really love me" and "I sometimes think my parent/guardian has changed their feelings about me without any reason." Participants were asked to respond to all seven items on a 4-point Likert scale from one (*strongly disagree*) to four (*strongly agree*). For ease of interpretability, items from the attachment avoidance subscale were reverse-coded to fall in the same direction as the items from the attachment anxiety subscale. After this reverse coding was conducted, scores were averaged for both subscales, with higher scores on both subscales indicating higher levels of attachment insecurity (and therefore greater risk) while lower scores indicating higher levels of attachment security (and therefore lower risk).

This construct was only assessed once (i.e., at Time 1), given the theorized stability of attachment security in middle childhood. This scale demonstrated normality with skew and kurtosis values less than the absolute value of two. Additionally, Cronbach's alpha for both

subscales: avoidance $\alpha = .85$; anxiety $\alpha = .84$. Refer to Appendix A for complete item-level descriptive analyses.

Access to Emotion Regulation Strategies. Access to emotion regulation strategies was assessed via selected items from Gratz & Roemer's (2004) Limited Access to Emotion Regulation (LAERS) subscale. This six-item subscale is part of the Difficulties with Emotion Regulation Scale, a 36-item measure that assesses six domains of emotion dsyregulation and is considered the most comprehensive measure to date on emotion regulation. While the DERS measure is designed to holistically capture an individual's difficulties with emotion regulation, the six items from the Limited Access to Emotion Regulation subscale specifically assesses the extent to which individuals perceive having access to effective regulation strategies during times of distress. A recent study (Weinberg & Klonsky, 2009) examined the psychometrics properties of the DERS in a community sample of 428 adolescents (aged 13-17) and found evidence of excellent internal consistency (alphas ranged from .76 to .89) and construct validity (the DERS exhibited robust correlations with several measures psychological problems).

Again, given survey fatigue considerations and survey administration time restraints, the full six-item subscale was not administered. Rather, three items were selected for inclusion. These items include: "When I'm upset, it takes me a long time to feel better," "When I'm upset, I believe there is nothing I can do to make myself feel better," and "When I'm upset, I believe that I will stay that way for a long time." Participants were asked to indicate how often these descriptions applied to them by utilizing a 4-point Likert scale from one (*never*) to four (*all of the time*). Following data validation procedures, scores were averaged across all three items to create a single composite score, with higher scores indicating less perceived access to effective

strategies (and therefore greater risk) and low scores indicating more perceived access to effective strategies (and therefore lower risk).

This construct was administered at all three time points, though only Time 1 scores were used for the treatment group and Time 2 scores were used for the delayed treatment group, in an effort to capture pre-intervention scores for both groups. Across all three time points, items from this scale demonstrated normality with skew and kurtosis values less than the absolute value of two. Additionally, Cronbach's alpha was high across administration periods: Time 1 $\alpha = .71$, Time 2 $\alpha = .77$, Time 3 $\alpha = .81$. Refer to Appendix A, B, and C for item-level descriptive analyses.

Student Proximal Processes. Three proximal processes were assessed at various time points: caring relationships with adults, daily use of YES practices, and various dimensions of YES program experience. These processes were selected for assessment because they represent the processes hypothesized to account for the change in children's outcomes as a result of children and adults participating in the YES intervention. They also represent different ways of operationalizing Bronfenbrenner's varying conceptualizations of proximal processes, which includes the quality of children's daily interactions with others (i.e., caring relationships at home and school), daily practices and activities (i.e., YES breathing practices), and experience in a particular context (i.e., program experience).

Caring Relationships with Adults. Caring relationships with adults was assessed using the California Healthy Kids Survey's (2001) Caring Relationships and High Expectations with Adults scale. This scale is a 14-item measure that assesses the quality of relationships that children experience with adults at *home* (seven items) and at *school* (seven items). This scale is routinely used in schools across California as part of the Resilience survey module and has

obtained consistent evidence of reliability and validity across many demographic populations (Constantine & Benard, 2001).

Because the scale is intended for youth aged 13 and older, wording on this measure was slightly adapted by the researcher for developmental appropriateness and for use with the study's elementary-aged sample. Sample items from the *home* subscale include: "In my home, there is a parent or other adult who listens to me when I have something to say", "…who talks with me about my problems or worries", and "….who notices when I'm upset." Sample items from the *school* subscale are similarly worded (e.g., "At my school, there is a teacher or some other adult who listens to me when I have something to say," and "who talks with me about my problems and worries." Only one item is different between the school and home subscales: for home, students are asked about a parent or adult who "… expects me to follow the rules;" for school, students are asked about a teacher who "…tells me when I do a good job." Participants were asked to indicate how true these statements are about the adults they interact with at home and school utilizing a 4-point Likert scale from one (*not at all true*) to four (*very much true*). Following data validation procedures, scores were then averaged for each subscale with higher scores indicating higher quality relationships with adults at home and at school.

This construct was assessed at all three time points. Across all three time points, items from this scale demonstrated normality with skew and kurtosis values less than the absolute value of two. Additionally, Cronbach's alpha was high across administration periods for the home subscale (Time 1 $\alpha = .83$, Time 2 $\alpha = .87$, Time 3 $\alpha = .89$) as well as the school subscale (Time 1 $\alpha = .87$, Time 2 $\alpha = .86$, Time 3 $\alpha = .87$) Refer to Appendix A, B, and C for complete item-level descriptive analyses.

YES Program Practice Use. Daily use of YES breathing practices was assessed with seven items developed collaboratively by the researcher and the YES program. The items assessed at post-intervention (i.e., Time 2 for treatment group; Time 3 for delayed treatment control group), the extent to which the students used the breathing practices in their daily lives. Items include use in two key contexts ("How often have you used the breathing practices you learned in the YES program… *at home*?" and "…*at school*") as well as use in specific circumstances ("… to calm yourself down," "… to help you focus," "…to help you relax," "…to give yourself energy"). Participants were asked to indicate how often they utilize these practices on a 4-point Likert scale from zero (*never*) to three (*once or more a day*). Scores were averaged across all 7 items with higher scores indicating more frequent utilization of YES breathing practices in their daily lives.

Across both time points, items from this scale demonstrated normality with skew and kurtosis values less than the absolute value of two. Additionally, Cronbach's alpha was high: Time 2 $\alpha = .89$ and Time 3 $\alpha = .74$ Refer to Appendix A, B, and C for complete item-level descriptive analyses.

YES Program Experience. Four constructs were assessed at various time points to understand children's perception of the YES program experience: program buy-in prior to the intervention (at Time 1 for all students), as well as program satisfaction, teacher satisfaction, and program attribution after participating in the intervention (Time 2 for treatment group; Time 3 for delayed treatment control group). These constructs were selected to capture differences in how students might experience the YES program, and to also test how these differences might later moderate program outcomes. All items listed below were developed collaboratively by the researcher and the YES program. Participants were asked to respond to statements using a 4-

point Likert scale from one (strongly disagree) to four (strongly agree). Following data validation procedures, scores were then averaged for each subscale with higher scores indicating more favorable program perceptions while lower scores indicate less favorable program perceptions.

Program interest was assessed using five items at Time 1. Sample items included: "I am excited about participating in the YES program again," "The YES program teaches me useful skills," "The YES program is fun." Items from this scale demonstrated normality with skew and kurtosis values less than the absolute value of two. Additionally, Cronbach's alpha was high, with a value of $\alpha = .89$. Refer to Appendix A for complete item-level descriptive analyses.

Program satisfaction was assessed using four items at Time 2 and Time 3. Sample items include: "I liked being in the YES program," "I thought the YES program was helpful," and "I want to be in the YES program again next year." Items from this scale demonstrated normality with skew and kurtosis values less than the absolute value of two. Additionally, Cronbach's alpha was high across both time points: Time 2 $\alpha = .89$ and Time 3 $\alpha = .74$. Refer to Appendix B and C for complete item-level descriptive analyses.

Teacher satisfaction was assessed using four items at Time 2 and Time 3. Sample items included: "The YES teacher cares about me" and "I want to learn more from the YES teacher next year." Items from this scale demonstrated normality with skew and kurtosis values less than the absolute value of two. Additionally, Cronbach's alpha was high across both time points: Time 2 $\alpha = .89$ and Time 3 $\alpha = .88$ Refer to Appendix B and C for complete item-level descriptive analyses.

Lastly, *program attribution* was assessed using seven items at Time 2 and Time 3, designed to assess the areas and extent to which children feel that YES participation made a difference in their lives. All items begin with the stem, "Because I participated in the YES

program…" and end with seven different outcomes including: "I feel happier," "I feel more relaxed," and "I focus better in class." Items from this scale demonstrated normality with skew and kurtosis values less than the absolute value of two. Additionally, Cronbach's alpha was high across both time points: Time 2 α = .93 and Time 3 α = .91 Refer to Appendix B and C for complete item-level descriptive analyses.

Student Demographics. Basic demographic questions were collected from all students at Time 1, including gender, grade, ethnicity, school, and previous program exposure. These measures were included for both descriptive and analytical control purposes.

Adult Measures

Adult Survey. An adult survey was administered to the parents and teachers who signed consent forms and who had children/students involved in the YES program. At Time 1, the survey assessed three constructs intended to examine baseline need for a stress management program like YES: (1) *satisfaction with life*, utilizing 5 items from the Satisfaction with Life Scale (SWLS; Diener et al., 1985), (2) *perceived stress,* utilizing 10 items from the Perceived Stress Scale (PSS; Cohen et al., 1994), and (3) *difficulties with emotion regulation,* utilizing 8 items from the Difficulties with Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The survey also included basic demographic questions (i.e., age, gender, ethnicity, relationship to the child, level of education obtained). Cronbach's alpha was high for both parents (SWLS α = .89; PSS α = .83, DERS α= .88) and teachers (SWLS =.85, PSS =.90 and DERS = .90). Refer to Appendix D and G for complete item-level descriptive analyses.

Adults who also participated in the YES Workshop for Adults were asked to complete this survey at least one other time during the study period: adults assigned to the treatment group were surveyed again at Time 2, while adults assigned to the delayed treatment group were

surveyed again at Time 3. These follow-up surveys assessed the same three constructs at Time 1, but importantly, also included one additional survey construct related to participation in the YES Workshop for Adults. This survey construct assessed *use of YES practices.* Both parents and teachers who completed the YES Workshop for Adults were asked to report how often they used the YES breathing practices they had learned in the YES workshop within the last month. Five items were used to ask about their use in specific circumstances for themselves (e.g., "…to help you relax," "…to help you focus"), while five items were used to ask about use with their child/student (e.g., "…to help your child/students relax" and "…to help your child/students focus"). Adults were asked to indicate how often they used these practices utilizing a 4-point Likert scale from zero (*never*) to three (*once or more a day*). Scores were averaged across all 10 items with higher scores indicating more frequent utilization of YES practices in their daily lives. Cronbach's alpha was high for both parents (α = .82 to .89) and teachers (α= .78 to .93). Refer to Appendix E, F, and H for complete item-level descriptive analyses.

Lastly, teachers at Time 3 were also asked to respond to four additional survey constructs related to YES program implementation: (1) *satisfaction with student programming*, utilizing seven items developed by the YES program, (2) *perception of student impact*. utilizing five items developed by the YES program, (3) *perceived value of breathing practices*, utilizing five items developed by the YES program, and (4) *perceived value of SEL lessons*, utilizing five items developed by the YES program. These measures were intended as an additional implementation quality and fidelity check related to student programming. Teachers were asked to respond to these items using a 5-point Likert scale from one (*strongly disagree*) to five (*strongly agree*). Higher scores indicated more favorable perceptions of YES programming for students while lower scores indicate less favorable program perceptions. Because Cronbach's alpha was

variable across these four constructs (α = .36 to. 81), descriptives within the Results chapter are only reported at the item-level, instead of at a composite level. Refer to Appendix I for complete item-level descriptive analyses.

It is important to remember that this adult survey was not intended to be a primary measure within the study, but rather a method for describing the sample of adults involved in the study at Time 1 (to determine baseline need for a stress reduction program); as a fidelity check at Time 2 and 3 (to determine whether adults who participated in the workshop actually used any of the practices they learned at the workshop); and as an additional quality check on student programming from an adult perspective at Time 3 to supplement student perspective. It was conceptualized that negative responses to these items could help explain lack of intervention effects if null findings occurred in later analyses.

Refer to Appendix D, E, and F for complete item-level descriptive analyses for parent responses at Time 1, Time 2, and Time 3, and refer to Appendix G, H, and I for teacher responses at Time 1, Time 2, and Time 3 respectively.

Adult post-workshop survey. Lastly, a post-workshop survey was administered on the final day of adults' workshop experience to the parents and teachers who attended the YES Workshop for Adults. The survey assessed four primary constructs intended to understand adults' experiences with the YES workshop: (1) *workshop satisfaction*, utilizing five items, (2) *facilitator satisfaction*, utilizing 5 items (2) *perception of knowledge and skill gain*, utilizing seven items and (4) *intention to use practices in the future*, utilizing two items. All items were developed by the YES program. Participants were asked to respond to these items using a 5-point Likert scale from one (strongly disagree) to five (strongly agree). Higher scores indicated more favorable workshop perceptions while lower scores indicate less favorable program perceptions.

Cronbach's alpha was high for parent and teacher responses to this workshop survey (α range = .89 to .99). However, skew values were of concern. While items from this survey generally demonstrated normality with skew and kurtosis values less than the absolute value of two for *teacher* respondents, nearly all items demonstrated negative skew values for parent respondents, suggesting that nearly all parent workshop attendees rated their workshop experience extremely positively with very little variability. Refer to Appendix J for complete item-level descriptive analyses for parent responses and Appendix K for teacher responses.

Similar to the adult survey described above, the post-workshop survey was not intended to be a primary measure within the study and should not be conceptualized as a way to examine the effectiveness of the training (as such analyses are outside of the scope of the proposed study). Rather, this measure was developed to explore if adults were satisfied with training, felt they learned anything of use, and if they have intentions to use knowledge and practices learned. Negative responses to these items could help explain lack of "context effects" if null findings occurred in later analyses.

Analytic Approach

Upon receipt of the data, student, parent, and teacher data were cleaned and prepared for analysis using *SPSS 24.0* software (IBM Corp, 2012). Steps for data cleaning included merging Time 1, Time 2, and Time 3 data for all participants into a single master file, coding missing data and categorial data, reverse coding negatively worded items, and other data preparation techniques. Descriptive statistics were also conducted to check for normality of the data (e.g., skew, kurtosis) for student, parent, and teacher data.

Next, confirmatory factor analyses (CFA) were conducted in R software to validate all primary data sources and to inform the development of higher-order constructs from the

individual scales. CFA models were evaluated using two absolute fit indices (Chi-square test of model fit; Root mean square error of approximation, RMSEA), and two comparative fit indices (Comparative Fit Index, CFI; Tucker-Lewis Fit Index, TLI). Substantive assessments of the model fit will be described in the study validation section below. Additionally, reliability analyses were conducted using Cronbach's alpha for all the primary measures in the study. Based on the CFA model fits and reliability analyses, mean composites were created for all primary measures at Time 1, Time 2, and Time 3.

Next, consistent with procedures associated with a standard waitlist-control group design (Shadish et al., 2002), student pre-test and post-test scores were developed for all primary student measures utilizing data collected at Time 1, 2, and 3. This step was conducted to increase the sample size for testing hypotheses that were unrelated to treatment/delayed treatment group differentiation. Given that these pre-test and post-test scores (rather than Time 1, Time 2, and Time 3 data) were utilized to test the majority of hypotheses within this study, this particular process will be described more thoroughly in the data preparation section below.

Next, to develop the proxy measure for ACEs-related risk (i.e., an essential first step to test hypotheses related to RQ3), latent profile analysis (LPA), a person-centered approach to analysis, was conducted in R software to identify student typologies of risk based on pre-test scores of perceived stress, attachment insecurity, and access to emotion regulation strategies. Latent profile analysis (LPA) was selected as the most appropriate statistical technique because of its unique ability to assign individuals to one mutually exclusive group based on their responses to observed variables of interest (Lanza et al., 2003; Lanza & Rhoades, 2013). Such a procedure allows for the development of distinct risk groups that demonstrate *within group homogeneity* (strong similarities to those within the same latent class) while also accounting for

and reflecting *between group heterogeneity* (clear distinction from other classes). The hope was that the risk groups derived from the LPA might reflect categorically different typologies of risk that would conceptually mirror the risk groups from the ACEs literature of low risk (0-1 ACE), moderate risk (2-3 ACEs), and high risk (4 or more),

To identify the best fitting model from the data collected, latent profile models were fitted to the hypothesized four-variable risk dataset and contained three through six classes (i.e., profiles) to exhaust potential solutions for the available model. LPA model fit was compared using conventional fit indices: log-likelihood, Akaike information criteria (AIC), Bayes information criteria (BIC), and entropy. Substantive assessments of the model fit are described in the section below, as well as justification for the LPA solution that was selected and utilized in subsequent analyses.

Lastly, all mediation and moderation models used to test proximal processes for RQ4 were completed in SPSS using the PROCESS V3 macro developed by Hayes (2017). All models use traditional path analysis, and values for standardized weights, unstandardized weights, p-values, and confidence intervals are reported.

Data Validation and Preparation

The following section outlines the three primary data validation and data preparation techniques used to prepare the primary data sources: (1) confirmatory factor analyses (CFAs) at all three data collection time points to validate the primary study measures (i.e., student outcomes, student risk variables, student proximal processes); (2) the development of pre-test and post-test scores from the Time 1, Time 2, and Time 3 data; and (3) latent profile analysis (LPA) to develop the proxy measure for ACEs-related risk. These preparations were conducted prior to the substantive data analyses.

Confirmatory Factor Analyses

Confirmatory factor analyses (CFAs) were conducted on student outcomes (i.e., self-regulation, executive functioning, and well-being), ACEs-related risk variables (perceived stress, attachment insecurity, and access to emotion regulation strategies), and proximal processes (caring adults at home and school, program practice use, and program experience) to assess the factor structure of each proposed construct prior to developing composite variables.

Student Outcomes. Model fit indices for well-being, self-regulation, and executive functioning for Time 1, Time 2, and Time 3 are provided in Table 5. CFA models demonstrated excellent model fit for all three outcomes at Time 1, and acceptable model fit for Time 2 and Time 3. Furthermore, reliability analyses demonstrated that the survey items associated with student outcomes possessed good internal consistency for well-being at across all three time points; adequate internal consistency for self-regulation, and good internal consistency for executive functioning. Refer to Table 6 for standardized factor loadings and reliability statistics for all three outcomes across all three time points.

Table 5.
CFA Model Fit Indices for Student Outcome Variables at Time 1, Time 2, and Time 3

	Time 1					
	X^2	**df**	***p***	**RMSEA**	**CFI**	**TLI**
Well-Being CFA Model	30.993	20	0.055	0.051	0.972	0.961
Self-Regulation CFA Model	18.043	9	0.035	0.069	0.940	0.900
Executive Functioning CFA Model	24.781	9	0.003	0.092	0.953	0.921
	Time 2					
Well-Being CFA Model	67.145	20	<.001	0.106	0.922	0.891
Self-Regulation CFA Model	48.244	9	<.001	0.144	0.823	0.705
Executive Functioning CFA Model	42.241	9	<.001	0.133	0.910	0.849
	Time 3					
Well-Being CFA Model	72.287	20	<.001	0.112	0.926	0.896
Self-Regulation CFA Model	317.185	15	<.001	0.198	0.755	0.592
Executive Functioning CFA Model	70.446	9	<.001	0.181	0.854	0.757

Table 6.

Standardized Factor Loadings and Reliability Statistics for Outcome Variables

Construct	Survey Item	Time 1		Time 2		Time 3	
		Stand. Factor Loadings	α	Stand. Factor Loadings	α	Stand. Factor Loadings	α
Well-Being (8 items)	In the last month, how often have you…						
	… felt happy?	0.593		0.699		0.770	
	... got along well with other kids?	0.496		0.514		0.528	
	... been in a good mood?	0.682		0.765		0.754	
	... felt calm?	0.483		0.623		0.627	
	... thought that good things will happen in your life?	0.679	.81	0.652	.86	0.733	.87
	... thought that there are many things you can be proud of?	0.624		0.687		0.695	
	... thought that lots of people care about you?	0.630		0.733		0.719	
	... felt that you are good at many things?	0.574		0.595		0.668	
Self-Regulation (6 items)	In the last month, how often have you…						
	...come to class prepared?	0.611		0.533		0.366	
	...followed directions in class?	0.529	.66	0.708	.71	0.499	.74
	...gotten your work done right away instead of waiting until the last minute?	0.548		0.510		0.403	
	... paid attention and ignored distractions?	0.420		0.495		0.430	
	... stayed calm even when someone was bothering you or saying bad things to you?	0.479		0.574		0.820	
	... been able to keep your temper under control?	0.490		0.458		0.761	

Construct	Survey Item	Time 1 Stand. Factor Loadings	Time 1 α	Time 2 Stand. Factor Loadings	Time 2 α	Time 3 Stand. Factor Loadings	Time 3 α
Executive-Functioning (6 items)	How hard or easy is it for you to…						
	... stay calm when you feel stressed?	0.684		0.595		0.668	
	... think carefully about what you say before you speak?	0.590		0.710		0.677	
	... control your temper when you are upset?	0.736	.79	0.649	.80	0.734	.81
	... think of different ways to solve a problem?	0.546		0.534		0.584	
	... think about what might happen before you make a decision?	0.700		0.801		0.726	
	... ask for advice when making an important decision?	0.570		0.551		0.563	

ACEs-Related Risk Variables. Next, model fit indices for perceived stress, attachment avoidance, attachment insecurity, and access to ER strategies for Time 1 and Time 2 are provided in Table 7. CFA models demonstrated good model fit for perceived stress at both time points, good model fit for attachment avoidance and attachment anxiety at Time 1, but inconsistent model fit for access to ER strategies. However, reliability analyses demonstrated that the survey items associated with these risk variables demonstrated adequate internal consistency across relevant time points. Specifically, alphas ranged from .75 to .76 for perceived stress, .84 to .85 for attachment insecurity, and .71 to .81 for difficulties with emotion regulation. Refer to Table 8 for standardized factor loadings and reliability statistics for all four risk variables at the relevant time points.

Table 7.

CFA Model Fit Indices for Student-Level Risk Variables at Time 1 and Time 2

	Time 1 Fit Indices					
	X^2	**df**	***p***	**RMSEA**	**CFI**	**TLI**
Perceived Stress CFA Model	12.296	5	0.031	.084	0.968	0.935
Attachment Avoidance CFA Model	1.851	2	0.396	.000	1.000	1.000
Attachment Anxiety CFA Model	13.386	1	<.001	.002	0.951	0.853
Access to Strategies CFA Model	48.067	1	<.001	.000	0.521	0.438
	Time 2 Fit Indices					
	X^2	**df**	***p***	**RMSEA**	**CFI**	**TLI**
Perceived Stress CFA Model	27.919	10	<.001	0.148	0.901	0.802
Access to Strategies CFA Model	32.366	1	<.001	.000	0.832	0.496

Table 8.

Standardized Factor Loadings and Reliability Statistics for Risk Variables

		Time 1		Time 2	
Construct	Survey Item	Stand. Factor Loadings	α	Stand. Factor Loadings	α
Perceived Stress (5 items)	In the last month, how often have you...				
	... felt stressed about something going on at home?	0.663	.75	0.642	.75
	... felt stressed about something going on at school?	0.709		0.644	
	... felt stressed about problems with friends or other kids at school?	0.651		0.592	
	... felt that something important in your life has gone wrong?	0.640		0.643	
	... felt angry because of something outside of your control?	0.440		0.586	
Attachment Avoidance (4 items)	I tell my parent or guardian nearly everything. (r)	0.786	.85	--	--
	I usually talk to my parent/guardian about my problems & worries. (r)	0.774		--	
	When I feel bad, it helps to talk to my parent or guardian. (r)	0.712		--	
	It is easy for me to tell my parent or guardian a lot about myself. (r)	0.799		--	

Construct	Survey Item	Time 1 Stand. Factor Loadings	Time 1 α	Time 2 Stand. Factor Loadings	Time 2 α	Time 3 Stand. Factor Loadings	Time 3 α
Attachment Anxiety (3 items)	I am worried my parent or guardian doesn't really love me.	0.851				--	
	I am worried that my parent or guardian might want to leave me.	0.747		.84		--	--
	I sometimes think that my parent or guardian has changed their feelings about me without any reason.	0.801				--	
Access to ER Strategies (3 items)	When I'm upset…						
	... it takes me a long time to feel better.	0.508				0.821	
	... I believe there is nothing I can do to make myself feel better.	0.738		.71		0.835	.77
	... I believe that I will stay that way for a long time.	0.683				0.818	

Proximal Processes. Lastly, model fit indices for caring adult at school and home for Time 1, Time 2, and Time 3 are provided in Table 9, while model fit indices for YES practice use and YES program experience are provided in Table 10. CFA models demonstrated adequate model fit for caring adult at school and home at all three time points as well as adequate model fit for YES program use and experience variables at all three time points. Furthermore, reliability analyses demonstrated that the survey items associated with these proximal processes possessed adequate to strong internal consistency across relevant time points. Specifically, alphas ranged from .83 to .89 for caring adult at school, .86 to .87 for caring adult at home, .74 to .93 for program experience, and .88 to .89 for program use. Refer to Table 11 for standardized factor loadings and reliability statistics for caring adult at home and school, and Table 12 for program experience and use, respectively.

Table 9.

CFA Model Fit Indices for Caring Adult at Time 1, Time 2, and Time 3

	Time 1 Fit Indices					
	X^2	**df**	***p***	**RMSEA**	**CFI**	**TLI**
Caring Adult at School CFA Model	33.416	14	<.001	0.023	0.982	0.972
Caring Adult at Home CFA Model	58.846	14	<.001	0.124	0.928	0.891
	Time 2 Fit Indices					
	X^2	**df**	***p***	**RMSEA**	**CFI**	**TLI**
Caring Adult at School CFA Model	26.069	14	0.025	0.064	0.982	0.974
Caring Adult at Home CFA Model	61.212	14	<.001	0.127	0.923	0.884
	Time 3 Fit Indices					
	X^2	**df**	***p***	**RMSEA**	**CFI**	**TLI**
Caring Adult at School CFA Model	72.834	14	<.001	0.142	0.921	0.882
Caring Adult at Home CFA Model	57.682	14	<.001	0.122	0.942	0.913

Table 10.

CFA Model Fit Indices for Program Use and Experience at Time 1, Time 2, and Time 3

	Time 1 Fit Indices					
	X^2	**df**	***p***	**RMSEA**	**CFI**	**TLI**
YES Buy-In CFA Model	32.513	5	<.001	0.175	0.951	0.901
	Time 2 Fit Indices					
	X^2	**df**	***p***	**RMSEA**	**CFI**	**TLI**
YES Satisfaction CFA Model	0.426	2	.808	<.001	1.000	1.000
YES Teacher CFA Model	149.716	3	<.001	<.001	1.000	1.000
YES Use CFA Model	38.112	14	<.001	0.126	0.936	0.904
YES Attribution CFA Model	30.809	14	.006	0.105	0.970	0.956
	Time 3 Fit Indices					
	X^2	**df**	***p***	**RMSEA**	**CFI**	**TLI**
YES Satisfaction CFA Model	2.989	2	0.224	0.072	0.992	0.977
YES Teacher CFA Model	40.148	1	<.001	0.642	0.566	0.065
YES Use CFA Model	25.839	14	0.027	0.095	0.960	0.941
YES Attribution CFA Model	60.202	14	<.001	0.186	0.909	0.864

Table 11.

Standardized Factor Loadings and Reliability Statistics for Caring Adult Variables

Construct	Survey Item	Time 1 Stand. Factor Loadings	Time 1 α	Time 2 Stand. Factor Loadings	Time 2 α	Time 3 Stand. Factor Loadings	Time 3 α
Caring Adult at School (7 items)	My teacher at school...						
	... really cares about me.	0.697		0.733		0.738	
	... listens to me when I have something to say.	0.550		0.683		0.775	
	... notices when I'm upset.	0.698		0.808		0.735	
	... helps me feel better when I'm feeling sad, mad, or bad.	0.777	.83	0.841	.87	0.808	.89
	... talks with me about my problems or worries.	0.609		0.714		0.747	
	... tells me when I do a good job.	0.502		0.600		0.611	
	...believes in me.	0.673		0.714		0.737	
Caring Adult at Home (7 items)	In my home, there is a parent or some other adult who...						
	... really cares about me.	0.716		0.689		0.757	
	... listens to me when I have something to say.	0.681		0.749		0.846	
	... notices when I'm upset.	0.723		0.746		0.692	
	... helps me feel better when I'm feeling sad, mad, or bad.	0.760	.87	0.759	.86	0.758	.87
	... talks with me about my problems.	0.748		0.759		0.777	
	... expects me to follow the rules.	0.483		0.302		0.356	
	... believes in me.	0.774		0.730		0.820	

Table 12.

Standardized Factor Loadings and Reliability Statistics for Program Experience and Use

Construct	Survey Item	Time 1 Stand. Factor Loadings	Time 1 α	Time 2 Stand. Factor Loadings	Time 2 α	Time 3 Stand. Factor Loadings	Time 3 α
YES Buy In (5 items)	I like participating in the YES program.	0.895	.89	--	--	--	--
	The YES program is fun.	0.883		--		--	
	The YES program teaches me useful skills.	0.612		--		--	
	The YES program helps me feel better.	0.753		--		--	
	I am excited about participating in the YES program again.	0.811		--		--	
YES Satisfaction (4 items)	I liked being in the YES program.	--	--	0.926	.89	0.794	.74
	I thought the YES program was boring.	--		0.738		0.364	
	I thought the YES program was helpful.	--		0.781		0.776	
	I want to be in the YES program again next year.	--		0.882		0.839	
YES Teacher (3 items)	My YES teacher cares about me.	--	--	0.793	.84	0.576	.74
	My YES teacher is a good teacher.	--		0.914		0.843	
	I want to learn more from My YES teacher next year.	--		0.737		0.826	
YES Use (7 items)	How often do you use the breathing practices…	--	--		.89		.88
	… when you are at school?	--		0.623		0.632	
	… when you are at home?	--		0.720		0.626	
	… to calm yourself down?	--		0.751		0.788	
	… to help you focus?	--		0.843		0.678	
	… to help you relax?	--		0.764		0.834	
	… to give yourself energy?	--		0.700		0.749	
	… to help you sleep?	--		0.735		0.739	

Construct	Survey Item	Time 1 Stand. Factor Loadings	Time 1 α	Time 2 Stand. Factor Loadings	Time 2 α	Time 3 Stand. Factor Loadings	Time 3 α
YES Attribution (7 items)	Because I participated in the YES program...						
	... I feel happier.	--	--	0.808	.93	0.896	.91
	... I feel more relaxed.	--		0.911		0.903	
	... I feel less stressed.	--		0.784		0.777	
	... I focus better in class.	--		0.748		0.695	
	... I feel more in control.	--		0.872		0.757	
	... I get along better with other kids at school.	--		0.697		0.655	
	... I feel better.	--		0.859		0.879	

Development of Pre-test and Post-test Scores

Although data was collected from study participants (i.e., students, parents, and teachers) at three time points (i.e., Time 1, Time 2, Time 3), consistent with a randomized delayed-treatment control group design, many of the analyses proposed to answer several of the research questions in this study necessitated the transformation of these data into pre-test and post-test scores (Shadish et al., 2002).

To develop pre-test and post-test scores for the student sample, Time 1, Time 2, and Time 3 composites for each of the main constructs were copied into new pre-test and post-test variables. In essence, *pre-test* scores were created for the *treatment group* by copying *Time 1* values into a new pre-test composite variable, while pre-test scores were created for the *delayed treatment group* by copying *Time 2* values into the new pre-test composite variable (Time 1 values were ignored for the delayed group). Similarly, *post-test* scores were created for the treatment group by copying *Time 2* values into a new post-test composite variable, while the same was done for the *delayed treatment* group by copying *Time 3* values into the new post-test composite variable (Time 3 values were ignored for the treatment group).

This process of deriving pre-test and post-test scores for treatment and waitlist control groups is consistent with the standard waitlist control group approach and was conducted for two primary reasons: (1) to increase the sample size for the majority of analyses that were not dependent on examining differences between treatment and delayed control, and (2) to examine pre-intervention and post-intervention trends for the whole group (Shadish et al., 2002).

Latent Profile Analyses for ACEs-Related Risk Proxy

To identify the best fitting model for our ACEs-related risk proxy, latent profile models were fitted to the four variables hypothesized to be related to high ACEs exposure (i.e., pre-test composites for stress, attachment avoidance, attachment anxiety, and difficulties with emotion regulation) and contained three through six classes (i.e., profiles) to exhaust the available model. LPA model fit was compared using traditional fit indices of log-likelihood, Akaike information criteria (AIC), Bayes information criteria (BIC), and entropy. Smaller values of log-likelihood, AIC, and BIC indicate better fit to the data, or increased probability of replication, while higher values of entropy reflect greater accuracy in assigning individuals to a class and better distinctions (i.e., less "fuzziness") between groups. Model fit indices for all four solutions are reported in Table 13.

Table 13.

Fit Indices for the Latent Profile Analysis

	Model Fit Indices			
LPA Profiles	**Log-likelihood**	**AIC**	**BIC**	**Entropy**
3 classes	-1066.920	2169.839	2233.153	.753
4 classes	-1017.148	2080.296	2161.198	.942
5 classes	-1013.344	2082.689	2181.177	.899
6 classes	-1017.115	2100.229	2216.305	.658

Based on these conventional fit indices, results suggested that a four-class solution (i.e., four risk typologies) provided the best fitting model for the data (log-likelihood = -1017.15, AIC

= 2169.84, BIC = 2233.15, entropy = .94). However, upon examining the profile solutions for interpretability, the four-profile solution was less parsimonious and made less theoretical sense than the three-profile solution and also yielded too small of sample sizes per group to proceed with additional analyses (e.g., one class was comprised of only 13 participants). Adequate sample size was also an issue for the five-class and six-class solution, in which group sizes were further split and contained group sizes as low as eight participants.

Thus, the *three-profile solution* was selected given a balanced consideration of model parsimony as well as goodness of fit. Specifically, for the three-profile solution: (a) model fit indices were adequate (log-likelihood = -1066.92, AIC = 2169.84, BIC = 2233.15, entropy = .75), (b) conditional class probabilities for the three profiles were high suggesting clear distinctions between the three groups (range = .83 to .92), (c) the profile solutions were highly interpretable and evinced logical patterns (i.e., easy to define given patterns of means across the four ACEs-related risk indicators), and (d) sample sizes for each profile were adequate for follow-up analyses (range = 31 to 119).

To validate the three-profile solution selected, a one-way between-subjects ANOVA was conducted to test whether there were significant mean differences between the three profiles developed by the LPA on the four ACEs-related risk indicators (i.e., perceived stress, attachment avoidance, attachment anxiety, and difficulties with emotion regulation). Indeed, statistically significant mean differences were found across all three LPA risk profiles on all four indicators: perceived stress, $F(2, 211) = 58.80$, $p < .001$; attachment avoidance $F(2, 211) = 31.07$, $p < .001$; attachment anxiety $F(2, 211) = 37.07$, $p < .001$; and difficulties with emotion regulation $F(2, 211) = 389.73$, $p < .001$. Mean differences between groups ranged from .52 to 1.10 for perceived stress, .34 to 1.11 for attachment avoidance, .47 to 1.14 for attachment anxiety, and .95 to 2.03

for difficulties with emotion regulation. All mean differences were statistically significant ($p < .001$). Table 14 displays the individual means and standard deviations for each of the four ACEs-related risk indicators, as well as the sample size, for each of the three risk profiles. Figure 1 provides a visual depiction of the mean differences across the four indicators by risk profile.

Table 14.

Means and Standard Deviations for Risk Variables by Risk Profile

	N | Percent (of 214)	Perceived Stress *M* (*SD*)	Attachment Avoidance *M* (*SD*)	Attachment Anxiety *M* (*SD*)	Difficulties w Emo. Reg. *M* (*SD*)
Low Risk (Class 1)	119 | 55%	1.65 (.50)	1.73 (.65)	1.31 (.55)	1.55 (.36)
Moderate Risk (Class 3)	64 | 30%	2.27 (.60)	2.08 (.68)	1.80 (.74)	2.52 (.43)
High Risk (Class 2)	31 | 15%	2.77 (.70)	2.97 (.93)	2.47 (1.02)	3.59 (.41)

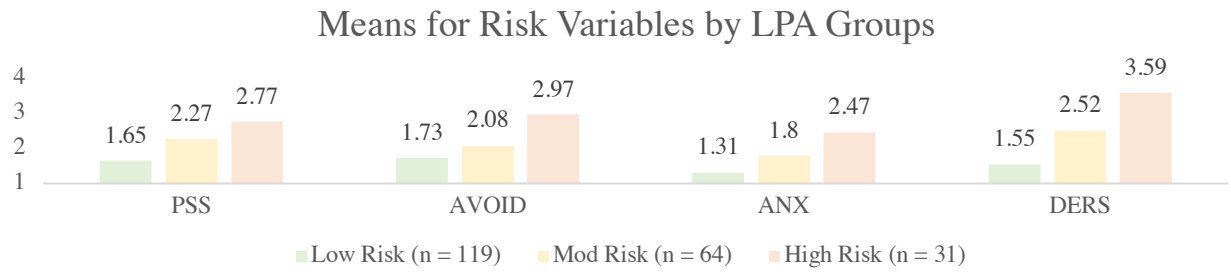

Figure 1. Pre-test means for ACEs-related risk variables by LPA risk profile ($N = 214$). Note: PSS = Perceived Stress; AVOID = Attachment Avoidance; ANX = Attachment Anxiety; DERS = Difficulties with Emotion Regulation

The three risk profiles were then named based upon the pattern of means across the four ACEs-related risk indicators. The first risk profile (Class 1) was described as "*Low Risk*" as students in this group were characterized by low levels of stress ($M = 1.65$, $SD = .50$), attachment avoidance ($M = 1.73$, $SD = .65$), attachment anxiety ($M = 1.31$, $SD = .55$) and difficulties with emotion regulation ($M = 1.55$, $SD = .36$). This group composed 55% ($n = 119$) of the study

sample and reflected a prevalence percentage similar to (but slightly lower than) the prevalence estimates for individuals with 1 or less ACEs in the seminal ACEs study (i.e., 62% of the seminal sample).

The second risk profile (Class 3) was described as "*Moderate Risk*", as students in this group were was characterized by moderate levels of stress ($M = 2.27$, $SD = .60$), attachment avoidance ($M = 2.08$, $SD = .68$), attachment anxiety ($M = 1.80$, $SD = .74$) and difficulties with emotion regulation ($M = 2.52$, $SD = .43$); all means values for this group were significantly higher than mean values in the "Low Risk" group described above. This moderate risk group composed 30% ($n = 64$) of the study sample and reflected a percentage similar to (but slightly higher than) the prevalence estimates for individuals with 2 to 3 ACEs in the seminal ACEs study (i.e., 26% of the seminal sample).

Lastly, the third risk profile (Class 2) was described as "*High Risk*, as students in this group were characterized by high levels of stress ($M = 2.77$, $SD = .70$), attachment avoidance ($M = 2.97$, $SD = .93$), attachment avoidance ($M = 2.47$, $SD = 1.02$) and difficulties with emotion regulation ($M = 3.59$, $SD = .41$). This group composed 15% ($n = 31$) of the study sample and obtained a percentage similar to (but slightly higher than) the prevalence estimates for individuals with 4 or more ACEs in the seminal ACEs study (i.e., 12.5% of the seminal sample).

To determine whether students within the three LPA groups differed significantly by key demographics, four chi square test of independence tests were conducted for gender, ethnicity, school, and grade. All chi-square tests were non-significant, suggesting that students within the three LPA classes did not differ significantly by *gender*, X^2 (2)= .708, $p = .702$; *ethnicity*, X^2 (8)= 6.99, $p = .537$; *school* X^2 (2)= 4.87, $p = .301$; or *grade level* X^2 (2)= .708, $p = .702$. Given these results, demographic controls were not determined as necessary for LPA-related analyses.

Description of YES Intervention Implementation

Before presenting study results, it is important to provide a description of intervention implementation to describe what the intervention actually entailed for students, parents, and teachers, and whether actual implementation deviated significantly from the intervention as planned. Details related to attendance, dosage, and participation are provided below for each group of participants as additional qualifiers to the results presented below.

Student Intervention

Students generally received the two-week YES Refresher programming as intended by the YES program. In short, all seven classrooms assigned to the treatment group received nine days of programming during Cycle 1 for 45 minutes per day, while all six classrooms assigned to the delayed treatment control group received nine days of programming during Cycle 2 for 45 minutes per day. Both intervention cycles were taught by one consistent YES teacher to ensure that all students in the study received programming from the same program facilitator. Student sessions generally followed the same routine: First, students engaged in light movement and yoga for the first five minutes, followed by 20 minutes of an activity or game that served as a refresher of an SEL lesson or breathing practice that students learned in previous years. The sessions ended with a 15-minute deep- breathing practice (i.e., a modified SKY breathing technique), intended to promote deep relaxation and meditation; students were encouraged to lay down on their yoga mat for relaxation, meditation, or rest for the remainder of the session.

While attendance records were not kept by the YES teacher during the program period, school attendance records were collected to approximate student dosage. Of the 227 students included in this study, 168 (74%) were present on all nine days of the program; 52 students (23%) were absent for one day, and only seven students (3%) were absent for two or more days.

Parent Intervention

Parent intervention deviated in two important ways from the program as intended; these issues were broadly related to sample size and dosage. Related to sample size, while all 227 parents in the sample were invited to participate in the YES Adult Workshop across the two intervention cycles, only a total of 15 parents attended: 10 from the treatment group in October and five from the delayed treatment group in November. While the small group size did not appear to negatively affect the quality of parents' experiences (see descriptives provided in Table 16), it did preclude several analyses that were dependent upon a large sample of parents co-participating in this intervention with their child. Greater detail is provided below.

Related to dosage, the YES Workshop for Adults is designed for 20 hours of programming. Such dosage would allow for parents to receive the program as intended, which typically entails five hours of programming across a four-day period, in which parents receive ample psychoeducation about stress and its negative impact on self and child, engage in multiple activities and discussions intended to deepen and personalize learning, and engage in extended practice of the SKY breathing techniques taught by the YES program. The latter is particularly important to facilitate proper use of "home breathing practice" long after the program ends.

However, as described in the Procedure section of this paper, actual dosage received by parent participants was five to seven hours, given modifications made to the length of the workshops after receiving feedback from the parent community that 20 hours was not feasible for most parents in the sample. As a result, the YES teacher truncated the 20-hour curriculum to seven hours of content across a two- or three-day period. Some parents did not complete all seven hours given lack of availability to attend all two or three days, arriving late or needing to leave early for personal reasons, or unforeseen issues with scheduling around the school

schedule. Such low dosage is particularly important to note, as extant literature suggests that adult-learning interventions typically recommends between 20-30 hours of dosage for change in skill or behavior to occur (Desimone, 2011; Guskey & Yoon, 2009). Modifications to dosage as well as incomplete attendance of the program meant that parents received less programming than intended and had less opportunities to practice the breathing techniques taught by the YES program, prior to program end.

Teacher Intervention

Teacher intervention deviated from intended programming in ways similar to the parent intervention. Related to sample size, although all 13 teachers were invited to participate in the YES Workshop for Adults, only five teachers attended. Additionally, all five teacher participants were a part of the same school (i.e., [Elementary 1]) as teachers from the other schools were unable to attend any of the scheduled workshop times. This deviation is important to note because it highlights that the sample of teachers who attended the workshop were disproportionately represented by [Elementary 1], the one school in the sample that is characterized by higher SES, and therefore potentially more resources.

Related to dosage, teachers also only received seven hours of programming across a two-day period; less than two of those seven hours were allocated to learning and practicing the SKY breathing techniques taught by the YES program. Similar to concerns noted above in the parent implementation section, it is important to note that seven hours of programming is considered insufficient dosage by most adult learning literature (e.g., Desimone, 2011, Guskey & Yoon, 2009).

Chapter III. Results

Descriptives and Correlations for Primary Study Variables

Descriptive statistics and correlations are provided below for the student, parent, and teacher data, respectively. As a reminder, the student variables are considered *primary* to the study, given their key role in directly answering the four research questions related to intervention effectiveness by time, context, person, and process. Therefore, these variables are described extensively below. In contrast, the parent and teacher variables are considered *secondary* as these measures were included primarily for descriptive, exploratory, and explanatory purposes, particularly in the event that null findings occurred in later analyses. Parent and teacher variables, therefore, are described less extensively in this section, but means are presented nevertheless as they will be referenced in later sections that detail study results.

Student Variables

Table 15 reports means, standard deviations, and correlations for the student variables. Student variables are organized by order of administration (i.e., pre and post) as well as by category (i.e., outcome variables, ACEs-related risk variables, and proximal process variables).

Significant positive correlations between all three student outcome variables (self-regulation, executive functioning, and well-being) at both time points (pre and post) indicated the interrelatedness of these three outcome variables, cross-sectionally as well as longitudinally. Additionally, significant negative correlations between these three outcomes variables and all four ACEs-related risk variables indicated that students with higher levels of risk (i.e., greater perceived stress, attachment avoidance and anxiety, and difficulties with emotion regulation) indeed tended to report lower outcomes at pre- and post-test. Furthermore, significant positive correlations between the three outcome variables and the proximal process variables suggest that

students with more positive YES program experiences, as well as those with caring adults at home and school, tended to report higher outcomes at pre- and post-test, especially for well-being and executive functioning. Lastly, there were notably less significant correlations between the four ACEs-related risk variables and the five program experience variables, suggesting less interrelatedness between ACEs-related risk and program experience in general. The only risk variable that consistently related to YES program experience was attachment avoidance, such that students who reported greater attachment avoidance were less likely to report positive program experiences at pre-test and post-test.

Considering all 17 study variables as a whole, study variables generally did not differ as a function of gender, ethnicity, school, or grade. However, a few exceptions did occur across the four demographic categories assessed, with the most significant differences for grade level. Significant differences by demographics included the following:

Gender differences were detected for one study outcome (i.e., self-regulation) and one proximal process (i.e., caring adult at school). For *self-regulation*, females ($M = 2.90$; $SD = .53$) reported significantly higher scores than males ($M = 2.68$, $SD = .56$), $t(225) = 29.93$, $p = .004$; M_{diff}=.214. For *caring adult at school*, females ($M = 3.33$, $SD = .57$) also reported significantly higher scores than males ($M = 3.16$, $SD = .57$); $t(224) = 2.14$, $p = .03$; $M_{\text{diff}} = .163$.

Ethnicity differences were also detected for one proximal process (i.e., caring adult at school. Specifically, for *caring adult at school,* Latinx students ($M = 3.30$) reported significantly higher scores than White students ($M = 2.81$), $F(2,221) = 2.87$, $p = .024$; $M_{diff} = 0.49$.

School differences were detected for one risk variable (i.e., access to emotion regulation strategies and one proximal process (i.e., YES program buy-in). For *access to emotion regulation strategies*, [Elementary 2] students ($M = 2.25$) reported higher scores, which indicates greater

difficulties accessing strategies, than [Elementary 3] students ($M = 1.84$), $F(2,223) = 3.122$, $p = .046$; $M_{diff} = 0.41$. For *YES program buy-in*, [Elementary 2] students also reported higher scores, indicating greater buy-in, than [Elementary 1] students, $F(2, 181) = 3.253$, $p = .041$; $M_{diff} = 0.24$.

Lastly, grade differences were detected for three risk variables (i.e., perceived stress, attachment avoidance, and access to emotion regulation strategies) and one proximal process variable (i.e., caring adult at school). For *perceived stress*, 5th grade students (M = 2.09) reported higher levels of stress than 6th grade students ($M = 1.78$), $F(2,222) = 4.21$, $p = .016$; $M_{diff} = 0.31$. A similar trend occurred for *access to emotion regulation strategies*, in which 5th grade students ($M = 2.28$) *and* 4th grade students($M = 2.25$) reported greater difficulties accessing emotion regulation strategies than 6th grade students ($M = 1.89$), $F(2,223) = 4.43$, $p = .013$); $M_{diff} = 0.39$ and 0.36 respectively). This trend of younger students reporting greater risk than older students was reversed for *attachment avoidance* in which 6th grade students ($M = 2.25$) reported greater attachment avoidance than 4th grade students ($M = 1.88$), $F(2,215) = 3.46$, $p = .033$; $M_{diff} = 0.37$. Lastly, for *caring adult at school*, 4th grade students ($M = 3.39$) reported high scores than 6th grade students ($M = 3.16$), $F(2,223) = 3.63$, $p = .028$, $M_{diff} = 0.23$.

Given significant demographic differences across several of the key variables, demographic controls were utilized in all analyses related to testing Hypotheses 1 thru 4.

Table 15.

Means, Standard Deviations, and Correlations Among Student Variables (N = 217- 227)

Student Variables	M *(SD)*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Outcomes: Pre-Test																	
1. Well Being	2.81 (.60)	-----															
2. Self-Reg	2.81 (.56)	.54***	-----														
3. Exec Func	2.64 (.65)	.54***	.55***	-----													
ACEs Risk: Pre-Test																	
4. Perc Stress	2.00 (.68)	-.51***	-.32***	-.46***	-----												
5. Attach Avoid	2.01 (.81)	-.51***	-.32***	-.39***	.25***	-----											
6. Attach Anx	1.63 (.80)	-.31***	-.24***	-.25***	.30***	.38***	-----										
7. Diff with ER	2.17 (.84)	-.43***	-.31***	-.44***	.51***	.38***	.41***	-----									
Proximal Processes																	
8. Caring Home	3.45 (.58)	.44***	.26***	.32***	-.14*	-.66***	-.38***	-.27***	-----								
9. Caring School	3.26 (.57)	.44***	.29***	.30***	-.15*	.40***	-.11	-.21***	.45***	-----							
10. YES Buy In	3.51 (.60)	.31***	.13	.14*	-.10	-.35***	-.14*	-.12	.31***	.33***	-----						
11. YES Satis	3.31 (.67)	.27***	.14*	.19**	-.02	-.36***	-.14*	-.06	.28***	.27***	.60***	-----					
12. YES Teacher	3.47 (.62)	.29***	.16*	.19**	-.05	-.36***	-.14*	-.03	.36***	.43***	.44***	.69***	-----				
13. YES Use	1.38 (.89)	.23**	.04	.16*	-.01	-.21**	-.04	.01	.13	.16*	.28***	.50***	.42***	-----			
14. YES Impact	3.09 (.74)	.47***	.19**	.30***	-.01	-.40***	-.11	-.17**	.32***	.38***	.47***	.70***	.64***	.58***	-----		
Outcomes: Post-Test																	
15. Well Being	2.85 (.63)	.66***	.35***	.35***	-.44***	.47***	-.27***	-.39***	.37***	.43***	.33***	.34***	.33***	.27***	.50***	-----	
16. Self Reg	2.81 (.60)	.46***	.62***	.45***	-.33***	.35***	-.21**	-.31***	.30***	.42***	.27***	.22**	.26***	.10	.30***	.55***	-----
17. Exec Func	2.67 (.65)	.52***	.46***	.76***	-.50***	.41***	-.27***	-.45***	.32***	.29***	.21**	.22**	.21**	.19**	.35***	.54***	.57*

Note. Self Reg = Self-Regulation; Exec Func = Executive Functioning; Perc Stress = Perceived Stress; Attach Avoid = Attachment Avoidance; Attach Anx = Attachment Anxiety; Diff w ER = Difficulties with Emotion Regulation; Caring Home = Caring adult at home; Caring School = Caring adult at school; YES Satis = YES satisfaction. All variables were rated by students on a scale from 1-4, with the exception of Post YES Use which was rated on scale from 0-3.

*p < .05 (two-tailed). **p < .01 (two tailed). ***p < .001 (two tailed).

Parent and Teacher Variables

Table 16 reports means and standard deviations for the parent and teacher variables. The first three categories (i.e., outcomes, workshop experience, and use of breathing practice) represent variables that both parents and teachers were asked to complete, therefore values are presented for both groups. The latter two categories (i.e., YES Buy In and YES Perceptions of Impact) were variables that only teachers were asked to respond to; therefore values are only presented for teacher responses. As a reminder, all variables were rated by parents and teachers on a scale from one to five, with the exception of Perceived Stress which was rated from zero to four and then summed to produce a normed score (max score = 40), and YES Practice Use which was rated on a scale from one (never) to four (once or more a day).

When examining mean values across the five categories, several themes are worth noting: First, in examining the adult outcomes that were intended to understand baseline need for a program like YES, both parents and teachers reported slightly elevated levels of perceived stress (parent M = 13.80; teacher M = 17.67), with teachers reporting higher levels of stress compared to the parents in the sample (M_{diff} = 3.87) as well as compared to a normed sample of community adults (M = 13) (Cohen et al., 1983; Cohen et al., 2012). Together, these findings suggested that the adults in this study, particularly the teachers who had elevated stress scores compared to a norm sample, could have indeed benefitted from a program like YES that was intended to reduce levels of stress. Both sets of adults, however, reported high satisfaction with life (parent M = 3.95; teacher M = 3.97) and low difficulties with emotion regulation (parent M = 1.89; teacher M = 2.33), suggesting less baseline need in those domains.

Next, in examining Workshop Experience for the adults who participated, both parents and teachers reported high levels of satisfaction with the workshop, immediately after

completing the workshop (parent $M = 4.45$; teacher $M = 4.56$). Both groups also indicated a high level of intent to use the breathing practices they had learned, immediately after completing the workshop (parent $M = 4.97$; teacher $M = 4.50$). However, both groups indicated infrequent use of breathing practices, in follow-up surveys at Time 2 and Time 3, both for self and with their child/students In general, parents reported using the breathing practices more often than the teachers, both when asked about use for self (parent $M = 2.83$, teacher $M = 1.88$,) as well as when asked about use with their child (parent $M = 2.60$, teacher $M = 2.40$). However, means for both groups indicated that both parents and teachers utilized the YES breathing practices, on average, at a frequency between once a month or once a week. This frequency is far less than the daily use encouraged by the YES program.

Lastly, teachers were asked about buy in for the program, pre-intervention, as well as their perceptions of effectiveness, post-intervention. In general, teachers had higher buy-in for student programming ($M = 4.42$) than adult programming ($M = 4.07$ to 4.11). Additionally, while perceptions of student satisfaction, at post-test, were high ($M = 4.26$), perceptions of student impact, at post-test, were moderate ($M = 3.60$), suggesting teachers had mixed feelings about the overall effectiveness of the intervention for students.

Table 16.

Means and Standard Deviations for Parent and Teacher Variables

	Parent (*N* = 89)		Teacher (*N* = 12)	
	N	*M (SD)*	*N*	*M (SD)*
Outcomes				
1. Satisfaction with Life	89	3.95 (0.83)	12	3.97 (0.61)
2. Perceived Stress	89	13.80 (6.32)	12	17.67 (6.28)
3. Difficulties with Emo Reg	89	1.89 (0.64)	12	2.33 (0.76)
YES Workshop Experience				
4. Workshop Satisfaction	15	4.45 (1.05)	5	4.56 (0.38)
5. Teacher Satisfaction	15	4.56 (1.04)	5	4.76 (0.35)
6. Knowledge Gains	15	4.40 (1.03)	5	4.11 (0.59)
7. Intent to Use	15	4.97 (0.22)	5	4.50 (0.55)
YES Practice Use				
8. For Self	14	2.83 (0.38)	5	1.88 (0.79)
9. With Child/Students	11	2.60 (0.73)	5	2.40 (0.55)
YES Buy-In (Pre)				
10. Student Refresher		*N/A*	12	4.42 (0.65)
11. Teacher Workshop		*N/A*	12	4.07 (0.82)
12. Parent Workshop		*N/A*	12	4.11 (0.46)
YES Perceptions (Post)				
13. Student Satisfaction		*N/A*	10	4.26 (0.33)
14. Student Impact		*N/A*	12	3.60 (0.34)
15. Student Breathing		*N/A*	12	4.05 (0.30)
16. Student SEL		*N/A*	12	4.00 (0.25)

Note. Emo Reg = emotion regulation; SEL = social emotional learning. All variables were rated by parents and teachers on a scale from 1-5, with the exception of Perceived Stress which was rated from 0-4 and then summed to produce a normed score, and YES Practice Use which was rated on a scale from 1-4.

Hypothesis 1: Intervention Effectiveness – Change Over Time Given Program Participation

Hypothesis 1 was comprised of two sub-hypotheses to examine change over time, given YES program participation, in two different ways. The first sub-hypothesis (H1a) was that students who participated in the YES program would have significant increases over time from pre-intervention to post-intervention on three sets of outcomes (i.e., self-regulation, executive functioning, and well-being). For this sub-hypothesis, all student participants were examined together ($N = 227$), regardless of whether they had been assigned to the treatment group or the delayed treatment group, by utilizing pre-test and post-test scores. The second sub-hypothesis (H1b) was that students in the treatment group ($n = 119$) would have greater change over time, compared to students in the delayed treatment control group ($n = 94$), when examining scores from Time 1 to Time 2—the period during which the treatment group had received the YES program, but the delayed treatment group had not. This sub-hypothesis was included to allow for more rigorous examination of program impact, utilizing a delayed treatment comparison group.

Hypothesis 1A

A repeated measures MANOVA was conducted to test for change over time from pre- to post-test on three student outcomes (i.e., self-regulation, executive functioning, and well-being) for the full intervention sample ($N = 227$ students), regardless of their assignment to the treatment or delayed treatment group. Contrary to our study hypothesis, there was no significant change over time, $F(3, 223) = .624, p = .60$[4]. Specifically, there were no significant differences between pre-test and post-test on *self-regulation*, $F(1, 225) = .047, p = .828, \eta_p^2 = .000$ (M_{pre} =

[4] $Wilks' Lambda\ \Lambda = .992$ (MANOVA accompaniment)
[5] Mauchly's test of sphericity was not violated for any of the outcomes. Correction was not applied.

2.81, SD_{pre} = .56; M_{post} = 2.81, SD_{post} = .60); *executive functioning*, $F(1, 225) = 1.409$, p =.236, η_p^2 = .006 (M_{pre} = 2.64, SD_{pre} = .65; M_{post} = 2.67, SD_{post} = .65); or *well-being*, $F(1, 225) = .951$, p =.330, η_p^2 = .004 (M_{pre} = 2.81, SD_{pre} = .60; M_{post} = 2.85, SD_{post} = .64). Rather, students reported nearly constant scores across both time points. See Table 17 for pre-test and post-test means and standard deviations for all three program outcomes.

Table 17.

Means and Standard Deviations for Pre-test and Post-test Program Outcomes (N = 227)

	Pre-test	Post-test
Outcome	*M (SD)*	*M (SD)*
Self-Regulation	2.81 (.56)	2.81 (.60)
Executive Functioning	2.64 (.65)	2.67 (.65)
Well Being	2.81 (.60)	2.85 (.64)

Hypothesis 1B

Next, a mixed factorial MANOVA was conducted to test for the main effect of change over time from Time 1 to Time 2 on three program outcomes (i.e., self-regulation, executive functioning, and well-being), the main effect of study assignment (i.e., treatment group vs delayed treatment control group) on program outcomes, as well as the interaction of time by study assignment. Support was not found for Hypothesis 1B in which a significant interaction effect was expected and greater rates of change for students in the treatment group compared to the delayed treatment group were hypothesized. While there was a main effect of time for self-regulation and well-being $F(3, 209) = 2.92$, p = .035, η_p^2 = .040), there was no main effect of study assignment, $F(3, 209) = 1.09$, p = .353, η_p^2 = .015, and no interaction effect of time by study assignment, $F(3, 209) = .326$, p = .807, η_p^2 = .005. Rather, analyses suggested that regardless of study assignment (i.e., treatment or delayed treatment), students in both groups

increased slightly from Time 1 to Time 2 on well-being and self-regulation at similar rates. See Table 18 for means and standard deviations for all three program outcomes at Time 1 and Time 2 by study assignment.

Table 18.

Means and Standard Deviations for Program Outcomes at Time 1 and Time 2 by Study Assignment ($N = 213$)

	Study Assignment			
	Treatment Group ($n = 119$)		Delayed Treatment ($n = 94$)	
	Time 1 *M (SD)*	Time 2 *M (SD)*	Time 1 *M (SD)*	Time 2 *M (SD)*
Self-Regulation	2.76 (.56)	2.81 (.62)	2.78 (.59)	2.88 (.55)
Executive Functioning	2.59 (.67)	2.63 (.68)	2.65 (.61)	2.71 (.64)
Well-Being	2.72 (.60)	2.78 (.66)	2.82 (.57)	2.95 (.59)

Hypothesis 2: Context Effects – Change Over Time by Adult Participation in YES Workshops

A mixed factorial MANOVA was conducted to test for the main effect of change over time from pre- to post-test on three program outcomes (i.e., self-regulation, executive functioning, and well-being), the main effect of adult participation in the YES Workshops(i.e., no adult, teacher only, parent only, both adults) on program outcomes, as well as the interaction of these two terms (change over time x adult participation in YES).

Contrary to the study hypothesis, there was no main effect of time, $F(3, 220) = 1.01$, $p = .388$, $\eta_p^2 = .014$; no main effect of adult YES participation, $F(9, 535) = 1.19$, $p = .300$, $\eta_p^2 = .016$; and no interaction effect of time by adult YES participation, $F(9, 535) = 1.04$, $p = .407$, $\eta_p^2 = .014$. Rather, analyses suggested that regardless of the condition of adult YES participation (i.e., no adult, parent only, teacher only, both adults), students across all four groups experienced

similar rates of non-significant change over time from pre- to post-test for self-regulation, $F(3, 222) = .608, p = .610, \eta_p^2 = .008$; and executive functioning, $F(3,222) = 1.239, p = .296, \eta_p^2 = .016$; and well-being, $F(3,222) = 1.194, p = .313, \eta_p^2 = .016$. See Table 19 for means and standard deviations for all three program outcomes at pre-test and post-test by the four adult participation groups.

Table 19.

Means and Standard Deviations for Program Outcomes at Pre-test and Post-test by Adult YES Participation ($N = 227$)

	Adult YES Participation							
	No adult ($n = 141$)		Parent only ($n = 6$)		Teacher only ($n = 69$)		Both adults ($n = 11$)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Self-Regulation	2.78 (.59)	2.78 (.63)	2.67 (.36)	2.44 (.23)	2.90 (.50)	2.93 (.56)	2.65 (.45)	2.76 (.58)
Executive Functioning	2.58 (.66)	2.64 (.66)	2.64 (.40)	2.36 (.65)	2.75 (.63)	2.78 (.63)	2.73 (.70)	2.68 (.68)
Well-Being	2.84 (.60)	2.86 (.66)	2.69 (.62)	2.58 (.66)	2.79 (.60)	2.87 (.58)	2.73 (.61)	3.00 (.79)

Hypothesis 3: Person Effects – Change Over Time by ACEs-Related Risk Proxy

Hypothesis 3 was comprised of two sub-hypotheses. The first sub-hypothesis (H3a) was that students' risk profile (i.e., high risk, moderate risk, low risk) would predict significant differences in pre-test scores on all three program outcomes (i.e., self-regulation, executive functioning, and well-being), such that higher risk students would report lower scores on all three outcomes than lower risk students, demonstrating a greater need for intervention. The second sub-hypothesis (H3b) was that students' risk profile would also influence differential rates of change over time, such that higher risk students would have steeper rates of change on all three outcomes, from pre-test to post-test, compared to students categorized as lower risk.

Hypothesis 3A

Consistent with hypothesis H3A, a one-way between-subjects ANOVA revealed that there was a significant effect of risk profile on all three study outcomes, such that the three risk profiles (i.e., high risk, moderate risk, and low risk) predicted significant differences in pre-test scores on self-regulation, $F(2, 211) = 11.25$, $p < .001$; executive functioning, $F(2, 211) = 30.09$, $p < .001$; and well-being, $F(2, 211) = 36.32$, $p < .001$.

Tukey HSD post-hoc tests were used for pairwise comparisons of means at pre-test for all three outcomes. First, for *self-regulation*, students in the high-risk group and the moderate risk group reported significantly lower self-regulation scores than students in the low risk group ($M_{diff} = -0.44$, $p < .001$ and $M_{diff} = -0.28$, $p = .002$, respectively), but students in the high-risk group and the moderate risk group did not differ significantly from each other ($M_{diff} = -0.15$, $p = .409$). See Figure 2.

Figure 2. Mean differences in pre-test self-regulation by risk profile ($N = 214$).

For *executive functioning*, Tukey HSD post-hoc tests revealed that all three risk groups had significantly different means from each other at pre-test. As shown in Figure 3, students in the high-risk group reported significantly lower executive functioning scores than students in the moderate risk group (M_{diff} = -0.32, p < .001) as well as the low risk group (M_{diff} = -0.81, p <.001). Additionally, students in the moderate risk group also reported significantly lower executive functioning scores than the low risk group (M_{diff} = -.0.48, p = .001).

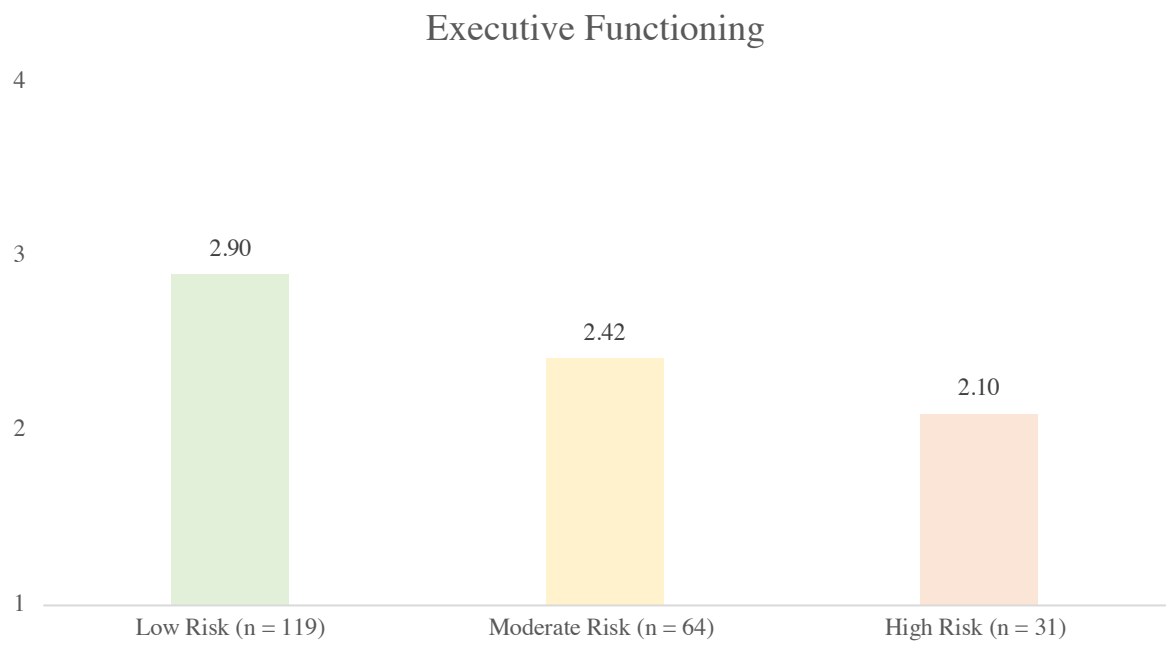

Figure 3. Mean differences in pre-test executive functioning by risk profile. (*N* = 214).

Similar trends were found for *well-being* in which all three risk groups had significantly different means from each other at pre-test. As shown in Figure 4, students in the high-risk group reported significantly lower well-being scores at than students in the moderate risk group (M_{diff} = -0.59, p < .001) as well as the low risk group (M_{diff} = -0.88, p <.001). Additionally, students in the moderate risk group also reported significantly lower well-being scores at pre-test than students in the low risk group (M_{diff} = -.0.29, p = .001).

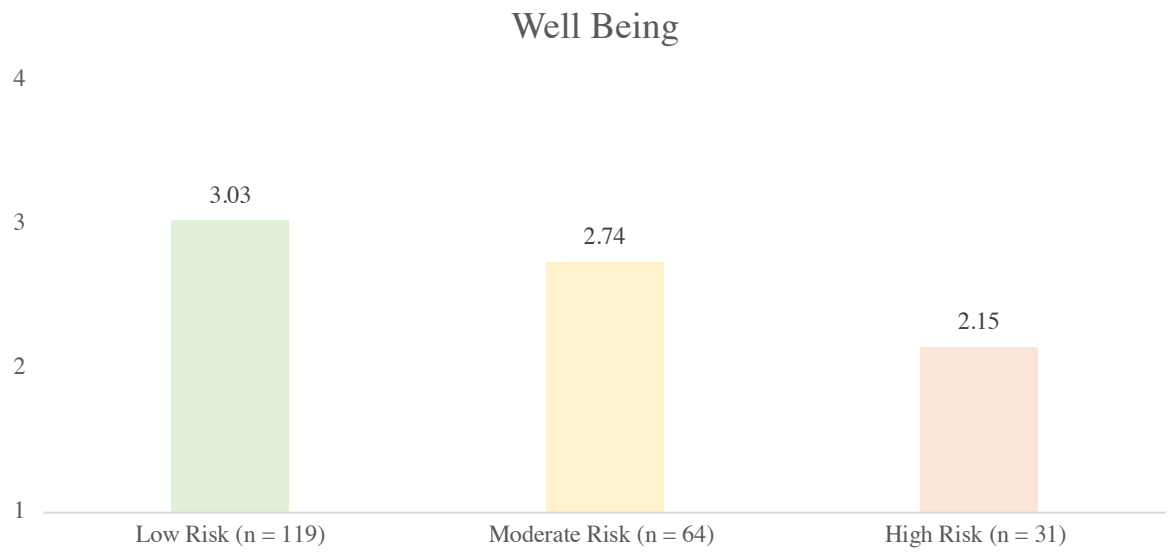

Figure 5. Mean differences in pre-test scores of well-being by risk profile ($N = 214$).

Hypothesis 3B

Next, to test Hypothesis 3B, a mixed factorial MANOVA was conducted to test for the main effect of change over time from pre- to post-test on three program outcomes, the main effect of student risk profile on program outcomes, as well as the interaction of these two terms. Support was not found for Hypothesis 3B in which differential rates of change over time were expected, depending on student risk profile. While there was a significant main effect of student risk profile on program outcomes $F(6, 418) = 1.17.56, p < .001, \eta_p^2 = .201$[6], there was no main effect of time, $F(3, 209) = .942, p = .421, \eta_p^2 = .013$; and no interaction effect of time by student risk group, $F(6, 418) = .322, p = .925, \eta_p^2 = .005$. Rather, analyses suggested that regardless of risk group, students in the sample experienced similar rates of non-significant change over time from pre-to post-test for self-regulation, $F(2, 211) = .218, p = .714, \eta_p^2 = .003$; executive functioning, $F(2,211) = .138, p = .871, \eta_p^2 = .001$, and well-being, $F(2,211) = .218, p = .804, \eta_p^2 =$

[6] Well-being, $F(2, 211) = 38.483, p < .001, \eta_p^2 = .267$; Self-regulation, $F(2,211) = 15.086, p < .001, \eta_p^2 = .125$; Executive functioning, $F(2,211) = 356.923, p < .001, \eta_p^2 = .254$

.002. See Table 20 for pre-test and post-test means and standard deviations for all three program outcomes by risk profile categorization, and Figures 5, 6, and 7 for visual depiction of pre-test to post-test change over time for each outcome, respectively.

Table 20.

Means and Standard Deviations for Program Outcomes at Pre-test and Post-test by Student Risk Profile ($N = 214$)

	Student Risk Profile					
	Low Risk ($n = 119$)		Moderate Risk ($n = 64$)		High Risk ($n = 31$)	
	Pre	Post	Pre	Post	Pre	Post
Self-Regulation	2.96 (.56)	2.99 (.59)	2.67 (.50)	2.64 (.57)	2.52 (.54)	2.51 (.53)
Executive Functioning	2.91 (.60)	2.95 (.58)	2.42 (.53)	2.44 (.56)	2.10 (.62)	2.16 (.62)
Well Being	3.03 (.53)	3.05 (.59)	2.75 (.46)	2.80 (.57)	2.15 (.56)	2.23 (.58)

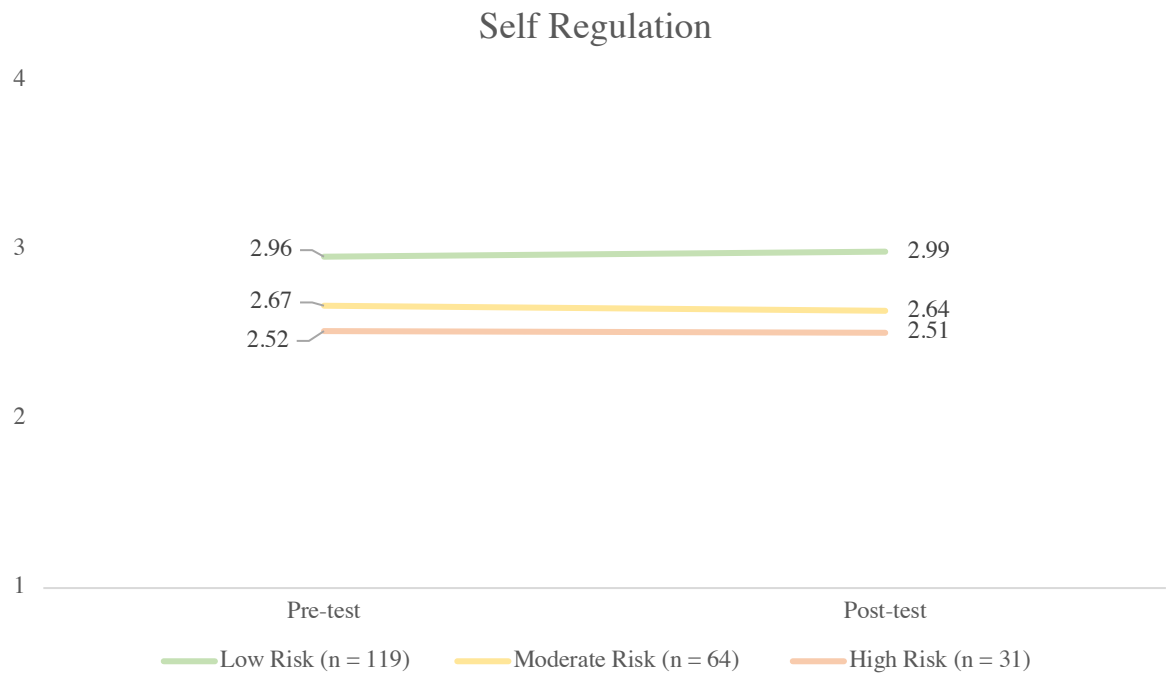

Figure 5. Change over time in self-regulation by risk profile ($N = 214$).

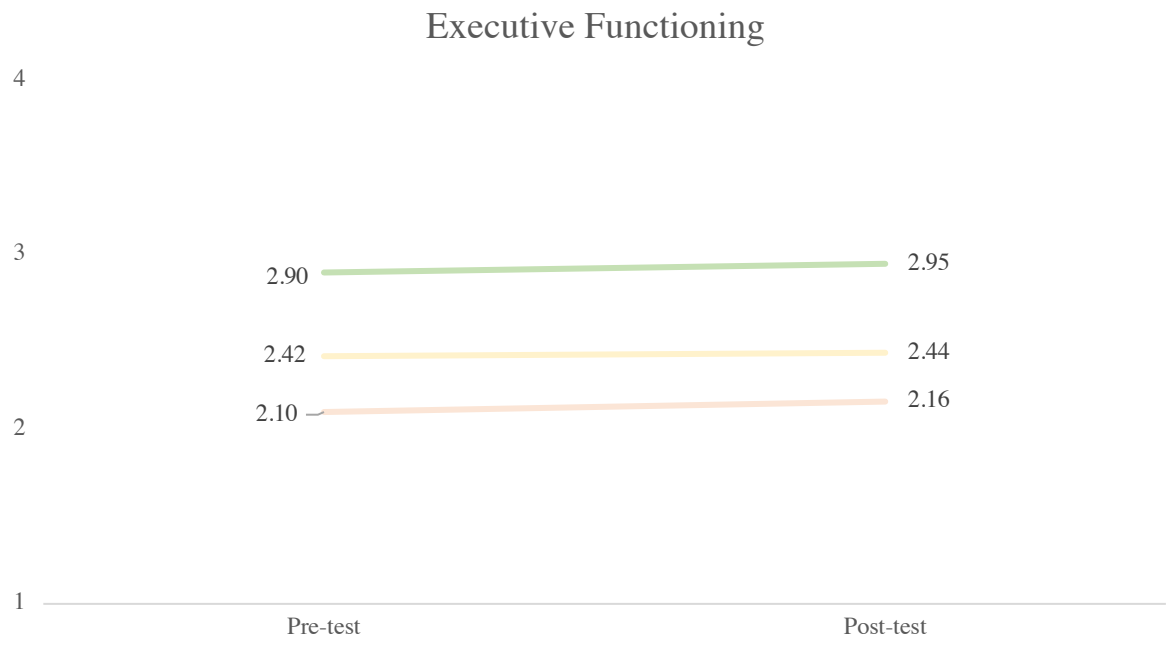

Figure 6. Change over time in executive functioning by risk profile ($N = 214$).

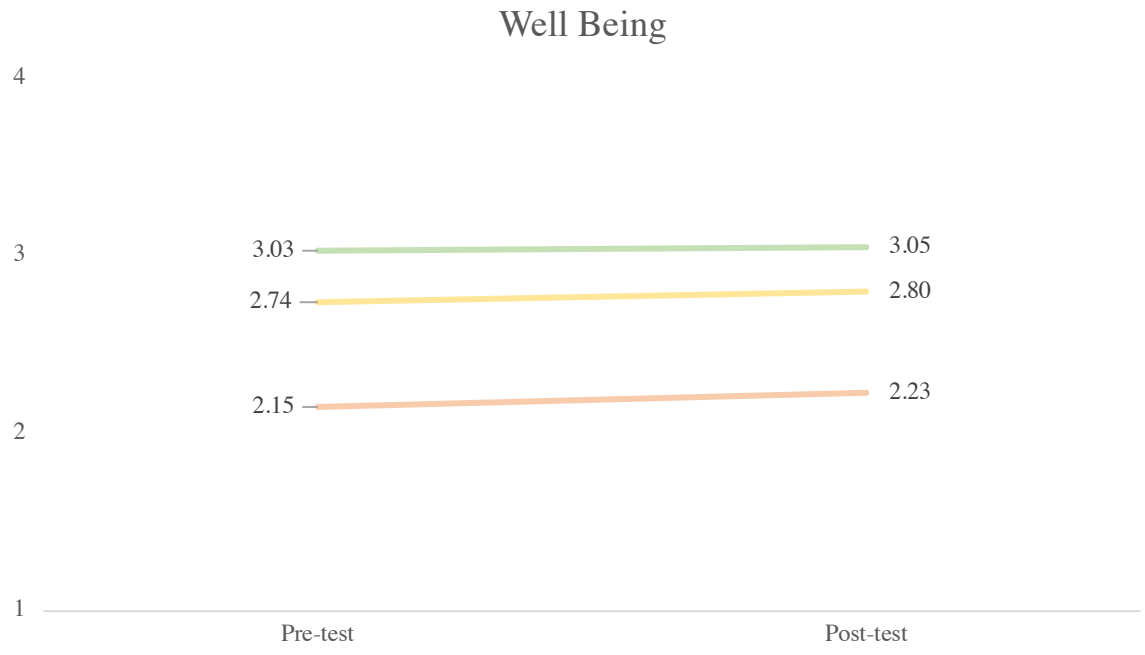

Figure 7. Change over time in well-being by risk profile ($N = 214$).

Hypothesis 4: Exploration of Proximal Processes

Given null findings related to program impact (i.e., significant change over time) for Hypotheses 1, 2, and 3, a decision was made to not test the original moderated mediation model that would explore the proximal processes responsible for program impact. Rather, other theoretically driven explorations of the data were conducted to determine whether other contributions to extant research could be made with the data collected. As a reminder, it was proposed that if the YES program was *not effective* (under any condition or for any group of children), study variables related to proximal processes (i.e., caring adult at school, use of program practices, and program experience), ACEs-related risk (i.e., LPA developed risk groups), and student outcomes (i.e., self-regulation, executive functioning, and well-being) would be repurposed to explore other developmental mechanisms and trends, disconnected from participation in the YES intervention.

Three sub-hypotheses were tested in accordance with this plan and are reported separately below. Hypothesis 4A expands upon findings for Hypothesis 3A, and tests whether the LPA risk groups predicts significant mean differences across the three proximal process variables assessed at pre-test. Hypothesis 4B tests a mediation model that attempts to explain the relationship between ACEs-related risk and well-being. Lastly, Hypothesis 4C tests a double moderation model that explores whether a caring relationship with an adult at home as well as caring relationship with an adult at school serve as two separate protective factors for students in the high-risk group by buffering (or weakening) the negative relationship between found risk and well-being.

Hypothesis 4A: Differences in Proximal Process Variables by Risk Group

First, it was hypothesized that the LPA risk groups would predict significant mean differences across all three proximal process variables—namely, a) caring adult at school and home, b) YES program experience, and c) use of YES breathing practices—such that students in the higher risk group would report significantly lower scores across all three constructs, compared to students in the lower risk group. Such results would be consistent with results from Hypothesis 3A in which we found that the LPA risk groups significantly predicted differences in all three student outcomes (i.e., self-regulation, executive functioning and well-being.).

In sum, partial support was found for Hypothesis 4A. A series of one-way between-subjects ANOVAs revealed that there was a significant effect of LPA risk profile on a) *caring adult at school*, $F(2, 211) = 3.784$, $p = .024$; *and caring adult at home* $F(2,2) = 9.760$ $p < .001$, as well as b) two of the four constructs related to program experience, namely *program buy-in* at pre-test, $F(2, 208) = 5.648$, $p = .004$; and *perceptions of program impact* at post-test $F(2, 201) = 8.632$, $p = <.001$. Results were non-significant for the other two program experience constructs, namely *YES program satisfaction*, $F(2,201) = 1.401$, $p = .249$; and *YES teacher satisfaction*, $F(2, 201) = 1.224$, $p = .296$, and c) use of *YES breathing practices*, $F(2, 201) = .817$, $p = .443$.

Tukey HSD post-hoc tests were used for pairwise comparisons of means for the four significant results described above. First, for *caring adult at home*, Tukey HSD post-hoc tests revealed that two of the risk groups had significantly different means from each other at pre-test. As shown in Figure 8, students in the high-risk group reported significantly lower scores than students in the low risk group ($M_{diff} = -0.46$, $p < .001$). Additionally, students in the moderate risk group also reported significantly lower scores for caring adult at home than the low risk group ($M_{diff} = -.0.19$, $p = .05$). Results were less drastic for *caring adult at school*. For this construct,

Tukey HSD post-hoc tests revealed that only the high-risk group and the low risk group had significantly different means from each other at pre-test. As shown in Figure 9, students in the high-risk group reported significantly lower scores on caring adult at school than students in the low risk group (M_{diff} = -0.30, p =.02)

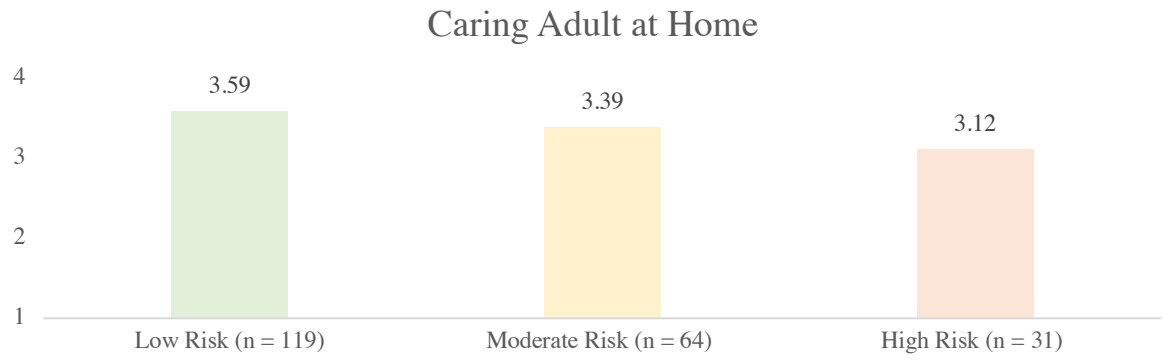

Figure 8. Mean differences in pre-test scores of caring adult at home by risk profile (N = 214).

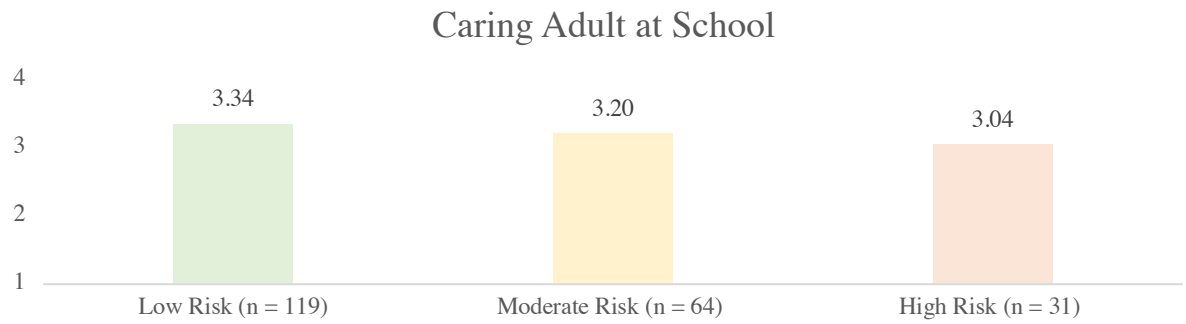

Figure 9. Mean differences in pre-test scores of caring adult at school by risk profile (N = 214).

Next, for *program buy-in* at pre-test, Tukey HSD post-hoc tests revealed that students in the high-risk group had significantly different means from students in the other two risk groups other at pre-test. As shown in Figure 10, students in the high-risk group reported significantly lower scores on program buy-in than students in the moderate risk group (M_{diff} = -0.30, p = .05) as well as students in the low risk group (M_{diff} = -.0.40, p = .003). However, students in the

moderate risk group did not significantly different from students in the low risk group (M_{diff} = -.0.10, p = .50.

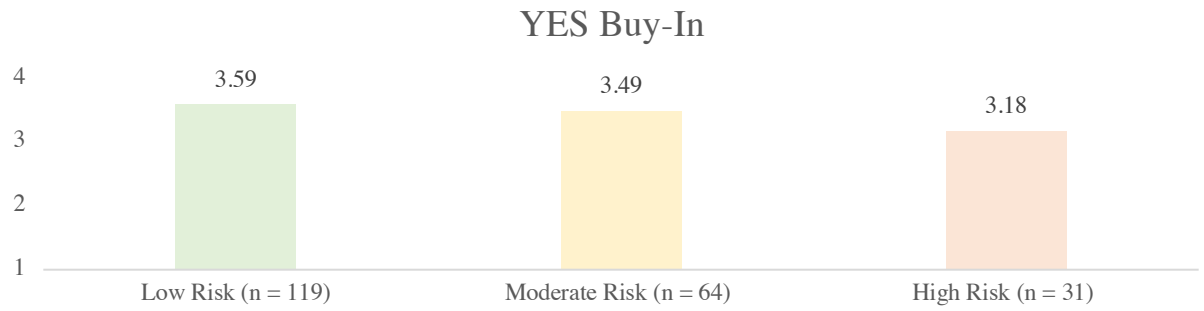

Figure 10. Mean differences in pre-test scores of YES program buy-in by risk profile (N = 214).

Results were similar for *perceptions of program impact* at post-test, such that students in the high-risk group had significantly different means from students in the other two risk groups other at post-test. As shown in Figure 11, students in the high-risk group reported significantly lower scores on perception of program impact than students in the moderate risk group (M_{diff} = -0.52, p = .005) as well as students in the low risk group (M_{diff} = -.0.64, p < .001). However, students in the moderate risk group did not significantly different from students in the low risk group (M_{diff} = -.0.12, p = .540).

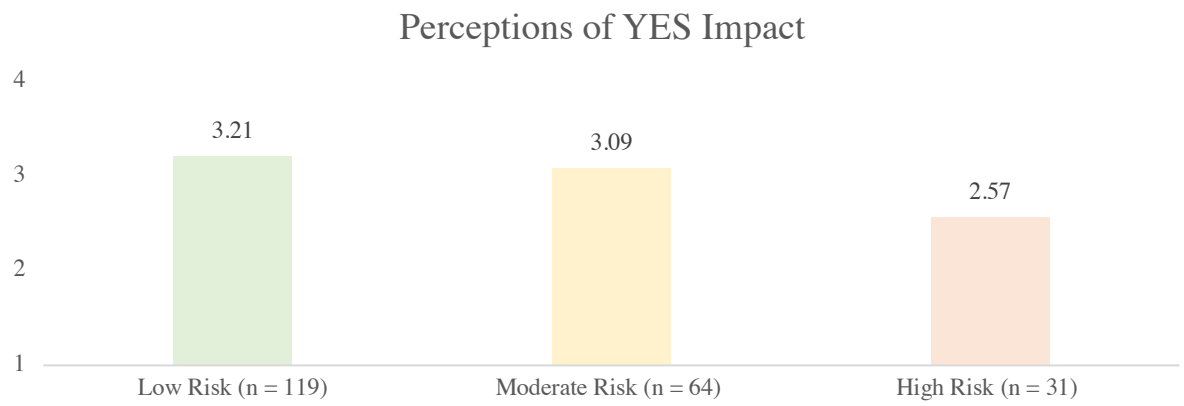

Figure 11. Mean differences in post-test scores of perceived YES impact by risk profile (N = 214).

Hypothesis 4B: Mediation Models

Second, it was hypothesized that self-regulation and executive functioning (two of the student outcomes measured in this study) would *mediate* the relationship between the LPA risk groups and well-being (the third student outcome measured in this study), such that lower scores in self-regulation and executive functioning might partially explain the relationship between higher risk and lower scores of well-being (see Figure 12 for conceptual diagram). Such results would be consistent with broader ACEs research and developmental literature that often conceptualizes deficits in self-regulation and executive functioning as explanatory mechanisms for poor outcomes later in development.

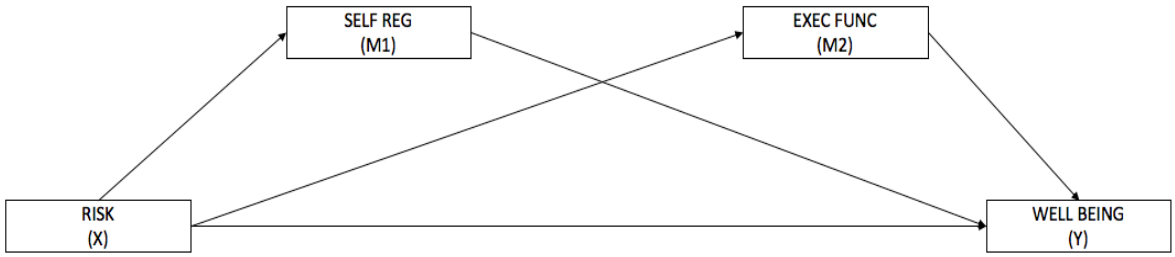

Figure 12. Conceptual diagram for path analysis model hypothesizing self-regulation and executive functioning as indirect links between risk and well-being.

Before describing the results of this mediation model below, it is important to note that for this particular analysis, a *continuous variable of risk* was utilized in place of the categorial LPA variable used in previous analyses. This decision was made because when risk was initially entered into the model as a categorical variable (i.e., high risk, moderate risk, and low risk groups), SPSS PROCESS automatically dummy-coded risk as *X1* (in which high risk students were compared to low risk students) and *X2* (in which high risk students were compared to moderate risk students), which resulted in two paths (*X1* and *X2*) being reported in all path analyses that involved risk as a predictor. Such results were difficult to interpret, particularly

within the context of a double mediation model. Therefore, for greater ease of interpretation, a continuous composite variable of risk was created and tested instead; this composite comprised the four risk variables utilized to develop the LPA risk groups (i.e., pre-test scores of perceived stress, attachment avoidance, attachment anxiety, and lack of access to emotion regulation strategies) and is therefore conceptually similar to the categorical variable of risk presented in previous analyses. To validate the development of this composite prior to its creation, a higher-order confirmatory factor analysis (CFA) was conducted in *R.* In sum, model fit for the higher-order model was good – X^2 = 124.31, df = 86, p = .004; CFI = 0.96, TLI = 0.96; RMSEA = .046, CI [.027, .064] – and all four first-order latent constructs loaded significantly onto the second order factor of ACEs Risk. Given these results, the continuous variable of risk was utilized in all models reported below.

Consistent with Hypothesis 4B, support for a partial mediation effect was found, in which lower scores in self-regulation and lower scores in executive functioning each partially explained the relationship between higher risk and lower-well-being. Figure 13 displays unstandardized coefficients, standard error, and *p*-values for all paths specified while Table 21 displays complete results, including standardized coefficients, *p*-values, and confidence intervals.

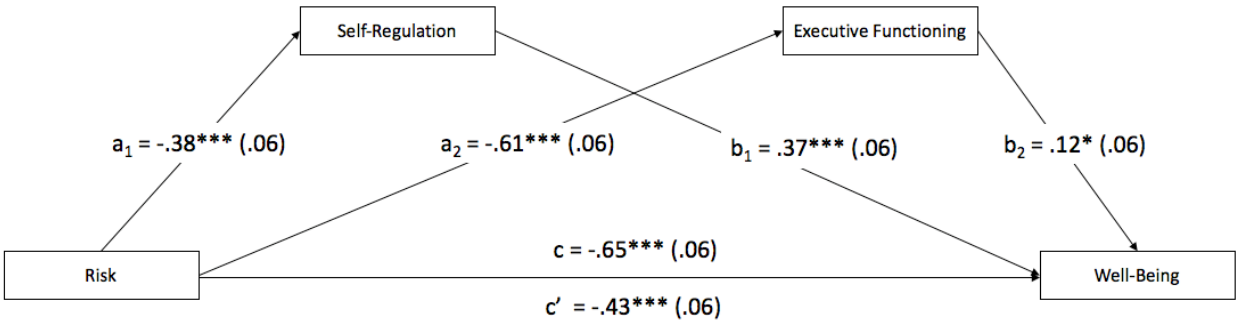

Figure 13. Path analysis model hypothesizing self-regulation and executive functioning as indirect links between risk and well-being, controlling for gender, grade, ethnicity, and school. Unstandardized coefficients are displayed. * p <.05, ** p <.01, *** p <.001.

To test for mediation, we first examined the relationship between our predictor (i.e., risk) and our outcome variable (i.e., well-being) and found a significant direct effect (b = -0.65, SE = 0.06, p <.001), indicating that students who reported higher levels of risk indeed reported lower levels of well-being.

Next, we examined the relationship between our predictor (i.e., risk) and our mediators (i.e., self-regulation and executive functioning) and found significant direct effects between risk and self-regulation (b = -0.38, SE = 0.06, p <.001, as well as risk and executive functioning (b = -0.61, SE = 0.06, p <.001, suggesting that students who reported higher levels of risk also reported lower levels of self-regulation and executive functioning. We also examined the relationship between our mediators (i.e., self-regulation and executive functioning) and our outcome (i.e., well-being) and found significant direct effects between self-regulation and well-being (b = 0.37, SE = 0.06, p <.001, as well as executive functioning and well-being, b = 0.12, SE = 0.06, p =.039), suggesting that students who reported higher levels of self-regulation and executive functioning reported higher levels of well-being.

Finally, we examined the relationship between our predictor (i.e., risk) and our outcome variable (well-being), once we controlled for our mediators (i.e., self-regulation and executive functioning) and still found a significant effect between risk and well-being (b = -0.43, SE = 0.06, p <.001), indicating that the two mediators did not fully account for relationship between risk and well-being. However, to test for partial mediation, percentile bootstrap CIs were examined on the tests of indirect effects. In support of partial mediation, we found significant indirect effects for the relationship between risk and well-being through self-regulation (ab = -0.14, SE = 0.03, CI [-0.22, -0.08]) as well as through executive functioning (ab = -0.07, SE = 0.04, CI [-0.15, -0.01]).

Together, the results of this mediation model suggest that the relationship between ACEs-related risk and well-being scores were partially explained by significant differences in self-regulation and executive functioning scores. Specifically, the data suggests that students who reported higher levels of risk reported lower levels of well-being, partially because they reported lower levels of self-regulation as well as lower levels of executive functioning. These findings indicate that self-regulation and executive functioning each uniquely contribute to our understanding of why students with higher levels of risk, related to ACEs, report lower levels of well-being.

Table 21.

Summary of Mediation Model Results Examining Self-Regulation and Executive Functioning As Indirect Links Between Risk And Well-Being. ($N = 214$)

	Model 1: predicting DV (no mediators)		Model 2: predicting M1		Model 3: predicting M2		Model 4: predicting DV (with mediators)	
Dependent variable:	Well-Being		Self-Regulation		Executive Functioning		Well-Being	
Predictor variables	*b* (SE)	CI	*b* (SE)	CI	*b* (SE)	CI	*b* (SE)	CI
Constant	3.87 (.16)	[3.56, 4.19]	3.51 (.17)	[3.17, 3.85]	3.74 (.6)	[3.37, 4.11]	2.12 (.26)	[1.59, 2.65]
Gender	0.12 (.07)	[-0.01, 0.25]	-0.16 (.07)	[-0.31, -0.03]	.03 (.07)	[-0.12, .18]	0.17 (.06)	[0.06, 0.29]
Grade	-0.01 (.04)	[-0.10, 0.07]	0.06 (.05)	[-0.03, 0.15]	-.08 (.04)	[-0.17, .02]	0.02 (.04)	[-0.10, 0.05]
Ethnicity	0.20 (.10)	[0.01, 0.40]	0.04 (.11)	[-0.17, 0.25]	.11 (.10)	[-0.12, .34]	0.18 (.09)	[0.01, 0.35]
School	-0.03 (.07)	[-0.17, 0.12]	0.08 (.08)	[-0.07, 0.24]	.18 (.07)	[0.01, .35]	-0.08 (.09)	[-0.21, 0.05]
Risk	-0.65 (.06)	[-0.76, .0-53]	-0.38 (.06)	[-0.50, -0.26]	-.61 (.06)	[-0.75, -.48]	**-0.43 (.06)**	**[-0.55, -0.32]**
Self-Regulation [A]	----	----	----	----	----	----	0.37 (.06)	[0.24, 0.49]
Executive Functioning [B]	----	----	----	----	----	----	0.12 (.06)	[0.01, 0.24]

Note: Bolded values highlight change in IV due to inclusion of the mediators in the model.
[A] Indirect effect in this pathway was significant, point estimate = -0.14; 95% CI: -0.22, -0.08
[B] Indirect effect in this pathway was significant, point estimate = -0.07; 95% CI: -0.15, -0.01

Hypothesis 4C: Moderation Models

Lastly, it was hypothesized that having a caring adult at home and caring adult at school would moderate the relationship between risk and the three student outcomes (i.e., self-regulation, executive functioning, and well-being), such that having a caring adult at home and/or at school might buffer or weaken the negative relationship between higher risk and lower outcomes. Consistent with resilience research that often cites caring adults as a protective factor for high-risk youth, it was expected that the negative relationship between risk and outcomes might be weaker for students who report higher levels of perceived support from a caring adult at home and school.

To test this hypothesis, three moderation models were conducted in SPSS PROCESS, one for each of the three outcome variables: self-regulation, executive functioning, and well-being. For all three models, our continuous risk variable was specified as the predictor variable while caring adult at home and caring adult at school were specified as two separate moderators. All three models controlled for gender, grade, ethnicity and school. Figure 14 displays a sample conceptual diagram for the double moderation that was tested.

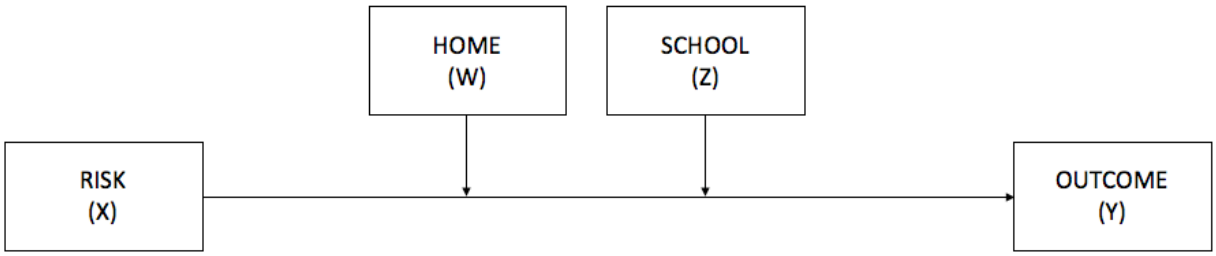

Figure 14. Conceptual diagram for path analysis model hypothesizing caring adult at home and caring adult at school as moderators in the relationship between risk and child outcomes.

In sum, results were similar across all three models, suggesting a consistent trend of interaction findings across all three student outcomes, in which one moderator was consistently non-significant (i.e., caring adult at home) but the second moderator was consistently significant

(i.e., caring adult at school) (see Figure 15 for summary of interactions). First, support was not found for the first moderator (i.e., caring adult at home) in any of the models tested, such that was no significant interaction between risk and caring adult at home on any of the three student outcomes, specifically self-regulation (b = -.06, p = .588), executive functioning (b = -.14, p = .212) and well-being (b = -.01, p =.947). However, support for the hypothesis was consistently found the second moderator (i.e., caring adult at school), such that caring adult at school significantly moderated the relationship between risk and self-regulation (b = -.31, p = .002), risk and executive functioning (b = -.28, p = .010), and risk and well-being (b = -.40, p <.001). Interestingly, however, the significant interaction between risk and caring adult at school did not occur in the direction that was expected.

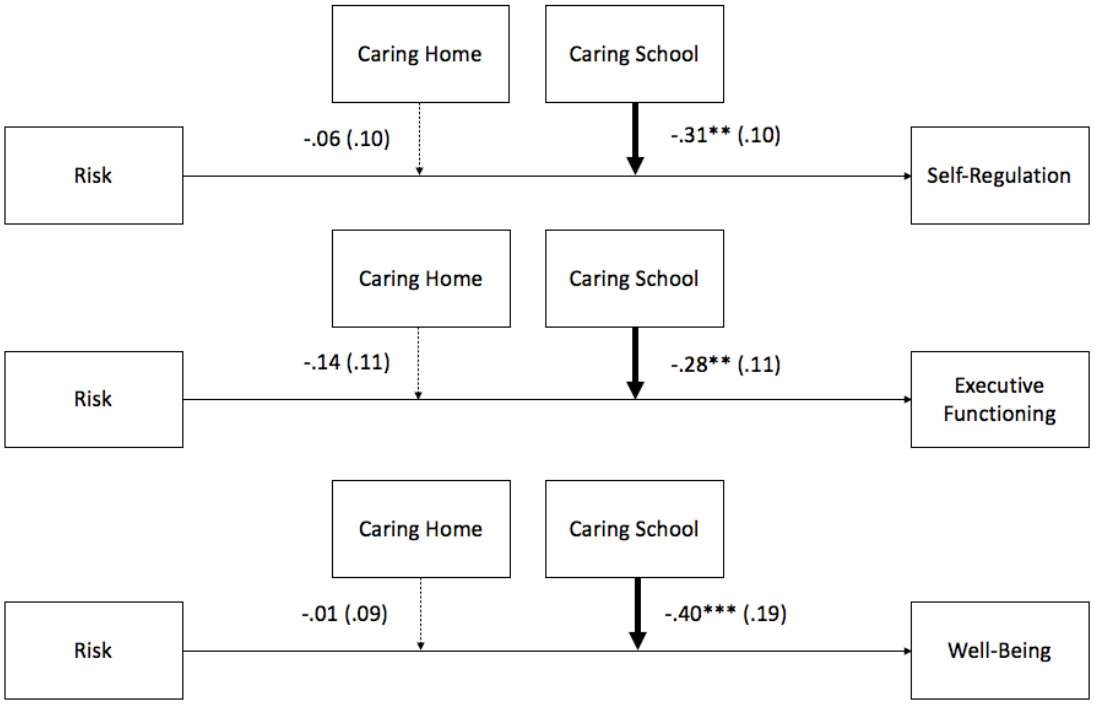

Figure 15. Path analysis models depicting caring adult at home and caring adult as school as moderators in the relationship between risk and child outcomes, controlling for gender, grade, ethnicity, and school. Unstandardized coefficients are displayed. Bolded arrows signify significant interaction terms. * p <.05, ** p <.01, *** p <.001.

Specifically, to understand for whom having a caring adult at school had a greater positive effect, conditional effects analyses were examined to understand how student outcomes differed at different levels of risk, different levels of caring adult at school, and different levels of caring adult at home (all three of which were examined at 1 *SD* below the mean, mean, and 1 *SD* above the mean).

Contrary to our study hypothesis, such analyses revealed that *for students who reported high levels of risk* (1 *SD* above the mean), having a caring adult at school had little to no effect on self-regulation, executive functioning, or well-being. Rather, for these high-risk students, scores on all three outcomes (i.e., self-regulation, executive functioning and well-being) were similarly low, regardless of whether the student reported high or low levels of having a caring adult at school. For visual depiction, see red bars on Figure 16.

In contrast, *for students who reported low levels of risk* (1 *SD* below the mean), having a caring adult at school had a positive incremental effect on self-regulation, executive functioning, and well-being, such that scores on those outcomes were higher for students who reported high levels of a caring adult at school, compared to those who reported low levels of caring adult at school. For visual depiction, see green bars on Figure 16.

Together, these results suggest that, for *low-risk students*, having a caring adult at school had a *promotive* effect on multiple outcomes, such that scores for self-regulation, executive functioning and well-being increased, given greater perceptions of a caring adult at school. However, for *high-risk* students, having a caring adult at school did not have the *protective buffering effect* that was expected; rather for this group of students, scores for self-regulation, executive functioning, and well-being were similarly low, regardless of the level of care perceived by students about an adult at school (see Table 22 for summary of interactions) .

Figure 16. Significant interaction between risk (low and high) and caring adult at school (low school and high school) on student outcomes (self-regulation, executive functioning, and well-being). $N = 214$.

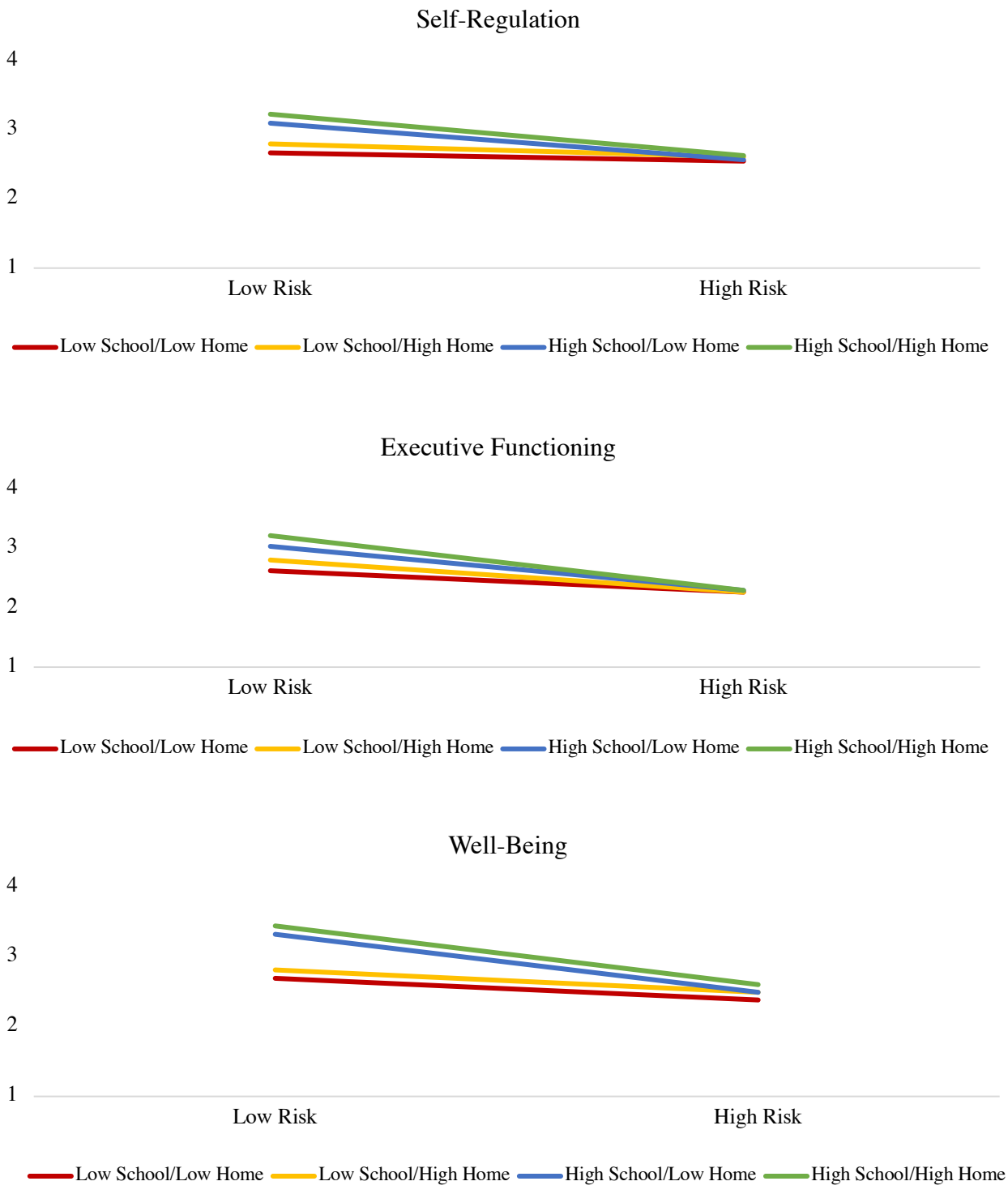

Figure 16. Significant interaction between risk (low and high) and caring adult at school (low school and high school) on student outcomes (self-regulation, executive functioning, and well-being). $N = 214$.

Table 22.

Summary of the Interaction between Risk and Caring Adult at Home and Caring Adult at School Predicting Program Outcomes

	Child Outcomes								
	Self-Regulation			Executive Functioning			Well-Being		
	b	*SE*	CI	*b*	*SE*	CI	*b*	*SE*	CI
Constant	.10	.82	[-1.53, 1.74]	-.04	.91	[-1.83, 1.75]	-.33	.72	[-1.75, 1.09]
Gender	-.18*	.07	[-0.32, -0.04]	.02	.08	[-0.13, 0.17]	.12*	.06	[0.00, 0.24]
Grade	.10*	.04	[0.01, 0.18]	-.95	.05	[-0.14, 0.05]	.04	.04	[-0.04, 0.11]
Ethnicity	-.02	.10	[-0.22, 0.18	.05	.11	[-0.17, 0.27]	.12	.09	[-0.06, 0.30]
School	.08	.08	[-0.07, 0.23]	.17*	.08	[0.00, 0.33]	-.03	.07	[-0.16, 0.10]
Risk	.89*	.36	[0.19, 1.59]	.85*	.39	[0.09, 1.62]	.80*	.31	[0.19, 1.40]
Caring School	.80**	.22	[0.37, 1.23]	.75**	.24	[0.28, 1.22]	1.08***	.19	[0.71, 1.46]
Caring Home	.19	.23	[-0.26, 0.64]	.36	.25	[-0.14, 0.85]	.11	.20	[-0.28, 0.50]
Risk x Caring School	**-.31****	**.10**	**[-0.51, -0.11]**	**-.28****	**.11**	**[-0.50, -0.07]**	**-.40*****	**.09**	**[-0.57, -0.22]**
Risk x Caring Home	-.06	.10	[-0.26, 0.15]	-.14	.11	[-0.36, 0.08]	-.01	.09	[-0.18, 0.17]

Note. CI = 95% confidence interval; Caring school = caring adult at school; Caring home = caring adult at home. *$p < .05$; ** $p < .01$; ***$p < .001$. $N = 214$.

Chapter. IV: Discussion

In response to the underinvestigated areas of research and practice identified earlier in this paper, this study began with two primary objectives: (1) develop and examine the utility of a theoretically-informed proxy measure of ACEs-related psychosocial risk for use in non-clinical settings and research, and (2) examine the effectiveness of the YES program on children's outcomes utilizing a developmental PPCT lens. Given null findings related to YES program impact that precluded the investigation of the proximal processes most responsible for change over time within the program context, a third objective was added: (3) repurpose the data collected to understand broader developmental trends disconnected from intervention participation. Each of these three objectives is restated below, followed by an explanation of main findings related to the study aim, a discussion of how the findings contributes to extant literature, and recommendations for future research.

The Development of an ACEs-Related Risk Proxy Measure for Use in Non-Clinical Settings

The first study objective involved the development and examination of an ACE-related risk proxy measure that could approximate the risk associated with children having high exposure to ACEs without needing to ask direct questions about their experience with specific ACEs events. Such an objective was considered critical and timely given the recent explosion of interest in ACEs as a risk construct, particularly in universal child-serving systems such as schools, but a concurrent measurement barrier regarding the pragmatic and ethical concerns of collecting a present-day ACE score from children within these settings (Blodgett, 2012).

Thus, within this study, it was postulated that three psychological constructs, when examined together as a set, might be able to approximate risk that is highly related to cumulative ACE exposure; these constructs included children's (a) perceived stress level, (b) attachment

insecurity, and (c) difficulty accessing effective emotion regulation strategies, with the empirically-supported rationale that children with high ACE scores (4 or more) typically evidence higher levels of psychosocial risk across all three constructs (Blodgett, 2014; Murphy et al., 2014; Shonkoff et al., 2012; Taylor & Stanton, 2007). Because the negative impact of ACEs is often discussed as those with low risk, moderate risk, and high risk according to empirically derived cut-offs of zero to one ACE (low risk), two to three ACEs (moderate risk), or four or more ACEs (high risk) respectively (Bethell et al., 2017), this study also sought to create categorical groups of children who might represent each of these risk profiles. In particular, because both cumulative risk literature and ACEs literature often references those with four or more ACEs as being significantly more at risk for poor outcomes (e.g., Rutter, 1979, Felitti et al.., 1998), there was great interest in seeing whether it was possible to identify children at this higher end of the risk spectrum.

To develop these risk profiles, a person-centered approach to analysis was conducted utilizing latent profile analysis (LPA)—a statistical method that assigns individuals to one mutually exclusive group (i.e., profile or class) based on their responses to observed variables of interest (McCutcheon, 1987). If the LPA method was conducted successfully, such a method would reveal categorically distinct profiles of children who had similar patterns of responses on the observed risk variables (i.e., stress, attachment insecurity, access to ER strategies), and such results would maximize *within group homogeneity* (strong similarities to those within the same latent class) while also accounting for and reflecting *between group heterogeneity* (clear distinction from other classes) (Lanza et al., 2003). Based on these profile distinctions, it was expected that different groups of children, with different levels of risk, would demonstrate significantly different mean values across multiple outcomes of interest.

Indeed, this study found evidence on all three accounts: that the LPA solution had strong model fit, was theoretically aligned to ACEs literature, and was predictive of key outcomes. First, the three-profile solution derived from the LPA demonstrated (a) adequate model fit, (b) high conditional class probabilities, (c) highly interpretable profile solutions, and (d) adequate sample sizes for meaningful follow-up analyses. Second, the subgroup sample sizes for each of the three profiles mirrored prevalence distributions from other ACEs studies that roughly suggest a spread of 62% low risk (zero to one ACE), 25.5% (two to three ACEs), and 12.5% (four or more ACEs) (Felitti et al., 1998; Metzler, 2017). Indeed, this study generated similar risk group percentages of 55% of children in low risk group, 30% in the moderate risk group, and 15% in the high-risk group. Children from each of these groups had significantly different mean values from each other across all three risk composites utilized to derive the LPA: compared to children in the low risk group, mean values for perceived stress, attachment insecurity, and access to ER strategies were significantly higher for the moderate risk group and the high risk group; furthermore, mean values were significantly higher for the high risk group, compared to the moderate risk group.

Lastly, membership to different LPA risk groups was predictive of significant differences across multiple study variables in the direction expected. Specifically, compared to children in the low-risk and moderate-risk groups, children in the high-risk group evidenced significantly lower means on key study outcomes (i.e., self-regulation, executive functioning, and well-being), YES program experiences (i.e., program interest at pre-test, perceptions of program impact at post-test), and protective factors (i.e., caring adult at home, caring adult at school). Furthermore, this categorial risk measure transformed well into a continuous risk measure for use in later path analyses models. In other words, the ACEs-related risk proxy was a still a useful and significant

predictor when transformed into a composite for use in mediation and moderation models (results of which will be further discussed below).

Taken together, these results suggest that the proxy measure conceptualized and developed within this study could have unique value as a risk assessment tool for applied researchers working in non-clinical settings in particular. Specifically, its value (at this early stage of measurement development and testing) stems from its *suggestive potential* to identify distinct groups of children who evidence categorically different levels of psychosocial risk that *may* be related to ACEs without (a) needing to ask children or their caregivers direct questions about present-day ACEs exposure, and (b) utilizing scales that are already commonplace in community-based child-serving systems such as schools and youth development programs. This theoretically-informed attempt at developing such a measure is an important contribution to researchers given public interest in ACEs as a modern-day risk construct and scholarly interest in investigating how to best promote well-being for this group of impacted children (Blodgett, 2014).

Such a measure—if rigorously evaluated and validated for its psychometric properties in future studies—could allow researchers, working in applied contexts, to sidestep the pragmatic and ethical issues associated with collecting children's present-day ACE score within non-clinical settings, while still revealing which children are most in need of critical support in ways that are face-valid, relatively innocuous, considerate of burden to time, and convenient to collect via child surveys . Such identification of differences in children's ACEs-related risk would allow for empirical testing of differential effectiveness in intervention studies (i.e., testing whether children at highest risk for poor outcomes actually derive the greatest benefits from participating in an intervention). Such a question is still important to investigate as studies have often found

mixed results, with some suggesting that high-risk children benefit more from intervention than low-risk children (e.g., Beauchaine et al., 2005; Gardner et al., 2010; Vazsonyi et al., 2004; Wilson et al., 2003), others suggesting no benefit for high-risk children compared to low-risk children (e.g., Spaeth et al., 2010)), and others suggesting comparable effects for high- and low-risk children (e.g., Spoth et al., 2006). Ensuring that children most in need of support actually equally, if not more, from an intervention not only represents a common goal of many practitioners, but also represents a research and program evaluation question that many stakeholders are likely to be interested in for years to come. Thus, the development and validation of such a tool is likely to benefit researchers and evaluators who are asked to determine whether the interventions being developed for youth impacted by ACEs, stress, or trauma are actually benefitting those who exhibit risk on these constructs at the highest levels.

However, to be clear, because this study *did not* directly assess children's ACE score (by asking children or their caregivers to report on different ACEs events), establishing an empirical link between the proxy measure of ACEs-related risk and children's actual ACE score was not possible. In the absence of such data, it is not possible to confirm (or deny) within this study whether the proxy measure is indeed an accurate or valid representation of children's ACEs exposure, or whether it is actually a measurement of some other related construct or phenomenon entirely. For example, it is possible that the proxy measure may actually be capturing naturally occurring differences among children—in biology, genetics, or temperament—that is unrelated to (or at best, should be considered in addition to) their cumulative exposure to adversity. Such alternative explanations for how to interpret what the risk proxy is actually assessing are consistent with propositions from diathesis-stress scholars (Monroe & Simons, 1991; Zuckerman, 1999), differential susceptibility scholars (Belsky & Pluess, 2009); and biological-

sensitivity-to-context scholars (Boyce & Ellis, 2005), who collectively remind researchers to consider biological, genetic, and temperament person differences in children, as well as their interaction with environmental influences, when interpreting research results.

Future studies would need to further investigate and evaluate this tool's measurement properties and construct validity before any strong claims are made about its validity, value, and use in research and practice contexts. While it would be an overreach of study results to conclude that the proxy measure is a valid replacement of asking about ACEs directly, this study does put forth a novel strategy for approximating ACEs-related risk in non-clinical settings and community samples, and at the very least, seemed to detect a type of risk that was highly predictive of other important developmental outcomes and intervention experience. Future studies should attempt to validate this type of proxy measure by directly testing its relatedness against a measure of actual ACEs count. Future studies could also engage in further proxy measurement development by utilizing other theoretically-relevant risk variables in its construction.

The Investigation of YES Program Effectiveness Utilizing a Developmental Lens

The second study objective involved testing a promising non-clinical intervention for intervention effectiveness while utilizing a developmental lens, with research questions inspired specifically by Bronfenbrenner's bioecological PPCT theory (2006). Such an objective was considered necessary given (a) interest in understanding how to best support children impacted by ACEs within non-clinical settings and (b) a lack of intervention studies informed by developmental theory.

To address this need, the YES program was selected for investigation given that its program strategies and activities were well-aligned to empirical research on how to best restore

or promote the efficacy of protective processes related to resilience and well-being, both for children impacted by toxic stress, complex trauma, and ACEs, as well as those with lower risk. Additionally, a comprehensive study was designed that aligned with central tenets of Bronfrenner's PPCT theory, in which research questions expanded beyond questions of *impact* (i.e., Does the program positively impact children's outcomes across time?), to also explore underinvestigated questions of *context* (i.e., Is the impact greater when parents and teachers also participate in the intervention alongside children?), *person* (Is the impact greater for high-risk children who score high on a proxy measure of ACEs?), and *process* (If the intervention is indeed effective, what proximal processes account for the intervention effect?).

Contrary to several study hypotheses (namely H1 thru H3), results indicated a lack of empirical support for YES intervention effectiveness on the children's outcomes examined, even when data was disaggregated in several theoretically relevant ways. To be specific, there was no significant change over time for the sample of children participants (i.e., H1: time), and no differential change over time by level of adult participation in YES workshops (i.e., H2: context) or by ACEs-related risk group (i.e., H3: person). Taken together, results suggested that participation in the YES program was not associated with any gains in child outcomes over time, which then precluded the investigation of proximal processes that might account for the intervention effect (i.e., H4: process).

There are several ways to interpret these null findings: First, it is possible that the most drastic change in outcomes occurred prior to this intervention year. It is important to remember that the children in this study were not first-time participants in the YES program; rather, 81% of the student participants had indeed attended the full four-week YES program in 3rd grade, with a mean duration of involvement in previous YES refreshers between one to two times, prior to

participation in this study's intervention cycle. Despite previous involvement in the program, it was expected that children may still benefit from engaging in the two-week refresher offered in this intervention cycle, particularly if participation was paired with significant caregivers (i.e., parents and teachers) also participating in the YES program for the first time. Indeed, pre-test scores were normally distributed, with mean values starting at a mid-level, indicating that children still had room to grow within the intervention cycle. However, nearly constant scores for children at pre-test and post-test for self-regulation, executive functioning, and well-being suggests that little gains were made across this study period. It is possible, given previous participation for the majority of the sample, that the biggest change in outcomes had already occurred in previous years and is therefore associated with participation in the four-week intervention. Such an interpretation would suggest that the two-week Refresher Course contributes little added value.

The second interpretation for null findings is related to program-theory failure, an explanation that is often raised in program evaluation research when a program fails to have the intended effect (Katz et al., 2013). Program-theory failure is defined as when a program attempts to intervene upon a particular outcome utilizing a particular strategy informed by social science theory or stakeholder theory, but the theory is actually amiss; the logic connecting the strategy to the outcome is faulty, and a different strategy, approach, or practice is needed to actually address the outcome of interest (Anderson & Harris, 2005; Shapiro, 1982). Applied to this particular study, this interpretation would suggest that the YES program's core intervention activities (e.g., breathing practices to address self-regulation and normative brain development) and intervention strategies (e.g., extending intervention to parent and teachers to address attachment) are not well-equipped to address the targeted outcomes and therefore should be re-examined and adapted.

However, as discussed by multiple evaluation scholars (e.g., Rossi, 1987; Weiss, 1997) program-theory failure should only be considered as a valid interpretation of null results if its counter-explanation of *program implementation failure* is sufficiently ruled out. Indeed, the concept of program implementation failure, defined as when a program fails to implement with sufficient fidelity or quality, draws greater attention to questions of whether the program was actually implemented as intended before dismissing the value of the program as a viable strategy altogether (Century et al., 2010; Durlak & Dupre, 2008; Meyers et al., 2012). If data suggest that implementation significantly deviated from that as intended, scholars contend that we do not actually know whether the intervention is effective; we can only conclude that the intervention was not implemented as intended (Fixsen et al., 2005).

Given descriptive data collected on YES implementation within this study, this third interpretation for null findings should be strongly considered. Namely, three critical deviations in program fidelity occurred: First, data from student, parent, and teacher data revealed that all three groups of participants reported using YES breathing practices less frequently than intended: students, parents, and teacher reported using YES breathing practices on average between once a month or once a week, which falls far from the daily practice intended. Second, adult participation in the intervention was far lower than intended: while it was expected that half of the parent sample would attend (i.e., approximately 100 parents), only 15 parents participated alongside their child; similarly, while it was expected that all 13 teachers would participate in the intervention, only five participated alongside their students. Third, for those adults who did participate, they did so at a lower dosage than intended: the 20-hour workshop for parents and teachers was reduced to seven hours given feedback from the adult community that 20 hours was

not actually feasible; additionally, some parents received as little as five hours of dosage given tardiness or absence.

Taken together, these implementation data suggest that null findings could be attributed to the fact that key program practices were not utilized by participants with the frequency intended and adult participants, in particular, did not receive the intervention dosage necessary to create large shifts in knowledge, skills, or behavior. Indeed, extant literature on effective adult learning interventions recommend between 20-30 hours of dosage for significant change in knowledge, skill, or behavior to occur (Desimone, 2011, Guskey & Yoon, 2009). Furthermore, given the small sample size of parent and teacher participation, there may not have been enough statistical power to detect significant change in outcomes (Lieber, 1990). Such conclusions illustrate the critical importance of piloting new initiatives that are core to the intervention model (i.e., the adult workshops) and engaging in evaluability assessments and/or formative evaluations that address issues in implementation *before* expending costly resources on an RCT study (Chen, 1996; Rutman & Wholey, 1980). Doing so may have increased the probability of securing the dosage, sample size, and frequency of practice necessary for realizing program effects (Chen, 2005). It should not be underestimated that successfully implementing a comprehensive intervention that involves student, parent, and teacher participation is difficult in real-world settings, and requires sufficient time for planning, accruing buy-in, and recruiting for participation prior to program or study launch (Century et al., 2010; Weiss, 1997).

However, despite null findings related to intervention effectiveness given challenges with program implementation, contribution to the extant research includes the following: This study demonstrates that it is in fact possible to conceptualize and execute a Bronfenbrenner-inspired study on intervention effectiveness. This study attempted to stay true to what it means to

examine intervention impact from a comprehensive developmental lens, by operationalizing and investigating program *processes*, developmentally relevant *person* variables, multiple *contexts*, and development across *time* within a single study (Bronfenbrenner & Morris, 1998, 2006).

This attempt at conceptualizing and executing an intervention study guided by developmental theory is noteworthy considering such studies are rare. For example, Tudge and colleagues (2009) examined 25 published papers whose authors claimed to base their study on Bronfenbrenner's bioecological PPCT model (2006) and found that all but four papers relied on outdated versions of the theory, thereby misusing, misrepresenting, or inadequately testing this theory. Additionally, none of the papers applied the PPCT model to an intervention study to explore how intervention effectiveness might vary by relevant context or person variables, or test which proximal processes might account for the intervention impact. Similar critiques have been made by scholars who have reviewed the state of research on youth development programs (e.g., Durlak et al., 2011, Mahoney et al., 2002; Roth & Brooks-Gunn, 2016) and similarly concluded that, to date, research on youth programs lack empirical attention to complex interactions between program or intervention processes, person characteristics, and other important contexts of children's lives.

Although this study did not allow for a full examination of proximal processes related to program impact (given lack of intervention effects), the attempt was made during study design to collect this type of data, and collected data was still repurposed at post-hoc in an attempt to investigate developmental trends, mechanisms, and conditions in ways that were disconnected from intervention participation. As will be described more thoroughly in the next section, such pivoting was valuable as it allowed for exploration of data in other theoretically important ways that still resulted in meaningful contributions to extant literature.

The Exploration of Broader Developmental Trends in Children's Risk and Well-Being

The third and final study objective involved exploring developmental trends amongst repurposed study variables to understand the relationships amongst ACEs-related risk (i.e., utilizing the ACEs-related risk proxy developed in this study), children's outcomes (self-regulation, executive functioning, well-being), and protective factors (i.e., caring adults at home and caring adult at school). This study objective was developed after finding that the YES program lacked evidence related to program impact and determining that further analyses related to proximal processes connected to intervention participation made little conceptual sense. In an effort to explore developmental mechanisms and conditions, particularly as they related to the novel ACEs-related proxy measure that was developed within this study, a post-hoc analytical plan was developed to explore mediation and moderation with this risk variable as the key predictor. Such analyses would allow for exploration of how this ACEs-related risk proxy variable related to other variables collected within this study, thus also allowing for potential contribution to or extension of extant research about risk and resilience.

In sum, two types of models were explored: (1) a mediation model that tested whether the relationship between the ACEs-related risk proxy and well-being could be partially explained by deficits in self-regulation and executive functioning, and (2) a double moderation model that tested whether the relationship between the ACEs-related risk proxy and three study outcomes (i.e., self-regulation, executive functioning, and well-being) could be buffered by well-known protective factors in the resilience research (i.e., children perceiving high levels of care from an adult at home and at school).

Evidence for partial mediation was found, such that self-regulation and executive functioning both significantly mediated the relationship between risk and well-being. Indeed,

lower scores in self-regulation *and* lower scores in executive functioning each uniquely explained why children with higher levels of ACEs-related risk reported lower levels of well-being. While evidence for full mediation was not found (i.e., the relationship was between risk and well-being was still significant, even after controlling for self-regulation and executive functioning, thus suggesting that other unspecified variables could still account for additional variance between the two constructs), the test of indirect effects did suggest the significant role that both deficits in self-regulation and executive functioning play in explaining lower well-being experienced by high risk children.

This significant mediation finding was highly synchronous with scores of previous studies conducted with high risk samples that have identified deficits in self-regulation and executive functioning as explanatory mechanisms in the link between high risk and poor developmental outcomes (Cook et al., 2017; Doan et al., 2012). Such a finding broadly suggests that self-regulation and executive functioning are, indeed, worthwhile developmental processes to target, prioritize, and pursue within interventions that aim to promote well-being in high-risk children. It also validates program logic behind intervention designs like YES that attempt to target the development of these protective processes in their program activities. From a public health perspective, these results further validate the need for developmentally well-timed preventative interventions designed to enhance self-regulation and executive functioning to promote well-being in children. Results from this study are in line with others that suggest the targeting of these outcomes to interrupt the cascading effect of ACEs-related risk on well-being.

Consistent evidence for moderation was found when examining the interaction between risk and *caring adult at school* (ACEs-related risk x school), but not found when examining the interaction between risk and *caring adult at home* (ACEs-related risk x home). The latter (i.e.,

lack of effect for caring adult at home) is not particularly surprising given that the ACEs-related risk proxy measure utilized in this study included an assessment of attachment security to a primary caregiver within the home, and scores on attachment insecurity were highly related to scores on caring adult at home. Though it was considered possible that a child could experience attachment insecurity with one primary caregiver but still perceive care from another adult in the home (e.g., perhaps the child's mother struggles with mental illness, but the child lives in a home with a caring and responsive grandmother), this pattern was not evident in this dataset.

The more surprising finding was related to the significant interaction found between ACEs-related risk and caring adult at school in predicting scores on self-regulation, executive functioning, and well-being. Across all three outcomes, the interaction effect was not in the direction expected. To be specific, it was hypothesized that a caring adult at school might have an additive effect for all children, but that the additive effect would be greatest for high-risk children who might stand to benefit more from a caring adult in one particularly salient context in childhood (i.e., school), given the lack of one in another (i.e., home; thus functioning as a protective factor). Such a finding would be (a) consistent with decades of resilience research that suggests the highly protective nature of having a caring and supportive adult in one's life, particularly under conditions of chronic risk and adversity (Masten & Reed, 2002; McLoyd, 1998; Werner, 1984), and (b) consistent with differential effectiveness intervention research that often indicates greater intervention gains for high-risk children compared to low-risk children (e.g., Vazsonyi et al., 2004; Wilson et al., 2003).

Rather, the results from this study suggested an additive effect of this well-known promotive/protective factor for low-risk children only, with no additive effect evident for high-risk children. To be specific, perceptions of a caring adult at school functioned as a *promotive*

factor for low-risk children, boosting scores on self-regulation, executive, functioning, and well-being at higher levels of perceived care. However, perceptions of a caring adult at school failed to function as *protective factor* for high-risk children, as scores on self-regulation, executive functioning, and well-being were nearly constant, regardless of whether the level of perceived care from an adult at school was high or low.

At first glance, this finding might appear to stand in stark contrast the resilience research and differential effectiveness studies mentioned above. However, given the way that risk was operationalized in this particular study, such a finding may actually extend our understanding of risk, resilience, and protective factors in critically important ways. First, it is important to remember which variables of risk were utilized in the development of the ACEs-related risk proxy measure: perceived stress, attachment insecurity, and difficulties accessing effective emotion regulation strategies. As already mentioned earlier in this chapter, such a risk measure could be interpreted in at least two different ways: (a) the measure is going beyond counting the number of adverse *events* a child has experienced (e.g., abuse, neglect, having a caregiver that struggles with mental illness) to potentially capturing the events' downstream negative *effects* (e.g., high stress, impaired attachment system, etc.), or (b) the measure is capturing naturally occurring differences among children in their stress-response due to biological, genetic, or temperament characteristics, that may be unrelated to ACEs exposure altogether, or should be considered in addition to potential ACEs exposure.

Either way, the proxy measure of risk developed in this study is likely capturing a type or level of risk that may not be amenable to a singular protective factor. For example, if the measure of risk developed in this study has indeed gone beyond identifying children who have a high ACEs count (i.e., a potentially heterogeneous group of children whose developmental

outcomes could still vary given the presence of powerful protective factors), to actually identifying a particularly homogenous group of higher-risk children who have already begun to internalize and evidence the devastating effects of cumulative risk (whether it be ACEs-related or attribute to biological differences) on important protective processes, then the significant moderation finding might suggest that for this particular group of high-risk children, a caring adult at school is simply not enough to buffer the negative effect between cumulative risk and important developmental outcomes.

Indeed, while many scholars agree that there is high value in children having access to at least one caring and supportive adult in their life, scholars also remind us that cumulative risk requires cumulative protection across the many ecologies that children interact with (Benard, 1991; Masten & Wright, 1998; Wyman et al., 2000), and that under conditions of cumulative risk and/or chronic adversity "there is not magic bullet" inherent in any singular protective factor in any singular context (Brooks-Gunn, 2003). Furthermore, other scholars have also suggested that under conditions of high-risk, merely adding protective factors to a child's life without equal attention to reducing risk factors is likely not an effective strategy for promoting positive development (e.g., Catalano et al., 2002; Luthar & Eisenberg, 2017). Such scholars remind us under conditions of high risk, children require comprehensive and multi-ecological support that targets both external and internal protective factors across the lifespan *and* actively works to reduce risk factors (Catalano et al., 2002; Masten & Reed, 2002). Such support would need to go beyond a caring adult at school, and include intervention to primary caregivers (Luthar & Eisenberg, 2017), supportive relationships with adults across multiple contexts (Bath & Seita, 2008) , and engagement in interventions, activities, and relationships across clinical and non-clinical contexts that restore the disruption to key protective processes (Masten, 2001).

Methodological Considerations & Direction for Future Research

While the present study offered several important contributions to extant research, it was not without several methodological limitations. Central limitations are described below with recommendations for how they might be addressed in future research.

First, several measurement issues require comment. Specifically, it should be noted that several measures utilized in this study were either truncated (e.g., eight items selected from a 12-item scale), heavily adapted by the researcher (e.g., perceived stress items were rewritten significantly to be developmentally appropriate for children) or developed by the YES program (e.g., most items related to program experience and perceived program impact). These measurement decisions stemmed from a need to (a) ensure that the surveys utilized in this study could tap a multitude of constructs without exhausting child participants, (b) ensure items were developmentally appropriate, especially for the elementary-age participants, and (c) maintain some level of consistency and continuity with internally conducted YES program evaluations around the country. While the key measures within this study were assessed for reliability, convergent validity, and measurement error, future studies could replicate this investigation utilizing more sophisticated measurement.

Second, the ACEs-related risk proxy measure that was developed and utilized in this study was a first attempt at approximating the likelihood of children having a high ACE score, without asking participants to report directly about ACEs events. Such an attempt was necessary for practical reasons (i.e., asking about ACEs directly was not considered appropriate within this study's context) and for theoretical reasons (i.e., a need to see if an approximation of risk was possible). However, because participants were never asked to report directly about ACEs events, it was not possible to validate this measure against a true measure of ACEs, thereby limiting

what can be concluded about this measure's construct validity. Until such an empirical connection can be made-- between the proxy measure used in this study and actual ACEs count—it is not possible to conclude that the ACEs-related risk proxy is valid.

On a related note, the proxy measure was an amalgamation of three risk constructs: perceived stress, attachment insecurity, and access to emotion regulation strategies. Arguably, other theoretically related constructs could have been included in the development of this risk measure (e.g., SES of parent, dual parent household, children's perception of felt safety). Additionally, the constructs could have included other ways of collecting data, including other person report (e.g., parent or teacher) or even biological or genetic indices (e.g., stress hormones from urine samples, genotype extraction) as pioneered by other risk researchers (e.g. Brody et al., 2014). However, the three constructs selected for ACEs risk approximation within this study was thoughtful and strategic in weighing the value of these alternatives against costs to time, feasibility, accessibility, and practicality. Regardless, future studies could explore other theoretically-motivated strategies for capturing ACEs, or a proxy of related risk, in other valid ways.

References

Ainsworth, M. D. S. (1973). The development of infant-mother attachment. In B. M. Caldwell & H. N. Ricciuti (Eds.), *Review of Child Development Research* (pp. 1-94). University of Chicago Press.

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation.* Erlbaum.

Alvord, M. K., & Grados, J. J. (2005). Enhancing resilience in children: A protective approach. *Professional Psychology*, *36*, 238-245.

Amato, P. R., & Keith, B. (1991). Parental divorce and the well-being of children: a meta-analysis. *Psychological Bulletin, 110*(1), 26-46.

American Academy of Pediatrics (2014). Adverse childhood experiences and the lifelong consequences of trauma.

Anda, R. F., Felitti, V. J., Bremner, J. D., Walker, J. D., Whitfield, C. H., Perry, B. D., Dube, S. D., & Giles, W. H. (2006). The enduring effects of abuse and related adverse experiences in childhood. *European Archives of Psychiatry and Clinical Neuroscience, 256*(3), 174-186.

Anda, R. F., Porter, L. E., & Brown, D. W. (2020). Inside the adverse childhood experience score: Strengths, limitations, and misapplications. *American Journal of Preventive Medicine,* 1-3

Anderson, A. & Harris, E. (2005). An introduction to theory of change. *Evaluation Exchange, 11*(2). 12-19.

Anthonysamy, A., & Zimmer-Gembeck, M. J. (2007). Peer status and behaviors of maltreated children and their classmates in the early years of school. *Child Abuse & Neglect, 31*(9), 971-991.

Arvidson, J., Kinniburgh, K., Howard, K., Spinazzola, J., Strothers, H., Evans, M., ... & Blaustein, M. E. (2011). Treatment of complex trauma in young children: Developmental and cultural considerations in application of the ARC intervention model. *Journal of Child & Adolescent Trauma, 4*(1), 34-51.

Astbury, B., & Leeuw, F. L. (2010). Unpacking black boxes: mechanisms and theory building in evaluation. *American Journal of Evaluation, 31*(3), 363-381.

Bartlett, J. D., Barto, B., Griffin, J. L., Fraser, J. G., Hodgdon, H., & Bodian, R. (2016). Trauma-informed care in the Massachusetts child trauma project. *Child Maltreatment*, *21*(2), 101-112.

Bartlett, J. D., Smith, S. & Bringewatt, E. (2017). *Helping young children who have experienced trauma: Policies and strategies for early care and education*. Child Trends.

Bath, H. (2008). The three pillars of trauma-informed care. *Reclaiming Children and Youth, 17*(3), 17-21.

Bath, H., & Seita, J. (2008). The Three Pillars of Transforming care: Healing in the 'other 23 hours'. *Reclaiming Children and Youth, 17*(3), 1-13.

Beauchaine, T., Webster-Stratton, C., & Reid, M. J. (2005). Mediators, moderators, and predictors of one-year outcomes among children treated for early-onset conduct problems: A latent growth curve analysis. *Journal of Consulting and Clinical Psychology, 73,* 371–388.

Belsky, J., & Pluess, M. (2009). Beyond diathesis stress: differential susceptibility to environmental influences. *Psychological Bulletin*, *135*(6), 885-908.

Benard, B. (1991). Fostering resiliency in kids: Protective factors in the family, school, and community. Washington, DC.

Bernier, A., Carlson, S. M., & Whipple, N. (2010). From external regulation to self-regulation: Early parenting precursors of young children's executive functioning. *Child Development, 81*(1), 326-339.

Bethell, C. D., Carle, A., Hudziak, J., Gombojav, N., Powers, K., Wade, R., & Braveman, P. (2017). Methods to assess adverse childhood experiences of children and families: toward approaches to promote child well-being in policy and practice. *Academic Pediatrics, 17*(7), 51-69.

Blaustein, M. E., & Kinniburgh, K. M. (2010). *Treating traumatic stress in children and adolescents: How to foster resilience through attachment, self-regulation, and competency*. Guilford Press.

Blodgett, C. (2012). Adopting ACES screening and assessment in child serving systems. Working paper. https://del-public-files.s3-us-west-2.amazonaws.com/Complex- Trauma-Research-ACE-Screening-and-Assessment-in-Child-Serving-Systems-7-12-final.pdf

Blodgett, C. (2014). ACEs in Head Start children and impact on development. Unpublished manuscript, Child and Family Research Unit, Washington State University, Spokane, WA.

Blodgett, C. & Dorado, J. (2016). A selected review of trauma-informed school practice and alignment with educational practice. CLEAR Trauma Center. San Francisco, CA: University of California.

Blodgett, C., & Lanigan, J. D. (2018). The association between adverse childhood experience (ACE) and school success in elementary school children. *School Psychology Quarterly*, *33*(1), 137.

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. Reading MA: Addison-Wesley

Bowlby, J. (1982). *Attachment* (2nd ed.). New York: Basic Books.

Boyce, W. T., & Ellis, B. J. (2005). Biological sensitivity to context: An evolutionary–developmental theory of the origins and functions of stress reactivity. *Development and Psychopathology, 17*, 271–301.

Boys and Girls Club of America (2017). National Youth Outcomes Inventory (NYOI) Guide to Measures.

Brendtro, L., & du Toit, L. (2005). Response Ability Pathways: Restoring bonds of respect. Cape Town: Pretext.

Brenning, K., Van Petegem, S., Vanhalst, J., & Soenens, B. (2014). The psychometric qualities of a short version of the Experiences in Close Relationships Scale–Revised Child version. *Personality and Individual Differences, 68*, 118-123.

Bretherton, I. (1985). Attachment theory: Retrospect and prospect. *Monographs of the Society for Research in Child Development, 50,* 3—35.

Bretherton, I., & Munholland, K. A. (2008). *Internal working models in attachment relationships: Elaborating a central construct in attachment theory*. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (p. 102–127). The Guilford Press.

Bridgett, D. J., Burt, N. M., Edwards, E. S., & Deater-Deckard, K. (2015). Intergenerational transmission of self-regulation: A multidisciplinary review and integrative conceptual framework. *Psychological Bulletin*, *141*(3), 602-654.

Brody, G. H., Yu, T., Chen, Y. F., Kogan, S. M., Evans, G. W., Beach, S. R., ... & Philibert, R. A. (2013). Cumulative socioeconomic status risk, allostatic load, and adjustment: a prospective latent profile analysis with contextual and genetic protective factors. *Developmental Psychology, 49*(5), 913-927.

Bronfenbrenner, U. (1974). Developmental research, public policy, and the ecology of childhood. *Child Development, 45*, 1–5.

Bronfenbrenner, U. (1976). The experimental ecology of education. *Teachers College Record, 78*, 157–204.

Bronfenbrenner, U. (1978). The social role of the child in ecological perspective. *Zeitschrift fur Soziologie, 7*(1), 4–20.

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.

Bronfenbrenner, U., & Ceci, S. J. (1994). Nature-nurture reconceptualized in developmental perspective: A bioecological model. *Psychological Review, 101*(4), 568-586.

Bronfenbrenner, U., & Crouter, A. C. (1983). The evolution of environmental models in developmental research. In P. H. Mussen (Series Ed.) & W. Kessen (Vol. Ed.), Handbook of child psychology, Vol. 1: History, theory and methods (pp. 357–414). Wiley.

Bronfenbrenner, U., & Evans, G. W. (2000). Developmental science in the 21st century: Emerging theoretical models, research designs, and empirical findings. *Social Development, 9,* 115–125.

Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In R. M. Lerner (Ed.), *Handbook of Child Psychology* (5th ed., Vol 1, pp 993-1028). Wiley.

Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In W. Damon (Series Ed.) & R.M. Lerner (Vol. Ed.), *Handbook of Child Psychology: Theoretical Models of Human Development,* (pp.793-828). Wiley.

Brooks-Gunn, J. (2003). Do you believe in magic?: What we can expect from early childhood intervention programs. *Social Policy Report*, *17*(1), 1-16.

Brown, R. P., & Gerbarg, P. L. (2005a). Sudarshan Kriya yogic breathing in the treatment of stress, anxiety, and depression: Part I—neurophysiologic model. *Journal of Alternative & Complementary Medicine, 11*(1), 189-201.

Brown, R. P., & Gerbarg, P. L. (2005b). Sudarshan Kriya Yogic breathing in the treatment of stress, anxiety, and depression: Part II—clinical applications and guidelines. *Journal of Alternative & Complementary Medicine, 11*(4), 711-717

Calkins, S.D. (2007) Caregiver influences on emerging emotion regulation. In J.J. Gross (Ed.) *Handbook of Emotion Regulation*. The Guilford Press.

Carter, J., Gerbarg, P. L., Brown, R. P., Ware, R. S., & D'Ambrosio, C. (2013). Multi-component yoga breath program for Vietnam veteran post traumatic stress disorder: randomized controlled trial. *Journal of Traumatic Stress Disorders and Treatment 2(3),* 1-10.

Cassidy, J. (1994). Emotion regulation: Influences of attachment relationships. *Monographs of The Society For Research In Child Development*, *59*(2-3), 228-249.

Catalano, R. F., Hawkins, J. D., Berglund, M. L., Pollard, J. A., & Arthur, M. W. (2002). Prevention science and positive youth development: competitive or cooperative frameworks?. *Journal of Adolescent Health, 31*(6), 230-239.

Century, J., Rudnick, M., & Freeman, C. (2010). A framework for measuring fidelity of implementation: A foundation for shared language and accumulation of knowledge. *American Journal of Evaluation, 31*(2), 199-218.

Chaffin, M., Silovsky, J. F., Funderburk, B., Valle, L. A., Brestan, E. V., Balachova, T., et al. (2004). Parent- Child Interaction Therapy with physically abusive parents: Efficacy for reducing future abuse reports. *Journal of Consulting and Clinical Psychology 72*(3), 500-510.

Chafouleas, S. M., Johnson, A. H., Overstreet, S., & Santos, N. M. (2016). Toward a blueprint for trauma-informed service delivery in schools. *School Mental Health, 8*(1), 144-162.

Chen, H. T. (1996). A comprehensive typology for program evaluation. *Evaluation Practice, 17*(2), 121-130.

Chen, H.T. (1990). *Theory-driven evaluations*. Sage.

Chen, H. T. (2005). *Practical program evaluation: Assessing and improving planning, implementation, and effectiveness*. Sage.

Clarkson Freeman, P. A. (2014). Prevalence and relationship between adverse childhood experiences and child behavior among young children. *Infant Mental Health Journal, 35*(6), 544-554.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 385-396.

Cohen, S., & Janicki-Deverts, D. (2012). Who's stressed? Distributions of psychological stress in

the United States in probability samples from 1983, 2006, and 2009. *Journal of Applied Social Psychology, 42*(6), 1320-1334.

Cohen, J. A., Deblinger, E., Mannarino, A. P., & Steer, R. A. (2004). A multisite, randomized controlled trial for children with sexual abuse–related PTSD symptoms. *Journal of the American Academy of Child & Adolescent Psychiatry*, *43*(4), 393-402.

Cohen, J.A., Mannarino, A.P., & Knudsen, K. (2005). Treating sexually abused children: 1 year follow-up of a randomized controlled trial. *Child Abuse Neglect, 29*, 135-145.

Cole, S. F., Eisner, A., Gregory, M. & Ristuccia, J. (2013). *Helping Traumatized Children Learn: Creating and Advocating for Trauma-Sensitive Schools* (Vol. 2). Massachusetts Advocates for Children.

Constantine, N. A., & Benard, B. (2001). California healthy kids survey resilience assessment module: Technical report. *Journal of Adolescent Health, 28*(2), 122-140.

Cook, A., Blaustein, M., Spinazzola, J., & Van der Kolk, B. (2003). Complex trauma in children and adolescents (White paper from the National Child Traumatic Stress Network Complex Trauma Task Force). Los Angeles, CA: National Center for Child Traumatic Stress.

Cook, A., Spinazzola, J., Ford, J., Lanktree, C., Blaustein, M., Cloitre, M., ... & Mallah, K. (2017). Complex trauma in children and adolescents. *Psychiatric Annals*, *35*(5), 390-398.

Cooper, M. L., Shaver, P. R., & Collins, N. L. (1998). Attachment styles, emotion regulation, and adjustment in adolescence. *Journal of Personality and Social Psychology*, *74*(5), 1380.

Crouch J.L., Shelton, C.R., Bardeen, J.R., Hiraoka, R., Milner, J.S., & Skowronski, J.J. Does attentional control mediate the association between adverse early experiences and child physical abuse risk? *Journal of Family Violence, 27*, 97–103.

Deblinger, E., Lippmann, J., & Steer, R.A. (1996). Sexually abused children suffering posttraumatic stress symptoms: Initial treatment outcome findings. *Child Maltreatment, 1*, 310-321.

Deblinger, E., Mannarino, A. P., Cohen, J. A., & Steer, R. A. (2006). A follow-up study of a multisite, randomized, controlled trial for children with sexual abuse-related PTSD symptoms. *Journal of the American Academy of Child & Adolescent Psychiatry*, *45*(12), 1474-1484.

Deblinger, E., Stauffer, L., & Steer, R.A. (2001). Comparative efficacies of supportive and cognitive behavioral group therapies for young children who have been sexually abused and their non-offending mothers. *Child Maltreatment, 6*, 332-343.

Descilo, T., Vedamurtachar, A., Gerbarg, P. L., Nagaraja, D., Gangadhar, B. N., Damodaran, B., ... & Brown, R. P. (2010). Effects of a yoga breath intervention alone and in combination with an exposure therapy for post-traumatic stress disorder and depression in survivors of the 2004 South-East Asia tsunami. *Acta Psychiatrica Scandinavica, 121*(4), 289-300.

Desimone, L. M. (2011). A primer on effective professional development. *Phi Delta Kappan, 92*(6), 68-71.

Dhruva, A., Miaskowski, C., Abrams, D., Acree, M., Cooper, B., Goodman, S., & Hecht, F. M. (2012). Yoga breathing for cancer chemotherapy-associated symptoms and quality of life: Results of a pilot randomized controlled trial. *Journal of Alternative & Complementary Medicine, 18*(5), 473-479.

Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*(1), 71-75.

Doan, S. N., Fuller-Rowell, T. E., & Evans, G. W. (2012). Cumulative risk and adolescent's internalizing and externalizing problems: The mediating roles of maternal responsiveness and self-regulation. *Developmental Psychology, 48*(6), 1529-1539.

Domitrovich, C. E., Durlak, J. A., Staley, K. C., & Weissberg, R. P. (2017). Social-emotional competence: An essential factor for promoting positive adjustment and reducing risk in school children. *Child Development*, *88*(2), 408-416.

Donaldson, S. I. (2003). Theory-driven program evaluation in the new millennium. In S.I. Donaldson & M. Scriven (Eds.), *Evaluating Social Programs and Problems: Visions For The New Millennium* (pp. 109-141). Routledge.

Dong, M., Anda, R. F., Felitti, V. J., Dube, S. R., Williamson, D. F., Thompson, T. J., ... & Giles, W. H. (2004). The interrelatedness of multiple forms of childhood abuse, neglect, and household dysfunction. *Child Abuse & Neglect*, *28*(7), 771-784.

Donisch, K., Bray, C., & Gewirtz, A. (2016). Child welfare, juvenile justice, mental health, and education providers' conceptualizations of trauma-informed practice. *Child Maltreatment, 21*(2), 125–134.

Donovan, W. L., Leavitt, L. A., & Walsh, R. O. (1998). Conflict and depression predict maternal sensitivity to infant cries. *Infant Behavior and Development, 21*(3), 505-517.

Duckworth, A. L., & Carlson, S. M. (2013). Self-regulation and school success. In B. W. Sokol, F. M. E. Grouzet, & U. Müller (Eds.), *Self-regulation and autonomy: Social and developmental dimension of human conduct* (pp. 208-230). Cambridge University Press.

Durlak, J. A., & DuPre, E. P. (2008). Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology, 41*(3-4), 327-350.

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development, 82*(1), 405-432.

Eisenberg, N., Cumberland, A., & Spinrad, T. L. (1998). Parental socialization of emotion. *Psychological Inquiry*, *9*(4), 241-273.

Ellis, W. R., & Dietz, W. H. (2017). A new framework for addressing adverse childhood and community experiences: The building community resilience model. *Academic Pediatrics, 17*(7), 86-93.

Evans, G. W. (2003). A multimethodological analysis of cumulative risk and allostatic load among rural children. *Developmental Psychology, 39,* 924–933.

Evans, G. W., Kim, P., Ting, A. H., Tesher, H. B., & Shanis, D. (2007). Cumulative risk, maternal responsiveness, and allostatic load among young adolescents. *Developmental Psychology, 43,* 341–351.

Evans, G. W., & Kim, P. (2012). Childhood poverty and young adult allostatic load: The mediating role of childhood cumulative risk exposure. *Psychological Science, 23,* 979 – 983.

Evans, G. W., Li, D., & Whipple, S. S. (2013). Cumulative risk and child development. *Psychological Bulletin*, *139*(6), 1-55.

Eyberg, S.M., & Matarazzo, R. G. (1980). Training parents as therapists: A comparison between individual parent-child interaction training and parent group didactic training. *Journal of Clinical Psychology, 36,* 492-499.

Felitti, V.J., Anda, R.F., Nordenberg, D., Williamson, D.F., Spitz, A.M., Edwards, V., & Koss, M. P. (1998) Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine 14*(4), 245-258.

Fixsen, D. L., Naoom, S. F., Blase´, K. A., Friedman, R. M., & Wallace, F. (2005). Implementation research: A synthesis of the literature. Tampa, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, The National Implementation Research Network (FMHI Publication #231).

Ford, J. D., & Blaustein, M. E. (2013). Systemic self-regulation: A framework for trauma-informed services in residential juvenile justice programs. *Journal of Family Violence*, *28*(7), 665-677.

Gardner, F., Hutchings, J., Bywater, T., & Whitaker, C. (2010). Who benefits and how does it work? Moderators and mediators of outcome in an effectiveness trial of a parenting intervention. *Journal of Clinical Child & Adolescent Psychology, 39*(4), 568-580.

Garner, A. S., Forkey, H., & Szilagyi, M. (2015). Translating developmental science to address childhood adversity. *Academic Pediatrics, 15*(5), 493-502.

Ghahremani, D. G., Oh, E. Y., Dean, A. C., Mouzakis, K., Wilson, K. D., & London, E. D. (2013). Effects of the Youth Empowerment Seminar on impulsive behavior in adolescents. *Journal of Adolescent Health*, *53*(1), 139-141.

Glaser, D. (2000). Child abuse and neglect and the brain—a review. *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, *41*(1), 97-116.

Gottman, J. M., & DeClaire, J. (1996). *The heart of parenting: Raising an emotionally intelligent child*. Simon & Schuster.

Gottman, J. M., Katz, L. F., & Hooven, C. (1996). Parental meta-emotion philosophy and the emotional life of families: Theoretical models and preliminary data. *Journal of Family Psychology, 10*, 243–268

Graham-Bermann, S., Castor, L., Miller, L., & Howell, K. (2012). The impact of intimate partner violence and additional traumatic events on trauma symptoms and PTSD in preschool-aged children. *Journal of Traumatic Stress, 25*, 393–400.

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment, 26*(1), 41-54.

Greene, R., & Ablon, S. (2006). *Treating explosive kids: The collaborative problem-solving approach*. The Guilford Press.

Greenwald, R. (2005). *Child trauma handbook: A guide for helping trauma-exposed children and adolescents*. The Haworth Maltreatment and Trauma Press.

Grossmann, K., & Grossmann, K. E. (2006). Attachment quality as an organizer of emotional and behavioral responses in a longitudinal perspective. In *Attachment across the life cycle* (pp. 101-122). Routledge.

Gunnar, M., & Quevedo, K. (2007). The neurobiology of stress and development. *Annual Review of Psychology., 58*, 145-173.

Guskey, T. R., & Yoon, K. S. (2009). What works in professional development?. *Phi Delta Kappan, 90*(7), 495-500.

Harris, N. B., Marques, S. S., Oh, D., Bucci, M., & Cloutier, M. (2017). Prevent, screen, heal: Collective action to fight the toxic effects of early life adversity. *Academic Pediatrics*, *17*(7), 14-15.

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Publications.

Henderson-Smith, L. (2018). Join the trauma-sensitive school movement. http://www.acesconnection.com/blog/join-the-trauma-sensitive-school-movement

Hodas, G. R. (2006). Responding to childhood trauma: The promise and practice of trauma informed care. Pennsylvania Office of Mental Health and Substance Abuse Services, 1-77.

Holmes, C., Levy, M., Smith, A., Pinne, S., & Neese, P. (2015). A model for creating a supportive trauma-informed culture for children in preschool settings. *Journal of Child and Family Studies*, *24*(6), 1650-1659.

Hood, K. K. & Eyberg, S. M. (2003). Outcomes of Parent-Child Interaction Therapy: Mothers' reports of maintenance three to six years after treatment. *Journal of Clinical Child and Adolescent Psychology, 32,* 419-429.

Janakiramaiah, N., Gangadhar, B. N., Murthy, P. N. V., Harish, M. G., Subbakrishna, D. K., & Vedamurthachar, A. (2000). Antidepressant efficacy of Sudarshan Kriya Yoga (SKY) in melancholia: a randomized comparison with electroconvulsive therapy (ECT) and imipramine. *Journal of Affective Disorders*, *57*(1-3), 255-259.

Jones, S. M., & Bouffard, S. M. (2012). Social and emotional learning in schools: From

programs to strategies and commentaries. *Social Policy Report*, *26*(4), 1-33.

Katz, J., Wandersman, A., Goodman, R. M., Griffin, S., Wilson, D. K., & Schillaci, M. (2013). Updating the FORECAST formative evaluation approach and some implications for ameliorating theory failure, implementation failure, and evaluation failure. *Evaluation and Program Planning, 39*, 42-50.

Katzman, M. A., Vermani, M., Gerbarg, P. L., Brown, R. P., Iorio, C., Davis, M., ... & Tsirgielis, D. (2012). A multicomponent yoga-based, breath intervention program as an adjunctive treatment in patients suffering from generalized anxiety disorder with or without comorbidities. *International Journal of Yoga*, *5*(1), 57-65.

Kim, J., & Cicchetti, D. (2003). Social self-efficacy and behavior problems in maltreated and nonmaltreated children. *Journal of Clinical Child and Adolescent Psychology, 32*(1), 106-117.

Kim, J., & Cicchetti, D. (2010). Longitudinal pathways linking child maltreatment, emotion regulation, peer relations, and psychopathology. *Journal of Child Psychology and Psychiatry, 51*(6), 706-716.

King, N.J., Tonge, B.J., Mullen, P., Myerson, N., Heyne, D., Rollings, S., Martin, R. & Ollendick, T.H. (2000). Treating sexually abused children with posttraumatic stress symptoms: A randomized clinical trial. *Journal of the American Academy of Child & Adolescent Psychiatry, 39,* 1347-1355.

Kiser, L. J., & Black, M. A. (2005). Family processes in the midst of urban poverty. *Aggression and Violent Behavior, 10*(6), 715-750

Ko, S. J., Ford, J. D., Kassam-Adams, N., Berkowitz, S. J., Wilson, C., Wong, M., ... & Layne, C. M. (2008). Creating trauma-informed systems: child welfare, education, first

responders, health care, juvenile justice. *Professional Psychology: Research and Practice*, *39*(4), 396.

Kobak, R. R., & Sceery, A. (1988). Attachment in late adolescence: Working models, affect regulation, and representations of self and others. *Child Development*, 135-146.

Kopp, C. B. (1982). Antecedents of self-regulation: a developmental perspective. *Developmental Psychology*, *18*(2), 199-214.

Kumar, N., Bhatnagar, S., Velpandian, T., Patnaik, S., Menon, G., Mehta, M., ... & Singh, V. (2013). Randomized controlled trial in advance stage breast cancer patients for the effectiveness on stress marker and pain through Sudarshan Kriya and Pranayam. *Indian Journal of Palliative Care*, *19*(3).

Laible, D. (2007). Attachment with parents and peers in late adolescence: Links with emotional competence and social behavior. *Personality and Individual Differences*, *43*(5), 1185-1197.

Lang, J. M., Campbell, K., Shanley, P., Crusto, C. A., & Connell, C. M. (2016). Building capacity for trauma-informed care in the child welfare system: Initial results of a statewide implementation. *Child Maltreatment*, *21*(2), 113-124.

Lansford, J. E., Dodge, K. A., Pettit, G. S., Bates, J. E., Crozier, J., & Kaplow, J. (2002). A 12-year prospective study of the long-term effects of early child physical maltreatment on psychological, behavioral, and academic problems in adolescence. *Archives of Pediatrics & Adolescent Medicine*, *156*(8), 824-830.

Lanza, S. T., Flaherty, B. P., & Collins, L. M. (2003). Latent class and latent transition analysis. *Handbook of Psychology*, 663-685.

Lanza, S. T., & Rhoades, B. L. (2013). Latent class analysis: an alternative perspective on subgroup analysis in prevention and treatment. *Prevention Science*, *14*(2), 157-168.

Layne, C. M., Greeson, J. K., Ostrowski, S. A., Kim, S., Reading, S., Vivrette, R. L., & Pynoos, R. S. (2014). Cumulative trauma exposure and high risk behavior in adolescence: Findings from the National Child Traumatic Stress Network Core Data Set. *Psychological Trauma: Theory, Research, Practice, and Policy*, *6*(1), 40-49.

Lerner, R. M., Jacobs, F., & Wertlieb, D. (Eds.). (2005). *Applied developmental science: An advanced textbook*. Sage Publications.

Liddle, I., & Carter, G. F. (2015). Emotional and psychological well-being in children: the development and validation of the Stirling Children's Well-being Scale. *Educational Psychology in Practice*, *31*(2), 174-185.

Lieber, R. L. (1990). Statistical significance and statistical power in hypothesis testing. *Journal of Orthopaedic Research*, *8*(2), 304-309.

Lieberman, A., Chu, A., Van Horn, P., & Harris, W. (2011). Trauma in early childhood: Empirical evidence and clinical implications. *Development and Psychopathology, 23*, 397–410.

Luster, T., & McAdoo, H. P. (1994). Factors related to the achievement and adjustment of young African American children. *Child Development*, *65*(4), 1080-1094.

Luthar, S. S., & Eisenberg, N. (2017). Resilient adaptation among at-risk children: Harnessing science toward maximizing salutary environments. *Child Development*, *88*(2), 337-349

Lyons-Ruth, K., & Jacobvitz, D. (1999). Attachment disorganization: Unresolved loss, relational violence, and lapses in behavioral and attentional strategies. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 520–

554). Guilford Press.

Mahoney, J. L., Schweder, A. E., & Stattin, H. (2002). Structured after-school activities as a moderator of depressed mood for adolescents with detached relations to their parents. *Journal of Community Psychology, 30*(1), 69-86.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. *Monographs of The Society for Research In Child Development*, 66-104.

Main, M., & Solomon, J. (1986). Discovery of a new, insecure-disorganized/disoriented attachment pattern. In M. Yogman & T. B. Brazelton (Eds.), *Affective development in infancy* (pp. 95–124). Ablex.

Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist*, *56*(3), 227-238.

Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and Psychopathology*, *22*(3), 491-495.

Masten, A. S., & Coatsworth, J. D. (1998). The development of competence in favorable and unfavorable environments: Lessons from research on successful children. *American Psychologist*, *53*(2), 205-220.

Masten, A. S., Hubbard, J. J., Gest, S. D., Tellegen, A., Garmezy, N., & Ramirez, M. (1999). Competence in the context of adversity: Pathways to resilience and maladaptation from childhood to late adolescence. *Development and Psychopathology*, *11*(1), 143-169.

Masten, A.S., & Reed, J.M.G. (2005). Resilience in development. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 74-85). Oxford.

Masten, A.S., & Wright, M. O. D. (1998). Cumulative risk and protection models of child maltreatment. *Journal of Aggression, Maltreatment & Trauma, 2*(1), 7-30.

Matas, L., Arend, R. A., & Sroufe, L. A. (1978). Continuity of adaptation in the second year: The relationship between quality of attachment and later competence. *Child Development*, 49 (3) 547-556.

Mathersul, D. C., Tang, J. S., Schulz-Heik, R. J., Avery, T. J., Seppälä, E. M., & Bayley, P. J. (2019). Study protocol for a non-inferiority randomised controlled trial of SKY breathing meditation versus cognitive processing therapy for PTSD among veterans. *BMJ Open*, *9*(4).

Mayes, L. & Truman, S. (2002). Substance abuse and parenting. In M. Bornstein (Ed.), *Handbook of parenting: Vol. 4. Social conditions and applied parenting*. (pp. 329-359). Erlbaum.

McCutcheon, A. C. (1987). *Latent class analysis.* Sage.

McEwen, B. S. (1998). Stress, adaptation, and disease: Allostasis and allostatic load. *Annals of the New York Academy of Sciences, 840,* 33–44.

McEwen, B. S. (2012). Brain on stress: how the social environment gets under the skin. *Proceedings of the National Academy of Sciences*, *109*, 17180-17185.

McGonigal, K. (2015). *The upside of stress: Why stress is good for you*. Penguin Random House.

McLaughlin, K. A., & Sheridan, M. A. (2016). Beyond cumulative risk: A dimensional approach to childhood adversity. *Current Directions in Psychological Science*, *25*(4), 239-245.

McLoyd, V. C. (1998). Socioeconomic disadvantage and child development. *American Psychologist*, *53*(2), 185-204.

Meisels, S., & Shonkoff, J. (2000). Early childhood intervention: A continuing evolution. In J. Shonkoff & S. Meisels (Eds.), *Handbook of early childhood intervention* (2nd ed.). Cambridge University Press.

Metzler, M., Merrick, M. T., Klevens, J., Ports, K. A., & Ford, D. C. (2017). Adverse childhood experiences and life opportunities: Shifting the narrative. *Children and Youth Services Review*, *72*, 141-149.

Meyers, D. C., Durlak, J. A., & Wandersman, A. (2012). The quality implementation framework: a synthesis of critical steps in the implementation process. *American Journal of Community Psychology*, *50*(3-4), 462-480.

Mischel, W., Ayduk, O., Berman, M. G., Casey, B. J., Gotlib, I. H., Jonides, J., ... & Shoda, Y. (2010). Willpower over the life span: decomposing self-regulation. *Social Cognitive and Affective Neuroscience*, *6*(2), 252-256.

Modecki, K. L., Zimmer-Gembeck, M. J., & Guerra, N. (2017). Emotion regulation, coping, and decision making: Three linked skills for preventing externalizing problems in adolescence. *Child Development*, *88*(2), 417-426.

Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H., ... & Sears, M. R. (2011). A gradient of childhood self-control predicts health, wealth, and public safety. *Proceedings of the National Academy of Sciences*, *108*(7), 2693-2698.

Monroe, S. M., & Simons, A. D. (1991). Diathesis-stress theories in the context of life stress research: Implications for the depressive disorders. *Psychological Bulletin, 110,* 406 – 425.

Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2007). The role of the family context in the development of emotion regulation. *Social Development*, *16*(2), 361-388.

Murphy, A., Steele, M., Dube, S. R., Bate, J., Bonuck, K., Meissner, P.,...Steele, H. (2014). Adverse Childhood Experiences (ACEs) questionnaire and Adult Attachment Interview (AAI): Implications for parent child relationships. *Child Abuse & Neglect, 38*, 224 –233.

National Research Council & Institute of Medicine. (2000). *From neurons to neighborhoods: The science of early childhood development*. In J. P. Shonkoff & D. A. Phillips, (Eds.), *Board on Children, Youth, and Families; Commission on Behavioral and Social Sciences and Education*. National Academy Press.

Nelson, C. A. (2003). Neural development and lifelong plasticity. *Handbook of Applied Developmental Science*, *1*, 31-60.

Nelson, C. A., & Bloom, F. E. (1997). Child development and neuroscience. *Child Development*, *68*(5), 970-987.

Newcomb, M. D., Maddahian, E., & Bentler, P. M. (1986). Risk factors for drug use among adolescents: concurrent and longitudinal analyses. *American Journal of Public Health*, *76*(5), 525-531.

Nota, L., Soresi, S., & Zimmerman, B. J. (2004). Self-regulation and academic achievement and resilience: A longitudinal study. *International Journal of Educational Research*, *41*(3), 198-215.

Pearl, E., Thieken, L., Olafson, E., Boat, B., Connelly, L., Barnes, J., & Putnam, F. (2012). Effectiveness of community dissemination of parent–child interaction therapy. *Psychological Trauma: Theory, Research, Practice, and Policy*, *4*(2), 204.

Perry, B. D. (2006). Applying principles of neurodevelopment to clinical work with maltreated and traumatized children: The neurosequential model of therapeutics. In N. B. Webb (Ed.), *Working with traumatized youth in child welfare* (pp. 27−52). Guilford.

Perry, B. D., & Pollard, R. (1998). Homeostasis, stress, trauma, and adaptation: A neurodevelopmental view of childhood trauma. *Stress in Children, 7*, 33–51.

Perry, B. D., Pollard, R. A., Blakley, T. L., Baker, W. L., & Vigilante, D. (1995). Childhood trauma, the neurobiology of adaptation, and "use-dependent" development of the brain: How "states" become "traits". *Infant Mental Health Journal, 16,* 271−291.

Perry, B. D., & Szalavitz, M. (2006). *The boy who was raised as a dog [and other stories from a child psychiatrist's notebook]: What traumatized children can teach us about loss, love, and healing*. Basic Books.

Purewal, S. K., Bucci, M., Gutiérrez Wang, L., Koita, K., Silvério Marques, S., Oh, D., & Harris, N.B. (2016). Screening for adverse childhood experiences (ACEs) in an integrated pediatric care model. *Zero to Three*, *37*(1), 10-17.

Raver, C. C., Jones, S. M., Li-Grining, C., Zhai, F., Bub, K., & Pressler, E. (2011). CSRP's impact on low-income preschoolers' preacademic skills: Self-regulation as a mediating mechanism. *Child Development*, *82*(1), 362-378.

Redford, J. (2016). Resilience: the biology of stress and the science of hope [Film]. KPJR Films.

Rosa, E. M., & Tudge, J. (2013). Urie Bronfenbrenner's theory of human development: Its evolution from ecology to bioecology. *Journal of Family Theory & Review*, *5*(4), 243-258

Rossi, P. (1987). The iron law of evaluation and other metallic rules. *Research in Social Problems and Public Policy, 4,* 3-20.

Roth, J. L., & Brooks-Gunn, J. (2016). Evaluating youth development programs: Progress and promise. *Applied Developmental Science*, *20*(3), 188-202.

Rutherford, H. J., Wallace, N. S., Laurent, H. K., & Mayes, L. C. (2015). Emotion regulation in parenthood. *Developmental Review, 36*, 1-14.

Rutman, L., & Wholey, J. S. (1980). *Planning useful evaluations: Evaluability assessment*. Sage Publications.

Rutter, M. (1979). Protective factors in children's responses to stress and disadvantage. *Annals of the Academy of Medicine, 8,* 324–338.

Rutter, M. (1981). Stress, coping, and development: Some issues and some questions. *Journal of Child Psychology and Psychiatry, 22,* 323–356.

Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry*, *57*(3), 316-331.

Sacks, V., Murphy, D., & Moore, K. (2014). Adverse Childhood Experiences: National and state level prevalence. *Child Trends*. 1-11.

Sameroff, A. J., Seifer, R., Zax, M., & Barocas, R. (1987). Early indicators of developmental risk: Rochester Longitudinal Study. *Schizophrenia Bulletin, 13,* 383–394.

Sameroff, A. J., Seifer, R., & McDonough, S. C. (2004). Contextual contributors to the assessment of infant mental health. In R. Del Carmen- Wiggins & A. Carter (Eds.), *Handbook of infant, toddler, and preschool mental health assessment* (pp. 61–76). Oxford University Press.

Sameroff, A. (2006). Identifying Risk and Protective Factors for Healthy Child Development. In A. Clarke-Stewart & J. Dunn (Eds.), *The Jacobs Foundation series on adolescence. Families count: Effects on child and adolescent development* (p. 53–76). University

Press.

Schore, A. N. (2001). Effects of a secure attachment relationship on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal*, *22*(1-2), 7-66.

Schore, A. N. (2001). The effects of early relational trauma on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal, 22*, 201-269.

Seppälä, E. M., Nitschke, J. B., Tudorascu, D. L., Hayes, A., Goldstein, M. R., Nguyen, D. T., ... & Davidson, R. J. (2014). Breathing-based meditation decreases posttraumatic stress disorder symptoms in US Military veterans: A randomized controlled longitudinal study. *Journal of Traumatic Stress*, *27*(4), 397-405.

Siegel, D. J., & Bryson, T. P. (2011). *The whole-brain child: 12 revolutionary strategies to nurture your child's developing mind*. Bantam.

Simons, K. J., Paternite, C. E., & Shore, C. (2001). Quality of parent/adolescent attachment and aggression in young adolescents. *Journal of Early Adolescence,* 21, 182-203.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference.* Houghton Mifflin.

Shapiro J. (1982). Evaluation as theory testing: An example from Head Start. *Educational Evaluation and Policy Analysis, 4,* 341–353.

Shaver, P. R., & Hazan, C. (1993). Adult romantic attachment: Theory and evidence. *Advances in Personal Relationships*, 4, 29-70.

Shaver, P. R., & Mikulincer, M. (2007). Adult attachment strategies and the regulation of emotion. *Handbook of Emotion Regulation, 44,* 446-465.

Shonkoff, J. P., Garner, A. S., Siegel, B. S., Dobbins, M. I., Earls, M. F., McGuinn, L., ... & Committee on Early Childhood, Adoption, and Dependent Care. (2012). The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*, *129*(1), 232-246.

Shonkoff, J. P., Callister, G., & Oberklaid, F. (2006). The science of early childhood development: Closing the gap between what we know and what we do. Department of Human Services, Victoria.

Spaeth, M., Weichold, K., Silbereisen, R. K., & Wiesner, M. (2010). Examining the differential effectiveness of a life skills program (IPSY) on alcohol use trajectories in early adolescence. *Journal of Consulting and Clinical Psychology*, *78*(3), 334-348.

Spanglar, G., Schieche, M., Ilg, U., Maier, U., & Ackermann, C. (1994). Maternal sensitivity as an external organizer for biobehavioral regulation in infancy. *Developmental Psychobiology*, *27*(7), 425-437.

Spoth, R., Shin, C., Guyll, M., Redmond, C., & Azevedo, K. (2006). Universality of effects: An examination of the comparability of long-term family intervention effects on substance use across risk-related subgroups. *Prevention Science*, *7*(2), 209-224.

Stevens, J. E. (2013). There's no such thing as a bad kid in these Spokane, WA, trauma-informed elementary schools. ACEs Too High. Retrieved from http://acestoohigh.com/2013/08/20/spokaneschools/.

Stratford, B., Cook, E., Hanneke, R., Katz, E., Seok, D., Steed, H., ... & Temkin, D. (2020). A Scoping Review of School-Based Efforts to Support Students Who Have Experienced Trauma. *School Mental Health*, 1-36.

Sureka, P., Govil, S., Dash, D., Dash, C., Kumar, M., & Singhal, V. (2014). Effect of Sudarshan Kriya on male prisoners with non-psychotic psychiatric disorders: A randomized control trial. *Asian Journal of Psychiatry*, *12*, 43-49.

Taylor, S.E., & Stanton, A.L. (2007) Coping resources, coping processes, and mental health. *Annual Review of Clinical Psychology*, 3, 377–401.

Taylor, R. D., Oberle, E., Durlak, J. A., & Weissberg, R. P. (2017). Promoting positive youth development through school-based social and emotional learning interventions: A meta-analysis of follow-up effects. *Child Development*, *88*(4), 1156-1171.

Teachanarong, L. R., Berry, T.B., & Borelli, J. (manuscript in prep). Are social-emotional learning programs universally effective? Exploring the relationships among attachment insecurity, program experience, and youth outcomes.

Teti, D. M., Gelfand, D. M., Messinger, D. S., & Isabella, R. (1995). Maternal depression and the quality of early attachment: An examination of infants, preschoolers, and their mothers. *Developmental Psychology*, *31*(3), 364.

Thompson, R. A. (2016). What more has been learned? The science of early childhood development 15 years after neurons to neighborhoods. *Zero to Three Journal*, *36*(3), 18-24.

Thompson, R. A., & Nelson, C. A. (2001). Developmental science and the media: Early brain development. *American Psychologist*, *56*(1), 5-15.

Tolan, P., Ross, K., Arkin, N., Godine, N., & Clark, E. (2016). Toward an integrated approach to positive development: Implications for intervention. *Applied Developmental Science*, *20*(3), 214-236.

Tudge, J. R., Mokrova, I., Hatfield, B. E., & Karnik, R. B. (2009). Uses and misuses of Bronfenbrenner's bioecological theory of human development. *Journal of Family Theory & Review*, *1*(4), 198-210.

Van der Kolk, B. A. (2015). *The body keeps the score: Brain, mind, and body in the healing of trauma*. Penguin Books.

Van der Kolk, B., & Courtois, C. (2005). Editorial comments: Complex developmental trauma. *Journal of Traumatic Stress*, *18*(5), 385-388.

Vazsonyi, A. T., Belliston, L. M., & Flannery, D. J. (2004). Evaluation of a school-based, universal violence prevention program: Low-, medium-, and high-risk children. *Youth Violence and Juvenile Justice, 2(*2), 185-206.

Vedamurthachar, A., Janakiramaiah, N., Hegde, J. M., Shetty, T. K., Subbakrishna, D. K., Sureshbabu, S. V., & Gangadhar, B. N. (2006). Antidepressant efficacy and hormonal effects of Sudarshana Kriya Yoga (SKY) in alcohol dependent individuals. *Journal of Affective Disorders*, *94*(1-3), 249-253.

Volling, B. L. (2001). Early attachment relationships as predictors of preschool children's emotion regulation with a distressed sibling. *Early Education and Development, 12*(2), 185-207.

Weinberg, A., & Klonsky, E. D. (2009). Measurement of emotion dysregulation in adolescents. *Psychological Assessment, 21*(4), 616-621.

Weiner, D, Schneider, S & Lyons, JS (2009). Evidence-based treatments for trauma among culturally diverse foster care youth: Treatment retention and outcomes. *Children and Youth Services Review, 31*,1199-1205

Weiss, C. H. (1995). Nothing as practical as good theory: Exploring theory-based evaluation for comprehensive community initiatives for children and families. *New Approaches to Evaluating Community Initiatives: Concepts, Methods, and Contexts*, 65-92.

Weiss, C. H. (1997). Theory-based evaluation: Past, present, and future. *New Directions for Evaluation*, *76,* 41-55.

Weiss, C. H. (1997). *Evaluation: Methods for Studying Programs and Policies, 2nd Edition*. Prentice Hall.

Werner, E. E. (1984). Resilient children. *Young Children, 40*, 68–72.

Werner, E. E. (2000). Protective factors and individual resilience. In J. Shonkoff, & S. Meisels (Eds.), Handbook of early childhood intervention (pp. 115–132). (2nd ed.). Cambridge University Press.

West, M. R., Buckley, K., Krachman, S. B., & Bookman, N. (2018). Development and implementation of student social-emotional surveys in the CORE districts. *Journal of Applied Developmental Psychology*, *55*, 119-129.

Wilson, S. J., Lipsey, M. W., & Derzon, J. H. (2003). The effects of school-based intervention programs on aggressive behavior: A meta-analysis. *Journal of Consulting and Clinical Psychology, 71*(1), 136-149.

Wolff, M. S., & Ijzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development*, *68*(4), 571-591.

Wyman, P. A., Sandler, I., Wolchick, S., & Nelson, K. (2000). Resilience as cumulative competence promotion and stress protection: Theory and intervention. In D. Cicchetti, J. Rappaport, I. Sandler, & R.P. Weissberg (Eds.), *The promotion of wellness in children and adolescents* (pp. 133-184). Child Welfare League of America.

Zins, J. E., & Elias, M. J. (2007). Social and emotional learning: Promoting the development of all students. *Journal of Educational and Psychological Consultation*, *17*(2-3), 233-255.

Zope, S. A., & Zope, R. A. (2013). Sudarshan kriya yoga: Breathing for health. *International Journal of Yoga*, *6*(1), 4-10.

Zuckerman, M. (1999). Vulnerability to psychopathology: A biosocial model. American Psychological Association.

Appendix A. Item-Level Descriptives for Student Survey at Time 1

Student Outcomes	Survey Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Well-Being (8 items)	In the last month, how often have you…					
	… felt happy?	219	2.89	0.72	-0.54	.81
	... got along well with other kids?	218	2.98	0.85	-0.87	
	... been in a good mood?	218	2.70	0.78	-0.45	
	... felt calm?	218	2.64	0.96	-0.92	
	... thought that good things will happen in your life?	218	2.70	0.94	-0.99	
	... thought that there are many things you can be proud of?	219	2.80	0.95	-0.92	
	... thought that lots of people care about you?	218	2.79	1.04	-1.19	
	... felt that you are good at many things?	218	2.56	0.95	-0.95	
Self-Regulation (6 items)	In the last month, how often have you…					
	...come to class prepared?	218	3.13	0.88	-0.54	.66
	...followed directions in class?	219	3.07	0.80	-0.46	
	...gotten your work done right away instead of waiting until the last minute?	219	2.86	0.97	-0.30	
	... paid attention and ignored distractions?	219	2.39	0.89	0.04	
	... stayed calm even when someone was bothering you or saying bad things to you?	219	2.42	1.07	0.15	
	... been able to keep your temper under control?	218	2.72	1.01	-0.17	
Executive-Functioning (6 items)	How hard or easy is it for you to…					
	... stay calm when you feel stressed?	218	2.43	0.84	0.10	.79
	... think carefully about what you say before you speak?	219	2.79	0.94	-0.41	
	... control your temper when you are upset?	219	2.48	0.98	-0.01	
	... think of different ways to solve a problem?	218	2.68	0.86	-0.26	
	... think about what might happen before you make a decision?	219	2.62	0.92	-0.11	
	... ask for advice when making an important decision?	218	2.71	0.94	-0.33	

ACEs-Related Risk Variables	Survey Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Perceived Stress (5 items)	In the last month, how often have you...					
	... felt stressed about something going on at home?	217	2.08	0.96	0.61	
	... felt stressed about something going on at school?	219	2.11	0.94	0.60	
	... felt stressed about problems with friends or other kids at school?	218	2.03	1.00	0.74	.75
	... felt that something important in your life has gone wrong?	217	2.03	0.95	0.74	
	... felt angry because of something outside of your control?	218	2.00	0.98	0.67	
Attachment Avoidance (4 items)	I tell my parent or guardian nearly everything. (r)	218	2.13	0.91	0.55	
	I usually talk to my parent/guardian about my problems & worries. (r)	218	2.03	0.97	0.64	.85
	When I feel bad, it helps to talk to my parent or guardian. (r)	218	1.95	0.98	0.79	
	It is easy for me to tell my parent or guardian a lot about myself. (r)	218	1.94	1.02	0.75	
Attachment Anxiety (3 items)	I am worried my parent or guardian doesn't really love me.	218	1.62	0.93	1.38	
	I am worried that my parent or guardian might want to leave me.	217	1.58	0.88	1.38	.84
	I sometimes think that my parent or guardian has changed their feelings about me without any reason.	217	1.68	0.95	1.13	
Access to ER strategies (3 items)	When I'm upset…					
	... it takes me a long time to feel better.	219	2.42	0.90	0.41	
	... I believe there is nothing I can do to make myself feel better.	218	1.97	1.04	0.75	.71
	... I believe that I will stay that way for a long time.	218	2.01	1.12	0.69	

Proximal Processes	Survey Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Caring Adult at School (7 items)	My teacher at school...					
	... really cares about me.	218	3.39	0.72	-1.28	
	... listens to me when I have something to say.	217	3.46	0.64	-0.97	
	... notices when I'm upset.	217	2.91	0.90	-0.35	
	... helps me feel better when I'm feeling sad, mad, or bad.	217	3.06	0.89	-0.66	.83
	... talks with me about my problems or worries.	217	3.03	0.92	-0.59	
	... tells me when I do a good job.	217	3.45	0.67	-1.09	
	...believes in me.	217	3.51	0.71	-1.49	
Caring Adult at Home (7 items)	In my home, there is a parent or some other adult who...					
	... really cares about me.	217	3.68	0.67	-2.38	
	... listens to me when I have something to say.	217	3.30	0.77	-1.01	
	... notices when I'm upset.	217	3.39	0.86	-1.38	
	... helps me feel better when I'm feeling sad, mad, or bad.	217	3.35	0.89	-1.26	.87
	... talks with me about my problems.	217	3.20	0.96	-1.02	
	... expects me to follow the rules.	216	3.46	0.79	-1.59	
	... believes in me.	217	3.65	0.71	-2.26	
YES Buy-In (5 items)	I like participating in the YES program.	184	3.58	0.69	-1.77	
	The YES program is fun.	184	3.54	0.68	-1.69	
	The YES program teaches me useful skills.	184	3.42	0.76	-1.34	.89
	The YES program helps me feel better.	184	3.41	0.79	-1.42	
	I am excited about participating in the YES program again.	184	3.57	0.71	-1.99	
YES Use of Practices (2 items)	How often do you practice the breathing that you learned in the YES program while you are *at school*?	184	1.72	1.15	-0.22	n/a
	How often do you practice the breathing you learned in the YES program while you are *at home*?	184	1.27	1.13	0.22	

Appendix B: Item-Level Descriptives for Student Survey at Time 2

Student Outcomes	Survey Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Well-Being (8 items)	In the last month, how often have you…					
	… felt happy?	224	2.90	0.81	-0.21	.86
	... got along well with other kids?	224	3.01	0.84	-0.35	
	... been in a good mood?	224	2.81	0.81	-0.03	
	... felt calm?	224	2.86	0.89	-0.19	
	... thought that good things will happen in your life?	224	2.73	0.98	-0.10	
	... thought that there are many things you can be proud of?	224	2.84	0.94	-0.25	
	... thought that lots of people care about you?	224	2.91	1.00	-0.36	
	... felt that you are good at many things?	224	2.70	0.96	-0.03	
Self-Regulation (6 items)	In the last month, how often have you…					.71
	...come to class prepared?	224	3.10	0.88	-0.60	
	...followed directions in class?	224	3.15	0.80	-0.70	
	...gotten your work done right away instead of waiting until the last minute?	224	2.92	0.92	-0.42	
	... paid attention and ignored distractions?	224	2.44	0.87	0.67	
	... stayed calm even when someone was bothering you or saying bad things to you?	224	2.54	1.08	-0.06	
	... been able to keep your temper under control?	224	2.84	0.99	-0.26	
Executive-Functioning (6 items)	How hard or easy is it for you to…					.80
	... stay calm when you feel stressed?	224	2.50	0.93	-0.05	
	... think carefully about what you say before you speak?	224	2.74	0.88	-0.43	
	... control your temper when you are upset?	224	2.51	1.02	-0.03	
	... think of different ways to solve a problem?	224	2.74	0.82	-0.27	
	... think about what might happen before you make a decision?	224	2.62	0.93	-0.10	
	... ask for advice when making an important decision?	224	2.80	0.95	-.046	

ACEs-Related Risk Variables	Survey Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Perceived Stress (5 items)	In the last month, how often have you...					
	... felt stressed about something going on at home?	224	1.92	0.88	0.76	
	... felt stressed about something going on at school?	224	2.04	0.95	0.61	
	... felt stressed about problems with friends or other kids at school?	224	1.88	0.94	0.86	.75
	... felt that something important in your life has gone wrong?	224	1.82	0.94	0.95	
	... felt angry because of something outside of your control?	224	1.97	0.90	0.69	
Access to ER strategies (3 items)	When I'm upset…					
	... it takes me a long time to feel better.	226	2.49	0.94	0.31	
	... I believe there is nothing I can do to make myself feel better.	226	2.09	1.03	0.60	.77
	... I believe that I will stay that way for a long time.	226	2.10	1.14	0.63	

Proximal Processes	Survey Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Caring Adult at School (7 items)	My teacher at school...					
	... really cares about me.	223	3.45	0.66	-1.24	
	... listens to me when I have something to say.	223	3.39	0.69	-1.06	
	... notices when I'm upset.	223	3.00	0.90	-0.53	
	... helps me feel better when I'm feeling sad, mad, or bad.	223	3.11	0.92	-0.77	.88
	... talks with me about my problems or worries.	223	3.04	0.92	-0.63	
	... tells me when I do a good job.	223	3.43	0.67	-1.22	
	...believes in me.	223	3.47	0.73	-1.57	
Caring Adult at Home (7 items)	In my home, there is a parent or some other adult who...					
	... really cares about me.	224	3.68	0.60	-2.03	
	... listens to me when I have something to say.	224	3.40	0.76	-1.06	
	... notices when I'm upset.	224	3.48	0.76	-1.38	
	... helps me feel better when I'm feeling sad, mad, or bad.	224	3.41	0.84	-1.31	.86
	... talks with me about my problems.	224	3.35	0.91	-1.24	
	... expects me to follow the rules.	224	3.62	0.65	-1.88	
	... believes in me.	224	3.65	0.65	-2.05	

YES Experience & Use	Survey Item	*n*	Mean	*SD*	Skew	Cron. Alpha
YES Satisfaction (4 items)	I liked being in the YES program.	112	3.43	0.80	-1.47	.89
	I thought the YES program was boring. (rev)	112	3.30	0.85	-1.17	
	I thought the YES program was helpful.	112	3.29	0.82	-1.09	
	I want to be in the YES program again next year.	112	3.31	0.95	-1.25	
YES Teacher (3 items)	My YES teacher cares about me.	112	3.41	0.82	-1.39	.84
	My YES teacher is a good teacher.	112	3.60	0.59	-1.19	
	I want to learn more from My YES teacher next year.	112	3.37	0.90	-1.32	
YES Attribution (7 items)	Because I participated in the YES program...					.93
	... I feel happier.	112	3.02	0.97	-0.77	
	... I feel more relaxed.	112	3.04	0.94	-0.80	
	... I feel less stressed.	112	2.98	0.97	-0.57	
	... I focus better in class.	112	3.04	0.96	-0.57	
	... I feel more in control.	112	2.96	0.98	-0.65	
	... I get along better with other kids at school.	112	2.91	0.98	-0.57	
	... I feel better.	112	3.12	0.95	-0.95	
YES Use (7 items)	How often do you use the breathing practices you learned in the YES program …					.89
	… when you are at school?	112	1.51	1.23	-0.34	
	… when you are at home?	112	1.45	1.17	-0.00	
	… to calm yourself down?	112	1.38	1.09	-0.09	
	… to help you focus?	112	1.39	1.15	-0.07	
	… to help you relax?	112	1.58	1.18	-0.15	
	… to give yourself energy?	112	1.24	1.19	0.37	
	… to help you sleep?	112	1.13	1.26	0.50	

Appendix C: Item-Level Descriptives for Student Survey at Time 3

Student Outcomes	Survey Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Well-Being (8 items)	In the last month, how often have you…					
	… felt happy?	220	2.94	0.78	-0.24	.87
	... got along well with other kids?	220	2.99	0.84	-0.44	
	... been in a good mood?	220	2.85	0.79	-0.00	
	... felt calm?	220	2.83	0.91	-0.29	
	... thought that good things will happen in your life?	220	2.82	0.96	-0.28	
	... thought that there are many things you can be proud of?	220	2.84	0.95	-0.28	
	... thought that lots of people care about you?	220	3.04	0.95	-0.51	
	... felt that you are good at many things?	220	2.72	0.99	-0.13	
Self-Regulation (6 items)	In the last month, how often have you…					
	...come to class prepared?	220	3.11	0.92	-0.76	.74
	...followed directions in class?	220	3.11	0.77	-0.50	
	...gotten your work done right away instead of waiting until the last minute?	220	2.88	0.93	-0.27	
	... paid attention and ignored distractions?	219	2.52	0.91	-0.12	
	... stayed calm even when someone was bothering you or saying bad things to you?	219	2.52	1.04	0.11	
	... been able to keep your temper under control?	219	2.64	1.02	0.02	
Executive-Functioning (6 items)	How hard or easy is it for you to…					
	... stay calm when you feel stressed?	220	2.60	0.90	-0.06	.81
	... think carefully about what you say before you speak?	220	2.73	0.89	-0.23	
	... control your temper when you are upset?	220	2.56	0.99	-0.07	
	... think of different ways to solve a problem?	220	2.81	0.88	-0.32	
	... think about what might happen before you make a decision?	220	2.85	0.86	-0.29	
	... ask for advice when making an important decision?	219	2.79	0.87	-0.38	

ACEs-Related Risk Variables	Survey Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Perceived Stress (5 items)	In the last month, how often have you...					
	... felt stressed about something going on at home?	220	1.88	0.90	0.91	
	... felt stressed about something going on at school?	220	1.97	0.90	0.73	
	... felt stressed about problems with friends or other kids at school?	219	1.94	0.97	0.86	.76
	... felt that something important in your life has gone wrong?	220	1.83	0.88	0.95	
	... felt angry because of something outside of your control?	219	1.94	0.97	0.88	
Access to ER Strategies (3 items)	When I'm upset…					
	... it takes me a long time to feel better.	220	2.42	0.98	0.29	
	... I believe there is nothing I can do to make myself feel better.	220	2.14	0.98	0.52	.81
	... I believe that I will stay that way for a long time.	220	2.14	1.08	0.49	

Proximal Processes	Survey Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Caring Adult at School (7 items)	My teacher at school...					
	... really cares about me.	219	3.47	0.70	-1.33	
	... listens to me when I have something to say.	219	3.33	0.72	-1.03	
	... notices when I'm upset.	219	3.11	0.86	-0.64	
	... helps me feel better when I'm feeling sad, mad, or bad.	219	3.11	0.92	-0.79	.89
	... talks with me about my problems or worries.	219	3.09	0.91	-0.65	
	... tells me when I do a good job.	219	3.46	0.69	-1.33	
	...believes in me.	219	3.43	0.82	-1.55	
Caring Adult at Home (7 items)	In my home, there is a parent or some other adult who...					
	... really cares about me.	219	3.68	0.65	-2.45	
	... listens to me when I have something to say.	219	3.34	0.82	-1.15	
	... notices when I'm upset.	219	3.44	0.77	-1.30	
	... helps me feel better when I'm feeling sad, mad, or bad.	219	3.37	0.90	-1.35	.88
	... talks with me about my problems.	219	3.37	0.88	-1.29	
	... expects me to follow the rules.	219	3.62	0.66	-1.87	
	... believes in me.	219	3.64	0.64	-2.13	

YES Experience & Use	Survey Item	*n*	Mean	*SD*	Skew	Cron. Alpha
YES Satisfaction (4 items)	I liked being in the YES program.	104	3.39	0.70	-1.07	.74
	I thought the YES program was boring. (rev)	104	3.04	0.93	-0.88	
	I thought the YES program was helpful.	104	3.32	0.70	-0.70	
	I want to be in the YES program again next year.	104	3.41	0.78	-1.25	
YES Teacher (3 items)	My YES teacher cares about me.	104	3.39	0.70	-1.07	.74
	My YES teacher is a good teacher.	104	3.63	0.51	-0.75	
	I want to learn more from My YES teacher next year.	104	3.39	0.82	-1.28	
YES Attribution (7 items)	Because I participated in the YES program...					.91
	... I feel happier.	104	3.16	0.83	-0.74	
	... I feel more relaxed.	104	3.24	0.77	-0.70	
	... I feel less stressed.	104	3.01	0.87	-0.57	
	... I focus better in class.	104	3.10	0.87	-0.74	
	... I feel more in control.	104	3.10	0.83	-0.87	
	... I get along better with other kids at school.	104	3.13	0.85	-0.56	
	... I feel better.	104	3.04	0.78	-1.17	
YES Use (7 items)	How often do you use the breathing practices you learned in the YES program …					.88
	… when you are at school?	104	1.39	1.13	0.15	
	… when you are at home?	104	1.28	1.11	0.22	
	… to calm yourself down?	104	1.51	1.16	-0.06	
	… to help you focus?	103	1.38	1.10	0.09	
	… to help you relax?	104	1.50	1.16	0.00	
	… to give yourself energy?	104	1.29	1.13	0.16	
	… to help you sleep?	104	1.25	1.23	0.25	

Appendix D. Item-Level Descriptives for Parent Survey at Time 1

Construct	Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Satisfaction with Life (5 items)	I am satisfied with my life.	33	4.24	0.94	-1.74	.89
	The conditions of my life are excellent.	33	3.82	1.10	-0.96	
	In most ways, my life is close to ideal.	33	3.73	1.07	-0.72	
	So far, I have gotten the important things in life.	33	4.12	1.08	-0.73	
	If I could live my life over, I would change almost nothing.	33	3.30	1.31	0.02	
Perceived Stress (10 items)	In the last month, how often have you…					.83
	...felt nervous and stressed?	33	2.33	0.96	-0.51	
	...felt difficulties were piling up so high that you could not overcome them?	33	1.88	1.05	0.26	
	…been upset because of something that has happened unexpectedly?	33	1.33	1.11	0.60	
	...found that you could not cope with all the things you had to do?	33	1.48	1.23	0.47	
	... felt that you were unable to control the important things in your life?	33	1.33	1.19	0.72	
	... been angered because of things that were outside of your control?	33	1.48	0.97	0.15	
	... felt confident about your ability to handle your personal problems? (rev)	33	1.36	1.06	0.89	
	…been able to control irritations in your life? (rev)	33	1.18	0.92	1.17	
	… felt that you were on top of things? (rev)	33	1.15	0.91	0.76	
	…felt that things were going your way? (rev)	33	1.30	0.85	0.67	
Difficulties with ER (8 items)	When I'm upset…					.88
	... it takes me a long time to feel better.	33	2.42	1.00	0.42	
	... I have a hard time concentrating.	33	2.82	1.13	0.24	
	... I lose control over my behaviors.	33	1.79	0.78	0.82	
	... I believe there is nothing I can do to make myself feel better.	33	1.82	1.01	1.92	
	... I have a hard time getting work done.	33	2.00	0.83	0.35	
	... I feel out of control.	33	1.67	0.82	1.07	
	…I start to feel bad about myself.	33	1.97	1.02	1.02	
	…I believe I will stay that way for a very long time.	33	1.85	1.25	1.62	

Appendix E. Item-Level Descriptives for Parent Survey at Time 2

Construct	Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Satisfaction with Life (5 items)	I am satisfied with my life.	66	4.24	0.89	-1.32	.92
	The conditions of my life are excellent.	66	3.91	0.94	0.63	
	In most ways, my life is close to ideal.	66	3.74	0.95	-0.45	
	So far, I have gotten the important things in life.	66	3.98	0.98	-0.98	
	If I could live my life over, I would change almost nothing.	66	3.71	1.11	-0.40	
Perceived Stress (10 items)	In the last month, how often have you…					.87
	...felt nervous and stressed?	67	1.96	0.91	0.91	
	...felt difficulties were piling up so high that you could not overcome them?	67	1.45	0.91	091	
	…been upset because of something that has happened unexpectedly?	67	1.21	1.08	1.08	
	...found that you could not cope with all the things you had to do?	67	1.13	0.98	0.98	
	... felt that you were unable to control the important things in your life?	67	1.03	0.95	0.95	
	... been angered because of things that were outside of your control?	67	1.46	0.94	0.94	
	... felt confident about your ability to handle your personal problems? (rev)	67	1.30	1.14	1.14	
	…been able to control irritations in your life? (rev)	67	1.21	0.91	0.91	
	… felt that you were on top of things? (rev)	67	1.31	0.93	0.93	
	…felt that things were going your way? (rev)	67	1.43	0.97	0.97	
Difficulties with ER (8 items)	When I'm upset…					.83
	... it takes me a long time to feel better.	67	2.28	1.01	1.01	
	... I have a hard time concentrating.	67	2.25	0.89	0.89	
	... I lose control over my behaviors.	67	1.72	0.92	0.92	
	... I believe there is nothing I can do to make myself feel better.	67	1.60	0.85	0.85	
	... I have a hard time getting work done.	67	1.73	0.83	0.93	
	... I feel out of control.	67	1.52	0.70	0.70	
	…I start to feel bad about myself.	67	1.88	1.02	1.02	
	…I believe I will stay that way for a very long time.	67	1.61	0.94	0.94	

Use of YES Practices (10 items	During this month, how often have you used the YES practices…					
	… to calm yourself down?	4	2.75	0.50	-2.00	.89
	… to help you focus?	4	2.25	1.50	0.37	
	…to help you relax?	4	2.75	1.26	-1.13	
	…to give you energy?	4	3.00	0.82	0.00	
	…to help you sleep?	4	2.75	1.26	-1.13	
	…to help calm your child down?	4	3.75	0.50	-2.00	
	…to help your child focus?	4	3.50	0.58	0.00	
	…to help your child relax?	4	2.50	1.73	0.00	
	…to give your child energy?	4	2.25	1.50	0.37	
	…to help your child sleep?	4	2.25	1.50	0.37	

Appendix F. Item-Level Descriptives for Parent Survey at Time 3

Construct	Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Satisfaction with Life (5 items)	I am satisfied with my life.	23	4.52	0.90	-2.13	.84
	The conditions of my life are excellent.	23	4.30	0.77	-1.27	
	In most ways, my life is close to ideal.	23	3.91	0.90	-1.05	
	So far, I have gotten the important things in life.	23	4.26	0.92	-0.96	
	If I could live my life over, I would change almost nothing.	23	3.83	1.07	-0.35	
Perceived Stress (10 items)	In the last month, how often have you…					.87
	...felt nervous and stressed?	23	1.96	1.15	-0.11	
	...felt difficulties were piling up so high that you could not overcome them?	23	1.61	1.16	-0.10	
	…been upset because of something that has happened unexpectedly?	23	1.30	1.10	0.44	
	...found that you could not cope with all the things you had to do?	23	1.13	1.11	0.62	
	... felt that you were unable to control the important things in your life?	23	1.09	1.11	0.99	
	... been angered because of things that were outside of your control?	23	1.52	0.95	-0.24	
	... felt confident about your ability to handle your personal problems? (rev)	23	1.43	1.08	1.13	
	…been able to control irritations in your life? (rev)	23	1.96	0.83	0.62	
	… felt that you were on top of things? (rev)	23	1.17	0.98	0.88	
	…felt that things were going your way? (rev)	23	1.22	0.74	0.37	
Difficulties with ER (8 items)	When I'm upset…					.94
	... it takes me a long time to feel better.	23	2.17	1.03	0.99	
	... I have a hard time concentrating.	23	2.35	0.94	-0.06	
	... I lose control over my behaviors.	23	1.87	1.06	1.54	
	... I believe there is nothing I can do to make myself feel better.	23	1.78	0.90	0.88	
	... I have a hard time getting work done.	23	1.96	0.93	0.47	
	... I feel out of control.	23	1.78	1.13	1.51	
	…I start to feel bad about myself.	23	1.96	1.02	0.65	
	…I believe I will stay that way for a very long time.	23	1.65	0.83	1.23	

Use of YES Practices (10 items	During this month, how often have you used the YES practices…					
	… to calm yourself down?	9	2.67	0.71	-2.23	
	… to help you focus?	9	3.00	0.50	.0.00	
	…to help you relax?	9	3.00	0.87	-1.53	
	…to give you energy?	9	3.00	0.71	0.00	
	…to help you sleep?	9	2.67	0.87	-0.81	.82
	…to help calm your child down?	9	2.78	0.83	-1.02	
	…to help your child focus?	9	2.67	0.71	-2.23	
	…to help your child relax?	9	2.56	0.73	-0.81	
	…to give your child energy?	9	2.22	0.97	-0.55	
	…to help your child sleep?	9	2.33	0.87	-0.45	

Appendix G. Item-Level Descriptives for Teacher Survey at Time 1

Construct	Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Satisfaction with Life (5 items)	I am satisfied with my life.	12	4.25	0.62	-0.17	.74
	The conditions of my life are excellent.	12	4.00	0.60	.00	
	In most ways, my life is close to ideal.	12	3.83	0.84	-0.77	
	So far, I have gotten the important things in life.	12	4.33	0.89	-0.80	
	If I could live my life over, I would change almost nothing.	12	3.67	1.07	-0.24	
Perceived Stress (10 items)	In the last month, how often have you…					.90
	...felt nervous and stressed?	12	2.75	0.62	.17	
	...felt difficulties were piling up so high that you could not overcome them?	12	2.17	1.04	-0.99	
	…been upset because of something that has happened unexpectedly?	12	1.83	1.34	0.36	
	...found that you could not cope with all the things you had to do?	12	1.83	1.34	0.36	
	... felt that you were unable to control the important things in your life?	12	1.50	1.31	0.57	
	... been angered because of things that were outside of your control?	12	1.92	0.79	-1.16	
	... felt confident about your ability to handle your personal problems? (rev)	12	1.08	0.79	-0.16	
	…been able to control irritations in your life? (rev)	12	1.52	0.79	0.33	
	… felt that you were on top of things? (rev)	12	1.92	0.90	-0.71	
	…felt that things were going your way? (rev)	12	1.42	0.67	-0.74	
Difficulties with ER (8 items)	When I'm upset…					.90
	... it takes me a long time to feel better.	12	2.91	0.83	-1.15	
	... I have a hard time concentrating.	12	3.00	0.89	-0.71	
	... I lose control over my behaviors.	12	2.27	1.01	0.14	
	... I believe there is nothing I can do to make myself feel better.	12	1.73	0.64	0.44	
	... I have a hard time getting work done.	12	2.45	1.04	-0.66	
	... I feel out of control.	12	2.00	0.89	0.00	
	…I start to feel bad about myself.	11	2.36	1.03	-0.23	
	…I believe I will stay that way for a very long time.	12	2.09	1.04	0.47	

Construct	Item	*n*	Mean	*SD*	Skew	Cron. Alpha
YES Buy In for Students (4 items)	I am excited about my students participating in the YES program this year.	12	4.50	0.67	-1.07	.91
	I think my students will benefit from participating in the YES program this year.	12	4.42	0.79	-0.99	
	I think my students will enjoy participating in the YES program this year.	12	4.42	0.67	-0.74	
	I think the YES program will be a good use of my students' time.	12	4.33	0.78	-0.72	
YES Buy In for Teachers (5 items)	I think participating in the YES program with my students will be a good use of my time.	12	4.17	0.94	-1.17	.91
	I think it is a good idea for the District to offer the YES program to teachers at my school.	12	4.33	0.99	-1.50	
	I am excited about participating in the YES Workshop for Teachers this year.	12	3.92	0.90	0.19	
	I think I could benefit from participating in the YES Workshop for Teachers.	12	4.00	0.85	0.00	
	I think the YES Workshop for Teachers will be a good use of my time.	12	3.92	0.99	-0.47	
YES Buy in for Parents (3 items)	I think it is a good idea for the District to offer the YES Program to parents in my classroom.	12	4.50	0.67	-1.07	.31
	I can think of many parents who might benefit from attending the YES Workshop for Parents.	12	4.25	0.62	-0.17	
	I am committed to getting at least 5 parents in my classroom to sign-up for the Workshop.	12	3.58	0.79	-0.33	

Appendix H. Item-Level Descriptives for Teacher Survey at Time 2

Construct	Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Satisfaction with Life (5 items)	I am satisfied with my life.	12	3.75	0.97	-2.32	.61
	The conditions of my life are excellent.	12	4.00	0.60	0.00	
	In most ways, my life is close to ideal.	12	3.83	0.72	0.26	
	So far, I have gotten the important things in life.	12	4.08	1.31	-1.63	
	If I could live my life over, I would change almost nothing.	12	3.25	1.22	-0.20	
Perceived Stress (10 items)	In the last month, how often have you…					.84
	...felt nervous and stressed?	12	2.83	0.84	0.35	
	...felt difficulties were piling up so high that you could not overcome them?	12	2.17	0.72	-0.26	
	…been upset because of something that has happened unexpectedly?	12	1.92	0.90	-0.71	
	...found that you could not cope with all the things you had to do?	12	1.92	1.31	0.47	
	... felt that you were unable to control the important things in your life?	12	1.83	1.03	0.39	
	... been angered because of things that were outside of your control?	12	1.92	0.79	0.16	
	... felt confident about your ability to handle your personal problems? (rev)	12	1.17	0.58	0.06	
	…been able to control irritations in your life? (rev)	12	1.50	0.80	0.00	
	… felt that you were on top of things? (rev)	12	1.92	0.79	0.16	
	…felt that things were going your way? (rev)	12	1.50	0.67	-1.07	
Difficulties with ER (8 items)	When I'm upset…					.86
	... it takes me a long time to feel better.	12	2.83	1.12	0.39	
	... I have a hard time concentrating.	12	3.00	1.20	0.37	
	... I lose control over my behaviors.	12	2.25	1.06	0.52	
	... I believe there is nothing I can do to make myself feel better.	12	2.00	0.95	0.76	
	... I have a hard time getting work done.	12	2.67	1.07	-0.26	
	... I feel out of control.	12	2.00	1.13	0.46	
	…I start to feel bad about myself.	12	2.42	0.99	-0.39	
	…I believe I will stay that way for a very long time.	12	2.00	0.74	0.00	

Construct	Item During this month, how often have you used the YES Breathing Practices to…	*n*	Mean	*SD*	Skew	Cron. Alpha
Use of YES for Self (5 items)	…calm yourself down?	5	2.00	1.00	0.00	.93
	…help you focus?	5	1.80	1.10	0.61	
	…help you relax?	5	2.40	.55	0.61	
	…give you energy?	5	1.60	.89	1.26	
	…help you sleep?	5	1.60	.89	1.26	
Use of YES for Students (4 items)	…help your students calm down?	5	3.00	.71	0.00	.78
	…help your students focus?	5	2.20	.84	-0.51	
	…help your students relax?	5	2.40	.55	0.61	
	...give your students energy?	5	2.00	.71	0.00	

Appendix I. Item-Level Descriptives for Teacher Survey at Time 3

Construct	Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Satisfaction with Life (5 items)	I am satisfied with my life.	12	4.25	0.75	-0.48	.85
	The conditions of my life are excellent.	12	4.33	0.65	-0.44	
	In most ways, my life is close to ideal.	12	4.00	0.74	0.00	
	So far, I have gotten the important things in life.	12	4.50	0.67	-1.07	
	If I could live my life over, I would change almost nothing.	12	3.50	1.09	-0.26	
Perceived Stress (10 items)	In the last month, how often have you…					.83
	...felt nervous and stressed?	12	2.42	0.79	0.33	
	...felt difficulties were piling up so high that you could not overcome them?	12	1.58	0.90	0.15	
	…been upset because of something that has happened unexpectedly?	12	1.83	1.19	-0.01	
	...found that you could not cope with all the things you had to do?	12	1.33	1.07	0.25	
	... felt that you were unable to control the important things in your life?	12	1.42	0.99	0.27	
	... been angered because of things that were outside of your control?	12	1.67	0.99	0.81	
	... felt confident about your ability to handle your personal problems? (rev)	12	1.33	1.44	1.06	
	…been able to control irritations in your life? (rev)	12	1.58	0.79	-0.33	
	… felt that you were on top of things? (rev)	12	1.92	0.67	0.09	
	…felt that things were going your way? (rev)	12	1.42	0.52	0.39	
Difficulties with ER (8 items)	When I'm upset…					.93
	... it takes me a long time to feel better.	12	2.64	0.92	-0.14	
	... I have a hard time concentrating.	12	2.82	1.17	0.39	
	... I lose control over my behaviors.	12	2.18	1.25	1.19	
	... I believe there is nothing I can do to make myself feel better.	12	1.82	0.98	0.85	
	... I have a hard time getting work done.	12	2.45	1.04	0.00	
	... I feel out of control.	12	2.00	1.09	0.57	
	…I start to feel bad about myself.	11	2.45	0.93	-0.29	
	…I believe I will stay that way for a very long time.	12	1.64	0.67	0.44	

Teacher Satisfaction for Student Programming	The YES Refresher Course is an effective program for promoting positive student outcomes.	11	4.10	0.57	0.15	.68
	Participating in the YES Refresher Course has been a good use of my students' time.	11	4.10	0.74	-0.12	
	My students enjoyed participating in the YES Refresher Course.	10	4.50	0.53	0.00	
	My students were engaged and attentive during YES program time.	11	4.20	0.63	-0.03	
	My students seemed to benefit from participating in the YES Refresher Course.	11	4.00		0.00	
	I want my future classrooms to continue engaging in the YES Refresher Course in future years.	11	4.40	0.70	-0.59	
	I would recommend the YES program to other elementary school teachers and administration.	11	4.50	0.53	0.21	
Teacher Perception of Student Impact	The YES Refresher Course had a positive impact on…					.81
	… my students' emotional development (e.g., learning about emotions, developing strategies for emotion regulation).	12	3.83	0.39	-2.06	
	… my students' mental health (e.g., reduce stress, anxiety, supported relaxation).	12	3.92	0.29	-3.46	
	… my students' social development (e.g., better relationships with peers).	12	3.50	0.52	0.00	
	… my students' academic development.	12	3.33	0.49	0.81	
	… the learning environment in my classroom.	12	3.42	0.52	0.39	
Teacher Perception of Breathing Practices	Learning and practicing breathing techniques has been valuable for my students' development.	12	4.00	.60	.00	.36
	My students seemed to benefit from having the opportunity to practice daily breathing with the YES program.	12	4.17	.39	2.06	
	I encourage my students to practice the breathing techniques, outside of YES instruction time (e.g., in my classroom, at home, on the playground).	12	4.17	.58	.06	
	I have seen my students practicing breath techniques, outside of YES instruction time.	12	3.50	.67	-1.07	
	I think it is important for my students to continue practicing the breathing techniques.	12	4.42	.52	0.39	

Teacher Perception of SEL Lessons	Learning social-emotional processes was valuable for my students' development.	11	4.45	0.52	0.00	
	My students seem to benefit from having the opportunity to practice daily breathing with the YES program.	11	4.18	0.41	2.06	
	I encourage my students to practice these social emotional skills outside of YES instruction time (e.g., in my classroom, at home, on the playground).	11	4.00	0.45	0.21	.40
	I have seen my students practicing these social-emotional concepts and skills, outside of YES instruction time (e.g., in my classroom on the playground).	11	3.27	0.65	-0.29	
	I reference these social-emotional concepts and skills in my own classroom.	11	4.09	0.70	-0.87	

Appendix J. Item-Level Descriptives for Parent Workshop Survey

Construct	Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Workshop Satisfaction	I liked participating in this workshop.	15	4.47	1.12	-2.81	.99
	This workshop was a good use of my time.	15	4.40	1.06	-2.34	
	I felt engaged in the activities and discussions most of the time.	15	4.47	1.06	-2.81	
	I would participate in other workshops offered by YES in the future.	15	4.40	1.06	-2.34	
	I would recommend this workshop to other teachers in this community.	15	4.53	1.06	-3.01	
YES Teacher Satisfaction	I enjoyed learning from this YES teacher.	15	4.60	1.06	-3.25	.99
	The YES teacher maintained my interest throughout the workshop.	15	4.53	1.06	-3.01	
	The YES teacher was knowledgeable about the topics covered.	15	4.53	1.06	-3.01	
	The YES teacher responded appropriately to questions.	15	4.60	1.06	-3.25	
	The YES teacher was skilled at guiding me through the breathing practices that were taught.	15	4.60	1.12	-3.25	
Gains in Knowledge	I learned valuable information during this workshop.	15	4.47	1.10	-2.81	.98
	I learned useful skills and strategies during this workshop.	15	4.40	1.13	-2.34	
	Because of this workshop, I have a better understanding of how stress affects me.	15	4.27	1.13	-2.10	
	Because of this workshop, I have a better understanding of how stress affects my child.	15	4.47	1.06	-2.51	
	Because of this workshop, I feel more confident in my ability to manage my stress and emotions.	15	4.40	1.06	-2.34	
	Because of this workshop, I feel more confident in my ability to help my child manage their stress and emotions.	15	4.40	1.06	-2.64	
	The skills and strategies I learned in this workshop to manage my stress and emotions are better than the skills and strategies I used before.	15	4.40	1.06	-2.64	
Intent to Use	Do you plan on using the breathing practices you learned from this workshop in your own life?	15	4.93	0.26	-3.87	--
	Do you plan on encouraging your students to use the breathing practices you learned today in your classroom?	15	5.00	0.00	--	
Overall Satisf.	How satisfied were you with the overall experience of this workshop?	15	4.80	0.17	-1.67	--

Appendix K. Item-Level Descriptives for Teacher Workshop Survey

Construct	Item	*n*	Mean	*SD*	Skew	Cron. Alpha
Workshop Satisfaction	I liked participating in this workshop.	5	4.80	.45	-2.24	.91
	This workshop was a good use of my time.	5	4.40	.89	-1.26	
	I felt engaged in the activities and discussions most of the time.	5	4.60	.55	-0.61	
	I would participate in other workshops offered by YES in the future.	5	4.40	.55	0.61	
	I would recommend this workshop to other teachers in this community.	5	4.60	.55	-0.61	
YES Teacher Satisfaction	I enjoyed learning from this YES teacher.	5	4.80	.55	-2.24	.92
	The YES teacher maintained my interest throughout the workshop.	5	4.60	.55	-0.61	
	The YES teacher was knowledgeable about the topics covered.	5	4.60	.55	-0.61	
	The YES teacher responded appropriately to questions.	5	4.80	.45	-2.24	
	The YES teacher was skilled at guiding me through the breathing practices that were taught.	5	5.00	.00		
Gains in Knowledge	I learned valuable information during this workshop.	5	4.60	.55	-0.61	.89
	I learned useful skills and strategies during this workshop.	5	4.40	.55	0.61	
	Because of this workshop, I have a better understanding of how stress affects me.	5	3.80	.84	0.51	
	Because of this workshop, I have a better understanding of how stress affects my students.	5	4.20	.84	-0.51	
	Because of this workshop, I feel more confident in my ability to manage my stress and emotions.	5	3.80	.84	0.51	
	Because of this workshop, I feel more confident in my ability to help my students manage their stress and emotions.	5	3.80	.84	0.51	
	The skills and strategies I learned in this workshop to manage my stress and emotions are better than the skills and strategies I used before.	5	4.20	.84	0.51	
Intent to Use	Do you plan on using the breathing practices you learned from this workshop in your own life?	5	4.40	.55	0.55	--
	Do you plan on encouraging your students to use the breathing practices you learned today in your classroom?	5	4.60	.55	0.55	