Pitt County School ACEs & Resilience Project:

An Exploration of the Impact of Adverse Childhood Experiences & Resilience as the Antidote to Trauma

By

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ABSTRACT

Trauma, specifically childhood trauma, is being called the public health crisis of the current generation by many public health leaders. Childhood trauma, known in many circles as Adverse Childhood Experiences (ACEs), has tremendous negative health impacts over a person's lifetime and can lead to malaise and chronic disease in adults. The long-term impacts of ACEs, however, can be remedied through "rewiring" one's brain, a phenomenon called neuroplasticity. Resilience skills are the mechanism by which neuroplasticity changes the brain to remedy the effects of ACEs.

In North Carolina, the *Pitt County School ACEs & Resilience Project*, is currently underway. Let by the Pitt County ACEs Collaborative, BRACE, and funded by a North Carolina Department of Public Instruction grant, this project brings training on ACEs and resilience skills to school systems and community organizations in the county. ACEs have a great impact on learning abilities and behaviors of children; therefore, it is optimal to create learning environments for children that are trauma-informed and resilience-focused. This work sets forth a program plan and evaluation for the *Pitt County School ACEs & Resilience Project*.

KEYWORDS: Adverse Childhood Experiences, ACEs, Resilience, Pitt County Schools, trauma-informed, resilience-focused, school

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LIST OF ABBREVIATIONS

ACEs	Adverse Childhood Experiences
BRACE	Build Resiliency and Courage/Capacity to Excel
CDC	Centers for Disease Control and Prevention
COPD	Chronic Obstructive Pulmonary Disease
DNA	DeoxyriboNucleic Acid
DPI	North Carolina Department of Public Instruction
ECU	East Carolina University
MAHEC	Mountain Area Health Education Center
MAPIT	Mobilize, Assess, Plan, Implement, Track Framework
R4R	Resources for Resilience™
SAMHSA	Substance Abuse and Mental Health Services Administration
TIRF	Trauma-Informed, Resilience-Focused

Introduction

Trauma is widespread in populations today, and is defined by the Substance Abuse and Mental Health Services Administration as, "an event, series of events, or set of circumstances that is experienced by an individual as physically or emotionally harmful or life-threatening and that has lasting adverse effects on the individual's functioning and mental, physical, social, emotional, or spiritual well-being" (Substance Abuse and Mental Health Services Administration, 2019, paragraph 1). Trauma can significantly impact children and families throughout the life course, and childhood trauma is being named as the current generation's public health crisis by many public health leaders ("ACEs Science 101," 2014; Dube, 2018; Sacks & Murphey, 2018).

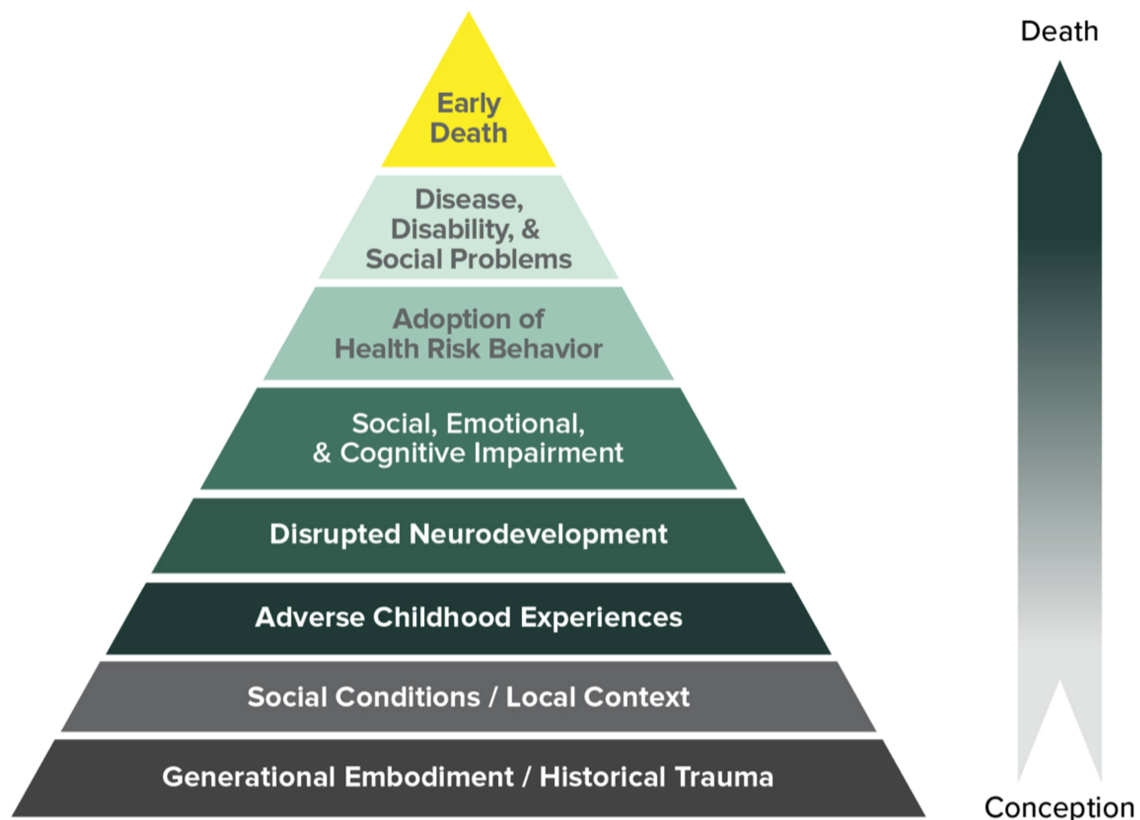
In the field of public health, childhood trauma is often referred to as Adverse Childhood Experiences, or ACEs, a term which originated with the publication of the Center for Disease Control and Prevention (CDC)-Kaiser Adverse Childhood Experiences Study, a 1998 publication that linked the impacts of childhood trauma with onset of malaise and disease later in the life course. The CDC says of ACEs: "Childhood experiences, both positive and negative, have a tremendous impact on future violence victimization and perpetration, and lifelong health and opportunity" (Centers for Disease Control and Prevention, n.d., paragraph 1; Felitti et al., 1998). Therefore, these issues are of critical importance to public health, and the cornerstone of research on childhood trauma is housed in the Adverse Childhood Experiences (ACE) Study (Centers for Disease Control and Prevention, 2019; Felitti et al., 1998)

Background

The ACE Study

Between 1995 and 1997, and in partnership with the CDC, Kaiser Permanente conducted one of the largest-scale studies on childhood trauma in connection to health and well-being later in life. The study employed the ACE Pyramid as the conceptual framework for this research, which depicts mechanisms through which ACEs influence health and well-being throughout the life course (See Figure 1). In the ACE Pyramid framework, the most impactful factors to adult health and well-being are generational embodiment/historical trauma, and social conditions/local context, both of which are immediately followed by Adverse Childhood Experiences (Centers for Disease Control and Prevention, 2019).

Figure 1. Mechanism by which Adverse Childhood Experiences Influence Health and Well-being Throughout the Lifespan



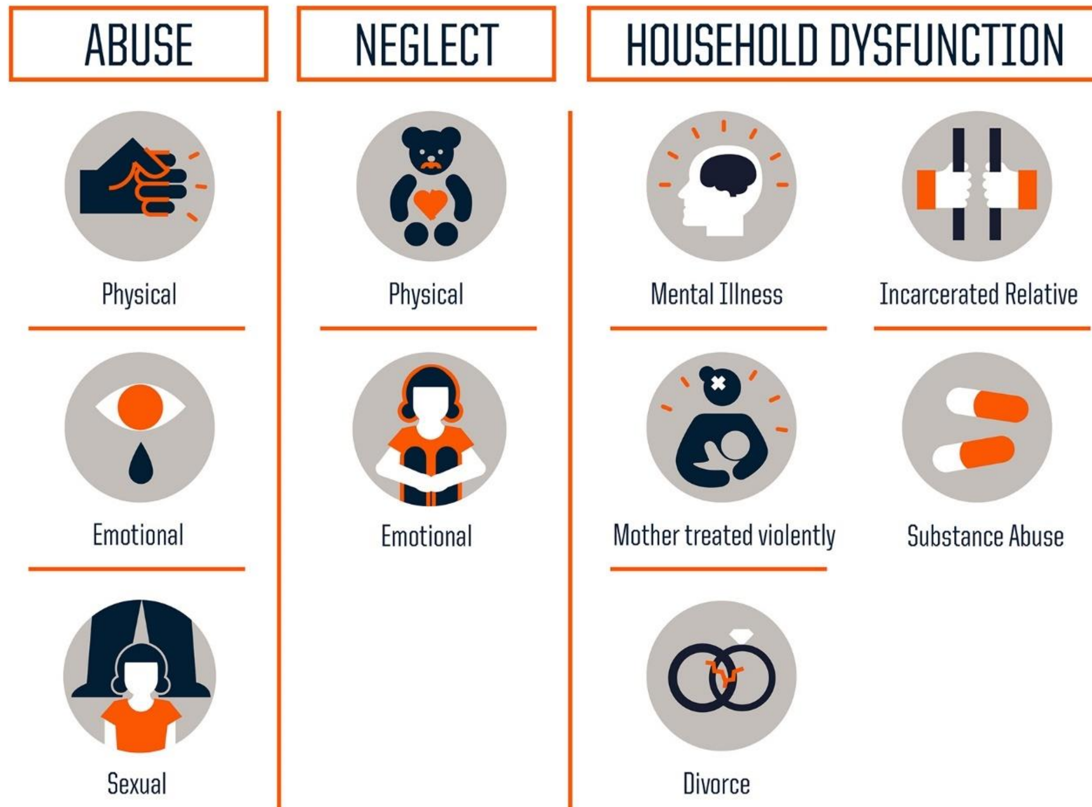
Source: Felitti, VJ, Anda, RF, Nordenberg MD, … , Marks, JS. (1998) as presented by the Centers for Disease Control and Prevention from the CDC-Kaiser Permanente Adverse Childhood Experiences (ACE) Study (CDC, 2019)
https://www.cdc.gov/violenceprevention/childabuseandneglect/acestudy/about.html

In its vulnerable populations portfolio, The Robert Wood Johnson Foundation states that “health begins where we live, learn, work and play” (Robert Wood Johnson Foundation, 2010). Where we live, learn, work and play is often referred to as the social determinants of health and these are the factors that have greatest impact on health outcomes throughout the life course and comprise the base of the ACE Pyramid. Social determinants of health can be delineated into five categories: neighborhood and built environment, health and health care, social and community context, education, and economic stability (HealthyPeople.gov, 2019b). Factors like access to healthy foods, crime and quality housing relate to one’s neighborhood and built environment; health literacy and access to care services are in the health and health care category; social and community context refers to items like discrimination and social cohesion; education refers to education from early childhood through opportunities to obtain advanced degrees; and economic stability category contains determinants like employment opportunities and poverty (HealthyPeople.gov, 2019b).

In the ACE Study, ACE questionnaires were administered in two waves to more than 17,000 health maintenance organization members from southern California between 1995 and 1997 (Centers for Disease Control and Prevention, 2019; Felitti et al., 1998). Demographic, family history and health history data were collected in addition to ACE information. ACEs were categorized into three groups: Abuse, Household Challenges, and Neglect (See Figure 2 and Appendix A). Abuse includes emotional, physical and sexual abuse; neglect includes physical and emotional neglect; and household challenges include violence, substance abuse, mental

illness, parent separation or divorce, and incarcerated household members (Centers for Disease Control and Prevention, 2019; Felitti et al., 1998).

Figure 2. Types of ACEs



Source: Felitti, VJ, Anda, RF, Nordenberg MD, … , Marks, JS. (1998) as presented by the Robert Wood Johnson Foundation

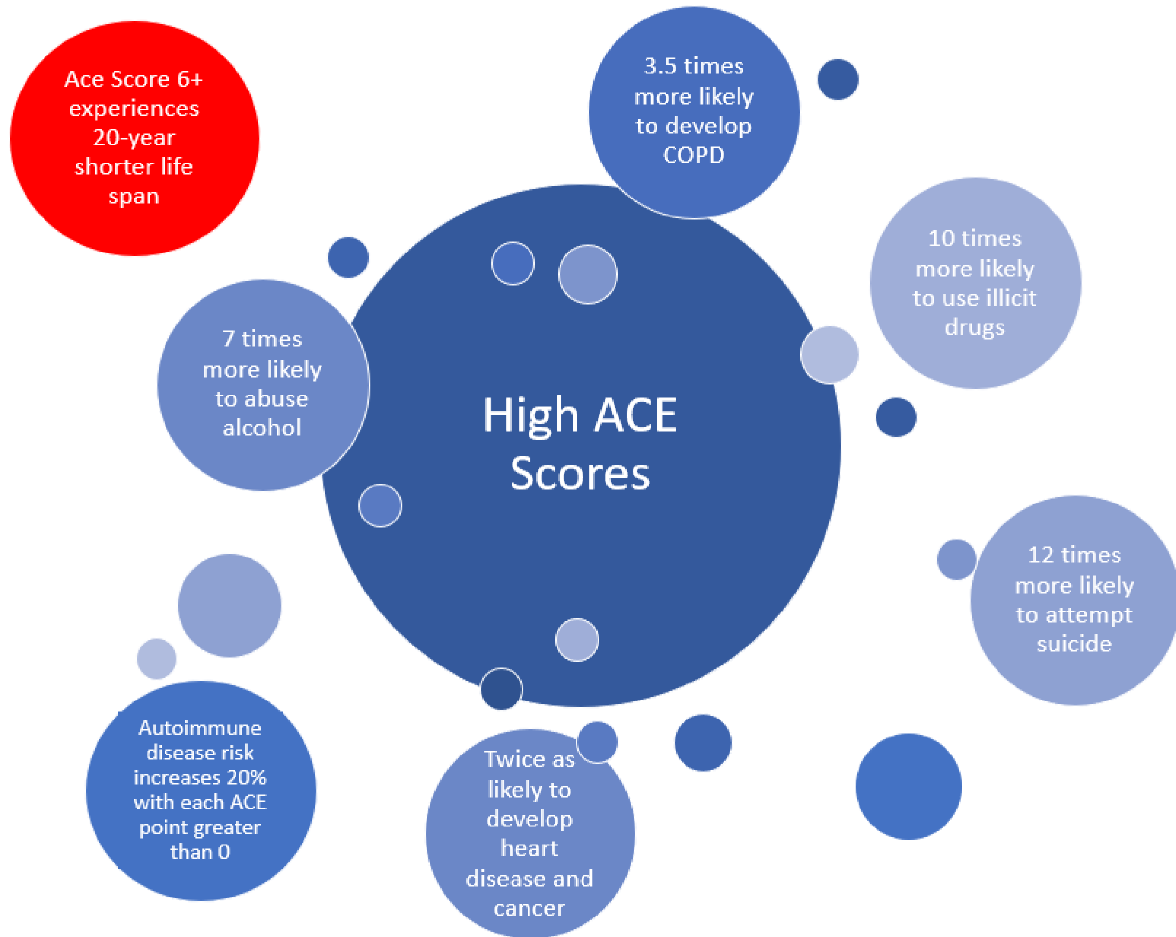
https://www.rwjf.org/en/library/infographics/the-truth-about-aces/_jcr_content/infographics/infographics.infographic.img.jpg/1503685540043.jpg

The results of the study showed that ACEs are surprisingly prevalent; nearly 64% of all survey respondents reported at least one ACE (Centers for Disease Control and Prevention, 2019; Felitti et al., 1998). Some populations are more likely to experience ACEs simply due to the social determinants of health impacting their lives, like economic instability, food insecurity, and unsafe housing or neighborhoods. While 36.1% of all respondents reported no ACE, 26%

reported one ACE, 15.9% reported two ACEs, 9.5% reported three ACEs and 12.5% of people reported four or more ACEs (Centers for Disease Control and Prevention, 2019; Felitti et al., 1998) Women experience higher percentages of ACEs than male counterparts across abuse, household challenges and neglect categories, with two exceptions: physical abuse and physical neglect by more than a 10% difference in each category (CDC, 2019, "About the CDC-Kaiser ACE Study, Data and Statistics, ACEs Prevalence").

ACEs impact health behaviors, mental health and physical health later in life. Health risk behaviors like lack of physical activity, smoking, alcoholism, drug use, and absenteeism from work or school are connected with high ACE scores, as are physical and mental health implications like severe obesity, diabetes, depression, suicide, sexually transmitted diseases, heart disease, cancer, stroke, chronic obstructive pulmonary disease and broken bones (Felitti et al., 1998; Robert Wood Johnson Foundation, n.d.). Ken Epstein, PhD calls trauma "the public health issue of our time" (Genentech, 2017), because of the tremendous impact ACEs can have on health later in the life course. People with four or more ACEs are seven times as likely as those with an ACE score of zero to abuse alcohol, ten times more likely to use illicit drugs, and 12 times more likely to attempt suicide. Life expectancy for people with an ACE score of six or more is 20 years shorter than people with an ACE score of zero (Mead, 2018). Individuals with high ACE scores are twice as likely to develop heart disease and cancer, three and a half times as likely to develop chronic obstructive pulmonary disease (COPD), are twice as likely to be hospitalized for autoimmune diseases, and are at overall greater risks for asthma, allergies, migraines, fibromyalgia, reflux and bronchitis (Burke Harris, 2018).

Figure 3. Possible Negative Health Outcomes Stemming from ACEs



Source: (Burke Harris, 2018; Felitti et al., 1998; Mead, 2018) https://www.acesconnection.com/fileSendAction/fcType/0/fcOid/475177373393172755/filePointer/475177373393632739/fodoid/475177373393632735/ALL%20EFFECTS%20OF%20ACES%20FACT%20SHEET%202018_3_14_VeroniqueMead_MD_MA.pdf

ACEs Science

There exists a science behind ACEs comprised of several factors: the CDC-Kaiser Permanente study showing the prevalence of ACEs; brain science, including the neurobiology of toxic stress; negative health outcomes caused by ACEs, historical and generational trauma; and resilience research and practice ("ACEs Science 101," 2014). Baseline childhood traumas cause

disrupted neurodevelopment through a mechanism called toxic stress, which leads to social, emotional and cognitive impairment in children and adolescents. These challenges have been found to lead to adoption of health risk behaviors, like substance abuse for example, which are precursors for disease, disability and social problems that eventually lead to early death. Even when researchers control for health risk behaviors, people with high incidence of childhood trauma still experience higher rates of all negative health outcomes due to the life course impacts of the prolonged stress response (Resources for Resilience, 2018).

While overcoming adversity is a normal part of development for healthy children, prolonged stress from ACEs has detrimental impact on children and throughout the life course. Dr. Nadine Harris notes that activation of a prolonged stress response impacts the way that the brain and immune system work, and even changes how DNA (deoxyribonucleic acid) is read and transcribed in developing children (Genentech, 2017). The human body experiences a physiological response to stress: increased heart rate and blood pressure, and production of additional stress hormones like cortisol (Harvard Center on the Developing Child, 2019b). There are several levels of stress: positive stress, tolerable stress and toxic stress. Positive stress is a normal part of healthy child development, like worriment about getting an immunization shot. Tolerable stress occurs with an event like an injury or death of a family member. Children can overcome the long-term impacts of tolerable stressors with stable, caring and supportive relationships in their lives (National Scientific Council on the Developing Child, 2015). Then there is toxic stress, like exposure to violence or chronic neglect. This type of stress is chronic, taking place over longer time spans, and impacts a person’s mental and physical health throughout their life course. Children who do not have stable relationships and coping skills lack

resources to help them buffer the impacts of toxic stress will experience negative health outcomes. Many times, children do not have access to people or resources to create a buffer to toxic stress because people in their lives may actually be the source of toxic stress, or other circumstances like substance abuse, neighborhood crime, or domestic violence may be present in the home (Resources for Resilience, 2018). However, research indicates that supportive relationships from an early age can prevent or reverse childhood damages from toxic stress (Harvard Center on the Developing Child, 2019b).

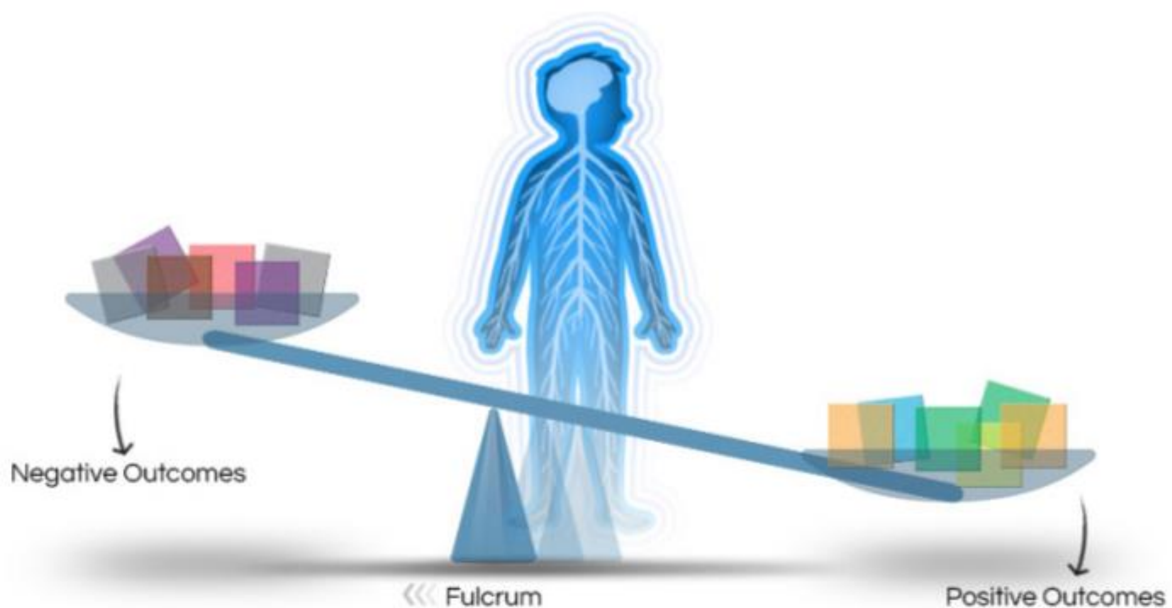
Resilience

While ACEs can sometimes seem an overwhelming issue with no clear direction forward, the science of resiliency offers hope. The American Psychological Association defines resilience as "the process of adapting well in the face of adversity, trauma, tragedy, threats or significant sources of stress - such as family and relationship problems, serious health problems or workplace and financial stressors. It means "bouncing back" from difficult experiences" (American Psychological Association, 2019, paragraph 4).

Neuroplasticity is at the core of resilience science and is defined as "the ability of the brain to form and reorganize synaptic connections, especially in response to learning or experience" (Lexico by Oxford, 2019). For decades it was believed that the brain was not capable of change, but scientific advances since 2000, have confirmed that the human brain can adapt throughout our lives. Cortical map plasticity and cortical synaptic plasticity are not only a reality, but they can be used to change cognitive capacity. Repeated use of new cognitive processes creates and strengthens new neural pathways in the brain, therefore developing increased cognitive capacity (Raskin, 2011).

Harvard University Center on the Developing Child describes resilience as a fulcrum of sorts. Positive experiences and coping skills are on one side of the balance scale, while significant adversity is opposite. A child demonstrates resiliency when they can demonstrate positive outcomes even with an array of negative factors weighing in. While there are several common factors that resilient children usually possess, like self-efficacy, adaptive and self-regulatory skills, and sources of faith or cultural tradition, the single most important factor is a stable, committed relationship (Harvard Center on the Developing Child, 2019a). Relationships and connection, therefore, can be viewed as an antidote to ACEs.

Figure 4. Resilience Moves Fulcrum to Decrease Impact of Negative Experiences



Source: (National Scientific Council on the Developing Child, 2015)

http://www.developingchild.harvard.edu

Literature Review

A review of current literature was conducted to identify school-based resiliency programs. Articles published between 2000 and 2019, freely available and in the English language were included. Websites and the ACEs Connection community sites were also searched. Both searches were conducted using the keywords of resilient school model, resilient schools, and school resilience. The listing of references from the identified sources were also evaluated for relevance to school-based resiliency programs. A total of eight sources were identified indicating the need for both documentation and evaluation of these programs.

School-Based Resiliency Concept

While there are a variety of school resilience models, there are common threads across many programs. Resilience spans physical, social/emotional, and intellectual health. Strategies to build school resilience include promoting positive connections between students and staff; nurturing positive qualities like empathy and optimism; creating an environment for students to use these positive qualities; avoiding focus on negative behaviors; teaching by example; fostering feelings of confidence and self-efficacy. Restorative justice techniques are also a recurrent theme in school resilience models, and these include giving students opportunities to reflect on and address challenges, setting high expectations for students, and supporting them in achieving goals (Child Trends, 2013).

The documentary film Paper Tigers recounts the stories of several teenagers from Lincoln High School in Walla Walla, Washington. The principal of the high school in the early 2000's, Jim Sporleder, led the change of Lincoln High School to a trauma-informed school, changing its disciplinary practices and educating students on ACEs and resiliency. Post

implementation of the program, Lincoln High School was recognized nationally for its dramatic decreases in suspensions from school, and significant increases in high school graduation rates and students who pursued higher education (KPJR Films, n.d.). In response to Lincoln High School's experiences with a trauma-informed learning environment, the Compassionate Schools Model of education was developed in the state of Washington. The Compassionate Schools Model focuses on education and development of the whole child; raises awareness of the impacts of childhood trauma; utilizes data-informed strategies to mitigate the negative impacts of childhood trauma; creates contest for change in school environments; makes teaching more enjoyable and effective; and informs policy development to affect school climate (Hertel & Johnson, 2015).

Protective factors from resilience were confirmed to reduce adolescent substance use in a recent meta-analysis (Hodder et al., 2017). In a 2013 study on a social-ecological school model, a comprehensive approach to resiliency building, involving students, staff, and community members was found to strengthen protective factors for resilience in students (Lee & Stewart, 2013). Another study found that resilience-focused interventions in the school setting showed promise in reducing short-term anxiety and depression symptoms in students (Dray et al., 2017). One study concluded that adult and peer support to elementary-age children is a critical strategy for building resilience in school settings (Stewart & Sun, 2004).

Schools greatly benefit from trauma-informed, resiliency-focused school models, because they help create ideal learning environments for students who have experienced trauma. The Benson-Henry Institute at Massachusetts General Hospital notes that their Resilient School Program "brings relaxation response-based coping skills and life management

tools into the school environment to help educators and students better manage daily stress, and positively impact student's academic performance and health." This environment equips students with both the tools and support needed to succeed with challenges in life (Benson-Henry Institute, n.d., paragraph 1).

There are three parts of the human brain that drive behavior. The survival brain, or brain stem, encompasses the body's automatic functions and makes decisions based on sensory input. This is the part of the brain that activates what is often referred to as fight, flight, or freeze. The emotional brain, or limbic brain, houses human feelings and connection, and makes decisions based on positive or negative memories; this part of the brain assesses levels of safety or threat, and is a critical component to learning. The thinking brain, or neocortex, is responsible for critical thinking and executive control; this part of the brain makes choices and decisions and integrates input from all 3 areas of the brain (Siegel, 2012). When children are in environments that feel safe, their brains are ripe for learning, and this is the key driver of trauma-informed, resilience-focused (TIRF) school models.

Program Plan

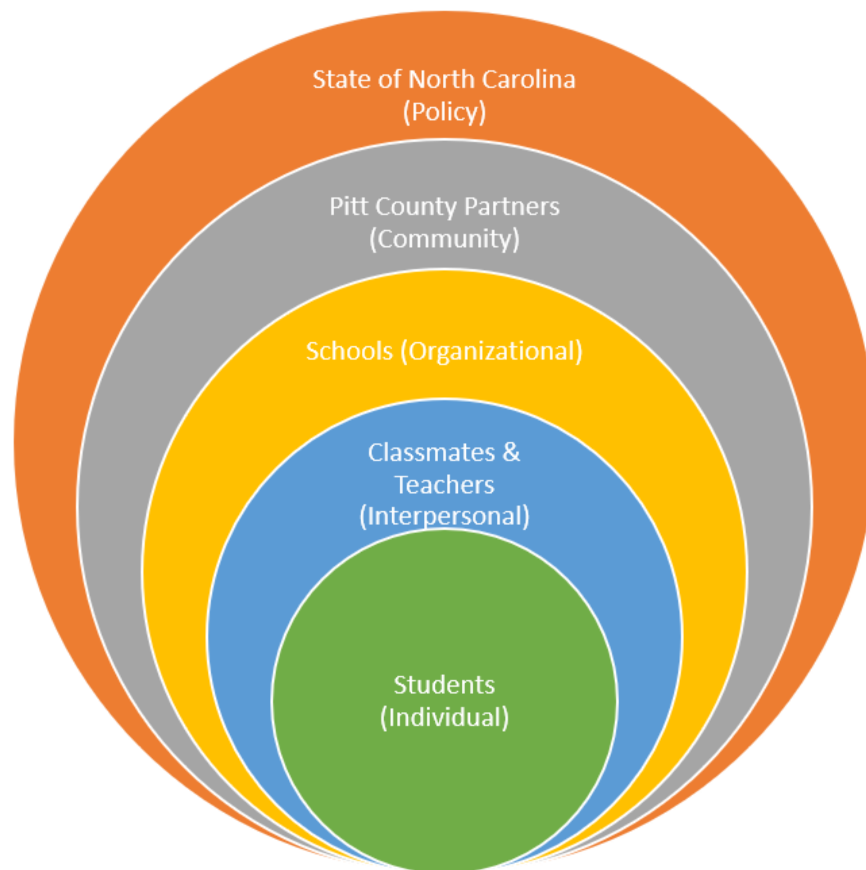
The *Pitt County School ACEs & Resilience Project* will take place in its namesake county in North Carolina. Pitt County's ACE Collaborative, Build Resiliency and Courage/Capacity to Excel (BRACE), will implement the program plan to combat ACEs in Pitt County Schools. BRACE began in 2018 when a portion of Kia Grantham Glosson's role at Children's Advocacy Center at East Carolina University (ECU) was allocated funding to focus on ACEs. Through her role in BRACE, Kia has created a steering committee for the collaborative, and has engaged key community leaders, schools, ECU, law enforcement, and mental health organizations in conversations

about ACEs. BRACE is currently building out its steering committee and engages in group decision making for all initiatives undertaken by partner organizations. The Children's Advocacy Center at ECU currently is receiving funding from the North Carolina Department of Public Instruction (DPI) to train the community on ACEs and resilience with the non-profit organization Resources for Resilience™ (R4R).

The program plan for Pitt County ACEs Initiatives in schools will be implemented in the framework of the social ecological model, considering individual, interpersonal, organizational, community and public policy levels of influence on the program. The individual target for this intervention is students in Pitt County schools. Students are influenced by their peers and teachers in their interpersonal network, and further at the organizational level by counselors, staff, principals and the superintendent in their school system. At the community level, organizations like the health department, the BRACE collaborative, and other community partners will influence the success of the ACEs Initiative in schools. At the policy level, North Carolina Department of Public Instruction (DPI) funds, make this intervention possible, and will influence funding for its future.

Theory of Change

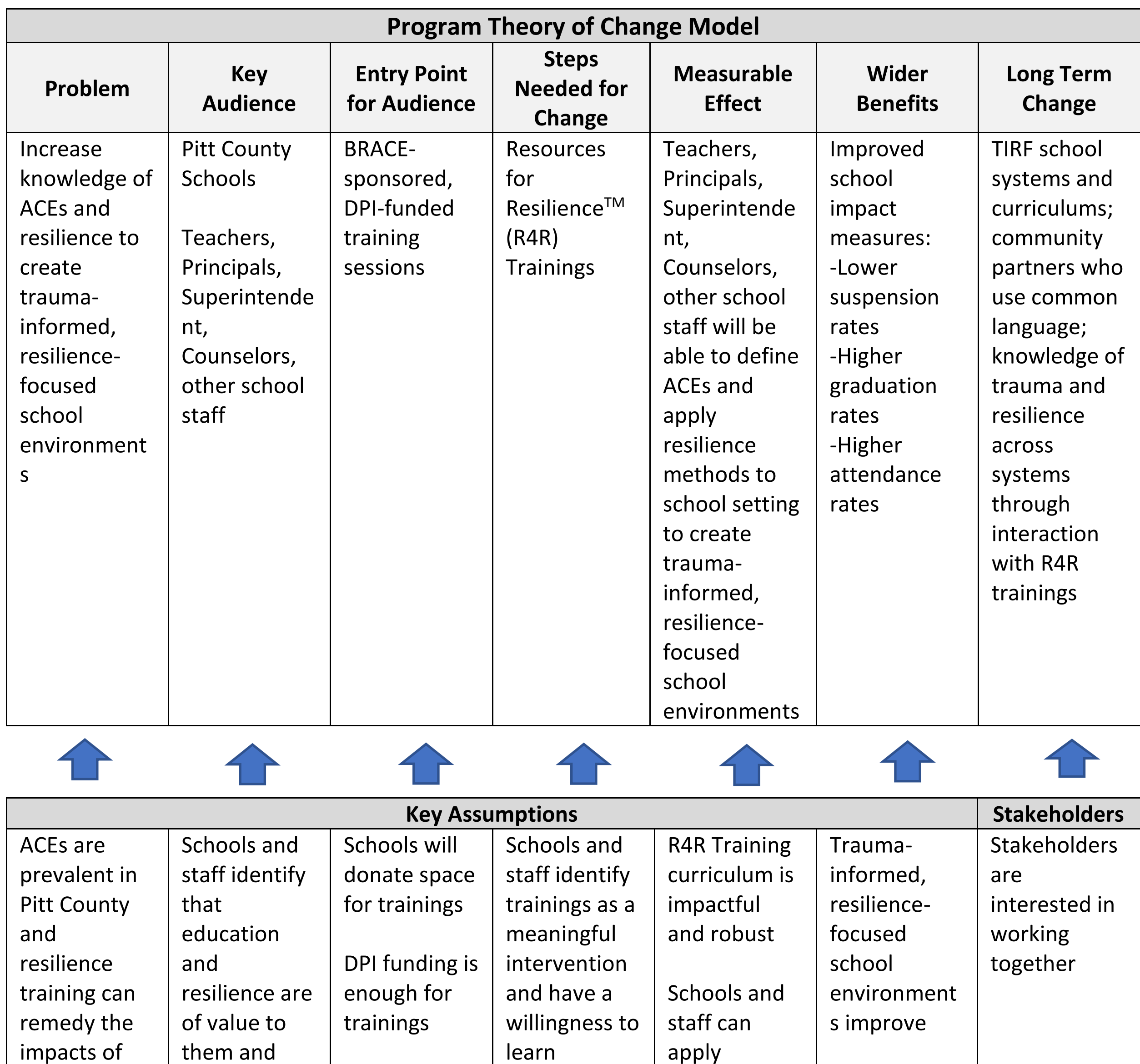
Figure 5: The Social Ecological Model Framework for Pitt County ACEs Interventions



The theory of change for this program centers on resilience training. By implementing resilience training for school superintendents, principals, counselors, teachers and staff, the program expects to have staff who are trained in resiliency skills, and can apply a trauma-informed, resilience-focused lens to their work. This will result in teachers and staff who create better learning environments for students, and who are more equipped to handle student behavior challenges stemming from childhood trauma. The long-term change in this theory of

change model is that through taking Resources for Resilience's "Reconnect for Resilience" training, that school systems in Pitt County will incorporate teaching mechanisms of the Compassionate Schools Model in their classrooms. Ultimately, the trauma-informed, resilience-focused learning environment will improve school impact measures like attendance, graduation rates, and suspension rates, and overall resilience will filter into the community through community partnerships in Pitt County, North Carolina.

Table 1. *Pitt County School ACEs & Resilience Project* Theory of Change



Program Theory of Change Model						
Problem	**Key Audience**	**Entry Point for Audience**	**Steps Needed for Change**	**Measurable Effect**	**Wider Benefits**	**Long Term Change**
Increase knowledge of ACEs and resilience to create trauma-informed, resilience-focused school environments	Pitt County Schools Teachers, Principals, Superintendent, Counselors, other school staff	BRACE-sponsored, DPI-funded training sessions	Resources for Resilience™ (R4R) Trainings	Teachers, Principals, Superintendent, Counselors, other school staff will be able to define ACEs and apply resilience methods to school setting to create trauma-informed, resilience-focused school environments	Improved school impact measures: -Lower suspension rates -Higher graduation rates -Higher attendance rates	TIRF school systems and curriculums; community partners who use common language; knowledge of trauma and resilience across systems through interaction with R4R trainings

Key Assumptions						Stakeholders
ACEs are prevalent in Pitt County and resilience training can remedy the impacts of	Schools and staff identify that education and resilience are of value to them and	Schools will donate space for trainings DPI funding is enough for trainings	Schools and staff identify trainings as a meaningful intervention and have a willingness to learn	R4R Training curriculum is impactful and robust Schools and staff can apply	Trauma-informed, resilience-focused school environments improve	Stakeholders are interested in working together

childhood trauma	their students	BRACE promotes trainings and engages stakeholders		resilience skills to self and with students	impact measures	

Both the Mobilize, Assess, Plan, Implement, Track (MAPIT) framework from HealthyPeople2020 (HealthyPeople.gov, 2019a) and the Community Tool Box Intervention Steps set forth by the University of Kansas Community Tool Box were used to guide the program plan described in this paper (University of Kansas, 2019a). The Pitt County ACEs Collaborative, BRACE, will begin by engaging community members in conversations about childhood trauma/ACEs and how they impact the life course and student learning, as well as detailing information on ACEs in Pitt County and by subpopulations. BRACE will be the agent of change for this program, leading conversations on prioritizing Teachers, Principals, Superintendent, Counselors, other school staff as the primary target of the ACEs intervention in Pitt County, detailing the concepts of ACEs and their impact over the life course, toxic stress, neuroplasticity, and resilience as the antidote to childhood trauma. BRACE will research and disseminate best practices for implementing resilience training in Pitt County schools, focusing on successes in published literature and relevant metrics.

Stakeholder Analysis

The University of Kansas's Community Toolbox defines four stakeholder groups for focus in any program plan or evaluation: *promoters* that have interest in the effort and power to drive it forward; *defenders* that have interest in the program but little power to change it, but are able to voice community support for the effort; *latents* that have no interests or collaboration with the program, but have tremendous power to influence if they choose to be

involved; and finally *apathetics* that may not even be aware of efforts, and have little interest or power in regards to the program (University of Kansas, 2019b). An evaluation of the stakeholders has been mapped according to these categories.

BRACE will be responsible for engaging all stakeholders and for general oversight of the *Pitt County School ACEs & Resilience Project*. The promoters of this project, BRACE, R4R trainers, NCDPI, Pitt County Schools and Principals and Superintendents will be responsible in varying degrees for delivering their contributions and moving forward the activities of the program plan. Teachers, counselors and other school staff are defenders of the program, and while they will contribute little to the program outside of attendance, their application of resilience skills in the school setting will be critical to the success of the outcome measures for this program. As apathetic stakeholders, Pitt County students have little to offer to this program but have the potential to reap tremendous benefits when they can learn in a TIRF school environment. Pitt County Health Department and Other Community Organizations are latent stakeholders and have tremendous influence in the community if they engage with the key principles of the R4r trainings, using coming knowledge about trauma and resilience and creating cross-cutting knowledge of these topics across systems.

Table 2: Stakeholder Analysis Matrix

Stakeholder	Impact and Influence of Project on Stakeholder	Potential Contributions/ Barriers from Stakeholder	Stakeholder Engagement Strategy
BRACE	Promoter	Champion Process Stakeholder engagement Schedule/organize trainings	Project lead
Resources for Resilience Trainers	Promoter	Training curriculum Training sessions Support to Pitt County Organizations	DPI funding, BRACE relationships
NC DPI	Promoter	Funding	Grant application, BRACE leadership
Pitt County Schools	Promoter	Meeting space for trainings	DPI funding, BRACE relationships, Principals, Superintendent promote program
Principals, Superintendent	Promoter	Training support Staff development Promote trauma-informed, resilience focused school environments	Utilize DPI funding and BRACE relationships
Teachers	Defender	Training attendance Utilize resilience skills in school environments	Principals, Superintendent promote program
Counselors	Defender	Training attendance Utilize resilience skills in school environments	Principals, Superintendent promote program
Other School Staff	Defender	Training attendance Utilize resilience skills in school environments	Principals, Superintendent promote program
Pitt County Students	Apathetic	-----	----
Pitt County Health Department	Latent	Support initiative Adopt R4R initiatives in organization	DPI funding and BRACE relationships
Other Community Partners	Latent	Support initiative Adopt R4R initiatives in organization	DPI funding and BRACE relationships

Program Implementation

The core component of this program plan is the R4R curriculum. This core curriculum is the primary vehicle for educating teachers, counselors, staff, principals, superintendents, health departments and other community partners on ACEs and how to employ resilience as an antidote to childhood trauma to reduce health impacts over the life course. BRACE will be responsible not only for organizing R4R trainings in the community, but also for mitigating any

barriers to training sessions for schools. These skill workshops will be the primary mode of delivery for schools in Pitt county. The logic model below outlines specific activities for the ACEs Intervention in Pitt county, and all activities will take place during the 2020-2021 academic school year. The full scope of work will be completed for one year to allow for monitoring, evaluation and updates to the program plan as needed.

Table 3: Logic Model for Pitt County ACEs Program Plan

Resources/Inputs	Activities	Outputs	Outcomes	Impacts
BRACE: Pitt County ACEs Collaborative	Identify ACEs as a community problem and assess prevalence/impacts in Pitt County; Engage community stakeholders in ACEs analysis and planning for resilience training in schools; Set goals for intervention and employ evidence-based best practices; Conduct Organize R4R trainings; Engage other resources in program plan and evaluation	Engaged community stakeholders; clear action plan and goals for intervention completion; evidence-informed approach to resilience training and evaluation; School staff, collaborative members, and community partners trained in resilience skills; schools are supported in trauma-informed, resilience-focused school model; Program evaluation completed	School staff, collaborative members, and community partners apply resilience skills	Increased school and community resilience
Resources for Resilience (R4R) curriculum & trainers	Develop and deliver training curriculum to Pitt county schools, collaborative members, and community partners; provide ongoing support for Pitt county schools, collaborative members, and community partners	School staff, collaborative members, and community partners trained in resilience skills		
Department of Public Instruction (DPI) grant funds	Provide funds to Pitt county for R4R instruction	School staff, collaborative members, and community partners trained in resilience skills	Trauma-informed, resilience-focused, school and staff members	
Pitt County Schools	Provide space for R4R trainings		Trauma-informed, resilience-focused, school	Improved school impact measures: ▪ Lower suspension rates ▪ Lower absenteeism ▪ Higher graduation rates
School superintendent and principals	Support R4R trainings for counselors, teachers and staff; Implement trauma-informed, resilience-focused school model; pursue more comprehensive school-based behavioral health programming	Possesses ability to apply resilience skills in school settings	Trauma-informed, resilience-focused leadership; better equipped to handle behavior challenges stemming from childhood trauma	Demonstrate more success on school impact measures
School counselors, teachers and staff	Engage in R4R trainings; Engage with trauma-informed, resilience-focused school model; Demonstrate and teach resilience skills to students	Possesses ability to apply resilience skills in school settings		
Pitt County Students	Attend trauma-informed, resilience-focused school	Learn resilience skills	Cope better with experienced trauma	
Pitt County Health Department	Support R4R trainings in Pitt county; Collaborate with BRACE, schools and community partners to implement/support trauma-informed, resilience-focused school model; support more comprehensive school-based behavioral health programming	Supported, trained school staff	Trauma-informed, resilience-focused leadership; better equipped to handle behavior challenges stemming from childhood trauma	Increased school and community resilience
Community Partners	Support R4R trainings in Pitt county; Collaborate with BRACE, schools and community partners to implement/support trauma-informed, resilience-focused school model			

Evaluation

The Pitt County School ACEs & Resilience Project will be implemented in Pitt County, North Carolina, with the newly founded BRACE collaborative leading both intervention and evaluation activities. The scope of the evaluation is one calendar year, beginning in August of 2020 with data collection for school outcome measures taking place within the academic year that begins in August 2020 and concludes in May 2021. These data will be compared to the previous academic year's outcome measures. The focus of the intervention is delivering R4R trainings to schools in the region. Teachers, Principals, Superintendent, Counselors, other school staff are the target audience for the intervention, and the goal of delivering this training program is that the target audience will be able to apply knowledge and skills from the training to their approach while at school. Therefore, ultimately creating trauma-informed, resilience-focused school environments in Pitt County that are supportive of students who have experienced childhood trauma. The expected impact of the program is that schools will experience better school impact measures of reduced suspension rates, decreased absenteeism, and increased graduation rates.

During the one-year program, BRACE projects that school system employees, students and community partners from across Pitt County's 39 schools will interact either directly with the content of the R4R trainings or will directly be impacted by the outputs from the trainings. The evaluation and monitoring proposal for this program is detailed below, beginning with stakeholder analysis, indicators, monitoring processes and projected outcomes and impacts. Monitoring and evaluation processes will be strictly adhered to in order to ensure that activities are effectively implemented, and the project achieves its intended outcomes and impacts

within budget, and within the allocated time for the project. The evaluation for this program follows guidelines proposed by the CDC (Centers for Disease Control and Prevention, 1999). The evaluation process will begin with creating an exhaustive list of stakeholders for the project and prioritizing the top stakeholder groups through a stakeholder analysis matrix.

Evaluation Design

The ACEs evaluation in Pitt County will be a non-experimental design with no control group for comparisons. Indicators will be measured at the baseline before the training program starts, and subsequently at the conclusion of the annual intervention to assess change. The evaluation will employ a mixed methods approach, collecting both quantitative and qualitative data to develop a robust data set for program analysis. The evaluation design will include descriptive, normative, and cause-and-effect indicators to capture an array of data points across program activities for both process and outcome measures for the program.

Table 4. ACEs and Resiliency Program in Pitt County, NC Process Indicators

Indicator	Definition	Target	Data & Means of Verification	Frequency & Responsible Party
Number of R4R trainings that have been offered	A comprehensive list of R4R offerings in Pitt County	Trainings offered to staff of 100% of Pitt County Schools	R4R training records, BRACE schedule records	Quarterly by BRACE
Planned number of people to attend trainings to the number of people who have *actually* attended R4R trainings	A ratio comprised of a comprehensive number of planned R4R attendees in Pitt County to the number of actual training attendees	75% of planned attendees attend training sessions	R4R training records, BRACE schedule records	Quarterly by BRACE
Percentage of types of schools have been represented at trainings	A comprehensive list of schools that are represented at R4R trainings and their school type (e.g. elementary, middle, high)	100% of schools on list	Pitt County School Data, R4R training records, BRACE schedule records	Quarterly by BRACE
Percent of surveyed trainees who are satisfied with training curriculum	Percent of trainees who report being "satisfied" or extremely satisfied" with training curriculum on the post-training survey	85% of participants	R4R post-training survey data	Quarterly by BRACE and R4R trainers
Percent of trainees who report increased knowledge of ACEs and resilience concepts	Percent of trainees who qualitatively report increased knowledge of and application of resilience concepts between the pre and post-training surveys	85% of participants	R4R post-training survey data	Quarterly by BRACE and R4R trainers
Percent of schools that have had a principal attend R4R trainings	Number of principals who have attended training/ Number of total principals in school district	100% by the end of year one	Pitt County School Data, R4R training records	Biannually by BRACE
Percent of schools that have had staff attend R4R trainings	Number of schools whose staff have attended training/ Number of total schools in district	75% by the end of year one	Pitt County School Data, R4R training records	Biannually by BRACE
Percent of each school's staff that has attended R4R trainings	Number each school's staff who have attended training/ Total number staff at each school	At least 25% for each school participating in training	Pitt County School Data, R4R training records	Biannually by BRACE

Table 5. ACEs and Resiliency Program in Pitt County, NC Outcome Indicators

Indicator	Numerator/ Denominator	Target	Means of Verification	Frequency & Responsible Party
Percent of School staff report feelings of increased capacity to support students with ACEs	Number of school staff who attended training and report increased feelings of capacity / Number of total school staff who attended training	50% of trained staff report increased capacity	Pitt County School Survey Data	Biannually by BRACE
Percent of school staff who report applying resilience skills in school settings	Number of school staff who attended training and report applying resilience skills in school settings / Number of total school staff who attended training	50% of trained staff report applying resilience skills	Pitt County School Survey Data	Biannually by BRACE
Percent of school counselors who report students are coping better with trauma	Number of school counselors who report students are coping better with trauma / Total number of school counselors who attended training	25% of counselors report better student outcomes	Pitt County School Survey Data	Biannually by BRACE
Number of Pitt County Students suspended during school year	Number of students suspended/total number of students in school system	Reduce number of suspensions by 25% in year one	Pitt County School Records North Carolina School Records	Biannually by Pitt County Schools, Principals and Superintendent
Percent of Pitt County Students who graduate from each school type (e.g. elementary, middle, high)	High school seniors who graduate/total number of students eligible for graduation	Increase percent of students who graduate by 5% in year one	Pitt County School Records North Carolina School Records	Annually by Pitt County Schools, Principals and Superintendent
Number of students absent from school during the school year	Number of students absent/total number of students in school system	Reduce absenteeism by 25% across all schools in the district in year one	Pitt County School Records North Carolina School Records	Biannually by Pitt County Schools, Principals and Superintendent

Evaluation METHODS

Resilience skills will be measured via surveys of training participants. Surveys will include Likert scale responses about school resilience techniques from the literature search, including promoting positive connections between students and staff; nurturing positive qualities like empathy and optimism; creating an environment for students to use these positive qualities; avoiding focus on negative behaviors; teaching by example; fostering feelings of confidence and self-efficacy. Surveys will also explore use of restorative justice techniques that include giving students opportunities to reflect on and address challenges, setting high expectations for students, and supporting them in achieving goals. School counselors will be used as proxy

measures for student resilience skill growth, by sharing observational data on student growth, behavior changes and resilience skills.

A baseline data set will be created as a pre-assessment to provide a point of measurement to the evaluation of this program. Findings from the pre-assessment will provide context for indicator measurement, defining what is a reasonable target and expectation for achievement. Data from previous school years on graduation rates, suspension rates, and absenteeism will be analyzed and compared to the 2020-2021 school year. A trend analysis will be completed for these data to identify opportunities for additional focus in subsequent program activities. Each of the process and outcome indicators will be reviewed on the cadence outlined in tables four and five above. Indicators will be evaluated to determine if targets were met; indicators will then be assessed for any adjustments that may be needed for the subsequent school year's training program activities. For indicators that are not met, BRACE will convene the steering committee to discuss opportunities. Since high goals were set as the target for these indicators, success may still be demonstrated by a missed target that is near to the original projected goal. Indicators that are within 10% of the original projection will be considered successful, and the BRACE steering committee will determine any additional considerations needed for the next school year to ensure attainment. The BRACE steering committee will determine the level of success for any indicators with missed targets and will report this information out to schools and community members along with recommendations for achieving goals for said indicators in the future.

Dissemination Plan

BRACE will take responsibility for collating data for the indicators, working with the school system to secure data for the outcomes measures. Following discussions with its steering committee on indicator parameters and achievement, the BRACE core team will create a dashboard of findings to be disseminated widely in Pitt County. BRACE will begin by presenting findings to the collaborative audience, incorporating any feedback before disseminating dashboards or reports to wider audiences. Dashboards will be shared with the school superintendent, and with principals from each of the 39 schools in the county. Principals will disseminate the results to teachers, counselors and other staff. BRACE will also disseminate findings to community organizations and partners and will hold at least two community sessions to include school systems and community partners to discuss the findings, answer questions, and solicit feedback.

Limitations

The non-experimental design of this evaluation provides a framework for important exploratory research. While this design does not have the benefit of comparison groups, it will frame an exploration of the relationship between the R4R trainings and trauma-informed, resilience-focused school models and how those models improve long term school impact measures like suspensions, attendance and graduation rates.

Discussion / Recommendations for Public Health Leaders

At the end of the timeline for the 2020-2021 school year, in May 2020, BRACE will explore opportunities to improve evaluation techniques based on feedback from the BRACE steering committee, and dissemination sessions with school employees and community

organizations. Feedback from these sessions should be used to improve the evaluation indicators and process for the subsequent school year. While the primary process goal of this program is to train school employees on ACEs and resilience, the overarching outcome goal of the program is to create TIRF school learning environments and communities. The activities of this program plan have the potential to create great positive impact in Pitt County schools; however, the program needs to be evaluated to identify outcomes, improvements and impacts. Additional work and formalized research are needed to fully realize projects of this nature and their impacts.

Following dissemination of evaluation results for the *Pitt County School ACEs & Resilience Project* and operating on the assumption that the program was successful in achievement of goals and targets, programs for school-based ACEs and resilience education should be replicated across the state of North Carolina. At minimum, the Pitt County project must meet the two process targets, "Number of R4R trainings that have been offered" and "Percent of surveyed trainees who are satisfied with training curriculum," in order to be considered a replicable program for scaling across the state. If these targets are not met, additional exploration of how to engage the superintendent and principals in the training initiative and exploration of the program content and delivery should be explored before scaling the program.

While implementing program plans for trauma-informed, resilience-focused school environments, public health leaders need to focus on the core components of trauma-informed and resilience-focused school models: promoting positive connections between students and staff; nurturing positive qualities like empathy and optimism; creating an environment for

students to use these positive qualities; avoiding focus on negative behaviors; teaching by example; fostering feelings of confidence and self-efficacy; and employing restorative justice techniques.

Conclusion

The prevalence of ACEs is a public health crisis for the current generation. Public health leaders must focus efforts not only on the issue of ACEs but educate on them with a resilience-focused lens. More research and program evaluation publications are needed on the effects of trauma-informed, resilience-focused school models, and public health leaders should lead initiatives that include data collection, publication and dissemination on this topic. Community partners should be engaged in all ACEs and resilience education efforts in order to create common language and increase resilience in cross-cutting sectors of the community.

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Appendix A

Source: (Centers for Disease Control and Prevention, 2019; Felitti et al., 1998)
https://www.cdc.gov/violenceprevention/childabuseandneglect/acestudy/about.html

CDC ACE Definitions:

All ACE questions refer to the respondent's first 18 years of life.

- Abuse
    - **Emotional abuse:** A parent, stepparent, or adult living in your home swore at you, insulted you, put you down, or acted in a way that made you afraid that you might be physically hurt.
    - **Physical abuse:** A parent, stepparent, or adult living in your home pushed, grabbed, slapped, threw something at you, or hit you so hard that you had marks or were injured.
    - **Sexual abuse:** An adult, relative, family friend, or stranger who was at least 5 years older than you ever touched or fondled your body in a sexual way, made you touch his/her body in a sexual way, attempted to have any type of sexual intercourse with you.
- Household Challenges
    - **Mother treated violently:** Your mother or stepmother was pushed, grabbed, slapped, had something thrown at her, kicked, bitten, hit with a fist, hit with something hard, repeatedly hit for over at least a few minutes, or ever threatened or hurt by a knife or gun by your father (or stepfather) or mother's boyfriend.
    - **Substance abuse in the household:** A household member was a problem drinker or alcoholic or a household member used street drugs.
    - **Mental illness in the household:** A household member was depressed or mentally ill or a household member attempted suicide.
    - **Parental separation or divorce:** Your parents were ever separated or divorced.
    - **Incarcerated household member:** A household member went to prison.
- Neglect[1]
    - **Emotional neglect:** Someone in your family helped you feel important or special, you felt loved, people in your family looked out for each other and felt close to each other, and your family was a source of strength and support.[2]
    - **Physical neglect:** There was someone to take care of you, protect you, and take you to the doctor if you needed it[2], you didn't have enough to eat, your parents were too drunk or too high to take care of you, and you had to wear dirty clothes.

[1]Collected during Wave 2 only.
[2] Items were reverse-scored to reflect the framing of the question.