Helping South Carolina’s Children Thrive: Promoting Protective Factors to Prevent the Long-Term Impact of Adverse Childhood Experiences Through the Development of Evidence-Based Public Health Policies

Aditi Srivastav

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HELPING SOUTH CAROLINA’S CHILDREN THRIVE: PROMOTING PROTECTIVE FACTORS TO PREVENT THE LONG-TERM IMPACT OF ADVERSE CHILDHOOD EXPERIENCES THROUGH THE DEVELOPMENT OF EVIDENCE-BASED PUBLIC HEALTH POLICIES

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DEDICATION

I would like to dedicate this dissertation to my parents, Drs. Sudhir and Rashmi Srivastava, who have helped me build my passion for public health and public service. You both sacrificed so much to ensure that my sister and I had all the opportunities in the world growing up, and for that I am thankful. I also dedicate this research to my Nani, who continues to make me feel loved and valued, even though she is not with us anymore. Nani, I love you so much, and I am thankful for the lessons you have taught me on compassion, family, and determination. I wish you could be there with me as I walk the stage, but I know you’ll be watching. Finally, I dedicate this research to all of you that work hard every day to dismantle systemic inequities working to give children the life they deserve. Thank you for all that you do.
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ABSTRACT

This study considered Adverse Childhood Experiences (ACEs) to be an underlying cause of engagement in risk behaviors and that the implementation of protective factors, or positive relationships and environments, can reduce long-term implications of ACEs. First, this study examined the empirical relationship between safe, stable, and nurturing relationships (SSNRs), exposure to ACEs, and risk behaviors using a population-level health survey in South Carolina. The results of this research, which demonstrate that SSNRs moderate the relationship between ACEs and risk behaviors, provide innovative evidence for the role of protective factors in reducing exposure to ACEs and risk behavior engagement. Next, this study used qualitative methodology to explore practice (child-and family-serving professionals) and policy (state policymakers) perspectives on protective factors and how they can be implemented through state-level policies and programs that address ACEs. The findings from this research provide valuable insight on the complex state-level policymaking process and resulted in several evidence-based policy and program recommendations for addressing ACEs in South Carolina. Overall, this study makes a significant and innovative contribution to the public health literature, reinforcing the importance of social determinants of health, and generating important knowledge about the extent to which protective factors may prevent ACEs and reduce engagement in risk behaviors and their associated health consequences.
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LIST OF ABBREVIATIONS

ACE..............................................................Adverse Childhood Experiences
CFSP .............................................................. Child-and family-serving professional
MST ............................................................... Multiple Streams Theory
SC-BRFSS .................South Carolina Behavioral Risk Factor Surveillance System survey
SDH..............................................................Social determinants of health
SSNR ........................................................... Safe, stable and nurturing relationships
1.1 SOCIAL DETERMINANTS OF HEALTH

Social determinants of health (SDH) refer to the social, economic and environmental contexts that contribute to an individual’s health (Wilkinson & Marmot, 2003). Evidence suggests that SDH can have major implications for current public health approaches, including alleviating health disparities and improving health equity (Wilkinson & Marmot, 2003). SDH emphasize the need to shift from treatment-oriented (downstream) to prevention-focused (upstream) approaches for attaining positive health outcomes (Braveman & Gottlieb, 2014; Brook & Stimmel, 2014; Viner et al., 2012; Wilkinson & Marmot, 2003). Such upstream approaches emphasize the improvement or modification of the complex conditions in which all individuals live, work and play to encourage healthy behaviors. A large body of research on SDH examines the health impact of social factors such as safety, education, income, housing, or access to services over the lifespan and on future generations (Bharmal, Derose, Felician, & Weden, 2015; Braveman & Gottlieb, 2014). It is theorized that SDH influence health at each life stage (childhood health, adult health, family health), with early childhood being a critical period in which exposure to negative social factors can substantially increase risks for poor health outcomes in adulthood (Bharmal et al., 2015; Braveman & Gottlieb, 2014; Gee, Walsemann, & Brondolo, 2012). This evidence is underscored by the concept of
adverse childhood experiences (ACEs), which suggest that traumatic early childhood experiences are shaped by social factors (including family well-being), affect children’s cognitive, behavioral, and physical development, and, in turn, predict current and future health (Bharmal et al., 2015).

1.2 ADVERSE CHILDHOOD EXPERIENCES (ACES)

ACEs\(^1\) are regarded as a framework for understanding the pathway between SDH and health across the lifespan and generations (Bharmal et al., 2015). ACEs include traumatic exposures ranging from experiencing abuse and neglect to dysfunction in the household (e.g., witnessing domestic violence or incarceration of a parent; Felitti et al., 1998). ACEs are common and prevalent. It is estimated that almost half (46%) of the children in the U.S. have experienced at least one type of ACE (National Survey of Children’s Health, n.d.).

Studies demonstrate that ACEs are strongly associated with poor adult health outcomes, with risk behaviors often mediating these relationships (Anda et al., 1999; Dube, Anda, Felitti, Croft, et al., 2001; Dube, Felitti, Dong, Chapman, et al., 2003; Dube, Felitti, Dong, Giles, & Anda, 2003; Felitti, 2009; Felitti et al., 1998). The known associations between ACEs and health outcomes offer a unique lens for understanding opportunities for primary prevention of adverse health outcomes, as ACEs shift focus from attempting to reduce engagement in risk behaviors after they occur to addressing

\(^{1}\) When it is used as a modifier in front of a noun, ACE data, ACE training, etc., there is no need for the s. When used as a noun itself, it is referred to as ACEs. This is the distinction the Centers for Disease Control (CDC) has made in its language and communications about the ACE Study and continuing ACE related efforts.
the underlying reasons for engagement in risk behaviors before they occur. This framing aligns with the push for more upstream approaches to prevent disease and improve population health in the SDH literature (Dorfman & Wallack, 2007).

1.3 THE ROLE OF PROTECTIVE FACTORS

Substantial evidence from neurobiological, developmental, epigenetic, and social science research demonstrate that toxic stress is considered a major biological mechanism through which ACEs affect health (Franke, 2014; Garner, 2013; Shonkoff et al., 2012). Toxic stress refers to severe, chronic stress resulting from prolonged exposure to adversity in childhood. This stress can disrupt a child’s socio-emotional development, which, in turn, can increase one’s engagement in risk behaviors and risk for developing poor health outcomes (Bethell, Gombojav, Solloway, & Wissow, 2016; Garner, Forkey, & Szilagyi, 2015; Health et al., 2012; Shonkoff et al., 2012; Shonkoff, Boyce, & McEwen, 2009; Ungar, Ghazinour, & Richter, 2013; Zannas & West, 2014). An intergenerational pathway of ACEs is also suggested in the existing evidence on toxic stress. While studies have long confirmed that exposure to a mother’s stress in utero has implications beyond birth and across the lifespan, there is growing evidence that stress from trauma can be transferred to a child biologically and socially (Barker, Winter, Osmond, Margetts, & Simmonds, 1989; McDonnell & Valentino, 2016; Narayan et al., 2017).

The research on toxic stress has also suggested that the effects of ACEs can be mitigated or reversed (Garner et al., 2012). The brain has the capacity to adapt and rebound quickly from ACEs when a child is subsequently exposed to healthy, positive nurturing experiences (Garner et al., 2012). Healthy and positive childhood experiences
result from the presence of protective factors in a child’s life that include safe, stable, nurturing relationships and positive environments. Specifically, protective factors buffer children from the potential negative impacts of traumatic experiences by helping them build resilience (Baum, 2005; Bethell et al., 2016; Felitti et al., 1998; Garner et al., 2012; Garner, 2013; Ginsburg & Jablow, 2005; Luthar, 2003; Ann S. Masten, 2013; McEwen, Gray, & Nasca, 2014; Shonkoff & Garner, 2011; Shonkoff & Meisels, 2000; Zannas & West, 2014). Resilience, in turn, can help children overcome the deleterious effects of ACEs by providing positive coping skills that reduce the risk of poor health outcomes (Felitti et al., 1998; Garner et al., 2012). Thus, the building of resilience in children though the presence of protective factors can potentially prevent the engagement in risk behaviors later in life.

1.4 PUBLIC HEALTH IMPLICATIONS OF ACEs

The field of public health is predicated on the notion that preventing disease is critical for protecting and improving both individual and community-level health. A key approach to preventing disease in public health is by reducing engagement in risk behaviors such as smoking and alcohol abuse, however, despite substantial public health prevention and intervention investments, smoking tobacco and alcohol abuse continue to be among the top causes of preventable deaths in the U.S. (CDC, 2017b; National Institute on Alcohol Abuse and Alcoholism, 2007). Tobacco and alcohol are linked to significant health risks when used alone or together (National Institute on Alcohol Abuse and Alcoholism, 2000). In addition to early mortality, smoking is associated with several types of lung disease, cancers, and cardiovascular diseases (U.S. Department of Health and Human Services, 2014), while alcohol abuse increases the risk for liver and kidney
disease, cancers, and cardiovascular diseases (National Institute on Alcohol Abuse and Alcoholism, 2007). The addictive nature of these substances is likely to play a role in their continued use. Evidence suggest that smoking tobacco and alcohol abuse can cause biological changes in the brain, leading many individuals to become addicted (Borowitz, 2010; Crews, He, & Hodge, 2007). However, it is also widely recognized that addiction is a complex interplay of pharmacology, genetics, and social and environmental factors (Benowitz, 2010). Thus, the potential role of ACEs in the engagement of smoking and alcohol abuse should be considered for future prevention efforts, given the growing evidence that suggests ACEs are caused by social and environmental factors and can have intergenerational effects.

1.5 STUDY OVERVIEW

This dissertation research considers ACEs to be an underlying cause of engagement in risk behaviors. It is grounded in the notion that the presence of protective factors, or positive relationships and environments, can reduce long-term implications of ACEs.

The first study included in this research examined the empirical relationship among potential protective factors focused on safe, stable, and nurturing relationships (SSNRs), ACEs, and risk behaviors. Protective factors, specifically SSNRs, have been widely researched in relation to their role in early brain development under conditions of sources of stress (e.g., parental divorce) and during serious traumatic experiences (e.g., abuse, war or political violence). However, prior research examining the association between protective factors and health outcomes is limited and has only been examined in select populations, such as individuals with existing mental health conditions (David,
Catalano, & Miller, 1992; Martinez-Torteya, Anne Bogat, Von Eye, & Levendosky, 2009; Masten, 2013; McDaniel, 2012; Rutter, 1985). This makes it unclear whether or not to promote protective factors as a general public health prevention strategy (Development Services Group, 2013). Therefore, a clear need exists to clarify the relationships among ACEs, protective factors, and risk behaviors on a population level.

The Behavioral Risk Factor Surveillance System (BRFSS) is a widely known system for assessing health and well-being in the U.S. (CDC, 2014b). The BRFSS is representative of state populations, making the findings especially useful for informing state-based public health prevention and intervention efforts (CDC, 2014). The BRFSS has been used to examine the prevalence of ACEs and assess their associations with a variety of health outcomes across many states (Crouch, Radcliff, Strompolis, & Srivastav, 2018; Crouch, Radcliff, Strompolis, & Wilson, 2017; Crouch, Strompolis, Bennett, Morse, & Radcliff, 2017; Ege, Messias, Thapa, & Krain, 2015; Ford et al., 2011; Morse, Strompolis, & Srivastav 2017). This study used South Carolina’s BRFSS (SC-BRFSS) to understand the relationship between ACEs and two risk behaviors (smoking and alcohol abuse), and the potential moderating relationship of two potential protective factors (having basic needs met and having a safe, stable home during childhood). The results of this study provide valuable insight on whether SSNRs in childhood can be considered protective against engagement in risk behaviors later in life. Findings from this research may be used to guide targeted prevention efforts through the development of new policies and programs to prevent smoking and alcohol abuse. It can also be used to inform how protective factors should be measured in future quantitative research.
The Behavioral Risk Factor Surveillance System (BRFSS) is considered the premier system for assessing health and well-being (CDC, 2014b). The BRFSS is representative of state populations, making the findings especially meaningful for prevention and intervention efforts for state-based public health efforts (CDC, 2014). The BRFSS has been used to examine the prevalence of ACEs and assess their association with a variety of health outcomes across many states (Crouch, Radcliff, Strompolis, & Srivastav, 2018; Crouch, Radcliff, Strompolis, & Wilson, 2017; Crouch, Strompolis, Bennett, Morse, & Radcliff, 2017; Ege, Messias, Thapa, & Krain, 2015; E. S. Ford et al., 2011; Morse, Strompolis, & Srivastav 2017). This study used South Carolina’s BRFSS (SC-BRFSS) to understand the relationship between ACEs and two risk behaviors (smoking and alcohol abuse), and the potential moderating relationship of two potential protective factors (having basic needs met and having a safe, stable home during childhood). The results of this study provide valuable insight on whether SSNRs in childhood can be considered protective against engagement in risk behaviors later in life. Findings from this research may be used to guide targeted prevention efforts through the development of new policies and programs to prevent smoking and alcohol abuse. It can also be used to determine how protective factors should be measured in future quantitative research.

The second study included in this research used qualitative methodology to explore barriers and opportunities to pass policies to address ACEs and promote protective factors. As aforementioned, research on the prevention and mitigation of ACEs has focused primarily on the role of SSNRs within the home as protective factors. As SDH literature suggests, these relationships and practices can be influenced by the social,
economic environmental contexts in which a child lives. These contexts are largely influenced and altered by public policies (Bhattacharya, 2013; Braveman & Gottlieb, 2014; Smedley & Syme, 2000). For example, many significant public health achievements in the 20th and 21st century were influenced by major policy and program efforts such as seat belt laws, increased drinking age, vaccine mandates, or smoking bans (CDC, 1999, 2011). Therefore, since protective factors have a significant influence on whether individuals recover from ACEs, it is important to understand the best ways in which to promote policies that support programs and efforts to prevent childhood adversity. Consequently, the second study within this dissertation research used qualitative methodology to explore the perspectives of state policymakers or legislators on advocacy and policymaking strategies to address ACEs.

Finally, the last study within this dissertation research was underpinned by the notion that public health policies are most effective when they are evidence-based (Brownson, Fielding, & Maylahn, 2009). Evidence-based policymaking uses evidence on program practices, implementation, and outcomes to determine policy strategies (Brownson, Chriqui, & Stamatakis, 2009). The third study incorporated the perspectives of child-and family-serving professionals (CFSPs), or individuals that directly serve children and families, to help build an evidence-base for ACEs policy and program efforts. CFSPs were asked to provide insight on the practicality and effectiveness of policies and programs, including barriers to implementation and opportunities for innovation, all of which can be considered key elements of evidence-based policymaking.

This study also recognized that policy and program approaches are most effective when they address the “evidence-policy gap,” or the lack of translation of research to
While there are a variety of reasons that the evidence-policy gap occurs, a major reason is a lack of understanding or engagement of policymakers in the process of developing evidence-based policy recommendations (Cairney & Oliver, 2017; Oliver, Innvar, Lorenc, Woodman, & Thomas, 2014). There continues to be an evidence-policy gap within the realm of ACEs, as current research has not examined or incorporated the perspectives of policymakers in the development of policy recommendations on ACEs. To address this evidence-policy gap, the third study in this dissertation research also gathered information from state policymakers, who can directly influence the policies and programs that serve children. State policymakers were asked to speak to the feasibility of advocacy for policies and programs that addressed ACEs, including their timeliness, relevance, and political will.

CFSPs and state policymakers’ perspectives were used together to obtain strong data from these key stakeholders on how to promote protective factors in children’s lives to prevent and mitigate ACEs. Findings from this research can shed light on examples of protective factors beyond the home, potentially increasing our knowledge of what factors are needed to prevent and mitigate ACEs. These findings can be used to lay the groundwork for upstream policy recommendations that can help address ACEs as a root cause of risk behaviors.

1.6 THEORETICAL INFLUENCES ON THE RESEARCH

This dissertation research was based on a conceptual model that links ACEs to risk behaviors that can lead to poor health outcomes. The study is primarily informed by three theories: 1) the life course perspective, which emphasizes the impact of stressful events in critical phases of childhood on outcomes in adulthood (Braveman & Barclay, 2009; Fine
1.7 SPECIFIC AIMS
This study had three specific aims:

Specific Aim #1: To determine the relationships between ACEs and risk behaviors and identify whether potential protective factors focused on SSNRs moderate these relationships.

- Hypothesis 1a: ACEs are positively associated with two risk behaviors (smoking and alcohol abuse) in adulthood.
- Hypothesis 1b: ACEs are inversely associated with two types of potential protective factors (basic needs met, feeling safe and protected) during childhood.
- Hypothesis 1c: The associations between ACEs and risk behaviors in adulthood are moderated by potential protective factors during childhood, such that there will be weaker relationships between ACEs and smoking or alcohol abuse in adulthood for participants whose basic needs were met and felt safe and protected during childhood and stronger relationships between ACEs and smoking or alcohol abuse in adulthood for participants who did not have their basic needs met or felt safe and protected during childhood.
Specific Aim #2: To understand stakeholder perspectives on their knowledge and understanding of ACEs, its related concepts and how they play a role in children’s health and well-being.

- Research Question #1: What is the current knowledge and understanding among stakeholders about ACEs and its related concepts?
- Research Question #2: What factors do stakeholder identify are most important to protecting children from exposure to/mitigation of ACEs?

Specific Aim #3: To explore stakeholder perspectives of public health policy approaches to prevent or mitigate ACEs.

- Research Question #1: What are stakeholders’ perspectives on existing policies and programs that are preventing and mitigating ACEs?
- Research Question #2: What are stakeholders’ perspectives on policies and programs that are needed to prevent and mitigate ACEs?

1.8 SIGNIFICANCE

This dissertation research is one of the first to empirically examine SSNRs as protective factors using BRFSS data from the American South. Many studies have been conducted using BRFSS data to examine the influences of ACEs on health. However, few studies, if any, have examined SSNRs as potential moderators of the relationship between ACEs and health outcomes. Previous studies have suggested a need to further explore how the effects of ACEs can be moderated, to understand which factors are most effective in weakening associations between ACEs and poor health behaviors such as smoking and alcohol abuse (Edwards, Anda, Gu, Dube, & Felitti, 2007; Ege, Messias,
Thapa, & Krain, 2015; Ford et al., 2011; Hughes et al., 2017; Hughes, Lowey, Quigg, & Bellis, 2016). By examining the role of nurturing relationships as protective factors in the association between ACEs and risk behaviors in adulthood, this study enhances knowledge about the role of protective factors in designing and implementing ACE prevention and mitigation strategies.

This research also seeks to understand the role of protective factors at the program and policy level to inform upstream public health approaches addressing ACEs. Though ACEs continue to be widely recognized since the 1997 Centers for Disease Control-Kaiser ACE Study, policy actions that enhance protective factors have been fragmented and incomplete (Bethell, Solloway, et al., 2017). Considering the need for evidence-based policy approaches and the many obstacles associated with translating research into policy (Dodson, Geary, & Brownson, 2015; Gollust et al., 2017; Oliver et al., 2014), few ACE-related policies have been enacted on the state or federal level. This study takes the unique approach of synthesizing CFSP and policymaker perspectives to develop policy recommendations to help address this gap. The qualitative nature of this phase of the study may also result in innovative program and policy solutions that could improve a wide range of public health outcomes.

1.9 PREVIEW

This dissertation has five chapters. In Chapter 2, “Background,” I review the literature on ACEs, risk behaviors, protective factors, and public health policy efforts to justify the need for this study. In Chapter 3, “Methods,” I explain the methods used in the three parts of this study. In Chapter 4, “Results,” I present my study findings in the form of three manuscripts. The first manuscript addresses Aim 1 and will be submitted for
consideration to *Children and Youth Services Review*. The second manuscript addresses Aim 2 and will be submitted for consideration in *Preventing Chronic Disease*. The third manuscript addresses parts of Aim 2 and all of Aim 3 and will be submitted for consideration in the *American Journal of Public Health*. I conclude with Chapter 5, “Discussion and Implications,” in which I summarize the findings of the study and discuss the research and policy implications of this work.
CHAPTER 2

BACKGROUND

2.1 ACES IN SOUTH CAROLINA

The American South faces disproportionately higher rates of chronic disease and mortality when compared to the rest of the country, which highlights the need for public health prevention and intervention efforts in the region (Savitt & Young, 1991). For example, individuals living in the American South are twice as likely to smoke and be sedentary compared to the national average (Dwyer-Lindgren et al., 2017). Additionally, chronic health conditions like obesity, heart disease, and stroke are significantly higher in the American South than other parts of the country (Artiga & Damico, 2016; Rodriguez, 2016). American Southerners are also likely to have a shorter lifespan by approximately six years when compared to their counterparts nationally (CDC, 2013). South Carolina, in particular, ranks among the bottom ten states in the U.S. for health and well-being (America’s Health Rankings, 2017b). Among Southern states, it has the fourth highest prevalence of unhealthy behaviors such as smoking and excessive drinking (America’s Health Rankings, 2017b). Research indicates that these regional disparities may result from influences of history, culture and politics, all of which can influence key determinants of health including education, income, and access to health care (Savitt & Young, 1991; Sledge, 2017). Further exploring the root causes of poor health in the American South through public health efforts is important to improve the well-being of the country.
Given the link between adverse childhood experiences (ACEs) and health, and the prevalence of poor health in the American South, it is not surprising that this region has higher rates of childhood adversity as well. South Carolina in particular, has a high prevalence of ACEs, with 60% of adults reporting that they experienced at least one ACE (Morse, Strompolis, Priester, Wooten, & Srivastav, 2018a). ACEs have been associated with a range of health and psychosocial outcomes. For example, among South Carolina adults, almost 75% of smokers and 71% of binge drinkers report at least one ACE (Morse, Strompolis, Priester, & Wooten, 2018) Over 60% of adults with conditions associated with smoking and alcohol abuse, such as kidney disease, chronic obstructive pulmonary disease, or asthma, report at least one ACE (Morse, Strompolis, Priester, Wooten, & Srivastav, 2018c). Of the South Carolina adults who report ACEs, 78% report depressive disorder, 78% cannot afford health care, and 60% never use a seatbelt when driving (Morse, Strompolis, Priester, Wooten, & Srivastav, 2018b; Priester, Wooten, Strompolis, & Morse, 2018). These associations between poor health outcomes and ACEs in South Carolina demonstrate the importance of considering the impact of childhood adversity in public health efforts across the state.

South Carolina is uniquely positioned to provide insight on next steps for ACEs-related public health efforts through its statewide ACE Initiative (Children’s Trust of South Carolina, n.d.), which is among the first initiatives of its kind in the American South. This Initiative focuses on increasing scientific knowledge about the causes and effects of ACEs in South Carolina, raising awareness about ACEs, and promoting community-based efforts to promote positive childhood experiences. Through the Initiative, thousands of South Carolinians across sectors and communities have been
educated on ACEs and its impact on health. This has led to a desire to understand how communities in the state can help children facing adversity, specifically through policies and programs. Although there are national examples of other successful state-based efforts in states such as Washington and Oregon (Hall, Porter, Longhi, Becker-Green, & Dreyfus, 2012; Kagi & Regala, 2012) different approaches may be needed to be effective in South Carolina due to its unique Southern context and history. For example, the American South has a large rural population with public health needs that are different than many urban cities in the Pacific Northwest (Warshaw, 2017). Southerners are also more likely to live in poverty compared to residents of other regions across the county, which can have lasting implications on population health (Artiga & Damico, 2016). The American South also has a larger proportion of racial and ethnic minority residents than other regions like the Pacific Northwest (Artiga & Damico, 2016). These differences suggest that unique policy and programmatic solutions may be needed to address ACEs in the American South. South Carolina shares similar socio-economic, racial, and geographic characteristics as many other Southern states (Radcliff, Crouch, & Strompolis, 2018); therefore, it could be considered representative of the American South. Consequently, South Carolina provides an appropriate setting for examining ACEs in the American South.

2.2 THE ACE STUDY

ACEs are traumatic and highly stressful experiences that occur in a child’s life. ACEs can include events that the child experiences directly, such as abuse or neglect, or are exposed to in their environment (Bethell et al., 2017; Bynum et al., 2010; CAHMI, 2017; CDC, 2016c; Dube, Anda, Felitti, Chapman, et al., 2001; Dube, Anda, Felitti,
Croft, et al., 2001; Dube et al., 2002; Edwards et al., 2003; Felitti et al., 1998; Felitti, 2009; McDonnell & Valentino, 2016; Sege et al., 2017; Shonkoff et al., 2012). Recurrent experience of or exposure to these traumatic events have been shown to alter brain development and can result in various long-term health consequences, ranging from engagement in risk behaviors to early mortality (Garner, 2013; Johnson, Riley, Granger, & Riis, 2013; McEwen & Gianaros, 2010; McEwen et al., 2014; Shonkoff et al., 2009).

The term ACEs was introduced through the 1997 Centers for Disease Control (CDC) and Kaiser Permanente ACE study (CDC, 2016c). Led by Dr. Robert Anda and Dr. Vincent Felitti, this study examined the relationship and impact of multiple types of childhood adversities on health and social outcomes among 17,000 adults (Felitti et al., 1998). Prior to the study, Drs. Anda and Felitti sought to understand why their patients were not successful in smoking cessation and obesity reduction even though they were educated on the associated risks and received treatment. Through patient history and appointment follow ups, Drs. Anda and Felitti discovered that both of their patient groups had something in common: the presence of traumatic experiences in childhood. Drs. Anda and Felitti hypothesized that childhood adversity (later known as ACEs) was the root cause of their patients’ inability to overcome poor health behaviors as adults (Felitti et al., 1998). They predicted that ACEs leads to disrupted neurodevelopment, which, in turn, impairs social, emotional, cognitive impairment that increases engagement in risk behaviors (Felitti et al., 1998). Drs. Anda and Felitti conceptualized ten types of ACEs, covering three experiences related to abuse, two experiences associated with neglect, and five aspects of household dysfunction (CDC, 2016c). Today, these ten ACE types
(detailed in Table 2.1) are considered the traditional types of childhood adversity (Anda & Porter, 2014; CDC, 2016c; Robert Wood Johnson Foundation, n.d.)

The CDC-Kaiser ACE Study revealed three key findings. First, ACEs are prevalent among groups with access to resources, as well as those with reduced access to resources (Felitti et al., 1998). The study population was relatively homogeneous and consisted predominantly of participants who were White, male, upper middle class, and/or well-educated (Felitti et al., 1998). Through the Kaiser insurance plan, the participants also had access to affordable and higher quality health care (Felitti et al., 1998). Second, ACEs are likely to co-occur. Two-thirds (63%) of participants reported at least one ACE, and more than one in five reported three or more ACEs (Felitti et al., 1998). Of the participants who reported ACEs, at least one other ACE occurred 87% of the time, supporting the notion that ACEs should not be observed as individual events but, rather, in terms of their cumulative impact on an individual’s life (Felitti et al., 1998). Third, ACEs have a dose-response relationship with outcomes later in life, such that the higher the number of ACEs, the higher the risk for health problems in adulthood (Felitti et al., 1998). For example, compared to people with no ACEs, participants with four or

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<td>Physical abuse</td>
<td>Parental separation or divorce</td>
<td>Physical neglect</td>
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<td>Sexual abuse</td>
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<td>Substance abuse by a family member</td>
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<td>Domestic violence</td>
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Table 2.1 Types of ACEs Measured in the CDC-Kaiser ACE Study
more ACEs were twice as likely to be smokers, seven times more likely to be alcoholic, and 10 times more likely to have injected street drugs (Felitti et al., 1998, Stevens, 2012). Those with four or more ACEs also had a 240% greater risk of hepatitis and were 390% more likely to have COPD (Felitti et al., 1998). These CDC-Kaiser Study findings provide strong evidence that ACEs are a key predictor of risk behaviors and later health outcomes, which have served as the foundation for future ACE research.

The CDC-Kaiser ACE study set in motion many research efforts to understand relationships between ACEs and health behaviors and outcomes across populations (CDC, 2016d; E. S. Ford et al., 2011; Kagi & Regala, 2012; Prewitt, 2014). To support these efforts, the CDC developed an ACE module that states could add to their Behavioral Risk Factor Surveillance System (BRFSS) surveys, which included 11 questions guided by the findings of the CDC-Kaiser ACE study (see Appendix A). Since 2009, 34 states have used the BRFSS to collect ACE data within their respective states (Prewitt, 2014). While the BRFSS has continued to be the main channel of collecting ACE data, efforts have been made through other surveys as well, including the National Survey of Children’s Health and the Fragile Families and Child Well-Being Study (National Survey of Children’s Health, n.d.; Prewitt, 2014; Waldfogel, Craigie, & Brooks-Gunn, 2010). These research efforts have ranged across diverse populations across racial/ethnic groups, regions, ages, and involvement in the military (Hughes et al., 2017; Jimenez, Wade, Lin, Morrow, & Reichman, 2016). This subsequent ACE research has largely supported the findings of the CDC-Kaiser study, indicating that ACEs are common, prevalent, and increase the risk of adverse health outcomes. However, more
work is needed to understand the ways in which ACEs can be successfully prevented or mitigated.

Three major concepts are critical to research on ACEs: toxic stress, trauma, and resilience. Toxic stress refers to the mechanism by which ACEs can alter brain functioning and early childhood development (Garner, 2013; Garner et al., 2012; Johnson et al., 2013; Shonkoff et al., 2012). Trauma refers to various kinds of events that can lead to ACEs in children (Eames et al., 2014; Lanius, Vermetten, & Pain, 2010; McDonnell & Valentino, 2016; Turner et al., 2012). The term trauma is often used in conjunction with trauma-informed, which describes communities and systems that have incorporated ACE research into their practices (Ko et al., 2008; Kramer, Sigel, Conners-Burrow, Savary, & Tempel, 2013; Leitch, 2017; Muskett, 2014; SAHMSA, 2014; Yeager, Cutler, Svendsen, & Sills, 2013). Resilience refers to the ability to overcome the effects of ACEs through effective stress responses that are developed through the presence of protective factors (Herrman et al., 2011; Leitch, 2017; McEwen et al., 2014; Ungar et al., 2013). It should be noted that while these three terms are widely recognized in research, their use and conceptualization in practice, policies, and programs are inconsistent (Bales, 2004, 2009; Shonkoff & Bales, 2011). Thus, there continues to be a need to develop common language that considers these three research terms in combination with practical perspectives to help move work on ACEs forward.

2.3 TOXIC STRESS

Early childhood, which ranges from birth to five years of age, is a critical period of the lifespan in which the brain and various systems within the body develop (Garner et al., 2012; Shonkoff, 2010; Shonkoff et al., 2012; Shonkoff & Meisels, 2000).
Experiences in early childhood have the power to alter development through the activation of the stress response system (Center for the Developing Child, 2017; Middlebrooks & Audage, 2008; Shonkoff et al., 2012). For example, when a child’s stress response is activated within a nurturing and supportive environment, which consists of a positive relationship with an adult, the psychological effects of stress can be buffered (Shonkoff et al., 2012). This is considered positive stress, as it can aid in early childhood development (Shonkoff et al., 2012). When a child is exposed to traumatic experiences and has a nurturing and supportive environment, the child can still appropriately cope with the stress experienced, leading to healthy development of the stress response system (Center for the Developing Child, n.d.; Franke, 2014; Garner, 2013; Shonkoff et al., 2012). While exposure to traumatic events in childhood is not ideal, research suggests that this type of stress can still be considered tolerable stress (Shonkoff et al., 2012). However, if a child is exposed to prolonged and frequent stress in the absence of a nurturing and supportive environment, evidence indicates that toxic stress ensues, which can have harmful effects on early childhood development by causing dysregulation of physiologic mediators (e.g. cortisol) or through chronic “wear and tear” on multiple systems of the body and brain (Fagundes, Glaser, & Kiecolt-Glaser, 2013; Franke, 2014; Garner, 2013). Ensuring that a child has the support to build healthy skills for coping with stress in early childhood is especially important for their development.

Toxic stress is considered a major biological mechanism by which ACEs can impact health and well-being across the lifespan (Center for the Developing Child, 2017; Franke, 2014; Garner, 2013; Johnson et al., 2013; Shonkoff, 2010; Shonkoff et al., 2012). When exposed to any type of stress, whether it is positive, tolerable, or toxic, the body
responds biologically and psychologically to help the body reach allostasis, which is when the body adapts to the stressors presented (Shonkoff et al., 2009). When stress associated with ACEs occurs in childhood, there can be a prolonged allostatic response if stress mediators that are typically adaptive to stressful conditions become chronically instead of periodically activated (Larkin, Felitti, & Anda, 2014). The sustained reaction to stress from a traumatic event results in a disruption of important regulatory systems in the body that can continue to impact the psychological, emotional, and physical behavior across the lifespan, including negatively impacting the stress response later in life (Shonkoff et al., 2012). As a consequence, childhood experiences can become hardwired into a child’s biology.

In addition to its impact on early childhood development, research on toxic stress also suggests an intergenerational pathway of childhood adversity, which can have profound implications for public health prevention and mitigation efforts. While studies have long confirmed that exposure to a mother’s stress in utero has implications beyond birth and across the lifespan, there is growing evidence that stress from trauma during pregnancy can be transferred to a child biologically and socially (Barker et al., 1989; McDonnell & Valentino, 2016; Narayan et al., 2017). Experiences of adversity and the activation of toxic stress can alter gene expressions, by turning “off” or deactivating certain genes that may be crucial to development (Garner, 2013; Garner et al., 2012; Johnson et al., 2013; Shonkoff et al., 2012). Studies show that a parent’s ACEs can be embedded into a child’s biology at birth, predisposing them to certain risks and conditions associated with extreme trauma and toxic stress, even when they themselves do not experience ACEs (McDonnell & Valentino, 2016; Narayan et al., 2017).
Additionally, children whose parents have experienced adversity are likely to have disrupted development in early childhood, and studies show that a high ACE score in parents is predictive of a higher ACE score in their children (Bair-Merritt MH & Zuckerman B, 2016; Bifulco et al., 2002; McDonnell & Valentino, 2016; Narayan et al., 2017). These findings are especially important to consider in public health efforts, as they indicate that health behaviors and outcomes can be a complex result of genetic and environmental factors, instead of solely individual choices, which further supports the significance of social determinants of health (SDH).

2.4 RESILIENCE AND PROTECTIVE FACTORS

While the research on toxic stress sheds light on the mechanisms by which ACEs can adversely affect health, it also highlights the ways in which ACEs can be mitigated. Evidence demonstrates that the ability to be able to cope with ACEs results from a child’s ability to be resilient (Baum, 2005; Bethell et al., 2016; Daskalakis et al., 2013; Ginsburg & Jablow, 2005; Luthar, 2003; Masten, 2013; Shonkoff et al., 2009). Resilience can be defined as protective processes that reduce maladaptive outcomes under the conditions of risk (Greenberg, 2006). Resilience is present when a child’s health and development counterbalance significant adversity (Cicchetti, 2010; Herrman et al., 2011; Shonkoff et al., 2012). Studies suggest that the socio-emotional characteristics of resilient children often mirror children who have not been exposed to high risk or significant adversity (Martinez-Torteya, Anne Bogat, Von Eye, & Levendosky, 2009; Masten et al., 1999). The evidence on resilience is promising, as it suggests that resilience can alter the effects of toxic stress in early childhood and, in some cases, even reverse the negative effects this stress has had on brain development (Benard, 1995; Herrman et al., 2011; Naglieri,
LeBuffe, & Ross, 2013; Shonkoff & Meisels, 2000; Wright & Masten, 2005). The research on resilience is encouraging for public health efforts, as it suggests that all children can have healthy lives, regardless of their childhood experiences.

For some children, resilience is a capability that results naturally from their healthy childhood experiences (Greenberg, 2006). For children who have experienced ACEs, however, resilience may have to be deliberately developed through supportive mechanisms (Masten et al., 1999). Resilience is built through the presence of protective factors in a child’s life, such as individual attributes (e.g., temperament, intelligence, cognition) or quality of relationships (e.g., with parents or caregiver) and social environments (e.g., safe and supportive neighborhoods or schools; Afifi & Macmillan, 2011; Benard, 1995; Greenberg, 2006; Martinez-Torteya et al., 2009; Masten, 2013; McEwen et al., 2014). The presence of these factors results from interplay of social, political, and environmental contexts (Shonkoff & Meisels, 2000; Walker et al., 2011). The role of protective factors in building resilience emphasizes that children alone cannot ensure positive growth and development, as individual attributes of resilience are not enough to mitigate the effects of stress, especially when dealing with ACEs.

Research on protective factors has focused largely on safe, stable and nurturing relationships (SSNRs). A SSNR refers to a child’s relationship with an adult who ensures that the child’s basic needs are met, supports the child, and understands the importance of social-emotional competence in a child’s self-worth and self-regulation (Thornberry et al., 2013). SSNRs have mostly been examined within child maltreatment research, which focuses on child abuse or neglect (Afifi & Macmillan, 2011; Herrenkohl, Klika, Brown, Herrenkohl, & Leeb, 2013; Masten et al., 1999; Schofield, Lee, & Merrick, 2013;
Thornberry et al., 2013). While there are a few studies that suggest that no significant relationships exist between SSNRs and child maltreatment, most evidence points to SSNRs dramatically reducing the risk of child maltreatment (Schofield et al., 2013). SSNRs can positively influence children’s brain development and promote positive functioning while reducing the influence of ACEs on child health (Herrenkohl et al., 2013; Schofield et al., 2013; Thornberry et al., 2013). Through these means, SSNRs can help children to recover from the impact of childhood adversity by helping them build resilience (Schofield et al., 2013). However, it is still unknown how protective factors impact later adult health outcomes, as most studies have only examined the effects of SSNRs on early childhood development. It should also be noted that child maltreatment covers only some of the many experiences that are considered ACEs. Nevertheless, SSNRs are widely recognized in research as important protective factors for children experiencing traumatic experiences, including ACEs (Afifi & Macmillan, 2011; Shonkoff & Meisels, 2000; Thornberry et al., 2013).

Growing evidence indicates that SSNRs do not have to be with a parent to be beneficial to children; these relationships can also be with another adult in the home or an adult that the child interacts with frequently in community settings (CDC, 2014a; Martinez-Torteya et al., 2009; National Scientific Council on the Developing Child, 2015; Shonkoff & Meisels, 2000). This raises the importance of creating positive environments for children in which SSNRs can be developed to help build resilience (Crouch, Radcliff, Strompolis, & Srivastav, 2018; Robinson, Leeb, Merrick, & Forbes, 2016; Sege et al., 2017). These environments can be created outside the home, such as at school, in churches, or other settings within the neighborhood in which the child lives.
There are several widely recognized protective factors frameworks among child health researchers and practitioners (Table 2) that attempt to model the ways in which the long-term impact of ACEs and related experiences can be prevented. These frameworks, which have been created by stakeholders focused on prevention of child abuse and neglect, promote factors that fall within three broad categories: 1) positive relationships; 2) safe, protective and equitable environments; and 3) the healthy development of social and emotional competencies (Crouch, Radcliff, Strompolis, & Srivastav, 2018; Greenberg, 2006; Sege et al., 2017; Smith & Carlson, 1997). To date, these frameworks have been endorsed as prevention strategies in the areas of mental health, violence prevention, and substance abuse (CDC, 2015; Children’s Bureau, Administration of Children and Families, 2014; David, Catalano, & Miller, 1992; Surgeon General, 2001). While these frameworks are largely informed by research on resilience, they have some limitations. First, many of the protective factors within these frameworks focus largely on the individual and interpersonal levels, although research suggests that a multi-level approach is most appropriate for changing health behaviors (Children’s Bureau, Administration of Children and Families, 2014). Additionally, the protective factors listed in these frameworks have not been examined in relation to mitigating poor health and social outcomes; they have mostly been used as frameworks to inform prevention strategies, program development and implementation (Children’s Bureau, Administration of Children and Families, 2014). This limits our knowledge about how best to engage protective factors through programs and policies to effectively reduce the risk of poor health outcomes among adults who experienced ACEs.
2.5 EFFORTS TO ADDRESS ACES

The CDC-Kaiser ACE Study prompted the development of new programs and policies to address ACEs, but these efforts have been mostly limited to increasing awareness of ACEs. Additionally, while these efforts have raised awareness about protective factors, most have not focused on understanding the ways in which protective factors can mitigate ACEs or how such factors can be modified. For example, in Walla Walla, Washington, leaders collaborated to develop the Children’s Resilience Initiative, which is a network of organizations dedicated to promoting understanding of the impact of childhood adversity in schools (Health Federation of Philadelphia & Robert Wood Johnson Foundation, 2017b). Through a series of state meetings, conferences and trainings, school staff were educated about brain development and the effects of ACEs on school performance (Hall et al., 2012; Health Federation of Philadelphia & Robert Wood Johnson Foundation, 2017b; Kagi & Regala, 2012). While this initiative resulted in some policy and programmatic changes in classrooms, there was an inconsistent response on a larger school policy level (Health Federation of Philadelphia & Robert Wood Johnson Foundation, 2017b). Another example of an awareness effort is the Philadelphia ACE Task Force, which focuses on educating education and health care professionals on the impact of trauma on children (Health Federation of Philadelphia & Robert Wood Johnson Foundation, 2017a). However, the impact of these trainings remains largely unknown.
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<td><strong>Protective Factors Included in Framework</strong></td>
<td>-Self-Regulation -Relational Skills -Problem-Solving Skills -Involvement in Positive Activities -Parenting Competencies -Caring Adults -Positive Peers -Positive Community -Positive School Environments -Economic Opportunities</td>
<td>-Youth Resilience -Social Connections -Knowledge of Adolescent Development -Concrete Supports in Times of Need -Cognitive and Social-Emotional Competence</td>
<td>-Supportive adult-child relationships -Sense of self-efficacy and perceived control -Opportunities to strengthen adaptive skills and self-regulatory capacities -Sources of faith, hope, and cultural traditions present</td>
<td>-Parental resilience -Social connections -Knowledge of parenting and child development -Concrete support in times of need -Social and emotional competence of children</td>
<td>-Safety: the extent to which a child is free from fear and secure from physical or psychological harm within their social and physical environment. -Stability: the degree of predictability and consistency in a child’s social, emotional, and physical environment. -Nurturing: the extent to which a parent or caregiver is available and able to sensitively and consistently respond to and meet the needs of their child.</td>
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Finally, in Tennessee, the statewide ACE initiative has been focused on helping the public understand the effects that ACEs have on brain development and the impact of the initiative has not yet been assessed (Daugherty & Poudel, 2017).

Education and raising awareness are important steps in addressing ACEs; however, research is needed to identify how to prevent and mitigate the effects of ACEs through more action-oriented programs and policies. Education and raising awareness are likely not enough to make substantial socio-environmental changes that promote healthy outcomes for children. The current policy actions further the importance of exploring comprehensive policy and program approaches to promote protective factors.

In order to increase the presence of protective factors in children’s lives, research suggests a need for more policies that focus on improving the environments and systems within most children reside or interact (Garner et al., 2012; Hall et al., 2012; Larkin et al., 2014). Examples include policies that support safe neighborhoods, funding for school based mental health services, home visiting programs, parenting programs, mandatory ACE screenings, and increased collaboration across child-serving systems (Bethell, Solloway, et al., 2017; Ellis & Dietz, 2017; Garner, 2013; Kagi & Regala, 2012; Leitch, 2017). Of the few policy actions that have been attempted to address ACEs by increasing protective factors, most are resolutions that reinforce the state-level commitments to ACEs with no funding or mandates. For example, California, Wisconsin, Virginia, and Arizona have all passed resolutions that recommend that state and local programs integrate existing evidence on ACEs in their program strategies, but there is no legislative accountability for not doing so (Prewitt, 2017). Resolutions passed in Illinois,
Massachusetts, Missouri, and Oregon recommend screening for childhood trauma in schools but do not appropriate funds for the training and resources needed in order to do so (Prewitt, 2017). Legislation in Oregon and Vermont has been passed to support programs that study the ways in which ACEs science is incorporated in health care settings, but no concrete changes have been made to existing health care systems using the findings of the CDC-Kaiser ACE Study (Prewitt, 2017). These state efforts highlight a need for policies that are derived from studying program and practice perspectives, which can directly help improve supports within child-serving systems. They also suggest that the means of enhancing the political feasibility of fully funding such policies needs to be explored in order to encourage the development of effective ACE prevention and mitigation policies.

One of the most notable state-level policies is in Washington State (H.B. 1965), in which the legislature passed a bill in 2011 to support a formal public-private partnership to support effective strategies to prevent and mitigate trauma. This bill funded an initiative to study how communities can work across sectors to address trauma, translate existing evidence to organizational policies and practice, and build community partnerships (ACEs Public-Private Initiative, n.d.; Kagi & Regala, 2012). This bill has many potential implications for children’s health and well-being across the state through systemic partnerships and programs. This legislation, however, is one of the only examples of a comprehensive policy that creates and encourages action for the prevention of ACEs. Thus, there is a continued need for research to inform the development of evidence-based policy and program recommendations.
2.6 OUTCOMES OF INTEREST

Risk Behaviors and ACEs. Individuals with ACEs are more likely to engage in risk behaviors such as smoking and alcohol abuse compared to those who experienced no ACEs (Garner, 2013; Garner et al., 2012; Rose, Xie, & Stineman, 2014; Shonkoff et al., 2012). It is theorized that these risk behaviors are adopted as a coping mechanism from the unrelenting toxic stress that disrupts socio-emotional development, serving as the pathway between ACEs and poor health outcomes (Felitti et al., 1998). Socio-emotional development plays a significant role in the development of self-regulation, which can lead to positive coping skills (Murray, Rosanbalm, Christopoulos, & Hamoudi, 2015). This is demonstrated in the evidence suggesting that the impact of traumatic experiences may make children and young adults especially vulnerable to the effects of peer pressure, media, and advertising, because of a need to regulate their emotions and affect (Anda et al., 1999). Preventing and mitigating ACEs may reduce the likelihood of engaging in smoking and drinking as adults.

Smoking and ACEs. Cigarette smoking is the leading cause of preventable disease and death in the United States, accounting for more than 480,000 deaths every year (U.S. Department of Health and Human Services, 2014). The CDC (2017c) estimates that 36.5 million people or approximately 15% of U.S. adults are current cigarette smokers. South Carolina’s prevalence of smokers is higher than this national average, with almost 20% of the state’s adult population estimated to be current smokers (Nguyen, 2016). Across the U.S., almost 90% of current smokers start smoking by age 18, with 99% starting by the age of 26 (CDC, 2016b; U.S. Department of Health and Human Services, 2014). The CDC (2017c; U.S. Department of Health and Human Services, 2014) predicts that if smoking continues at the current rate among adolescents in the U.S., about 5.6 million of
today’s Americans younger than 18 will die early from a smoking-related illness (U.S. Department of Health and Human Services, 2014).

ACEs are strongly associated with smoking initiation at an early age, smoking maintenance, and smoking-related illnesses in adulthood (Anda et al., 1999; Edwards et al., 2007; Ford et al., 2011). For instance, in South Carolina, adults who have experienced ACEs are twice as likely to be current smokers than those who have not experienced any ACEs (Morse et al., 2016b; Studies also demonstrate that individuals with ACEs are likely to continue to smoke after learning that they have conditions or illnesses that contraindicate smoking (Edwards et al., 2007). ACEs and smoking have a dose-response relationship (Anda et al., 1999). As the number of ACEs reported increases, so does the likelihood of smoking and smoking-related illnesses in adulthood (Edwards, Anda, Gu, Dube, & Felitti, 2007). This research on ACEs and smoking reinforces a need to prevent childhood adversity through public health smoking cessation efforts (Anda et al., 1999; Edwards et al., 2007).

Individuals with ACEs are more likely to smoke tobacco as a means of regulating their mood in response to social pressures (Anda et al., 1999). Tobacco, which contains nicotine, has demonstrated psychoactive benefits that can regulate emotions and behaviors, making products containing nicotine highly addictive (Anda et al., 1999; Carmody, Vieten, & Astin, 2007). Over time, smoking can become a habitual and adaptive function to deal with childhood trauma as its temporary benefits surpass the associated health risks (Anda et al., 1999). Asking individuals with toxic stress in their childhood to quit smoking removes a potential method of coping with the negative emotional, neurobiological, and social effects of ACEs that, for many, persist through
adulthood (Anda et al., 1999; Shiffman, 1985). Many individuals with trauma are unable to successfully quit smoking even though many smoking prevention and cessation programs exist (Anda et al., 1999). Due to disruption of socio-emotional development, individuals with ACEs may also be more likely to fall prey to the marketing tactics of tobacco companies (Anda et al., 1999). Consequently, current public health efforts are more ineffective for smokers with ACEs, as most do not address the underlying role of trauma in use of tobacco (Anda et al., 1999). For smokers with high ACE scores, it may therefore be beneficial to consider alternative treatment options such as mental health services or trauma therapy to help individuals cope with their experiences in a healthy way. For individuals who are unable to quit smoking, harm reduction approaches that promote the use of less harmful alternatives such as e-cigarettes may also be more effective for individuals with childhood adversity. Smoking prevention and cessation programs could focus on helping individuals understand the connection between childhood experiences and adult health behaviors, while reducing the residual effects of childhood trauma.

Alcohol Abuse and ACEs. Around 88,000 deaths a year are attributable to alcohol, making it the fourth leading preventable cause of death in the U.S. (National Institute on Alcohol Abuse and Alcoholism, 2018a). According to the National Institute on Alcohol Abuse and Alcoholism (2018), alcohol abuse is defined as a pattern of binge drinking that brings blood alcohol concentration to 0.08 g/dL, and binge drinking is classified as consuming five drinks for men and four drinks for women within a couple of hours. Alcohol abuse is prevalent; 25% of adults over the age of 18 report engage in binge drinking in the U.S. (National Institute on Alcohol Abuse and Alcoholism, 2018b). In
South Carolina 16% of adults report binge drinking (America’s Health Rankings, 2017; National Institute on Alcohol Abuse and Alcoholism, n.d.-b; SAMHSA, n.d.).

The likelihood of heavy drinking, self-reported alcoholism, and marrying an individual that abuses alcohol are two to four times higher among those with multiple ACEs compared to those who do not report ACEs (Dube et al., 2002; Ford et al., 2011). In South Carolina, men and women who report four or more ACEs are almost twice as likely to report heavy alcohol use or binge drinking compared to their counterparts who report no ACEs (Crouch, Radcliff, et al., 2017). Current evidence on the link between ACEs and alcohol abuse suggests two key findings. First, alcohol abuse often results from an individual’s attempt to self-regulate social and emotional behaviors, which are often severely impaired by ACEs (Pilowsky, Keyes, & Hasin, 2009). In moderate doses, alcohol has been linked with some mental health benefits, such as an overall increase in affect, happiness, euphoria and pleasantness, which demonstrates its ability to serve as a coping tool (Baum-Baicker, 1985; Brady & Sonne, 1999). Individuals with a history of childhood adversity are more likely to initiate alcohol use earlier in their lives and are more likely to use it as a coping mechanism as opposed to drinking alcohol due to social pressures or for pleasure (Eames et al., 2014; Pilowsky et al., 2009; E. F. Rothman, Edwards, Heeren, & Hingson, 2008). Additionally, individuals with ACEs are more likely to engage in heavy alcohol consumption throughout their lives as a means to regulate the cumulative effects of toxic stress (Dube, Anda, Felitti, Croft, et al., 2001; Eames et al., 2014; Felitti et al., 1998). Second, evidence demonstrates that the relationship between ACEs and alcohol abuse are cyclical; individuals with ACEs are more likely to abuse alcohol, and individuals who abuse alcohol are more likely to have
children with ACEs, emphasizing the intergenerational nature of ACEs (Anda et al., 2002; Dube, Anda, Felitti, Croft, et al., 2001). Not surprisingly, research indicates that alcohol abuse by a parent significantly increases the likelihood of ACEs in a child, as well (Anda et al., 2002; Dube, Anda, Felitti, Croft, et al., 2001; Dube et al., 2002; Pilowsky et al., 2009). Evidence also demonstrates that the greatest risks of alcohol abuse have been observed among individuals with a high ACE score and a history of parental alcoholism (Anda et al., 2002; Dube et al., 2002). These individuals are also more likely to marry someone with alcohol problems (Dube et al., 2002; Felitti et al., 1998). Therefore, these two key findings emphasize that public health responses to alcohol abuse may not be as effective until they help individuals cope with stressors associated with ACEs. They also suggest that problems with alcohol are not limited to heritable dispositions but can be influenced by socio-environmental factors as well, highlighting the need for public health efforts that address the contexts in which individuals live, work, and play.

2.7 GUIDING THEORIES

The Life Course Perspective. The root causes of public health outcomes are social determinants of health (SDH), which refer to the conditions and contexts in which individuals live, work, play (Braveman & Gottlieb, 2014). SDH have a direct impact on an individual’s health by structuring their lifestyle choices and behaviors and shaping their experiences (Bharmal et al., 2015; CDC, 2018). The life course perspective recognizes the complex interplay of these social, biological, and environmental factors on an individual’s health across the lifespan (Gee et al., 2012). The life course perspective can substantially improve our understanding of upstream solutions to improving
population health by emphasizing the role of SDH on health outcomes (Hser, Longshore, & Anglin, 2007).

Figure 2.1. CDC-ACEs Pyramid

The CDC-Kaiser ACE study’s conceptual model (Figure 2.1) was based on the life course perspective (Braveman & Barclay, 2009; Nurius, Green, Logan-Greene, & Borja, 2015; Shonkoff et al., 2012). A key construct of the life course perspective is a “critical period,” which refers to a specific period across the lifespan in which biological development is strongly dependent upon experiences and environmental influences (Gee et al., 2012; Guttmannova et al., 2011). The rapid pace of development and brain growth make early childhood a critical period for both opportunity and vulnerability (Jimenez et al., 2016). In the CDC-Kaiser Study, it was hypothesized that the presence of buffering factors in early childhood can modify the pathway between ACEs and poor outcomes (Felitti et al., 1998). This hypothesis has been supported in subsequent studies on toxic stress (Garner et al., 2012; Shonkoff, 2010, 2010). Today, the life course perspective continues to underpin the concept of ACEs in research efforts (Braveman & Gottlieb, 2014). Thus, the life course perspective was used as a theoretical framework in this
research to identify how different types of protective factors may buffer the effects of ACEs on adult engagement in risk behaviors

*The Social-Ecological Model.* The social-ecological model considers the complex relationship between multiple levels of influence on health behaviors (CDC, 2015). The levels of influence include individual, interpersonal, organizational/community, and public policy (CDC, 2015). The social-ecological model reinforces the idea that behaviors shape and are shaped by social determinants, suggesting that public health prevention efforts are most effective when they address multiple levels of influence (Stokols, 1996). The protective factors literature recognizes that while SSNRs are protective against the effects of ACEs, their ability to do so comes from larger cultural, political, and or environmental contexts, which are often influenced by policy and programs (Sege et al., 2017). This concept is consistent with this study’s goals as well, especially given its focus on understanding how protective factors can be promoted through policies and programs. Thus, the social-ecological model is also a guiding framework of this research.

*The Multiple Streams Theory.* The Multiple Streams Theory centers around conceptualizing the policymaking process. It suggests that a public policy agenda is set through the interaction of three components, or “streams,” that produce a “window of opportunity” for policymaking to occur (Béland & Howlett, 2016). It has been applied to many different disciplines, including public health (Clarke, Swinburn, & Sacks, 2016; Craig, Felix, Walker, & Phillips, 2010; Milton & Grix, 2015; Walhart, 2013). The Multiple Streams Theory provides a framework of the key components of policymaking to help develop policy and program recommendations on the prevention of ACEs.
The three streams within the Multiple Stream Theory include “problems”, “policies” and “politics.” (Cairney & Jones, 2016; Sabatier, Weible, & Zahariadis, 2014; Travis & Zahariadis, 2002). First, the problem stream centers around the current awareness and urgency of an issue that may require governmental action; this is often assessed by understanding the framing of the issue and any current crises that may relate to the issue. The second aim of this dissertation research was consistent with the problem stream, as it sought to understand key stakeholder perspectives on ACEs including their knowledge about its relationship to health outcomes, the prevalence of ACEs in South Carolina, and how the concept is defined by these stakeholders. Second, the policy stream refers to the process in which various solutions are narrowed down by policymakers, based on their framing and appeal to public values (Sabatier et al., 2014; Zahariadis & Buonanno, 2017). In this research, the policy stream underpinned the reasoning to interview both CFSPs and policymakers, recognizing that advocates can embed frames in their messages about policies to increase the importance of an issue or to help set the political agenda (Perloff, 2013). It also supported the importance of exploring the conceptualization of ACEs and protective factors in Aim 2 to help in framing policy solutions. Most importantly, the policy streams served as a basis for the dissertation’s goal in developing policy recommendations by exploring current and ideal policies and programs in Aim 3. Finally, the political stream refers to the political landscape that can affect agenda setting, which can include the national mood, political climate and the feedback that policymakers may receive from their constituents, their political party, and various interest groups (Sabatier et al., 2014; Zahariadis & Buonanno, 2017). The third aim of this research was explored within the context of state legislator perspectives.
These stakeholders were asked to share perspectives on the political climate and how it may influence policy and program approaches, which could help in the development of relevant policy recommendations.

The Multiple Streams Theory asserts that these three streams intermingle and are influenced by policy entrepreneurs or advocates. At critical points in time, “policy windows,” or opportunities to push through a policy, are created, which are often led by the efforts of policy entrepreneurs (Sabatier et al., 2014). In these efforts, policy entrepreneurs link policy problems with policy options and political opportunities to encourage policymaking (Cairney & Jones, 2016). Understanding what policy windows exist is a key component of the Multiple Streams Theory, as it provides insight on the political feasibility of such policies at a given moment in time (Sabatier et al., 2014).

This dissertation research’s overall goal was to develop evidence-based policy and program recommendations, which can be furthered by policy entrepreneurs to help create policy windows. In Aim 3, this study also sought to understand current successes and opportunities in South Carolina, which may shed light on potential windows of opportunity for these recommendations to be developed into policies and programs.

**Significance of this Research**

The American South experiences some of the highest prevalence of risk behaviors and the highest rates of chronic diseases associated with risk behaviors in the United States (Savitt & Young, 1991). South Carolina, in particular, reports high rates of excessive drinking and smoking and has a high prevalence of chronic conditions such as obesity, diabetes, and heart disease (America’s Health Rankings, 2017a), and ACEs are
considered a root cause for many of these preventable conditions (Burton, 2018; Shonkoff et al., 2012). The historical and cultural context of the American South, ranging from systemic inequities to political climate, pose unique challenges to public health (Minahan, Valdivieso, Johnson, & Baker, 2017; Sutton, Gray, Elmore, & Gaul, 2017). Thus, it is especially important to understand how childhood trauma plays a role in the region’s population to develop effective programs and interventions to prevent poor health outcomes.

The associations between ACEs and risk behaviors in adulthood have been well-established across populations, demonstrating that traumatic experiences in childhood can increase the likelihood of engagement in risk behaviors (Anda et al., 1999, 2002; Dube, Felitti, Dong, Chapman, et al., 2003; Edwards et al., 2007; Pilowsky et al., 2009). However, it is still unclear how the relationship between ACEs and risk behaviors might be mitigated. In public health practice, promoting protective factors that encourage positive relationships for children are considered a solution to reducing the long-term consequences of childhood trauma (Herrenkohl et al., 2013; Schofield et al., 2013; Thornberry et al., 2013). While protective factors have been extensively examined within the context of research early childhood development, their impact on adult health outcomes are still not understood. Additionally, most research on protective factors has been conducted within populations with special health care needs. By examining the role of protective factors on the relationship between ACEs and risk behaviors using a representative sample of South Carolina, this research contributes to the literature by addressing key gaps in knowledge. The first study’s results within this dissertation can help guide future research efforts on protective factors in relation to health outcomes and
inform public health efforts on reducing engagement in risk behaviors across the American South.

This research also seeks to understand the role of protective factors at the program and policy level to inform upstream public health approaches to addressing ACEs. Though ACEs continue to be widely recognized since the 1997 Centers for Disease Control-Kaiser ACE Study, policy actions that enhance protective factors have been fragmented and incomplete (Bethell, Solloway, et al., 2017). Thus, second study in this dissertation examines barriers and opportunities to passing policies that address ACEs and promote protective factors using state legislator perspectives. Additionally, considering the need for evidence-based policy approaches and the many obstacles associated with translating research into policy (Dodson et al., 2015; Gollust et al., 2017; Oliver et al., 2014), few ACE-related policies have been enacted on the state or federal level. The third study takes the unique approach of synthesizing CFSP and policymaker perspectives to develop policy recommendations. Both qualitative studies can help in the development of innovative program and policy solutions that could improve a wide range of public health outcomes affecting the American South.
CHAPTER 3

METHODS

This dissertation research used a mixed-methods approach to examine the role protective factors play in reducing risk behaviors within children experiencing ACEs. The first study was conducted using secondary data analysis to examine empirical relationships between ACEs, protective factors, and risk behaviors. The second study was conducted using qualitative research methods to collect data from state legislators. The third study also used a qualitative approach to collect data from two stakeholder groups: CFSPs and state policymakers. The methods of this dissertation research are discussed by study below.

3.1 STUDY 1

**Specific Aim #1:** To determine the relationships between ACEs and risk behaviors and identify whether potential protective factors focused on SSNRs moderate these relationships.

- Hypothesis 1a: ACEs are positively associated with two risk behaviors (smoking and alcohol abuse) in adulthood.
- Hypothesis 1b: ACEs are inversely associated with two types of potential protective factors (basic needs met, feeling safe and protected) during childhood.
• Hypothesis 1c: The association between ACEs and risk behaviors in adulthood is moderated by the potential protective factors during childhood, such that there will be weaker relationships between ACEs and risk behaviors in adulthood for participants whose basic needs were met and felt safe and protected during childhood and stronger relationships between ACEs and risk behaviors in adulthood for participants who did not have their basic needs met and did not feel safe and protected during childhood.

• adulthood for participants who did not have their basic needs met and did not feel safe and protected during childhood.

Figure 3.1 Study Conceptual Model

Figure 3.1 illustrates the conceptual model for the first aim of this study. This model was developed based on existing ACE literature, the life course perspective and protective factors frameworks. The green rectangles signify the variables assessed in the study. ACEs was the predictor variable in this study. Two risk behaviors, smoking and alcohol abuse, were the outcome variables in this study. It was hypothesized that ACEs would have positive associations with the two risk behaviors. It was also hypothesized
that potential protective factors during childhood (measured by whether basic needs are met and whether an individual felt safe and protected in childhood) would moderate the associations between ACEs and risk behaviors, by weakening the associations between ACEs and risk behaviors when protective factors are present.

3.1.1 Data Collection and Data Source

**SC-BRFSS.** The Behavioral Risk Factor Surveillance System (BRFSS) is CDC’s state-based health survey that collects information on socio-economic factors, risk behaviors, health care access and chronic disease. Every state is required to administer a common set of core questions determined by the CDC that cover several health topics (CDC, 2014b). The survey is administered by telephone monthly through random dialing techniques to determine the state’s health and social well-being. Aim 1 was addressed by conducting a secondary analysis of cross-sectional data from the 2016 South Carolina Behavioral Risk Factor Surveillance System (SC-BRFSS).

**Participants.** Non-incarcerated adults over the age of 18 who primarily resided in South Carolina and had either a landline or cell phone were eligible to participate in the SC-BRFSS (DHEC, 2015). Data from participants of the SC-BRFSS who fully completed the ACE module, risk behavior questions and potential protective factor questions were included in the study (n=7,184). The University of South Carolina’s Institutional Review Board approved this study as exempt.

3.1.2 Measurement

**ACEs.** The ACE module was a set of eleven questions asking respondents to recall experiences before the age of 18 (see Appendix A). These questions were conceptually grouped into abuse (physical, emotional, and sexual) or household
dysfunction (parental divorce/separation, domestic violence, mental illness, substance abuse, and parental incarceration; CDC, 2016). It should also be noted that while ACEs in the BRFSS were formatted as two subscales (abuse and household dysfunction), previous factor analysis of the ACE items demonstrated that sexual abuse loads separately, creating three separate subscales (Ford et al., 2014). However, given the interrelatedness of ACEs (Dong et al., 2004), the ACE items were examined as an aggregate exposure, based on ACE types.

The ACE module items were developed and adapted from the original CDC-Kaiser ACE study (Felitti et al., 1998). In the original study, items pertaining to drug and alcohol abuse in the home were adapted from the 1988 National Health Interview Survey (Dawson, 1991), items asking about sexual abuse were adapted from a scale developed by Gail Wyatt (1985), and items about psychological, physical, or violence against the mother were adapted from the Conflict’s Tactics Scale (Felitti et al., 1998; Morse, 1995). Finally, questions that address the other kinds household dysfunction (e.g., incarceration of a parent, divorce/separation) were developed by the researchers leading the original CDC-Kaiser ACE Study (Felitti et al, 1998). In 2009, the ACE questions were pilot tested in focus groups prior to being added to the BRFSS (Bethell et al., 2017). Based on challenges that arose during pre-testing, ACEs that measure childhood neglect were omitted from the BRFSS module (Anda & Porter, 2014; Slack, Hull, Altenbernd, McDaniel, & Stevens, 2003). In this study, the ACE module was shown to have high internal consistency (α = 0.77) which is comparable with existing research on the psychometric properties of these items (Dube, Williamson, Thompson, Felitti, & Anda, 2004; Murphy et al., 2014).
To develop the eight types of ACEs, the eleven ACE items were collapsed into household substance use, sexual abuse, emotional abuse, physical abuse, domestic violence, household mental illness, incarceration of a parent, and parental divorce/separation. These categories are consistent with the original CDC-Kaiser study methodology and subsequent research (Felitti et al., 1998). To develop the household substance use ACE, a “yes” response to either or both of two items (“Did you live with anyone who used illegal street drugs or who abused prescription medications?” and “Did you live with anyone who was a problem drinker or alcoholic?”) were combined. The responses “once” and “more than once” were collapsed into “yes,” while “never” were recoded as “no.” A yes to the household substance use ACE indicated that a participant had at least one of these experiences. To develop the sexual abuse ACE, three items were combined (“Did anyone at least 5 years older than you or an adult ever touch you sexually?”, “Did anyone at least 5 years older than you or an adult, try to make you touch them sexually?”, “Did anyone at least 5 years older than you or an adult force you to have sex?”). For each of these items, the responses “once” and “more than once” were collapsed into “yes,” while “never” were recoded as “no.” A yes to the sexual abuse ACE indicated that the participant had experienced at least one of these things. For the emotional abuse, physical abuse, and domestic violence ACEs, which were developed from the items, “How often did a parent or adult in your home ever swear at you, insult you, or put you down”, “Before age 18, how often did a parent or adult in your home ever hit, beat, kick, or physically hurt you in any way”, “How often did your parents or adults in your home ever slap, hit, kick, punch, or beat each other up?” the same cut points as the sexual abuse ACE/household substance use ACE were used to create dichotomous
variables: the responses “once” and “more than once” were collapsed into “yes,” while
“never” were recoded as “no.” Finally, the household mental illness, parental
incarceration and parental divorce/separation ACEs were developed using items that were
asked in a yes/no format (see Appendix A). Using the eight dichotomous ACE types, an
ACE score variable was created to indicate the overall exposure to childhood adversity.
As consistent with previous ACE study methodologies (Mersky et al., 2017), respondents
were categorized as having ACE exposure if they reported at least one type of ACE and
as not having an ACE exposure if they reported no ACEs.

*Potential Protective Factors.* The supplemental ACE questions in the SC-BRFSS
included two items that assessed potential protective factors: “For how much of your
childhood was there an adult who made you feel safe and protected?” and “For how
much of your childhood was there an adult who tried hard to make sure your basic needs
were met?” (see Appendix A for more information). Some evidence indicates that these
items should be analyzed as separate dichotomous variables (Crouch, Radcliff,
Strompolis, et al., 2018; Sege et al., 2017), while others have combined these experiences
into a binary variable similar to the ACE score (Sege et al., 2017). For this study,
respondents who reported having an adult who made them feel safe and protected most of
the time or all of the time were categorized as a “yes,” while all other responses to this
question were categorized as “no.” Respondents who reported that they had an adult who
tried hard to make sure their basic needs were met most or all of the time were
categorized as “yes,” while all other responses were categorized as “no.” These cut points
are consistent with previous research using the SC-BRFSS (Crouch, Radcliff, Nelson,
Strompolis, & Martin, 2018; Crouch, Radcliff, Strompolis, & Srivastav, 2018) and align
with the broader protective factors literature (Afifi & Macmillan, 2011; Children’s Bureau, Administration of Children and Families, 2014; Durlak, 1998). The re-categorized responses to the two protective factors questions were then combined into a potential protective factors variable with three levels (low, moderate, high). Response level low included those participants who responded “no” to both potential protective factor questions, moderate included those who responded “yes” to either of the potential protective factor questions, and high included those who responded “yes” to both potential protective factor questions.

**Risk Factors.** In the 2016 SC-BRFSS, smoking and alcohol abuse were measured using the standard CDC module (DHEC, 2015; see Appendix A). The core questions on the BRFSS which include the items on risk behaviors, have demonstrated moderate reliability and validity (CDC, 2017a; Pierannunzi, Hu, & Balluz, 2013; Stein, Lederman, & Shea, 1993). The tobacco and alcohol related items however, have demonstrated a high level of validity, especially when compared to other similar state surveys (Pierannunzi et al., 2013).

Smoking was assessed using the CDC’s 2016 BRFSS calculated dichotomous variable for current smoker (_RFSMOK3), which uses responses to the following questions: “Have you smoked at least 100 cigarettes in your entire life?” and “Do you now smoke a cigarette every day, some days, or not at all?” Respondents who had smoked at least 100 cigarettes and still smoked every day were coded as daily current smokers. Respondents who had smoked at least 100 cigarettes and just smoked some days were coded as non-daily smokers. Respondents who had smoked at least 100 cigarettes and but did not smoke at all were coded as former smokers. Respondents who
had not smoked at least 100 cigarettes or smoke at all were coded as non-smokers. Based on these levels, a dichotomous variable for current smoking status was created, collapsing daily and nondaily smokers as “yes,” and collapsing former smoker and non-smoker as “no”.

Alcohol abuse was assessed using the CDC’s 2016 BRFSS calculated dichotomous variable for binge drinker (_RFBING5), which uses responses to the following questions: 1) “During the past 30 days how many days per week or per month did you have at least one drink of any alcoholic beverage such as beer, wine, a malt beverage or liquor?” 2) “During the past 30 days, on the days when you drank, about how many drinks did you drink on the average?” and 3) “Considering all types of alcoholic beverages, how many times during the past 30 days did you have 5 or more drinks for men or 4 or more drinks for women on an occasion?” The number of times that respondents reported consuming five or more drinks on one or more occasion (defined as binge drinking) in the past 30 days was captured by the BRFSS (ALCDAY5). The number of drinks reported in the past 30 days was divided by 7 to create a drink per day variable (DRNK3GE5). These two variable responses were used to create an alcohol abuse variable, which was dichotomized as binge drinker or non-binge drinker based on if they reported at least one episode of binge drinking in the past 30 (binge drinking is defined as five or more drinks on one occasion for men or four or more drinks on one occasion for women).
In the BRFSS, missing responses are coded as 77 or 99. Participants with missing responses for any of this study’s variables were removed from the data set. All data analysis was conducted in SAS (SAS, version 9.3; SAS Institute Inc.). To adjust for sampling techniques and nonresponse, SAS SURVEY procedures were used, which account for the complex sample design of the BRFSS. Stratum weights (STRATA) were also used to account for the state weights provided by the CDC to ensure the sample is representative of South Carolina’s study population. Prior to running the regression

<table>
<thead>
<tr>
<th>Variable Names</th>
<th>Values</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse Childhood Experiences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household Substance Use</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Sexual Abuse</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Emotional Abuse</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Physical Abuse</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Domestic Violence</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Household Mental Illness</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Household Incarceration</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Parental Divorce/Separation</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>ACE Score</td>
<td>At least one/none</td>
<td></td>
</tr>
</tbody>
</table>

| Potential Protective Factors          |                         |   |
| Adult who made you feel safe and protected | Yes both/No |   |
| Adult who made sure basic needs were met |                         |   |

| Risk Behaviors                       |                         |   |
| Current smoker                       | Yes/No                  |   |
| Binge drinker                        | Yes/No                  |   |

Table 3.1 Study Variables for Quantitative Research
analyses, assumptions were examined using residual plots. The residuals appeared to be normally distributed, linear, and homoscedastic. Baseline data indicated an adequate cell sizes for logistic regression analyses.

This study controlled for age, gender, education, household income, and race, using calculated variables from the CDC. These variables were controlled for instead of being a part of the main research question because ACEs are common across most socio-economic factors (Merrick, Ford, Ports, & Guinn, 2018). Age was divided into the following groups: 18 to 29, 30 to 39, 40 to 49, 50 to 59, 60 to 69, and 70 to 80. Race was categorized as White, Black, Hispanic, and “Other” Non-Hispanic. Education was divided between those with less than or equal to high school degree/GED versus those with at least some college. Income categories included those making less than $25,000, $25,000 to $49,999, and $50,000 or more. These groups were consistent with previous research conducted using the SC-BRFSS and was determined based on this study’s sample sizes (Crouch, Radcliff, Strompolis, & Srivastav, 2018).

Prior to the main analysis, descriptive and bi-variate analyses were conducted to examine relationships between ACEs, potential protective factors, and risk behaviors using chi-square tests with $\alpha = 0.05$. Separate multiple logistic regression models were used to examine the impact of exposure to ACEs on risk behaviors and the interaction of exposure to ACEs and potential protective factors on the two types of risk behaviors. Adjusted ORs and 95% confidence intervals (CIs) from logistic regression models were used to describe the associations between each of the variables.

Regression equations were as follows:
current smoker = $\beta_0i + \beta_1(ACE) + \beta_2(\text{potential protective factors}) + \varepsilon$

binge drinker = $\beta_0i + \beta_1(ACE) + \beta_2(\text{potential protective factors}) + \beta_3 (ACE \times \text{potential protective factors}) + \varepsilon$

3.2 STUDY 2

**Specific Aim #2:** To understand stakeholder perspectives on their knowledge and understanding of ACEs, its related concepts and how they play a role in children’s health and well-being.

- **Research Question #1:** What is the current knowledge and understanding among stakeholders about ACEs and its related concepts?
- **Research Question #2:** What factors do stakeholders identify are most important to protecting children from exposure to/mitigation of ACEs?

3.2.1 Study Design

The study’s interview guide was informed by Multiple Streams Theory (MST), which provided a helpful framework for understanding the policymaking process (Kingdon, 2011). The MST streams include “problems,” “policies,” and “politics” (Kingdon, 2011). MST asserts that these three streams intermingle and at critical points in time, create “policy windows,” or opportunities to push through a policy (Sabatier, Weible, & Zahariadis, 2014). First, the problem stream centers around the current awareness and urgency of an issue that may require governmental action (Cairney & Jones, 2016; Sabatier et al., 2014). This stream was assessed in the interview guide by
exploring legislators’ knowledge about ACEs and conceptualizations of ACEs-related terms. Second, the policy stream refers to the processes in which policy solutions and alternatives are identified and developed (Cairney & Jones, 2016; Sabatier et al., 2014). This was assessed by examining what types of information legislators use to make decisions and what type of sources they find most trustworthy and credible. Third, the political stream refers to the political landscape that can affect agenda setting. This was assessed by exploring legislator opinions on the state’s current political climate and topics on the policy agenda with which ACES could be meaningfully associated. Possible policy windows were determined through policymakers’ viewpoints of upcoming legislative priorities related to ACEs. Finally, the results of this study were used to understand how policy entrepreneurs or advocates can link policy problems with policy options within the current political context, potentially opening policy windows (Cairney & Jones, 2016; Sabatier et al., 2014).

3.2.2 Study Sample

*Sample.* State policymakers were defined as current members of the South Carolina General Assembly who had served at least one term. They did not need to have previous experience with child health issues.

This study used maximum variation sampling. This sampling strategy focuses on capturing common themes and elements that are cross-cutting (Patton, 2014). It values the central themes or shared aspects that result from a diverse group of individuals and has been used to assess the impact of programs that have a wide reach (Patton, 2014). The researcher developed a list of eligible policymakers based on the study’s criteria and
the policymakers’ roles (House/Senate), region, time served, and political affiliation to ensure variation. Efforts were also made to have variation in gender and race, though there were limitations to the current state legislature’s makeup. All four regions of South Carolina were also represented in this group and participants had a wide range of experience in the legislature, from 2-25 or more years. The group of policymakers was comprised of roughly a quarter Democrats (the minority party), half women, and half minorities (n=24).

**Recruitment.** Policymakers were recruited by leveraging Children’s Trust’s partnerships with South Carolina’s Joint Citizens and Legislative Committee on Children and the South Carolina State House. Policymakers received email invitations, phone calls, and in-person visits to their Columbia offices. Due to ethics concerns, policymakers were not offered an incentive.

The goal was to conduct enough interviews reach saturation and sufficiency (Patton, 2014). The sample size of this study was determined based on saturation and sufficiency. Sufficiency is when interviews have a broad enough range to represent the population of interest adequately (Seidman, 2005). Though saturation range can vary across qualitative studies, researchers have found that 12 interviews are often enough to reach saturation (Guest, Bunce, & Johnson, 2006). The researcher found that 20 interviews were needed to reach saturation but completed all interviews that were scheduled (n =24). Sufficiency was ensured through the sampling method and range in political affiliation.
3.2.3 Data Collection

Data was collected through semi-structured interviews (interview guides available in Appendix B). This interview style was selected to allow for consistency amongst the topics discussed among participants in order to adequately address the research questions associated with Aim 2 and 3. This style of interview also minimized researcher bias by providing the participants an opportunity to share relevant perspectives that may not be directly addressed by the interview guide (Corbin & Strauss, 2007). Interviews were conducted face-to-face and lasted around 45 minutes for CFSPs and 55 minutes for policymakers. Face-to-face interviews are considered the gold standard for qualitative research, as they provide an opportunity to build trust with the participant and gain rich insight on their experiences and perspectives (Dicicco-Bloom & Crabtree, 2006). The researcher met CFSPs where they were most comfortable, ranging from their offices, restaurants, coffee shops, or hotel lobbies. The researcher met state policymakers either at their state office or in their home district, as data was collected when the legislature was out of session.

To establish legitimacy and rapport prior to the interviews, all participants received an e-mail letter thanking them for agreeing to participate, reminding them of their interview time, and providing them with an opportunity to ask any questions. Prior to the interview, the researcher reviewed the informed consent form (Appendix C) approved by the University of South Carolina’s Institutional Review Board. This document detailed participant confidentiality, risks, benefits, and permission to record the interview. All participants were given an opportunity to ask questions about the consent form. They also received a copy of the consent form for their own records. Prior to
beginning the audio recording, the researcher provided an overview of the study and asked the participants to confirm their consent. Each participant was given a pseudonym, which was used throughout the interview. For some interview questions, the researcher provided contextual information, such as South Carolina ACE data, or general information about ACEs. All interviews were audio recorded.

3.2.4 Data Analysis

Prior to data collection, the interview guide was pilot tested through three focus groups with policy advocates to ensure consistency, clarity, and fidelity to the elements of MST.

All interviews were professionally transcribed and were reviewed by the researcher for accuracy. Dedoose (Dedoose, version 8.0.35, SocioCultural Research Consultants, LLC) was used for the organization of data and to assist with the interview data analysis through coding. A preliminary codebook was developed prior to data collection based on a literature review and guided by MST. Two researchers individually analyzed each interview transcript using focused coding qualitative techniques (Patton, 2014) which entailed mapping excerpts from the transcripts onto components of MST using both *a priori* and emerging themes. To ensure coding accuracy, a subsample of five interviews was double-coded by both researchers using the same codebook at the beginning of the analysis process. A high inter-rater agreement (Patton, 2014) was demonstrated κ =0.76-0.87, and discrepancies were resolved through discussion.
3.3 STUDY 3

**Specific Aim #3:** To explore stakeholder perspectives of public health policy approaches to prevent or mitigate ACEs.

- Research Question #1: What are stakeholders’ perspectives on existing policies and programs that are preventing and mitigating ACEs?

- Research Question #2: What are stakeholders’ perspectives on policies and programs that are needed to prevent and mitigate ACEs?

The third study focused on qualitatively understanding what protective factors should exist to prevent the long-term consequences of ACEs (Research Question #2, Aim 2) and how protective factors can be promoted through policies and programs through the perspectives of CFSPs and state policymakers (Aim 3).

3.3.1 Study Design

Because this study focused on the perspectives of two distinct stakeholder groups and intended to capture the complex policy and program systems processes, this study used a grounded theory approach.

Grounded theory is especially useful for the study of social processes, contexts and structures that are shaped by human agency (Charmaz, 2011; Sbaraini, Carter, Evans, & Blinkhorn, 2011; Willig, 2013). It has been applied to a wide range of social sciences, including public health. Grounded theory focuses on developing a theory based on the data gathered instead of applying an a priori application of an existing theory to explain the data (Bryant & Charmaz, 2010; Strauss & Corbin, 1997). As such, this study sought to expand the breadth of understanding of the various factors and processes at play to
obtain a holistic understanding of the nuances of ACEs and protective factors in South Carolina. In a grounded theory approach, construction of theory occurs through an iterative process of moving between data collection and analysis, which allows for the development an in-depth theoretical explanation that is ideally informed the data collected and not by biases that are brought to the data by the researcher (Glaser & Strauss, 2000). Although it is acknowledged that complete objectivity is impossible to achieve in any scientific study (Strauss & Corbin, 1997), this method can potentially reduce the effect of the researcher’s pre-conceived biases that can undermine the innovativeness of this research.

The guiding questions of grounded theory ask, “what happens?” and “how do people interact?” (Sbaraini et al., 2011). To answer these questions, experts in grounded theory analysis suggest that research questions should be open-ended and should not make assumptions about the phenomenon of interest (Sbaraini et al., 2011; Willig, 2013). For example, if the researcher were to ask questions about how protective factors are applied in South Carolina as a primary research question, she would be assuming that they are currently being applied. Similarly, if the researcher were to ask what policies are being implemented around ACEs and protective factors, she would be assuming that policies are currently being enacted. Thus, Aim 2 focused on understanding what protective factors are important based on key stakeholder perspectives. Correspondingly, Aim 3 focused on exploring perspectives about existing legislative policies and ideal policies to support protective factors as a prevention strategy for public health outcomes associated with ACEs. Both sets of research questions attempted to remove assumptions about existing work around ACEs, protective factors, and public health policy.
3.3.2 Study Sample and Recruitment

Sample. A sample of stakeholders who work as CFSPs and state policymakers in South Carolina were recruited to participate in semi-structured, in-depth interviews (n=47). CFSPs were defined as individuals in South Carolina who were aged 18 and older and had experience working in the direct service of children and families for at least five years. Professionals with direct ties to academia or research were excluded. This used the same sample of policymakers from Study 2.

This study also used maximum variation sampling as detailed in Study 2. Given the various sectors that work in public health and the range of ideologies and perspectives among policymakers, this sampling strategy was the most appropriate for this study. For maximum variation, the researcher brainstormed a list of key child-serving sectors that work on issues directly related to public health. These sectors included child welfare, medical/pediatrics, community services, health system, women’s health, family resources, education, psychology, mental health, and social work. Efforts were also made to have variation in years of experience and regions served. The sample reflected all four regions of South Carolina (Upstate, Pee Dee, Low Country, and Midlands), and participants ranged from 5 years to 27 or more years of experience. A similar process was used for the state policymaker sample as detailed in Study 2 methods.

Additionally, the sample size for this study was also determined by saturation and sufficiency as detailed in Study 2. The researcher found that 20 interviews were needed per group and conducted a total of 47 interviews. The researcher confirmed saturation and sufficiency within and between both groups by reviewing the sample’s variation and reviewing cross-cutting themes prior to completing data collection.
Recruitment. CFSPs were recruited through e-newsletters, social media, and emails using a database of individuals that have existing relationships and partnerships with Children’s Trust of South Carolina. All communications contained a link to respond to the invitation with contact information and preferred interview times. Each selected participant was offered a $25 gift card as appreciation for their participation. Policymakers’ recruitment was the same as Study 2. Both CFSPs and policymakers were offered a brief summarizing the results of the study upon conclusion.

3.3.3 Data Collection

All interviews used the same collection process as detailed in Study 2. A video conferencing option was provided in special cases in which the participant was not able to meet in person, and four CFSPs chose to use this option for their interviews. Interviews generally followed the same format and content across both stakeholder groups; however, the wording of questions was tailored to the participant’s role in the policymaking process. For example, CFSPs were asked to talk about the experiences that they have had working with and children and families and what programs they would like to build on, while state policymakers were asked to talk about current opportunities to address children’s issues in the state legislature. Given the semi-structured nature of the interview, participants were encouraged to share their perspectives and stories in their own words and assured that that the interview was flexible (i.e., the order of questions being answered or asked did not matter).

The interview guides for both CFSPs and state policymakers were pretested with focus groups with CFSPs and policy advocates that were not associated with the study. Three focus groups were conducted which included five CFSPs and four policy
advocates. During the focus groups, the participants were asked to give feedback on the structure and clarity of each question and the overall interview process. Their changes were incorporated prior to any interviews being conducted. Consistent with a grounded theory approach, the interview guide was also adjusted in the initial set of interviews to capture emerging themes and improve the flow of the discussion. Additionally, data analysis occurred iteratively throughout data collection process. During the interviews and analysis, the researcher engaged in memo-writing, which helped maintain a record of how the theory was emerging and provided additional context for emerging themes within the research.

3.3.4 Data Analysis

All interviews were professionally transcribed and were reviewed by the researcher for accuracy. Dedoose (Dedoose, version 8.0.35, SocioCultural Research Consultants, LLC) was used for the organization of data and to assist with the interview data analysis through coding. Initial coding of the data, which Glaser and Strauss (2000) define as open coding, occurred after the first three interviews were completed with both groups. Initial coding included the development of descriptive labels for the larger themes (also referred to as categories) in the data (Willig, 2013). As the interviews progressed, evolving categories and new subcategories emerged as codes. To integrate these subcategories with the initial codes, focused coding was used. Focused coding entailed comparing data with other interviews and data to existing codes to determine which codes could serve as a conceptual core to the emerging theory (Sbaraini et al., 2011). During this process, the researcher asked herself questions (Corbin & Strauss, 1990) such as, “If I had to conceptualize my findings in a few sentences, what would they
be?” and “How can I explain the variation I see between and among the categories?” To develop a theory that explains this research, the final phase of coding involved theoretical coding. This type of coding was used to determine how the most substantive codes related to each other as hypotheses and could be integrated into theory (Charmaz, 2011). In other words, the researcher assessed how the core categories could be integrated into a theoretical explanation for the study. In the grounded theory approach, these three coding processes do not have to occur in the exact order they are described. In this study, the researcher flowed between initial and focused coding. Therefore, throughout the coding process and its various phases, the researcher used constant comparative analysis, which helped ensure that the coding process includes the back and forth comparisons of categories to identify similarities and differences (Willig, 2013). This also allowed the complexity of the study to be sufficiently captured by the theory developed through the analysis. The researcher also used an iterative coding process to modify the questions asked during the data collection process to help address gaps that need to be addressed in order to build emerging theory (Sbaraini et al., 2011).

To increase validity and reliability of the analysis, triangulation was used. Triangulation refers to the use of multiple methods or data sources in qualitative research to develop a comprehensive understanding of the phenomenon (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014). This study used investigator triangulation, which refers to the process of involving more than one researcher in the examination of the qualitative study phenomenon (Denzin, 2006). Two individuals (the researcher and a collaborating professional with 10 years of experience conducting qualitative research) were involved in the analysis of data. Both individuals collaborated on adapting the
interview guides as the initial interviews were completed. Both individuals also engaged in memo-writing on the process of the interviews, preliminary themes, and non-verbal cues. These memos were shared throughout the data collection and analysis process to demonstrate validity of the interview guide and to help inform a preliminary codebook. Both individuals engaged in the coding processes to analyze the data separately. A subset of interviews was analyzed using the same set of codes to determine inter-rater agreement. Discrepancies in coding were discussed until a consensus was reached. Investigator triangulation was used to strengthen the study’s approach and to ensure a deep insight into the various issues being examined through the study.
CHAPTER 4

RESULTS

MANUSCRIPT 1

Moderating the Effects of Adverse Childhood Experiences: Understanding the Role of Safe, Stable, and Nurturing Relationships on Risk Behaviors²

² Srivastav A., Davis R.E., Strompolis M., Crouch E., Thrasher J.F., Spencer M. To be submitted to Child and Youth Services Review.
Abstract

Adverse childhood experiences (ACEs) can be considered root causes of many preventable risk behaviors and poor health outcomes. Protective factors, such as safe, stable, and nurturing relationships can potentially moderate the long-term impact of ACEs by helping children build resilience. To better understand ways in which risk behaviors leading to poor health outcomes can be prevented, this study examines the relationships among protective factors in childhood, ACEs, and two risk behaviors in adulthood (smoking tobacco and binge drinking). Data were obtained from 3,414 adults who participated in the 2016 South Carolina Behavioral Risk Factor Surveillance System survey. Using multivariate logistic regression, the presence of two protective factors (whether participants’ basic needs were met and/or whether they felt safe and protected during childhood) were assessed as potential moderators of the association between ACEs, smoking tobacco and binge drinking. Two separate models were run for each outcome variable, controlling for sex, age, race/ethnicity, educational attainment, and income. The moderating effects of protective factors were present: the presence of protective factors weakened the association between ACEs and risk behaviors. This was demonstrated by the dose response of higher odds for reporting smoking tobacco (aOR 1.78, 95% CI: 1.30-2.37 vs. aOR 3.69; 95% CI: 2.21-6.17.) or binge drinking (aOR 1.35; 95% CI: 1.01-1.73 vs. aOR1.66; 95% CI: 1.05-2.62) when participants reported one or more ACE and no protective factors. This study suggests that ACEs can be considered a root cause of risk behavior engagement, and protective factors can serve as intervention strategy for ACEs.
**Highlights** (3-4 bullets that summarize the study findings and implications):

- Respondents who reported one or more Adverse Childhood Experience (ACE) had significantly greater odds of reporting smoking tobacco and binge drinking in adulthood that respondents with no ACEs.
- Respondents with no ACEs had significantly greater odds of reporting high protective factors than low protective factors compared to people with ACEs.
- The presence of protective factors moderates the associations between ACEs and risk behaviors, by weakening the association between ACE and risk behavior engagement.

**Keywords:** Adverse Childhood Experiences, Protective Factors, Smoking, Alcohol Abuse, Prevention, Child Maltreatment, Behavioral Risk Factor Surveillance System
1. Introduction

Adverse Childhood Experiences (ACEs), which include traumatic events ranging from abuse and neglect to dysfunction in the household (e.g., witnessing domestic violence or incarceration of a parent), provide a framework for understanding how adult risk behaviors manifest because of experiences in early childhood. Substantial evidence from neurobiological, developmental, epigenetic, and social sciences research demonstrate that toxic stress is considered the major mechanism by which ACEs affect health (Franke, 2014; Garner, 2013; Shonkoff et al., 2012). Toxic stress refers to the severe and chronic stress that results from a prolonged exposure to traumatic events without buffering supports in a child’s life (Shonkoff et al., 2012). Toxic stress in childhood can disrupt socio-emotional development, which, in turn, can increase one’s engagement in risk behaviors and ultimately increase the likelihood of developing chronic health conditions, such as heart disease, stroke, cancer, and diabetes (Garner, 2013; Shonkoff et al., 2012; Ungar, 2011).

Children with ACEs are more likely to engage in risk behaviors such as smoking tobacco or binge drinking compared to children who experienced no ACEs (Garner, 2013; Garner et al., 2012; Rose, Xie, & Stineman, 2014; Shonkoff et al., 2012). This is significant considering that smoking tobacco and alcohol abuse continue to be among the top causes of preventable deaths in the United States despite significant public health efforts to address them (CDC, 2017; National Institute on Alcohol Abuse and Alcoholism, 2007). Theoretical models suggest that some individuals engage in risk behaviors as a means of coping with the chronic toxic stress associated with ACEs, thereby connecting childhood trauma to poor adult health (Felitti et al., 1998). Thus, the
science of toxic stress suggests that ACEs could be considered a root cause of risk behavior engagement.

While the research on toxic stress sheds light on the mechanisms by which ACEs affect health, it also highlights the ways in which the health effects of ACEs can be mitigated. The brain has the capacity to adapt and rebound quickly from ACEs when a child is subsequently exposed to healthy, positive and nurturing experiences (Garner et al., 2012). This process of the brain redeveloping capacity for adapting to and overcoming challenges is defined as resilience (Luthar, 2003; Shonkoff et al., 2012; Wright & Masten, 2005). Resilience can mitigate the effects of toxic stress in early childhood by reversing the negative effects such stress has on brain development (Shonkoff & Meisels, 2000; Wright & Masten, 2005). Resilience is built through the presence of protective factors in a child’s life, which helps children learn positive coping skills that reduce the risk of engagement with risk behaviors and poor health outcomes (Afifi & Macmillan, 2011).

Research on protective factors has focused largely on the presence of safe, stable and nurturing relationships (SSNRs). A SSNR refers to a child’s relationship with an adult who ensures that the child’s basic needs are met, supports the child, understands the importance of social-emotional competence in a child’s self-worth, and makes them feel safe and protected (Jaffee et al., 2013; Thornberry et al., 2013) Most evidence points to SSNRs dramatically reducing the risk of child maltreatment (Berlin, Appleyard, & Dodge, 2011; Schofield et al., 2013; Thornberry et al., 2013). These studies demonstrate that the presence of these protective factors positively influences brain development and promotes positive functioning while increasing the likelihood of optimal health (Berlin et
Thus, the implementation of protective factors has been widely promoted as a way to mitigate the long-term effects of ACEs by researchers. However, some gaps in the literature should be considered. First, the role of protective factors on later adult outcomes has not been explored in relation to adult health outcomes as most studies have assessed the effects of SSNRs on early childhood development (Afifi & Macmillan, 2011; Children’s Bureau, Administration of Children and Families, 2014; Durlak, 1998). Additionally, SSNRs have mostly been examined within child maltreatment research, which focuses on experiences of child abuse or neglect (Berlin, Appleyard, & Dodge, 2011; Schofield et al., 2013; Thornberry et al., 2013). However, there is a need to understand if protective factors also mitigate against the long-term effects of all traumatic experiences classified as ACEs, especially considering their interrelatedness (Crouch, Strompolis, Bennett, Morse, & Radcliff, 2017; Dong et al., 2004). These limitations warrant a further examination of the ways in which protective factors can affect the relationship between ACEs and later adult health.

This study tested the degree to which protective factors moderate the relationship between ACEs and risk behaviors. Specifically, this study examined the potential moderating role of two protective factors -- feeling safe and protected in childhood and having basic needs being met in childhood -- on the relationships between ACEs and engagement in two adult risk behaviors -- smoking tobacco and binge drinking. We predicted that ACEs would be positively associated with both risk behaviors in adulthood and inversely associated with reporting of the presence of the two protective factors of interest in childhood. We also hypothesized that the association between ACEs and risk
behaviors in adulthood would moderated by reporting of protective factors during childhood. Specifically, we predicted that there would be weaker relationships between ACEs and smoking tobacco/binge drinking in adulthood for participants whose basic needs were met and felt safe and protected during childhood and a stronger relationship between ACEs and smoking tobacco/binge drinking in adulthood for participants who did not have their basic needs met and did not feel safe and protected during childhood.

1.1. Theoretical Approach

The conceptual model for the original ACE study conducted by the Centers for Disease Control and Kaiser Permanente was based on the life course perspective (Anda et al., 1999; Braveman & Gottlieb, 2014; Felitti et al., 1998; Shonkoff et al., 2012). A key construct of the life course perspective is a “critical period,” which refers to a specific period across the lifespan in which biological development is strongly dependent upon experiences and environmental influences (Gee, Walsemann, & Brondolo, 2012; Guttmannova et al., 2011). The rapid pace of development and brain growth make early childhood a critical period for both opportunity and vulnerability (Jimenez, Wade, Lin, Morrow, & Reichman, 2016). In the CDC-Kaiser Study, it was hypothesized that the presence of buffering factors in early childhood can modify the pathway between exposure to ACEs and poor outcomes (Felitti et al., 1998). This hypothesis has been supported in subsequent studies on toxic stress (Garner et al., 2012; Shonkoff et al., 2012). Today, the life course perspective continues to underpin the concept of ACEs in research efforts (Braveman & Gottlieb, 2014). Thus, the life course perspective was used as a theoretical framework in this study to identify how protective factors may buffer the effects of ACEs on adult engagement in risk behaviors.
2. Methods

2.1. Data Source

Data for this study came from 2016 South Carolina Behavioral Risk Factor Surveillance System survey (SC-BRFSS; SC Dept of Health and Environmental Control, 2017). The SC-BRFSS survey was conducted with non-institutionalized South Carolina residents who were 18 years or older through landlines and cell phones. This survey is designed to be representative of the population in South Carolina (SC-BRFSS; SC Dept of Health and Environmental Control, 2017). In 2016, 3,414 respondents provided complete data for the ACE module, protective factors, risk behaviors, and socio-demographics. The [IRB BLINDED FOR REVIEW] approved this study.

2.2. Measurement

2.2.1. Risk Behaviors

**Smoking Tobacco.** A dichotomous smoking variable was created using responses to two questions: “Have you smoked at least 100 cigarettes in your entire life?” and “Do you now smoke a cigarette every day, some days, or not at all?” Respondents who reported that they had smoked at least 100 cigarettes in their lifetime and/or currently smoked some days or every day were coded as current smokers (current smoker = yes). Respondents who did not currently smoke and had not reported smoking at least 100 cigarettes in their life were coded as non-smokers, regardless of their lifetime smoking status (current smoker = no).

**Binge Drinking.** A dichotomous variable indicating binge drinking was constructed from the following question, “Considering all types of alcoholic beverages, how many times during the past 30 days did you have (men: 5 or more drinks / women: 4
or more drinks) on an occasion?” Respondents were categorized as binge drinkers if they reported consuming five or more drinks on one occasion for men and four or more drinks on one occasion for women (binge drinker = yes). Respondents who reported that they did not drink alcohol or consumed less than the binge drinking threshold amounts were classified as non-abusers (binge drinker = no).

2.2.2. Predictor Variables

**ACEs.** ACE exposure was assessed using responses from 11 questions, which are listed in Table 4.1. These questions were collapsed into eight ACE types (three sexual abuse items were collapsed into one type, alcohol abuse and use/misuse of drugs was collapsed into one type, and the remaining items each represented unique types). A dichotomous ACE exposure variable was created by collapsing these ACE types into “yes” if respondents reported one or more ACE or “no” if respondents did not report any ACEs. This method of examining ACEs as a dichotomous variable is consistent with previous research which suggests that exposure to just one ACE can have consequences in adulthood (Crouch, Radcliff, Strompolis, & Srivastav, 2018; Dube et al., 2006; Felitti et al., 1998).

**Protective Factors.** Two questions were used to assess SSNRs: “For how much of your childhood was there an adult who made you feel safe and protected?” and “For how much of your childhood was there an adult who tried hard to make sure your basic needs were met?” Response options for these questions included “Never, a little of the time, some of the time, most of the time, and all of the time.” If respondents reported having an adult who made them feel safe and protected most of the time or all of the time, they were categorized as a “yes,” while all other responses to this question were
categorized as “no.” Respondents who had an adult who tried hard to make sure their basic needs were met most or all of the time were categorized as “yes,” while all other responses were categorized as “no”. These cut points are consistent with previous research using the SC-BRFSS (Crouch, Radcliff, Nelson, Strompolis, & Martin, 2018; Crouch, Radcliff, Strompolis, et al., 2018) and align with the broader protective factors literature (Afifi & Macmillan, 2011; Children’s Bureau, Administration of Children and Families, 2014; Durlak, 1998). Responses to the two protective factors questions were then combined into an overall protective factors variable. If a respondent indicated “yes” to both items, they were classified as having protective factors (protective factors= yes). If a respondent indicated yes to only one item or no to both items, they were classified as not having protective factors (protective factors=no). These categories were chosen to capture that a safe, stable, nurturing relationship can be defined as having both basic needs being met and feeling safe and protected in childhood. (Afifi & Macmillan, 2011; Moore & Ramirez, 2016; Shonkoff, 2016).

2.2.3. Control Variables

Five control variables were assessed: sex, age, race/ethnicity, educational attainment, and income. Sex included male and female. Age was divided into six groups: 18 to 29, 30 to 39, 40 to 49, 50 to 59, 60 to 69, and 70 to 80, which was the maximum age within the sample. Race/ethnicity categories included White, Black, Hispanic, and “Other” Non-Hispanic. Education was divided into less than high school graduate/GED or less and at least some college. Household categories included $25,000, $25,000 to $49,999, and $50,000 or more. Those who chose not to disclose their income (9.52%) were included to maintain the sample size.
2.3. Data Analysis

All data analyses were conducted in SAS (SAS, version 9.3; SAS Institute Inc.). Prior to the main analysis, descriptive and bivariate analyses were conducted between ACEs, protective factors, and risk behavior outcomes using chi-square tests with $\alpha = 0.05$. Separate multivariate logistic regression models regressed each of the two risk behaviors on ACEs exposure, protective factors, and a multiplicative interaction between them. Adjusted odds ratios (ORs) and 95% confidence intervals (CIs) from the models were used to describe the associations between each of the variables. All logistic regression models controlled for sex, age, race/ethnicity, educational attainment, and income. To adjust for sampling techniques and non-response, population weights assigned by the CDC were used (CDC, 2014b).

3. Results

As shown in Table 4.2, most of the sample was White (73.35%) and slightly over half was male (53.41%). Around 59% of participants were between ages 18-50. Approximately 30% of respondents had a high school education or less, and almost 20% of the population made $25,000 or less (17.22%). About two-thirds of the population (65.40%) reported experiencing one or more ACE. Roughly one-fifth of respondents reported being a current smoker (22.21%) while about one-third of respondents reported being binge drinker (34.31%). Most of the sample reported having protective factors during childhood (92.49%), with nearly 8% of participants reporting no protective factors.

In bivariate analyses, smoking tobacco, binge drinking, and protective factors were each significantly associated with ACEs (Table 4.2). Respondents who had
experienced one or more ACE were more likely to report smoking tobacco when compared to those who did not report ACEs (17.43% versus 4.78%, \( p < 0.0001 \)). Similarly, those who experienced one or more ACE were more likely to report binge drinking than their counterparts that did not report ACEs (24.66% versus 9.66%, respectively, \( p < 0.001 \)). Respondents who reported one or more ACE were also less likely to report protective factors (34.04% versus 58.45% for those who did not report ACEs, \( p < 0.001 \)) compared to their counterparts. Age, sex, education, and income were also significantly associated with ACEs.

Adjusted analyses also indicated significant associations between ACEs and risk behaviors, as well as between ACEs and protective factors (Table 4.3). Respondents who reported one or more ACE had significantly greater odds of reporting smoking tobacco (OR 1.95; 95% CI 1.45-2.61) and binge drinking (OR 1.40; 95% CI 1.11-1.78), respectively, than respondents who reported no ACEs. Respondents who reported one or more ACE also had significantly lesser odds of reporting protective factors (OR 0.14; 95% CI 0.08-0.26) than those who reported no ACEs.

There were significant interactions between ACEs and protective factors on both risk behaviors. As presented in Table 4.4, among participants with one or more ACE and without protective factors, the odds of smoking tobacco was 3.69 times (95% CI: 2.21-6.17) that of those with no ACEs and with protective factors. Among those with one or more ACEs and with protective factors, the odds of smoking tobacco decreased to 1.78 times (95% CI: 1.30-2.37) that of those without ACEs and with protective factors. There was no difference between those with no ACEs and without protective factors and those with no ACEs and with protective factors in terms of their odds of smoking tobacco.
Similar patterns held true for binge drinking. As presented in Table 4.5, among participants with one or more ACE and without protective factors, the odds of binge drinking was 1.66 times (95% CI: 1.05-2.62) that of those with no ACEs and with protective factors. Among those with one or more ACEs and with protective factors, the odds of binge drinking decreased to 1.35 times (95% CI: 1.01-1.73) that of those with no ACEs and with protective factors. There was no difference between those with no ACEs and without protective factors and those with no ACEs and with protective factors in terms of their odds of binge drinking.

4. Discussion

This study investigated whether the presence of protective factors, specifically those that address SSNRs, moderated the relationship between ACE exposure and risk behaviors. As predicted, we found that those who reported ACEs during childhood were significantly more likely to report smoking tobacco or binge drinking in adulthood than those who reported no ACEs. Additionally, we found that respondents with one or more ACE were significantly less likely to report protective factors than their counterparts with no ACEs. The moderating effects of protective factors were present for both smoking tobacco and binge drinking: specifically, the association between ACEs and risk behaviors was weakened by the presence of protective factors. This was demonstrated by the dose response of higher odds when ACEs and no protective factors were present. It should be noted that the lack of significance between participants with or without protective factors among those with no ACEs supports that protective factors in childhood alone cannot overcome risk behavior engagement, considering the extensive literature on factors that may predispose youth to smoking tobacco or drinking (e.g. peer
influences, media exposure, etc.; Andrews, Tildesley, Hops, & Li, 2002; Srivastav et al., 2018).

This study reinforces the importance of considering ACEs as an underlying cause for the engagement in risk behaviors. This suggests that on one hand, preventing ACEs from occurring altogether may reduce the likelihood of engaging in smoking and drinking as adults and on the other hand, risk behavior prevention should consider providing supports for individuals with ACEs. Most importantly, this study suggests that protective factors can be considered a potential early intervention strategy for risk behavior engagement among those who have experienced childhood trauma, specifically by ensuring children have SSNRs that can help them develop resilience and healthy adulthoods.

Programs that provide education on parenting and child development can be especially useful to help foster positive relationships in the home with the parent or caregiver. Examples of these programs range from national home visiting programs to Positive Parenting Programs (Triple P) in local communities (Garner, 2013; Sanders, 1999). Programs that promote trauma-informed education to teachers can help provide children with a SSNR as well. Evidence suggests that buffering relationships can be with an adult that the child interacts with frequently in community settings (CDC, 2014; Martinez-Torteya, Anne Bogat, Von Eye, & Levendosky, 2009; National Scientific Council on the Developing Child, 2015; Shonkoff & Meisels, 2000). Policies that encourage positive environments in the home and in settings such as school, churches, or neighborhoods may further reduce risk of childhood adversity (Ellis & Dietz, 2017). These policies could address the social and environmental factors that contribute to child
and family well-being including child care, neighborhood safety, school discipline policies, and community-based supports.

Future research should continue to explore the role of SSNRs as a moderating factor between ACEs and other behavioral risks such as the misuse of prescription drugs and alternative tobacco products, such as e-cigarettes, considering their growing prevalence amongst young adults (Goldman, 2014; Murthy, 2016; U.S. Department of Health and Human Services, 2014). Research should also examine the potential moderating role of SSNRs on the known relationship between ACEs and chronic diseases to potentially provide further insight on disease prevention strategies. Finally, future research should consider expanding the concept of protective factors within the BRFSS to examine other potentially buffering factors, specifically on a community or environmental level not only to align with the expanded conceptualization ACEs in research which include experiences outside of the home (e.g. neighborhood violence, homelessness, food insecurity) but to further knowledge on the known link between childhood experiences and socio-environmental influences (Braveman & Barclay, 2009; Cronholm et al., 2015). These efforts can continue to help inform targeted programs and policies that seek to prevent risk behaviors and their health consequences.

4.1 Strengths and Limitations

This study is the first to examine the relationship among ACEs, protective factors and risk behaviors using a data set representing South Carolina’s adult population. It provides innovative evidence that addresses existing gaps in knowledge about how protective factors, specifically SSNRs can mitigate the long-term effects of ACEs in
adulthood. We recognize, however, that some limitations exist. First, we were restricted to examining protective factors as included the SC-BRFSS, which do not capture all the buffering elements that have been discussed in the ACEs literature such as being able to talk to an adult during a tough time, participate in community traditions, and/or have a nurturing place outside the home (Sege & Browne, 2017). Nevertheless, this study provides evidence to support the benefits of SSNRs, a widely touted prevention strategy for children and youth experiencing childhood adversity (CDC, 2014a). Additionally, this study included one year of data from the SC-BRFSS, with low variation within the protective factors’ variable. This could have affected the estimates of associations between the study variables. Given the cross-sectional design and retrospective self-reported data used in this study, it is important to note that the data may be influenced by the timing of the experiences and when they were asked to be recalled (Horwitz, Widom, McLaughlin, & White, 2001; Roxburgh & MacArthur, 2014). Concerns have been expressed about possible recall bias and the sensitive nature of the topics discussed in the ACEs module (Cronholm et al., 2015). However, existing evidence on abuse and neglect suggests that when abuse or neglect is retrospectively reported, these positive reports are likely to be correct (Hardt & Rutter, 2004). Other studies suggest that if any bias occurs due to the retrospective nature of the questions, it typically leads to nonresponse, creating a downward bias for ACE prevalence estimates (Cronholm et al., 2015; Edwards et al., 2001; Hardt & Rutter, 2004). This may have led to an underestimation of ACEs, although our prevalence estimates are consistent with many other statewide representative surveys (Merrick, Ford, Ports, & Guinn, 2018).
4.2 Conclusion

In conclusion, this study provides unique insight on protective factors as a moderator of risk behaviors on a population level. The data in this study highlight the importance of providing children with SSNRs as a way to buffer the effects of ACEs in adulthood, which can include the engagement in risk behaviors. The interrelatedness of ACEs (Dong et al., 2004) and the dose-response relationship between ACEs and health outcomes (Felitti et al., 1998) suggest that reducing exposure to ACEs can reduce engagement in adult risk behaviors. However, for those who have experienced childhood adversity, having an adult that ensures their basic needs are met and make them feel safe and protected may assist in mitigating to effects of ACEs. This study is especially relevant as efforts on the community, state, and national level look to data to help inform the ways to address childhood adversity to prevent poor adult health outcomes.
Table 4.1 Adverse Childhood Experiences (ACEs) questions included in the 2016 South Carolina Behavioral Risk Factor Surveillance System

<table>
<thead>
<tr>
<th>ACE types</th>
<th>Survey questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household mental illness</td>
<td>1. Did you live with anyone who was depressed, mentally ill, or suicidal?</td>
</tr>
<tr>
<td></td>
<td>2. Did you live with anyone who was a problem drinker or alcoholic?</td>
</tr>
<tr>
<td></td>
<td>3. Did you live with anyone who used illegal street drugs or who abused medications?</td>
</tr>
<tr>
<td>Household incarceration</td>
<td>4. Did you live with anyone who served time or was sentenced to serve time in a prison, jail, or other correctional facility?</td>
</tr>
<tr>
<td>Parental separation/divorce</td>
<td>5. Were your parents separated or divorced?</td>
</tr>
<tr>
<td>Witnessing household violence</td>
<td>6. Did your parents or adults in your home ever slap, hit, kick, punch, or beat each other up?</td>
</tr>
<tr>
<td>Physical or emotional abuse</td>
<td>7. Before age 18, did a parent or adult in your home ever hit, beat, kick, or physically hurt you in any way?</td>
</tr>
<tr>
<td></td>
<td>8. Did a parent or adult in your home ever swear at you, insult you, or put you down?</td>
</tr>
<tr>
<td>Supplemental survey questions</td>
<td>S-1. For how much of your childhood was there an adult who made you feel safe and protected?</td>
</tr>
<tr>
<td></td>
<td>S-2. For how much of your childhood was there an adult who tried hard to make sure your basic needs were met?</td>
</tr>
</tbody>
</table>

1Columns may not add up to 100 due to rounding.

* Differences comparing those with one ACE and no ACEs are significant. Bold indicates p-values that are significant.
Table 4.2 Characteristics of respondents, in total and stratified by Adverse Childhood Experiences (ACE) exposure in SC-BRFSS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All¹ (%)</th>
<th>ACE Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>% with No ACES (n=1403)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>53.41</td>
<td>19.47</td>
</tr>
<tr>
<td>Female</td>
<td>46.49</td>
<td>15.13</td>
</tr>
<tr>
<td>Age (in years)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-29</td>
<td>21.71</td>
<td>5.71</td>
</tr>
<tr>
<td>30-39</td>
<td>19.68</td>
<td>5.40</td>
</tr>
<tr>
<td>40-49</td>
<td>17.26</td>
<td>5.58</td>
</tr>
<tr>
<td>50-59</td>
<td>17.32</td>
<td>6.54</td>
</tr>
<tr>
<td>60-69</td>
<td>16.34</td>
<td>7.24</td>
</tr>
<tr>
<td>70-80</td>
<td>7.69</td>
<td>4.12</td>
</tr>
<tr>
<td>Race/Ethnicity*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>73.35</td>
<td>27.57</td>
</tr>
<tr>
<td>Black, Non-Hispanic</td>
<td>19.94</td>
<td>5.17</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4.37</td>
<td>1.05</td>
</tr>
<tr>
<td>Other Non-Hispanic</td>
<td>2.34</td>
<td>0.81</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school graduate or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>less</td>
<td>30.46</td>
<td>10.00</td>
</tr>
<tr>
<td>At least some college</td>
<td>69.54</td>
<td>25.40</td>
</tr>
<tr>
<td>Income, per year*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;$25,000</td>
<td>17.22</td>
<td>4.02</td>
</tr>
<tr>
<td>$25,000-$49,999</td>
<td>22.28</td>
<td>7.11</td>
</tr>
<tr>
<td>&gt;=$50,000</td>
<td>50.99</td>
<td>19.71</td>
</tr>
<tr>
<td>Did not disclose</td>
<td>9.52</td>
<td>3.76</td>
</tr>
<tr>
<td>Current Smoker*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>22.21</td>
<td>4.78</td>
</tr>
<tr>
<td>No</td>
<td>77.79</td>
<td>29.82</td>
</tr>
<tr>
<td>Binge Drinker*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>34.31</td>
<td>9.66</td>
</tr>
<tr>
<td>No</td>
<td>65.69</td>
<td>24.94</td>
</tr>
<tr>
<td>Protective factors*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>92.49</td>
<td>58.45</td>
</tr>
<tr>
<td>No</td>
<td>7.51</td>
<td>0.55</td>
</tr>
</tbody>
</table>
Table 4.3 Adjusted odds ratios and 95% Wald confidence intervals estimates of the influence of Adverse Childhood Experiences (ACEs)\(^1\) on engagement of risk behaviors in adulthood and presence of protective factors in childhood among respondents to 2016 South Carolina Behavioral Risk Factor Surveillance System Survey

<table>
<thead>
<tr>
<th></th>
<th>Point Estimate</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1: ACEs and Smoking Tobacco</td>
<td>1.95</td>
<td>1.45-2.61</td>
</tr>
<tr>
<td>Model 2: ACEs and Binge Drinking</td>
<td>1.40</td>
<td>1.11-1.78</td>
</tr>
<tr>
<td>Model 3: ACEs and Protective Factors</td>
<td>0.14</td>
<td>0.08-0.26</td>
</tr>
</tbody>
</table>

\(^1\)one or more ACEs \(^2\)Adjusted for sex, age, race/ethnicity, education, and household income
Table 4.4 Adjusted odds ratios and 95% Wald confidence intervals estimates of the influence of protective factors on the association between Adverse Childhood Experiences (ACEs) and smoking tobacco in adulthood

<table>
<thead>
<tr>
<th>Dependent Variable: Smoking Tobacco</th>
<th>Adjusted Odds Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Point Estimate</td>
</tr>
<tr>
<td>Protectives Factors * ACEs (Protective Factor= Yes, ACEs= No)</td>
<td></td>
</tr>
<tr>
<td>Yes ACEs * No Protective Factors</td>
<td>3.69</td>
</tr>
<tr>
<td>Yes ACEs * Yes Protective Factors</td>
<td>1.78</td>
</tr>
<tr>
<td>No ACEs * No Protective Factors</td>
<td>0.43</td>
</tr>
<tr>
<td>ACEs¹</td>
<td>1.83</td>
</tr>
<tr>
<td>Protective factors</td>
<td>1.92</td>
</tr>
<tr>
<td>Sex (Male =0)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.54</td>
</tr>
<tr>
<td>Age (18-29=0)</td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>1.76</td>
</tr>
<tr>
<td>40-49</td>
<td>1.43</td>
</tr>
<tr>
<td>50-59</td>
<td>1.77</td>
</tr>
<tr>
<td>60-69</td>
<td>0.89</td>
</tr>
<tr>
<td>70-80</td>
<td>0.29</td>
</tr>
<tr>
<td>Race (White =0)</td>
<td></td>
</tr>
<tr>
<td>Black, Non-Hispanic</td>
<td>1.13</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.42</td>
</tr>
<tr>
<td>“Other,” Non-Hispanic</td>
<td>1.22</td>
</tr>
<tr>
<td>Education (less than high school =0)</td>
<td></td>
</tr>
<tr>
<td>At least some college</td>
<td>0.51</td>
</tr>
<tr>
<td>Income ($25,000-$49,999=0)</td>
<td></td>
</tr>
<tr>
<td>&lt;$25,000</td>
<td>1.36</td>
</tr>
<tr>
<td>$50,000</td>
<td>0.37</td>
</tr>
<tr>
<td>Did not disclose</td>
<td>0.99</td>
</tr>
</tbody>
</table>

¹ one or more ACEs
Table 4.5 Adjusted odds ratios and 95% Wald confidence intervals estimates of the influence of protective factors on the association between Adverse Childhood Experiences (ACEs) and binge drinking in adulthood

<table>
<thead>
<tr>
<th>Dependent Variable: Binge Drinking</th>
<th>Adjusted Odds Ratios</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protective Factors * ACEs (Protective Factor= Yes, ACEs=No)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes ACEs * No Protective Factors</td>
<td>1.67</td>
<td>1.05-2.62</td>
</tr>
<tr>
<td>Yes ACEs * Yes Protective Factors</td>
<td>1.35</td>
<td>1.07-1.72</td>
</tr>
<tr>
<td>No ACEs * No Protective Factors</td>
<td>0.40</td>
<td>0.10-1.68</td>
</tr>
<tr>
<td>ACEs¹</td>
<td>1.39</td>
<td>1.10-1.76</td>
</tr>
<tr>
<td>Protective Factors</td>
<td>1.14</td>
<td>0.75-1.73</td>
</tr>
<tr>
<td>Sex (Male =0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.49</td>
<td>0.39-0.61</td>
</tr>
<tr>
<td>Age (18-29=0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>1.07</td>
<td>0.73-1.56</td>
</tr>
<tr>
<td>40-49</td>
<td>0.86</td>
<td>0.59-1.24</td>
</tr>
<tr>
<td>50-59</td>
<td>0.73</td>
<td>0.52-1.04</td>
</tr>
<tr>
<td>60-69</td>
<td>0.38</td>
<td>0.27-0.55</td>
</tr>
<tr>
<td>70-80</td>
<td>0.13</td>
<td>0.08-0.21</td>
</tr>
<tr>
<td>Race (White =0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black, Non-Hispanic</td>
<td>0.82</td>
<td>0.61-1.10</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.81</td>
<td>0.43-1.53</td>
</tr>
<tr>
<td>“Other,” Non-Hispanic</td>
<td>0.66</td>
<td>0.37-1.17</td>
</tr>
<tr>
<td>Education (less than high school =0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least some college</td>
<td>0.75</td>
<td>0.58-0.97</td>
</tr>
<tr>
<td>Income ($25,000-$49,999=0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;$25,000</td>
<td>0.80</td>
<td>0.55-1.15</td>
</tr>
<tr>
<td>&gt;=$50,000</td>
<td>0.83</td>
<td>0.62-1.12</td>
</tr>
<tr>
<td>Did not disclose</td>
<td>0.79</td>
<td>0.50-1.27</td>
</tr>
</tbody>
</table>

¹ one or more ACEs
References:


system in 23 states. *JAMA Pediatrics*.

https://doi.org/10.1001/jamapediatrics.2018.2537


Disease Prevention and Health Promotion, Office on Smoking and Health.


https://doi.org/10.1007/0-306-48572-9_2
Addressing Adverse Childhood Experiences (ACEs) Through State Policy:
Understanding Barriers and Opportunities for Policymaking in South Carolina

Srivastav A., Spencer M, Strompolis M., Thrasher J.F., Crouch E. & Davis R.E. To be submitted to Preventing Chronic Disease.
Abstract

Objective: As Adverse Childhood Experiences (ACEs) become an increasing concern, researchers, practitioners, and legislators seek to understand policy strategies to prevent and mitigate the effects of ACEs. Given the high prevalence of ACEs, policies that address ACEs can meaningfully prevent disease and improve population mental health. We sought to understand barriers and opportunities for policies to prevent and mitigate ACEs by exploring the perspectives of state legislators in South Carolina.

Methods: In 2018, we conducted semi-structured interviews with 24 state legislators. Participants were recruited using maximum variation sampling. Our data collection and analysis were guided by Multiple Streams Theory, which identifies three key components (attention to the problem, decisions about policy options, and the impact of political landscape) that can promote windows of opportunity for passing policies.

Results: Legislators identified several factors that can influence the passage of legislation on ACEs: awareness of ACEs; gaps in understanding about what can be done about ACEs; the use of data and stories that contextualize the problem of ACEs; capitalizing on the bi-partisanship of children’s issues; and linking to current ACES-related issues on the policy agenda, such as school safety and the opioid epidemic.

Conclusion: Advocates should focus on the factors identified to promote policies that prevent ACEs and/or address their consequences.
Summary Box

What is already known about this topic? Adverse Childhood Experiences (ACEs) are linked to many poor health and social outcomes in adulthood, including an increased risk and occurrence of chronic disease. Research suggests that providing children, family and communities with protective factors (e.g., nurturing relationships social supports, safe neighborhoods) can help prevent and mitigate the effects of ACEs. To date, few state policy actions have been successful in preventing and/or addressing ACEs.

What is added by this report? By exploring legislators’ perspectives on ACEs, this study provides insight on the barriers and opportunities to address ACEs through state policymaking, ways in which to advocate about ACEs, the important features of the current political context, and potential ways to try to promote and take advantage of windows of opportunities around ACE policies.

What are the implications for public health practice? Results highlight important considerations for advocating about ACEs policy, including framing of the issue, mode of communication, and the use of data or research. They also suggest that policy approaches could be more successful if the issue of ACEs are embedded within current public health issues of concern, such as the opioid epidemic and school safety. Advocates can use the lessons from this study to more effectively communicate and collaborate with legislators to translate ACEs research into public health policies and practice.

Keywords (Using MeSH): Public Health, Life Change Events, Government, Policy Making, Chronic Disease, Qualitative Research, Social Determinants of Health, Public Policy, Politics
Introduction

Adverse Childhood Experiences (ACEs) refer to traumatic exposures in childhood such as abuse, neglect, and household dysfunction.  

1,2 Studies demonstrate that ACEs are strongly associated with poor health outcomes in adulthood, including conditions like depression, heart disease, diabetes, obesity, and early mortality.  

2–4 ACEs are common—an estimated 46% of children have experienced ACEs in the United States.  

5 Fortunately, studies suggest that the long-term impact of ACEs can be mitigated through the presence of protective factors such as safe, stable, nurturing relationships and environments, which help build resilience.  

6,7 As ACEs become an increasing concern on a national and state level8, researchers, practitioners, and legislators seek to understand strategies to reduce exposure to and mitigate the effects of ACEs. Although solutions vary, the use of policy approaches to help children build resilience against the effects of ACEs is one example of an upstream approach to address the social determinants that underlie population health.  

9 State-level policymakers have the ability to support public health efforts through the formation and adoption of policy.  

10,11 While there are some promising state-level policy efforts to address ACEs, many have fallen short of being passed.  

12 When policies related to ACEs have been adopted or implemented, the majority have been unfunded mandates or resolutions focused primarily on increasing awareness of the issue.  

12 Additionally, current policies have not made comprehensive changes on a systems level--specifically in programs and practices.  

11 Consequently, current policy efforts have fallen short of making substantial changes in the rates of ACEs. The need to understand barriers and opportunities to passing these laws are crucial to the success of policy efforts,
specifically policymakers’ ability to make a substantial impact on preventing and mitigating the effects of ACEs as a root cause of many public health outcomes.

The policy process is complex, and there continue to be challenges in communication between researchers and legislators. This study used Multiple Streams Theory (MST) to understand the perspectives of state legislators who can provide valuable insight on the agenda setting and policymaking process with respect to ACEs. Evidence suggests that MST can help public health researchers and advocates better understand, communicate, and collaborate with legislators. Additionally, MST has been empirically tested to assess policy change in many different disciplines, demonstrating that the theory’s three “streams,” which focus on issue salience, awareness of policy options, and political mood, are key considerations for the policymaking process. Thus, through qualitative inquiry, this study sought to understand the various factors that may influence policymaking on ACEs to inform future advocacy efforts and policy development using MST.

Methods

Participants

A sample of state legislators in South Carolina was recruited to participate in semi-structured, in-depth interviews (n=24). Legislators were defined as current members of the South Carolina General Assembly who had served at least one term. They did not have to have previous experience with child health policy issues. Legislators were recruited by leveraging existing relationships with the primary author’s agency until data saturation was achieved. Due to ethical concerns, legislators were not offered an incentive for their participation. However, the researcher did offer to share the results of
the study in the form of a research brief upon its conclusion. The [IRB BLINDED FOR REVIEW] approved this study.

**Data Collection, Measurement, and Analysis**

The interview guide was informed by MST, which provided a helpful framework for understanding the policymaking process (Table 4.6). The MST streams include “problems,” “policies,” and “politics.” MST asserts that these three streams intermingle and, at critical points in time, create “policy windows,” or opportunities to push through a policy. The problem stream focuses on the current awareness and urgency of an issue that may require governmental action. This stream was assessed in the interview guide by exploring legislators’ knowledge about ACEs and conceptualizations of ACEs-related terms. The policy stream refers to the processes in which policy solutions and alternatives are identified and developed. This was assessed by asking legislators what types of information they use to make decisions and what sources they find most trustworthy and credible. The political stream refers to the political landscape that affects agenda setting. This was assessed by exploring legislators’ opinions on the state’s current political climate and topics on the policy agenda with which ACES could be meaningfully associated. Possible policy windows were determined through by legislators’ viewpoints of upcoming legislative priorities related to ACEs. Finally, the results of this study were used to understand how “policy entrepreneurs” or advocates can link policy problems with policy options within the current political context, potentially opening policy windows in the data analysis phase.

Prior to data collection, the interview guide was pilot tested through three focus groups with policy advocates to ensure consistency, clarity, and fidelity to the elements
of MST. The interviews were conducted face-to-face and lasted an average of 55 minutes. All interview sessions were recorded, and the interviews were professionally transcribed and reviewed by the research team for accuracy.

Dedoose Version 8.0.35 (Socio-cultural Consultants, Los Angeles, CA) was used to organize and code the data. A preliminary codebook was developed prior to data collection based on a literature review and guided by MST. Two researchers individually analyzed each interview transcript using focused coding qualitative techniques, which entailed mapping excerpts from the transcripts onto components of MST using both a priori and emerging themes. To ensure coding accuracy, a subsample of five interviews was double-coded by both researchers using the same codebook at the beginning of the analysis process. A high inter-rater agreement $\kappa = 0.76-0.87$, and discrepancies were resolved through discussion.

**Results**

The participant sample was reflective of the current state legislature (Table 4.7). Participants were mostly White (75%) and male (70.8%). There was a nearly even split between political affiliation (Republican vs. Democrat) and role (House vs. Senate). Legislators were included from all four regions of the state. The results are presented based on the three streams of MST, followed by legislator perspectives on potential windows of opportunity for ACEs-related policymaking.

**Problem Stream**

Legislators who had heard of ACEs learned about the issue through community programs in their district, the state’s legislative children’s committee, or a child-serving interest group. Those who were not familiar with ACEs were able to deduce the
definition. In addition to abuse, neglect, and household dysfunction, legislators frequently
classified experiences such as bullying, homelessness, and food insecurity as ACEs. Most
legislators commented on the impact of ACEs on a child’s development, behavior, and
ability to succeed in school. They mentioned the link between ACEs and mental health
outcomes (e.g., depression and suicide) but were less familiar with the link between
ACEs and adult health conditions, as suggested by this quotation:

“I don't think I’m going to go with the obesity part, but (ACEs) might still go with
suicide?”

Five legislators noted that ACEs were intergenerational and that it was difficult to break
the cycle of traumatic experiences. As one legislator shared:

“The reason we don't eat healthy or we don't focus on education, that we're
“okay” with giving drugs and abusing and sexually abusing our children, is
because we're the product of our parents.”

However, legislators across the political spectrum also shared examples of constituents
who grew up with ACEs that were able to raise healthy, happy, and successful children,
despite their hardships in childhood. They all commented that parents must ultimately
make the deliberate choice not to continue the cycle of trauma with their children.

All participants expressed that “ACEs” and “childhood trauma” are related terms.
They recognized, however, that terms could have different connotations to be considered.
The term ACEs was frequently referred to as “jargon” that would be difficult for
legislators who were not engaged in children’s issues to understand by many participants.
Some also thought the term ACEs was too politically correct and “downplayed” the
issue:
“I believe that you need to call things what they are. I think that adverse childhood experiences somewhat cheapens what the real issue and what has happened...a lot of times we don't feel comfortable with calling things what they are, but I think it lessens the impact when you don't.”

Some legislators stated that term childhood trauma sounded more urgent, serious, and impactful on a child’s life, and, as a result, was more likely to catch the attention of legislators. Generally, the term ACEs described as encompassing a broader range of experiences than childhood trauma by all legislators. On one hand, some legislators mentioned that this term made the issue sound too complex. On the other hand, many legislators stated that the term ACEs frames the issue as something that affects many children instead of a certain population or group, possibly increasing its significance, as demonstrated by this quotation:

“Because it’s broader...I mean it’s horrible when a child is physically or sexually abused, but, percentage-wise, the population it happens to much fewer children than, say, being stuck in a bad home environment....”

In order to convey a need for addressing ACEs, several legislators emphasized the importance of framing ACEs as an issue that can be solved:

“ACEs are a lot. You've got to break it down into something that is manageable in the pursuit of this broader aim, but what is something that can be achieved?”

To do this, they recommended several options that advocates should consider: 1) talking about ACEs and a health outcome that has a pressing need to be addressed, 2) focusing on the link between ACEs and cost, or 3) highlighting how ACEs relate to a core function of government (e.g., child protective services).
**Policy Stream**

The framing of ACEs within specific outcomes or functions of government also proved to be important for assessing policy options among legislators. However, the use of stories and data played a significant role as well. Many legislators expressed a mistrust of data, voicing concerns about how data can be manipulated to paint a picture that may not be accurate, which can be problematic when legislators have to know “a little about a lot of different things.” Almost half of the participants mentioned concerns about state agency data, suggesting that these data are likely to be flawed due to poor quality and consistency. Some legislators also discussed concerns about data use in advocacy work, pointing to examples where they perceived that advocates had manipulated data to push for more funding for an issue.

Several legislators shared that they were more likely to listen to stories that came from within their district about the effects of ACEs than to attend to traditional policy advocacy strategies, such as policy briefs or one-pagers. Other legislators felt that presenting data and research in the form of policy briefs about ACEs was equally important. Most participants reported that a combination of stories, data, and research would be more effective in presenting policy options to legislators, because it helped in “humanizing” the issue. They also advised that data is typically more useful in assessing policy options if it is relevant to South Carolina. As one participant explained:

“Stories and data, you know. But stories get to my heart. So if I know someone that has suffered, it makes me spend more time handling it than I would if you just gave me statistics by itself. I have to see a face with it.”
To help make policy decisions, the majority of legislators shared that they are most likely to trust data analysis and research from their office staff, legislative committee staff, and experts in the field with whom they have pre-existing relationship. In fact, several legislators expressed the importance of having a trusting relationship with the advocate:

“I can have the same numbers tell a number of different stories, so you have to have faith in the data. But you also have to have faith in the researchers, as well...”

Perspectives varied on credibility of advocates. Some legislators stated that community-based advocates were the most credible, as they were directly involved in the work, while others shared that professional lobbyists would be more likely to sway legislators in favor of a policy action. Some legislators revealed relying on coalitions for guidance in decision making. Several cited relying on the expertise of colleagues in the state legislature, especially those who championed children’s issues. Few mentioned looking for information on their own from non-profits and think tanks, although they were likely to review reports from these entities if presented by a constituent or advocate.

**Politics Stream**

Legislators generally expressed that the national political climate did not greatly affect the state legislature, pointing to continued and successful efforts to work “across the aisle.” However, they varied on the extent to which they believed that children’s issues were bipartisan. Republican legislators pointed to several successful bipartisan policy efforts (e.g., safe sleep\textsuperscript{25}, car seat safety\textsuperscript{26}, creating an? Office of the Child
Advocate$^{27}$), expressing the sentiment that all legislators are committed to ensuring children have basic needs met such as food, shelter, and education:

“A starving child, a growling stomach doesn't care whether the food comes from -- a Republican or a Democrat. They're just hungry.”

In contrast, all Democrats voiced that many children’s issues are partisan, pointing to examples of failed policy efforts (e.g., Medicaid expansion, education reform) that had the potential to positively impact a substantial number of children. As one Democrat commented:

“That's why prison rates are so high. That's why our school systems are not funded properly. That's why we don't have healthcare for more people, because it's split down political lines and it impacts us.”

The lack of partisanship was acknowledged by a few policymakers across both parties, who stated that partisanship within children’s issues largely results from ideological disagreement about the appropriate extent of government involvement.

Obstacles associated with the state legislature’s infrastructure frequently emerged in discussions about the political context. Several legislators shared that South Carolina’s legislators are part-time, with the general session lasting only five months. Legislators pointed to these factors as making it difficult to discuss policy options that are not considered urgent and in need of immediate attention. As a result, legislators talked about how the state legislature is more reactive than proactive, making it difficult to develop a case for prevention-related policymaking:
“*The system is built on us being part-time legislators, and it's basically an unpaid position and you're getting just people who love their community, which is great. But it's not necessarily the best system to do the best work.*”

Several participants also suggested that these factors make it especially important to focus on short-term policy wins that allow legislators to demonstrate their efforts to their constituents. Finally, legislators touched on the fact that the limited state budget that must be shared across 170 legislator interests, which may decrease opportunities to pass policies related to child health.

**Possible Policy Windows**

A majority of legislators pointed to two issues of growing significance that can help open a window of opportunity to pass comprehensive policies on ACEs: 1) safety from violence in schools, and 2) the opioid epidemic.

To address school safety and violence prevention, most legislators shared their support for policies providing more mental health services, hiring and retaining school support staff such as school safety officers, and funding better training for teachers. All Democrat legislators expressed a need to address gun safety to prevent school shootings while many Republicans recommended arming school safety officers. Several legislators shared examples of efforts to help push policies forward on this issue, including a recent school safety summit by the governor’s office. Three legislators from both parties pointed to a possible policy link that could be made between school-based mental health services to prevent school violence and services to help students cope with ACEs. As one legislator commented:
“We are leaders, I think in the country, of trying to bring counselors, mental health counselors, into the school. There may be an opportunity in there.”

Democrat legislators noted that increasing access to mental health services is a more politically feasible approach to preventing violence in schools and that, given the number of school shootings across the country, this policy approach was an ideal opportunity to integrate ACEs into the current policy agenda.

Most legislators across both political parties expressed an interest and commitment to supporting policies that reduce opioid abuse, provide services for those with opioid dependence, and tighten the distribution and prescription of opioids. Most legislators mentioned that a study committee was developed to examine the effects of opioids in the state and that many informational events had occurred around the issue, including a summit by the governor’s office. Two legislators talked about ACEs and epidemic being possibly related, pointing to the potential trauma experienced by children whose parents who are addicted to opioids:

“Why not jump on this train under the umbrella of opioid abuse, talk about what it does to children and why it's so important that we not just look at the person who has the problem, but also look at how that is trickling down to the kids.”

These two participants also noted that this relationship had not yet been highlighted in current discussions about opioids but could provide an opportunity to increase awareness about ACEs, especially because the opioid epidemic was a bi-partisan issue of concern in the state and was currently being studied on various legislative committees.
Discussion

As the prevention and mitigation of ACEs continue to grow as a state policy issue, this study examined the opportunity to address ACEs through state-level policy efforts by applying MST to understand legislator perspectives the urgency to address ACEs, their decision-making process, the political context, and potential policy windows of opportunity to pass policies. Our findings illustrated several factors, some of which are specific to ACEs and some that can be applied to legislative efforts on a variety of public health issues.

Although research on evidence-based policymaking suggests that research plays a crucial role on the salience of an issue,\textsuperscript{12,13} our study suggests that terminology and framing may play a more important role for raising awareness among legislators. Participants presented several strengths and weaknesses in terms of connotations for the terms ACEs and childhood trauma while expressing the importance of framing ACEs as a measurable and solvable issue in public health. This is an especially important finding not only because researchers have identified a need for effective language for ACEs\textsuperscript{8}, but because current evidence is limited on ways to frame SDH for policy efforts.\textsuperscript{24} This study also reinforces existing knowledge that policy options which include both anecdotal and tailored scientific evidence are more likely be considered by policymakers in their decision-making process.\textsuperscript{25,26} However, this study brings to light a new potential challenge to evidence-based policymaking; the mistrust of data. The large number of legislators that commented on their concerns of data being manipulated or of poor quality highlights the opportunity researchers to educate legislators and their staff on identifying credible data and research. This is in turn, can also help develop a trusting relationship

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for public health advocates, which, consistent to existing literature, was identified by participants as a key influence deciding on policy options. Notable structural factors (i.e., legislative session length, part-time legislators) in addition to known political factors (e.g., ideologies, national mood) were identified as influencing political feasibility for policymaking around ACEs and other issues related to SDH. This suggests that evidence-based policymaking may be most feasible not only when contextualized within a policy window but when both short-term and long-term options are presented and have the potential of benefitting a large percentage of the population with the state. Finally, this study builds on existing evidence that application of the MST provides important insights on barriers and opportunities for public health advocates (see Figure 4.1).

These results must be considered in light of several limitations. First, most participants had some prior knowledge about issues related to ACEs; therefore, this research may not fully reflect the perspectives of legislators who do not work on child issues. Additionally, while recommendations from this study can serve as a foundation for understanding state policymaking opportunities around ACEs, this study included legislators from one state. It should be noted however, that qualitative research is not intended to be generalizable. Nevertheless, the qualitative nature of this study provided rich insight on South Carolina state legislators’ knowledge, perspectives, and political processes, which can help strengthen communication and collaboration with researchers and policymakers on addressing ACEs.

To our knowledge, this study is the first to explore state legislators’ perspectives on policymaking processes related to ACEs, which have received growing attention in public health research and policy. Our study provides important new insight of
research translation and advocacy to encourage evidence-based policymaking specifically for ACEs while building on existing evidence about general knowledge gaps between public health researchers and legislators.\textsuperscript{13,14,27} The results indicate advocates should consider the connotations of “ACEs” and “childhood trauma” when framing the issue’s urgency. Advocacy efforts should also be dedicated to explaining the long-term physical health consequences of adversity, in addition to the mental health implications. These efforts could also touch on the intergenerational implications of ACEs to highlight potential benefit ACEs polices have for both children and their families, potentially increasing interest in the issue. Finally, advocates should spend time cultivating trust with legislators and legislative staff to promote evidence-based decision making, especially using data. Future studies should consider the empirical testing of advocacy messages around ACEs to further examine the most effective ways of working with legislators on these important issues.
<table>
<thead>
<tr>
<th>Theory Component</th>
<th>Definition*</th>
<th>Sample Interview Guide Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem Stream</strong></td>
<td>How conditions are turned into policy problems, how problems are defined, and how problems garner attention</td>
<td>How would you define ACEs? How did you hear about ACEs? What term resonates when talking about this issue, childhood trauma or ACEs? Why?</td>
</tr>
<tr>
<td><strong>Policy Stream</strong></td>
<td>The process by which policy options are identified and developed</td>
<td>What kind of information (e.g., stories, data and research) do you use to make a decision about an issue? Who do you go to for trustworthy and credible decision-making information? Have you learned about or know of any current ACE policy options?</td>
</tr>
<tr>
<td><strong>Politics Stream</strong></td>
<td>The policy landscape including partisan politics, political mood, election impacts, and political structure</td>
<td>To what extent do you believe children’s issues like ACEs considered bipartisan in the state legislators? What are opportunities or obstacles to passing policies that affect children?</td>
</tr>
<tr>
<td><strong>Policy Windows</strong></td>
<td>Windows of opportunity for policymaking</td>
<td>In your opinion, what are top issues affecting children today? What are some issues related to children that are being discussed in the legislature currently?</td>
</tr>
<tr>
<td><strong>Policy Entrepreneurs</strong></td>
<td>Advocates or interest groups that couple policy problems with policy options within political landscapes</td>
<td>N/A - Based on the perspectives of legislators who participated in this study, recommendations for policy entrepreneurs were developed</td>
</tr>
</tbody>
</table>

* Kingdon (2010) and Mosier (2013)
### Table 4.7 Participant Characteristics (n=24)

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>6 (25.0%)</th>
<th>5 (20.8%)</th>
<th>7 (29.2%)</th>
<th>6 (25.0%)</th>
<th>5 (20.8%)</th>
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<td>House of Representatives</td>
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<td>10 (41.7%)</td>
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<td>Senate</td>
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<td>Political Affiliation</td>
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<tr>
<td>Democrat</td>
<td>10 (41.7%)</td>
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<tr>
<td>Republican</td>
<td>14 (58.3%)</td>
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<tr>
<td>Black</td>
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<td>Upstate (North)</td>
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<tr>
<td>Lowcountry (South)</td>
<td>5 (20.8%)</td>
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<tr>
<td>Pee Dee (East)</td>
<td>2 (8.3%)</td>
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Figure 4.1 Summary of Findings from Application of the Multiple Streams Theory to Understand Barriers and Opportunities to Policymaking on ACEs in South Carolina


While I Breathe, I Hope: Exploring Key Stakeholder Perspectives on Programs and Policy Approaches to Address Adverse Childhood Experiences (ACEs) in South Carolina

Abstract

Objective: We examined the perspectives of child and family-serving professionals (CFSP) and state policymakers on protective factors to develop policy and program recommendations to address ACEs.

Methods: In 2018, we conducted semi-structured, in-depth interviews with 23 CFSP and 24 state policymakers in South Carolina about current and needed approaches for addressing ACEs. Data were analyzed using a grounded theory approach.

Results: CFSPs and policymakers had varying opinions on state government involvement and primary prevention for ACEs. Three protective factors emerged from their perspectives: 1) loving, trusting, and nurturing relationships; 2) safe home environments; and 3) opportunities to thrive. For each of these protective factors, participants suggested policy options that support existing community efforts, attempt to alleviate poverty, and improve child and family serving systems.

Conclusion: This study suggests that CFSPs and policymakers recognize the importance of protective factors in a child’s life to buffer the effect of ACEs. More awareness is needed about the feasibility and significance of primary prevention of ACEs.

Policy Implications: The study’s findings can be used to strengthen advocacy priorities for a wide range of public health outcomes associated with ACEs.
INTRODUCTION

Adverse Childhood Experiences (ACEs) refer to traumatic exposures (i.e., abuse, neglect, household or community dysfunction) that have been linked to poor health and social outcomes in adulthood.\(^1\) ACEs serve as an example of social determinants of health, as they highlight how adult health outcomes are influenced by the complex interplay of social, biological, and environmental factors in early childhood.\(^2\) Research indicates that a child’s ability to be resilient influences their ability to positively cope with ACEs.\(^3,4\) Resilience is built through the presence of protective factors in a child’s life, such as safe, stable, and nurturing relationships with trusted adults (e.g., parents or other caregivers) or safe and supportive social environments (e.g., neighborhoods or schools).\(^5,6\) This research illustrates that health outcomes can be influenced by socio-environmental factors, rather than solely individual choices, which is a foundational principle within the social determinants of health literature.\(^7,8\)

Public health policies that focus on improving the environments and systems within which most children interact are necessary to increase the presence of protective factors that build resilience.\(^4,9\) Though ACEs are receiving steady recognition within public health in the U.S., specific policies that promote protective factors to prevent and mitigate ACEs have been limited and fragmented.\(^7,10\) Most existing state policies are limited to increasing awareness of ACEs.\(^10\) While these efforts are important, they are likely not enough to foment considerable social and environmental changes that promote healthy outcomes for children. Of the few policy actions that have been attempted to address ACEs across the country, most are resolutions that reinforce state commitments
to ACEs, with no funding or mandates for implementation.\textsuperscript{10} There is an urgency to explore comprehensive state-level policy options that more effectively address ACEs through the promotion of protective factors through programs.

Public health research is more likely to influence policymaking when it is evidence-based and addresses the evidence-policy gap. Evidence-based policymaking uses research on program practices, implementation, and outcomes to determine policy strategies.\textsuperscript{11} Child-and family-serving professionals (CSFPs) play a key part in this research, given their role in program practice and implementation. In policymaking, there is also often an evidence-policy gap, which results from a lack of engagement, understanding and evidence from policymakers about the issue at hand.\textsuperscript{12,13} To develop evidence-based recommendations that address this gap, it is essential to understand the perspectives of those \textit{who are implementing} and those \textit{who are creating} policies and programs. CFSPs can provide insight on the practicality and effectiveness of ACE policies and programs, including barriers to implementation and opportunities for innovation. State policymakers can speak to the feasibility of designing policies and programs to prevent and mitigate ACEs. The combination of these perspectives could result in practical recommendations that are more likely to be supported and adopted in real-world policy change.

The goal of this study was to qualitatively explore CFSP and state policymaker perspectives on factors that are important for preventing and helping children cope with ACEs in South Carolina, as well as the ways in which these factors can be supported through policy and program efforts.
METHODS

Setting

South Carolina is uniquely positioned to provide insight on next steps for public health efforts to address ACEs through its statewide ACE initiative, which focuses on data dissemination, training, coalition building, and policy advocacy to prevent ACEs. States such as Maryland, Virginia, North Carolina and Georgia have used South Carolina’s efforts as a model for their work. Thus, South Carolina was an appropriate setting for this study.

Participants

A sample of 47 CFSPs (n=23) and state policymakers (n=24) in South Carolina participated in this study. CFSPs were defined as individuals aged 18 and older who had experience providing direct services to children and families in the state for at least five years. Professionals with direct ties to academia or research were excluded. Policymakers were defined as members of the 2018 South Carolina General Assembly who had served at least one term.

This study used maximum variation sampling to ensure that diverse public health program and policy perspectives were captured. Efforts were made to have variation in sector, experience, political affiliation, region, gender, and race. Participants were recruited through existing relationships with Children’s Trust of South Carolina, a statewide agency focused on the prevention of child abuse and neglect. Each CFSP was offered a $25 gift card as a post-incentive for participating in the study. Due to ethical restrictions, policymakers were not offered an incentive. We agreed to share the results of
the study in the form of policy brief with all participants after data analyses were complete.

**Interview Guide**

The Multiple Streams Theory served as the framework for the discussion guide. It has been applied to many different disciplines, including public health (Clarke, Swinburn, & Sacks, 2016; Craig, Felix, Walker, & Phillips, 2010; Milton & Grix, 2015; Walhart, 2013). The Multiple Streams Theory centers around conceptualizing the policymaking process. It suggests that a public policy agenda is set through the interaction of three components, or “streams” (the problem stream, the policy stream, and the politics stream) to create window of opportunity or “policy window” for policymaking (Cairney & Jones, 2016). These components helped inform the development open-ended questions asking about the ways in which children can be protected from ACEs and what policies and programs can address ACEs.

**Procedure**

Data were collected through in-depth, semi-structured interviews. Interview guides for both CFSPs and state policymakers were pretested in three focus groups with five CFSPs and four policy advocates that were not associated with the study. The CFSP and policymaker interview guides contained the same content and formatting; however, the wording of selected questions was tailored to each participant’s role in the policymaking process.
All interviews were conducted face-to-face and audio-recorded. The interviews lasted around 45 minutes for CFSPs and 55 minutes for policymakers. All study procedures were reviewed by the [IRB BLINDED FOR REVIEW].

Analysis

Interview recordings were professionally transcribed and reviewed by the researchers for accuracy. Dedoose Version 8.0.35 (Socio-cultural Consultants, Los Angeles, CA) was used to organize and code the data. The data were analyzed using a grounded theory approach.\textsuperscript{16} The research team (AUTHOR INITIALS BLINDED) engaged in initial, focused, and theoretical coding, which are key components of a grounded theory analysis approach.\textsuperscript{17} Initial coding was conducted by examining the interviews by participant type and developing descriptive labels for larger themes, which were used to create a preliminary codebook. As we began coding all the interviews, evolving categories and new subcategories were created. To integrate these subcategories within the initial codes, focused coding was used to compare data from one participant type to existing codes from the other participant type to determine which codes could serve as a conceptual core for the emerging theory.\textsuperscript{16–18} To develop the overarching themes of the study, the research team met and discussed the focused codes to determine how the most substantive codes related to each other as hypotheses and could be integrated as a theory.\textsuperscript{17} Throughout the coding process and its various phases, we used constant comparative analysis to help ensure that the coding process included the back and forth comparisons of categories to identify similarities and differences.\textsuperscript{17} A summary of overarching themes and their accompanying excerpts were discussed with research team members (INITIALS BLINDED) before they were finalized.
RESULTS

As shown in Table 4.8, both groups had considerable variation in their experience, role/sector, political affiliation and region served. The majority of CFSPs were White (69.9%) and female (87.0%), while policymakers were majority White (75%) and male (70.8%). Several cross-cutting themes emerged from the data, which are grouped under three overarching topics: 1) the role of state-level policy efforts; 2) factors that are most important to protecting children from ACEs; and 3) policy and program recommendations that promote the identified protective factors to address ACEs.

The Role of State-Level Policy Efforts

The role of government in addressing ACEs was an unexpected theme that arose within participant discussions. Specifically, both groups shared perspectives that commented on the extent to which the state government should be involved in public health issues and the extent to which the state government can prevent ACEs (Table 4.9).

Government Involvement

CFSPs and policymakers had differing perspectives on the extent to state government has a responsibility to address ACEs. The majority of CFSPs shared the sentiment that “it takes a village” to ensure children and families’ well-being and that government was an important component of this approach. It should be noted that some CFSPs were uncertain about the ability of “top-down” state approaches to be effective for children and families and several CFSPs working in the child welfare system commented that there needs to be an understanding that the state cannot “solve it all.”
In contrast, policymakers appeared to be divided by political party alignment on the role of state-level policy and programs. Comments by Republican policymakers tended to support a limited role for the government and focused more on the importance of individual responsibility and will to succeed, regardless of one’s background. Democrat policymakers reported that the government should be more involved in ensuring children have the supports they need. Regardless of political affiliation, all policymakers commented that community-based organizations should be key partners with the state government to provide tailored solutions to addressing ACEs.

**Prevention vs. Treatment**

Most CFSPs commented on the importance of secondary and tertiary prevention of ACEs by building resilience to adversity that has already occurred. Only CFSPs working in health care discussed the primary prevention of ACEs.

While all policymakers commented on the benefits of primary prevention, its feasibility was divided down party lines. Most Republican policymakers pointed to the role of family culture and dynamics in influencing ACEs, reporting that it was difficult to influence what happens “in the home.” Thus, they recommended that the state focus on responding to ACEs that have already occurred. Several Democrat policymakers commented that preventing ACEs was possible, but that it would take time, significant investment, and political will to address complex issues such as poverty, health disparities, education, and community development.
Protecting Children from ACEs

Three factors emerged in participants’ comments about ways to protect child health and well-being: 1) loving, consistent, and nurturing relationships; 2) a safe home environment; and 3) opportunities for families to thrive (Table 4.10).

Loving, Consistent, and Nurturing Relationships

Many participants noted that resilience was a quality that can be built over time, as opposed to an innate characteristic. A majority of CFSPs and policymakers shared stories of children they knew who had “beat the odds” and pointed to a caring adult in their life being a major influence on their ability to succeed. CFSPs in mental health/counseling remarked on the significance of these relationships providing the ability for children to develop self-regulation and self-efficacy. CFSPs within the education and youth development sectors specifically pointed out the importance of consistency and structure within these relationships. Most policymakers stated the importance of love and support between a parent and child. One policymaker also mentioned these relationships being important between a child and a direct service provider (e.g., a Department of Social Services case worker).

Safe Home Environment

This protective factor developed from participant discussions about the major role of the home environment in influencing exposure to ACEs. Many CFSPs, particularly those who worked with both children and parents, noted the necessity of breaking cycles of adversity by helping parents understand their own childhoods to promote positive parenting in the home.
Building on the discussions about the role of government, many policymakers emphasized that preventing ACEs must start in the home. All policymakers involved with child welfare issues talked about the importance of promoting healthy family practices such as car seat safety, safe sleep, reading with children, or having family dinners together. All female policymakers discussed the need to eliminate exposure to violence in the home and noted that South Carolina has one of the highest rates of violence against women in the U.S. Many Republican policymakers emphasized that safe home environments are more likely to exist within two-parent households, pointing to the economic benefits and likelihood of reduced stress due to single parenting.

**Opportunities to Thrive**

This protective factor stemmed from participant discussions about the connection between poverty and ACE exposure and the sentiment that every child, regardless of their socio-economic status, should have the opportunity to succeed or “thrive.”

A majority of CFSPs suggested poverty as something that can exacerbate the effects of ACEs. Several CFSPs in education and mental health shared examples of children from higher-income families that had experienced ACEs but had greater access to supports and services that children from lower-income families. Almost all policymakers, regardless of gender, experience or political affiliation, associated ACEs with poverty. Only two policymakers recognized that ACEs can happen in any family, regardless of socio-economic status.

While all participants touched on adequate housing, transportation, and food security as the minimum for all children to thrive, the concept of opportunities had a
range of definitions. Most CFSPs providing community-based and mental health services mentioned the importance of accessible and affordable health care, while CFSPs in education commented on increasing access to quality education. Most policymakers largely discussed opportunities related to increasing income and employment options for parents to ensure their children’s needs are met. All Black policymakers said that it was important to provide equity in opportunity for families, pointing to many existing racial inequities in the state.

**Policy and Program Recommendations that Promote Identified Protective Factors**

CFSPs and policymakers presented a wide range of policy and program options to build resilience and protect children from ACEs (Table 4.11). These suggestions aligned closely with the three protective factors that emerged above and are presented below within each identified factor.

**Loving, Consistent, and Nurturing Relationships**

*Youth Development Programs*

Participants were agreement youth development programs are important to promoting nurturing relationships. Several CFSPs and policymakers provided examples of several existing efforts in South Carolina that they thought had been successful in creating positive relationships for children, including school-based mental health services, after-school engagement programs, and faith-based mentoring programs. Many CFSPs recommended additional state investments to sustain and expand the accessibility of these services beyond high-risk populations. Most policymakers suggested that the state continue to support community-based mentoring programs, specifically in after-school and faith-based settings.
Compassionate Education System

All CFSPs in education recommended expanding the number of support staff, specifically mental health clinicians and social workers. Similarly, most CFSPs in juvenile justice suggested increasing the number of school safety officers to reduce “the school to prison pipeline.” Many policymakers expressed a need for the education system to address ACEs, but these participants cautioned that teachers are already overburdened, supporting the idea that support staff (e.g., social workers, counselors) within schools should be expanded. Several policymakers also recommended that schools be used as a setting to provide other types of family resources, such as quality after-school child care and parenting education.

Supportive and Responsive Child Welfare System

All CFSPs in the child welfare system suggested more evidence-based training/certification requirements for social workers to respond to ACEs, higher pay to incentivize recruitment and retention of high-quality CFSPs, and lower caseloads. A few CFSPs working in and with child welfare suggested that more support networks be created for youth, particularly those transitioning out of foster care or dealing with substance abuse in the home. All policymakers in both political parties shared their concern about the capacities and capabilities of the child welfare system. They pointed to the recent creation of the Office of the Child Advocate\textsuperscript{19} as a policy approach for improving the responsiveness of the child welfare system. Both Republican and Democrat policymakers commented on the importance of the development of policies to ensure more continuity of care for a child of the state, such a better trained child welfare
workforce, finding more high-quality foster parents, and increase the quality of group homes.

**Safe Home Environment**

*Evidence-Based Parenting Programs*

Most CFSPs working to provide community-based resources shared examples of evidence-based parenting programs such as Triple P and Strengthening Families Program as examples of effective options for addressing intergenerational trauma and promoting positive environments in the home. These participants suggested that these programs be made available to more communities across South Carolina through more investments from the state. On the other hand, several policymakers touted the success of Nurse Family Partnership, an evidence-based home visiting program, in helping new parents build positive home environments and suggested that this model should be expanded so that they are available as an option to all first-time parents.

**ACEs Screening in Health Care**

All CFSPs in health care and mental health emphasized that the healthcare sector should be address ACEs in well-child visits. Some recommended that all primary care providers educate and screen for ACEs. Other CFSPs recommended that medical providers connect parents/caregivers with community resources (e.g., parent support groups, counseling, access to transportation) during well-child visits. Many also pointed out that current medical education curricula do not require learning about ACEs and suggested that all medical providers in the state be mandated to complete training on the role of health care in responding to ACEs.

**Child Safety and Unintentional Injury Prevention**
All policymakers that had previous experience with child issues shared specific examples of policies in South Carolina that were implemented to promote safe home environments, such as a recent child passenger safety amendment, a law focused on educating parents about safe sleep in hospitals, and a law that increases penalties for acts of domestic violence. They all also commented that more should be done to support safe home environments but were unsure how. Three Democrat policymakers also emphasized the need for better gun safety in the home.

**Opportunities to Thrive**

*Access to quality health care*

Most CFSPs across sectors expressed concern about the access to affordable, high-quality healthcare and suggested the development of “one-stop shops” in every community where children and families could get the health services and community supports they need. All Democrat policymakers supported the expansion of Medicaid as a way to help some of the most impoverished families receive preventative care to ensure that ACEs are “caught early.”

*Trauma-responsive criminal justice system*

The majority of CFSPs in juvenile justice and child welfare emphasized the importance of reforming the justice system through policies that promoted reunification of mothers and their children, as well as re-entry programs that provided stable employment opportunities for those who have a history of incarceration. Some recommended that diversion programs for youth continue and be expanded to all regions of the state. A few Black policymakers talked about the disproportionate incarceration of...
Black fathers in the state and mentioned the importance of addressing these disparities by reforming sentencing and employment laws (e.g., “ban the box”).

**Economic opportunities and supports for families**

All policymakers talked about the importance of creating more work opportunities, continuing education programs, and access to quality, affordable childcare options (e.g., tax credits) to help increase income among parents. The majority of policymakers also talked about the importance of workforce readiness programs for single parents and suggested expanding pre-kindergarten options to provide flexibility for parents to work while promoting positive early childhood development.

**Data-sharing across systems**

Some CFSPs and policymakers expressed interest in sharing more data across systems to provide better and more consistent services and to evaluate the impact of programs. A few CFSPs in child welfare talked about the importance of data sharing across different sectors (e.g., social services, foster care) to provide a holistic and consistent services to children in their care. Several policymakers, however, discussed data sharing for understanding processes and impact of state policies and programs. Several policymakers voiced concern that many innovative approaches have been adopted in South Carolina without the ability to measure their long-term benefits.

**DISCUSSION & POLICY IMPLICATIONS**

This study revealed important evidence that may influence implementation of policies and programs. The first is that there is a varying degree of agreement on the extent to which the state government should be involved in public health issues. When ACE advocates promote government intervention, these findings indicate that they may
need to first need to convey the known impact and significant role that the state can play in implementing policies and programs\textsuperscript{4,8} to increase buy-in, especially from conservative policymakers. Secondly, while participants conveyed a strong understanding that ACEs prevention is important, few seemed to think of prevention as currently feasible through policies and programs. These results indicate that advocates may need to further education on the known positive impact of upstream policies\textsuperscript{3,7,8}.

Our results also suggest that participating CFSPs and policymakers had a general understanding of the importance of promoting protective factors and consistent with the literature, could identify ways in which a cross-sector and systems approach can play a role in building resilience to address ACEs. It should be noted that participants in this study did not have previous knowledge of protective factors literature. The first two protective factors that emerged in our data align with those already identified in the existing public health literature: safe, stable, and nurturing relationships and positive environments.\textsuperscript{23,24} While the development of the third protective factor in the data suggests that participants understood the influence of social determinants of health\textsuperscript{7} it also suggests that CFSPs and policymakers largely associated ACEs with poverty. Although there is evidence to suggest that poverty exacerbates the effects of ACEs\textsuperscript{25} most literature indicates that ACEs are common across socio-economic groups.\textsuperscript{26} Findings indicate that there is a need to focus research efforts on the benefits of implementing ACE policies and programs across populations to not only demonstrate their potential population level impact but to help de-stigmatize childhood adversity.\textsuperscript{26}

CFSPs presented several recommendations that build upon existing child- and family-serving systems and programs, most of which have also been suggested in
existing literature. This suggests that advocacy efforts could continue to promote these state-level policies and programs, pointing to both to existing research and practice perspectives captured by this study. Bi-partisan policy and program recommendations presented by policymakers focused on supporting existing community efforts (e.g., mentoring programs, parenting programs), improving the education and child-welfare systems, child safety/unintentional injury prevention, and providing more economic opportunities for families. Many of these recommendations were new and have not been touched on in existing literature. Advocates could consider these recommendations as a starting point for addressing ACEs through policymaking.

Finally, the differing perspectives that were observed among some CFSPs and policymakers in this study are aligned with previous evidence suggesting that political ideologies and values play a role in shaping policy and program options. Future studies are needed to examine whether framing ACEs-related recommendations in a way that appeals to differing political values increases their likelihood of being supported by policymakers. Researchers should also consider studying the most effective advocacy techniques for ACEs, including understanding barriers and opportunities to policymaking around this topic.

This is the first study that we know of to explore program and policy perspectives to address ACEs among CFSPs and state policymakers. This study has some limitations that should be considered. First, the study sample was limited in diversity specifically in terms of all the participants being in South Carolina; future research may benefit from examining these stakeholders’ perspectives in other states, which can provide unique insight. Additionally, it is possible that policymakers who participated in this study had a
stronger interest in children’s issues than those who refused to participate. Thus, this study may not have adequately captured the perspectives of policymakers with less knowledge of ACEs but who also influence the development of ACEs-related policy and programs. Nevertheless, this study can serve as a foundation for research with other populations and in other regions, and its recommendations can be useful for a wide variety of public health researchers and advocates as ACEs continue to garner visibility as a root cause of preventable behaviors and disease.
Table 4.8 Demographic Characteristics of Child- and Family-Serving Professionals and State Policymakers (n=47)

<table>
<thead>
<tr>
<th></th>
<th>Child- and Family-Serving Professionals (n = 23)</th>
<th>State Policymakers (n = 24)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Years of Experience</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5</td>
<td>0</td>
<td>6 (25.0%)</td>
</tr>
<tr>
<td>5-10</td>
<td>6 (26.1%)</td>
<td>6 (25.0%)</td>
</tr>
<tr>
<td>11-19</td>
<td>9 (39.1%)</td>
<td>7 (29.2%)</td>
</tr>
<tr>
<td>20+</td>
<td>8 (34.8%)</td>
<td>5 (20.8%)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>3 (13.7%)</td>
<td>17 (70.8%)</td>
</tr>
<tr>
<td>Female</td>
<td>20 (87.0%)</td>
<td>7 (29.2%)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>16 (69.6%)</td>
<td>18 (75.0%)</td>
</tr>
<tr>
<td>Black</td>
<td>5 (21.7%)</td>
<td>6 (25.0%)</td>
</tr>
<tr>
<td>Other</td>
<td>2 (8.7%)</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Region Served</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upstate (North)</td>
<td>10 (43.5%)</td>
<td>11 (45.8%)</td>
</tr>
<tr>
<td>Midlands (Central)</td>
<td>5 (21.7%)</td>
<td>6 (25.0%)</td>
</tr>
<tr>
<td>Lowcountry (South)</td>
<td>1 (4.3%)</td>
<td>5 (20.8%)</td>
</tr>
<tr>
<td>PeeDee (East)</td>
<td>1 (4.3%)</td>
<td>2 (8.3%)</td>
</tr>
<tr>
<td>Statewide</td>
<td>6 (26.1%)</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Role</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>House of Representatives</td>
<td>N/A</td>
<td>14 (58.3%)</td>
</tr>
<tr>
<td>Senate</td>
<td>N/A</td>
<td>10 (41.7%)</td>
</tr>
<tr>
<td><strong>Political Affiliation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Democrat</td>
<td>N/A</td>
<td>10 (41.7%)</td>
</tr>
<tr>
<td>Republican</td>
<td>N/A</td>
<td>14 (58.3%)</td>
</tr>
<tr>
<td><strong>Sector</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child welfare</td>
<td>4 (17.4%)</td>
<td></td>
</tr>
<tr>
<td>(social services and foster care)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care</td>
<td>3 (13.0%)</td>
<td></td>
</tr>
<tr>
<td>Community-based services</td>
<td>4 (17.4%)</td>
<td></td>
</tr>
<tr>
<td>(e.g. housing, family resources, parent educator)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>3 (13.0%)</td>
<td></td>
</tr>
<tr>
<td>Mental health/counseling</td>
<td>4 (17.4%)</td>
<td></td>
</tr>
<tr>
<td>Domestic violence prevention</td>
<td>1 (4.3%)</td>
<td></td>
</tr>
<tr>
<td>Substance use prevention</td>
<td>1 (4.3%)</td>
<td></td>
</tr>
<tr>
<td>Child and youth development</td>
<td>3 (13.0%)</td>
<td></td>
</tr>
<tr>
<td>Juvenile justice</td>
<td>1 (4.3%)</td>
<td></td>
</tr>
<tr>
<td>Theme</td>
<td>Subtheme</td>
<td>Sample Comments</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Government Involvement</td>
<td>It takes a village</td>
<td>CFSP: &quot;Well, to me, it's a systems approach, it's not a 'this is their problem'... It's a 'we' problem. Parents, medical providers, child-serving professionals, educators, legislators, we all have to work together.&quot;</td>
</tr>
<tr>
<td></td>
<td>The government can't do it all</td>
<td>CFSP: “One of the biggest things I just like to remind people is that we have to stop shifting the blame. We have to stop putting the blame on the governmental organizations... At this point in my career, that's the biggest takeaway that I want to be heard.”</td>
</tr>
<tr>
<td>Role of government</td>
<td></td>
<td>Policymaker: ‘From the state level, I think we need to go back and look at every one of our policies and make sure that they are strengthened to be able to support kids...”</td>
</tr>
<tr>
<td>Prevention vs. Treatment</td>
<td>Primary prevention is important</td>
<td>Policymaker: “An ounce of prevention's worth ten metric tons of cure. Getting this right on the front end will yield multi-generational dividends on the back end. Not only for the state government's fiscal health, but also in terms of the supply and quality of human capital.”</td>
</tr>
<tr>
<td></td>
<td>Primary prevention may not be</td>
<td>Policymaker: “On the actual abuse of the children side...I think those are the ones where the state should directly intervene...If a child is sexually abused, that child's going to get treatment. The parents are going to get appropriately punished, or the perpetrator gets punished. There's going to be training in all sorts of other stuff. I think the state should focus on protecting the kids from the trauma to the kid.”</td>
</tr>
<tr>
<td>Protective Factor</td>
<td>Sample Comments</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Loving, Consistent, and Nurturing</td>
<td>CFSP: “(Children) need consistency. They need structure. They need nurturing.” Polymaker: “Love and support. I think the security that comes from being in a loving, nurturing environment produces a foundation that can then survive or be resilient to other negative factors.”</td>
<td></td>
</tr>
<tr>
<td>Safe Home Environment</td>
<td>CFSP: “I think ACEs directly affect how we get wired, biologically. I think there’s a direct impact on our ability to parent and also, the way that we parent is directly related to maybe events that have happened in childhood and how we’ve learned to respond and cope.” Polymaker: “Ideally, every child in the state would come from a two-parent home and at home have a stable home life...an environment which the child is learning to read and feels cared for”</td>
<td></td>
</tr>
<tr>
<td>Opportunities to Thrive</td>
<td>CFSP: “Basic safety needs, like enough food, adequate shelter, free from real fear and living in that. I think that’s really important, and those opportunities come in lots of different ways. I think that contributes to them being happy and healthy.” Polymaker: “I just want to see parents to be able to have jobs and those jobs are fulfilling their needs, which means that they are able to fulfill their children's needs.”</td>
<td></td>
</tr>
<tr>
<td>Protective Factor</td>
<td>Suggested Approaches</td>
<td>Sample Comments</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Loving, Consistent, and Nurturing Relationships | • Increase state funding for mentoring programs in after-school and faith-based settings  
• Expand the education system workforce by hiring more support staff and increasing pay for teachers  
• Use schools as a setting to provide family services such as health care, child care, and continuing education  
• Improve child welfare by creating accountability for responding appropriately to cases of child abuse and neglect  
• Expand the child welfare workforce by recruiting high quality professionals  
• Invest in higher quality group homes and foster care options | CFSP: “(The child welfare system) need(s) better organization. They need better communication, better training, better ability to recruit people, and to maintain staff because I see so much turnover.”  
Policymaker: “The school system is set up to be that place where we're helping the kids and the parents... So, it would make sense if we have all those schools as a resource...” |
Safe Home Environment

- Invest in evidence-based parenting programs that encourage positive parent-child interactions
- Provide universal home visiting for all first-time parents
- Screen and support coping with ACEs in child well visits
- Develop laws that prevent child injury and exposure to violence in the home

CFSP: “It would be a home visiting program…so when someone has a baby for the first time and [it is] able to ensure that they’re practicing safe sleep and that they’re not abusing substances and they’re not leaving the child unprotected on the couch or that they’re not abusing marijuana or alcohol, making sure they know how to properly feed and change a diaper.”

Policymaker: “I've passed legislation to keep parents engaged, to teach parents about domestic violence, to teach parents how to sleep with their kids. I have passed legislation to do everything. I'm trying to legislate good parenting.”

Opportunities to Thrive

- Create access to health care through one-stop shops in every community
- Expand Medicaid
- Provide workforce readiness programs for single parents
- Reform criminal justice policies to promote and encourage reunification of parents with children and work opportunities
- Create data-sharing systems across state agencies to provide quality and consistent services for children and their families

CFSP: “I do think Medicaid expansion would have been a good thing for our state, I think it still would. I think we're passing up on a lot of dollars that can be put in really good use in this state.”

Policymaker: “But it's almost like, well, we did it and we're done. We need to share data to see whether [programs and policies] implemented well to see if it has any impact.”
References


12. Cairney P, Oliver K. Evidence-based policymaking is not like evidence-based medicine, so how far should you go to bridge the divide between evidence and policy? *Health Res Policy Syst*. 2017;15. doi:10.1186/s12961-017-0192-x


CHAPTER 5

DISCUSSION & IMPLICATIONS

This study considered ACEs a to be an underlying cause of engagement in risk behaviors. It is grounded in the notion that the implementation of protective factors, or positive relationships and environments, can reduce long-term implications of ACEs. The overall goal of this research was to understand whether and how protective factors can be used as a prevention strategy for ACEs through public health policies and programs. This chapter discusses the overall findings of each study and followed by study strengths, limitations, and implications for future research.

5.1 STUDY 1

**Specific Aim #1:** To determine the relationship between ACEs and risk behaviors and identify whether potential protective factors focused on SSNRs moderate this relationship.

- Hypothesis 1a: ACEs are positively associated with two risk behaviors (smoking and alcohol abuse) in adulthood.
- Hypothesis 1b: ACEs are inversely associated with two types of potential protective factors (basic needs met, feeling safe and protected) during childhood.
- Hypothesis 1c: The association between ACEs and risk behaviors in adulthood is moderated by the potential protective factors during childhood, such that there
will be a weaker relationship between ACEs, smoking, alcohol abuse in adulthood for participants whose basic needs were met and felt safe and protected during childhood and a stronger relationship between ACEs, smoking, and alcohol abuse in adulthood for participants who did not have their basic needs met or felt safe and protected during childhood.

In Study 1, as predicted it was found that those who reported ACEs during childhood were significantly more likely to report smoking tobacco or binge drinking in adulthood than those who reported no ACEs. Additionally, we found that respondents with one or more ACE were significantly less likely to report protective factors than their counterparts with no ACEs. The moderating effects of protective factors were present for both smoking tobacco and binge drinking: specifically, the association between ACEs and risk behaviors was weakened by the presence of protective factors. This was demonstrated by the higher odds of risk behavior engagement when one or more ACEs and no protective factors were present than when protective factors were present. It should be noted that the lack of significance between risk behaviors and participants with no ACEs regardless of whether they reported protective factors indicates that protective factors in childhood alone cannot overcome risk behavior engagement, considering the extensive literature on factors that may predispose youth to smoking tobacco or drinking such as peer pressure or media influence (Andrews, Tildesley, Hops, & Li, 2002; Barrientos-Gutierrez et al., 2015; National Cancer Institute, 2012; Srivastav et al., 2018).

The findings reinforce the importance of considering ACEs as an underlying cause for the engagement in risk behaviors (Anda et al., 1999, 2002; Bynum et al., 2010). These findings also suggest that while on one hand, preventing ACEs from occurring
altogether may reduce the likelihood of engaging in smoking and drinking as adults, on the other hand, risk behavior prevention should consider providing supports for individuals with ACEs. Most importantly, this research indicates that protective factors can be considered a potential early intervention strategy for risk behavior engagement among those who have experienced childhood trauma, specifically by ensuring children have SSNRs that can help them develop resilience and healthy adulthoods, which is important knowledge not only for ACEs literature but also for the qualitative aims of this study.

Programs that provide education on parenting and child development may be especially useful to help foster positive relationships in the home with the parent or caregiver (Garner, 2013; Shonkoff & Fisher, 2013). Examples of these programs range from national home visiting programs to Positive Parenting Programs (Triple P) in local communities (Garner, 2013; Sanders, 1999). Programs that promote trauma-informed education to teachers can help provide children with a SSNR as well. Evidence suggests that buffering relationships can be with an adult that the child interacts with frequently in community settings (CDC, 2014; Martinez-Torteya, Anne Bogat, Von Eye, & Levendosky, 2009; National Scientific Council on the Developing Child, 2015; Shonkoff & Meisels, 2000). Policies that encourage positive environments in the home and in community settings such as school, churches, or neighborhoods may further reduce risk of childhood adversity (Ellis & Dietz, 2017). These policies could address the social and environmental factors that contribute to child and family well-being including child care, neighborhood safety, school discipline policies, and community-based supports (Bethell,
Newacheck, Hawes, & Halfon, 2014; Hall et al., 2012; Ko et al., 2008; Larkin, Shields, & Anda, 2012; Vanderbilt-Adriance & Shaw, 2008).

Future research should continue to explore the role of SSNRs as a moderating factor between ACEs and other behavioral risks such as the misuse of prescription drugs and alternative tobacco products, such as e-cigarettes, considering their growing prevalence amongst young adults (Goldman, 2014; Murthy, 2016; U.S. Department of Health and Human Services, 2014). Research should also examine the potential moderating role of SSNRs on the known relationship between ACEs and chronic diseases to potentially provide further insight on disease prevention strategies. Finally, future research should consider expanding the concept of protective factors within the BRFSS to examine other potentially buffering factors, specifically on a community or environmental level not only to align with the expanded conceptualization ACEs in research which include experiences outside of the home (e.g. neighborhood violence, homelessness, food insecurity) but to further knowledge on the known link between childhood experiences and socio-environmental influences (Braveman & Barclay, 2009; Cronholm et al., 2015). These efforts can continue to help inform targeted programs and policies that seek to prevent risk behaviors and their health consequences.

This research is the first to examine the relationship among ACEs, protective factors and risk behaviors using a data set representing South Carolina’s adult population. It provides innovative evidence that addresses existing gaps in knowledge about how protective factors, specifically SSNRs can mitigate the long-term effects of ACEs in adulthood. We recognize, however, that some limitations exist. First, we were restricted to examining protective factors as included the SC-BRFSS, which do not capture all the
factors that have been discussed in the ACEs literature such as being able to talk to an adult during a tough time, participate in community traditions, and/or have a nurturing place outside the home (Sege & Browne, 2017). Nevertheless, this study provides evidence to support the benefits of SSNRs, a widely touted prevention strategy for children and youth experiencing childhood adversity (CDC, 2014a).

Additionally, this study included one year of data from the SC-BRFSS, with low variation within the protective factors’ variable. This could have affected the estimates of associations between the study variables. Given the cross-sectional design and retrospective self-reported data used in this study, it is important to note that the data may be influenced by the timing of the experiences and when they were asked to be recalled (Horwitz, Widom, McLaughlin, & White, 2001; Roxburgh & MacArthur, 2014). Concerns have been expressed about possible recall bias and the sensitive nature of the topics discussed in the ACEs module (Cronholm et al., 2015). However, existing evidence on abuse and neglect suggests that when abuse or neglect is retrospectively reported, these positive reports are likely to be correct (Hardt & Rutter, 2004). Other studies suggest that if any bias occurs due to the retrospective nature of the questions, it typically leads to nonresponse, creating a downward bias for ACE prevalence estimates (Cronholm et al., 2015; Edwards et al., 2001; Hardt & Rutter, 2004). This may have led to an underestimation of ACEs, although our prevalence estimates are consistent with many other statewide representative surveys (Merrick, Ford, Ports, & Guinn, 2018).

There have been many studies conducted using the BRFSS to look at ACEs and outcomes (Crouch, Radcliff, Nelson, Strompolis, & Martin, 2018; Crouch, Radcliff, Strompolis, & Wilson, 2017, 2018; Crouch, Strompolis, Bennett, Morse, & Radcliff,
2017; Crouch, Strompolis, Radcliff, & Srivastav, 2018); however, few, if any, have
looked at potential protective factors as moderators of the relationship between ACEs and
poor health outcomes. In fact, many existing BRFSS studies have suggested a need for
measuring indicators of resilience in those affected by ACEs to understand which factors
are most effective in weakening the association with long-term health and social
outcomes (Edwards, Anda, Gu, Dube, & Felitti, 2007; Ege, Messias, Thapa, & Krain,
2015; Ford et al., 2011; Hughes et al., 2017; Hughes, Lowey, Quigg, & Bellis, 2016). The
data in this study highlight the importance of providing children with SSNRs as a way to
buffer the effects of ACEs in adulthood, which can include the engagement in risk
behaviors. The interrelatedness of ACEs (Dong et al., 2004) and the dose-response
relationship between ACEs and health outcomes (Felitti et al., 1998) suggest that
reducing exposure to ACEs can reduce engagement in adult risk behaviors. However, for
those who have experienced childhood adversity, having an adult that ensures their basic
needs are met and make them feel safe and protected may assist in mitigating to effects of
ACEs. By looking at the potential role of protective factors on the relationship between
ACEs and risk behaviors using population level data, this research provides new evidence
on the importance of protective factors for preventing the long-term health consequences
of ACEs (Bair-Merritt MH & Zuckerman B, 2016; Garner et al., 2012; Haskins &
Thompson, 2014; Sawhill & Venator, 2001; The Aspen Institute, n.d.). Using a
representative sample and appropriate analysis techniques in addition to innovative
conceptualization of protective factors strengthened this study’s findings and
implications.
5.2 STUDY 2

**Specific Aim #2:** To understand stakeholder perspectives on their knowledge and understanding of ACEs, its related concepts and how they play a role in children’s health and well-being.

- Research Question #1: What is the current knowledge and understanding among stakeholders about ACEs and its related concepts?

- Research Question #2: What factors do stakeholder identify are most important to protecting children from exposure to/mitigation of ACEs?

Study 2 examined the opportunity to address ACEs through state-level policy efforts by applying Multiple Streams Theory to understand policymakers’ knowledge and awareness of ACEs as a policy issue, their decision-making process, the political context, and potential policy windows of opportunity to pass policies on ACEs. The findings illustrate several factors, some of which that are specific to ACEs and some that can be applied to legislative efforts on a variety of public health issues.

Although research on evidence-based policymaking suggests that research plays a crucial role on the salience of an issue, (Bogenschneider & Corbett, 2011; Brownson, Chriqui, et al., 2009; Brownson, Fielding, et al., 2009), our findings suggest that terminology and framing may play a more important role for raising awareness among policymakers. Participants presented several strengths and weaknesses in terms of connotations for the terms ACEs and childhood trauma and expressed the importance of framing ACEs as a measurable and solvable public health issue. This is an especially
important finding, not only because researchers have identified a need for effective language for ACEs (Bethell, Solloway, et al., 2017), but also because current evidence is limited on ways to frame social determinants of health for policy efforts (Clarke, Niederdeppe, & Lundell, 2012; Dorfman & Wallack, 2007). This research also supports findings from previous studies, which indicate that policy options that include both anecdotal and tailored scientific evidence are more likely be considered by policymakers in their decision-making process (Apollonio & Bero, 2017; Clarke et al., 2012; Niederdeppe, Roh, & Dreisbach, 2016). However, these results bring to light a new potential challenge to evidence-based policymaking: the mistrust of data. The large number of participants that commented on their concerns of data being manipulated or of poor-quality highlights an opportunity for researchers to educate policymakers and their staff on how to identify credible data and research. This, in turn, could help develop more trusting relationships between policymakers and public health advocates, which, as consistent with existing literature (Apollonio & Bero, 2017; Bhattacharya, 2013; Bogenschneider & Corbett, 2011; Brownson, Chriqui, et al., 2009), was identified by participants as a key influence on their policy-related decision making. Notable structural factors (i.e., legislative session length, part-time role), in addition to known political factors such as ideology and political mood (Cairney, 2011; Mosier, 2013; Zahariadis, 2007), were also identified as influencing political feasibility for policymaking around ACEs and issues related to social determinants of health. This suggests that evidence-based policymaking may be most feasible not only when contextualized within a policy window (Cairney, 2011; Mosier, 2013; Zahariadis, 2007), but also when both short-term and long-term options are presented and have the potential
of benefitting a large percentage of the population with the state. Finally, this study builds on existing evidence (B. Clarke et al., 2016; Jones et al., 2015) that application of Multiple Streams Theory provides important insights on potential barriers and opportunities for public health advocates around an issue.

These results must be considered in light of some limitations. First, many participants had some prior knowledge about issues related to ACEs; therefore, this research may not fully reflect the perspectives of legislators who do not work on child issues. Additionally, while recommendations from this study can serve as a foundation for understanding state policymaking opportunities around ACEs, this study included legislators from one state. It should be noted however, that qualitative research is not intended to be generalizable (Corbin & Strauss, 2007). Nevertheless, the qualitative nature of this study provided rich insight on South Carolina state legislators’ knowledge, perspectives, and political processes, which can help strengthen communication and collaboration with researchers and policymakers on addressing ACEs.

To our knowledge, this study is the first to explore state policymakers’ perspectives on policymaking processes related to ACEs, which have received growing attention in public health research and policy (Bethell, Solloway, et al., 2017; Larkin et al., 2012). Our study provides important new insight of research translation and advocacy to encourage evidence-based policymaking specifically for ACEs while building on existing evidence about general knowledge gaps between public health researchers and legislators (Brownson, Fielding, et al., 2009; Canfield-Davis, Jain, Wattam, McMurtry, & Johnson, 2010; Dodson et al., 2015, 2013; Niederdeppe et al., 2016). These results indicate advocates should consider the connotations of “ACEs” and “childhood trauma”
when framing the issue’s urgency. Advocacy efforts should also be dedicated to explaining the long-term physical health consequences of adversity, in addition to the mental health implications. These efforts could also touch on the intergenerational implications of ACEs to highlight potential benefit ACEs polices have for both children and their families, potentially increasing interest in the issue. Finally, advocates should spend time cultivating trust with legislators and legislative staff to promote evidence-based decision making, especially using data. Future studies should consider the empirical testing of advocacy messages around ACEs to further examine the most effective ways of working with legislators on these important issues. By leveraging existing evidence on ACEs with strategically framed messages about ACEs within current and emerging policy windows, public health professionals are more likely to be successful in translating research into policy action.

5.3 STUDY 3

**Specific Aim #3:** To explore stakeholder perspectives of public health policy approaches to prevent or mitigate ACEs.

- Research Question #1: What are stakeholders’ perspectives on existing policies and programs that are preventing and mitigating ACEs?
- Research Question #2: What are stakeholders’ perspectives on policies and programs that are needed to prevent and mitigate ACEs?

Study 3 examined the perspectives of child and family-serving professionals (CFSPs) and state policymakers on protective factors to develop policy and program recommendations to address ACEs. Our findings reveal important evidence that may
influence the implementation of policies and programs. The first consideration is that there is a varying degree of agreement on the extent to which the state government should be involved in ACEs related issues. When ACE advocates promote government intervention, these findings indicate that they may need to first convey the known impact and significant role that the state can play in implementing policies and programs (Bethell, Solloway, et al., 2017; Dodson et al., 2015; Hall et al., 2012; Larkin et al., 2012) to increase buy-in, especially from conservative policymakers. Secondly, while participants conveyed a strong understanding that ACEs prevention is important, few seemed to view prevention as currently feasible through the implementation of policies and programs. These results indicate that advocates may need to highlight successful approaches that focus on primary prevention of ACEs.

These data demonstrate that CFSPs and policymakers had a general understanding of the importance of promoting protective factors that is consistent with the literature. They recognized that resilience can be built through relationships and experiences (Ellis & Dietz, 2017; Ungar, 2011a; Vanderbilt-Adriance & Shaw, 2008) and could identify ways in which a cross-sector and systems approach can play a role in building resilience to address ACEs (Bethell, Solloway, et al., 2017; Leitch, 2017). It should be noted that participants in this study did not have previous knowledge of the protective factors literature. The first two protective factors that emerged in our data align with those already identified in the existing public health literature: SSNRs and positive environments (Crouch, Radcliff, Strompolis, & Srivastav, 2018; Jaffee et al., 2013; Schofield et al., 2013). While the development of the third protective factor in the data suggests that participants understood the influence of SDH on health outcomes.
Braveman & Barclay, 2009; Braveman, Egerter, & Williams, 2011; Braveman & Gottlieb, 2014), it also proposes that CFSPs and policymakers largely associated ACEs with poverty. Although there is evidence to suggest that poverty exacerbates the effects of ACEs (Bruner, 2017; Nurius, Logan-Greene, & Green, 2012), most literature indicates that ACEs are common across socio-economic groups (Vincent J. Felitti et al., 1998; Nurius et al., 2012). These findings indicate that there is a need to focus research efforts on the benefits of implementing ACE policies and programs across populations to not only demonstrate their potential population level impact but also to help de-stigmatize childhood adversity (Bruner, 2017; Friedman, Keane, & Resick, 2007; Nurius et al., 2012).

CFSPs presented several recommendations that build upon existing child- and family-serving systems and programs (e.g., expanding child welfare workforce, integrating ACEs in well-child visits, universal parenting programs), most of which have also been suggested in the existing literature (Bethell, Solloway, et al., 2017; Bowen & Murshid, 2016; Garner, 2013; Hall et al., 2012; Leitch, 2017). These findings further build an evidence-base for policies that have been recommended in the research by demonstrating that these policies may be practically feasible. Bipartisan policy and program recommendations presented by policymakers focused on supporting existing community efforts (e.g., mentoring programs, parenting programs), improving the education and child-welfare systems, child safety/unintentional injury prevention, and providing more economic opportunities for families. Many of these recommendations have not been touched on in the existing literature (Bethell, Solloway, et al., 2017; Bowen & Murshid, 2016; Garner, 2013; Hall et al., 2012; Leitch, 2017). Researchers may
want to consider further exploring the effectiveness of these recommendations, while advocates could use recommendations as a starting point for developing their legislative strategy.

Finally, the differing perspectives that were observed among some CFSPs and policymakers in this study are aligned with previous evidence suggesting that political ideologies and values play a role in shaping policy and program options (Brewer & Gross, 2005; Gross, 2008; Rothman & Salovey, 1997). Future studies are needed to examine whether framing ACEs-related recommendations in a way that appeals to differing political values increases their likelihood of being supported by policymakers. Researchers should also consider studying the most effective advocacy techniques for ACEs, including understanding barriers and opportunities to policymaking around this topic.

This is the first research to focus on program and policy perspectives to address ACEs among CFSPs and state policymakers. The perspectives of these stakeholders are likely to result in solutions that are effective, politically feasible, and consider the contexts associated with policy and program practices. Such solutions are greatly needed as the research on ACEs continues to grow and highlight its role across the lifespan. This study has some limitations that should be considered. First, the study sample was limited in diversity specifically in terms of all the participants being in South Carolina; future research may benefit from examining these stakeholders in other states, which can provide unique insight. Additionally, it is possible that policymakers who participated in this study had a stronger interest in children’s issues than those who refused to participate. Thus, this study may not have adequately captured the perspectives of
legislators with less knowledge of ACEs but who also influence the development of ACEs-related policy and programs. Nevertheless, this study can serve as a foundation for research with other populations and in other regions, and its recommendations can be useful for a wide variety of public health researchers and advocates as ACEs continue to garner visibility as a root cause of preventable behaviors and disease.

5.4 OVERALL CONCLUSION

This dissertation research is among the first to empirically examine potential protective factors through the BRFSS in the American South. There have been many studies conducted using the BRFSS to look at ACEs and outcomes (Crouch, Radcliff, Nelson, Strompolis, & Martin, 2018; Crouch, Radcliff, Strompolis, & Wilson, 2017, 2018; Crouch, Strompolis, Bennett, Morse, & Radcliff, 2017; Crouch, Strompolis, Radcliff, & Srivastav, 2018), however, few, if any, have looked at potential protective factors as moderators of the relationship between ACEs and poor health outcomes. In fact, many existing BRFSS studies have suggested a need for measuring indicators of resilience in those affected by ACEs to understand which factors are most effective in weakening the association with long-term health and social outcomes (Edwards, Anda, Gu, Dube, & Felitti, 2007; Ege, Messias, Thapa, & Krain, 2015; Ford et al., 2011; Hughes et al., 2017; Hughes, Lowey, Quigg, & Bellis, 2016).

Additionally, this dissertation research is the first to explore policy and program solutions using the perspectives of child-serving stakeholders and state policymakers. Considering the obstacles associated with translating research into policy, which can range from political context (Feldman, 1988), to lack of communication amongst researchers and policymakers (Brownson, Royer, Ewing, & McBride, 2006), it is not
surprising that few ACE related policies have been enacted on the state level (Prewitt, 2017). This research provides valuable insight on the complex policymaking process and how public health researchers can more effectively advocate about the importance of preventing ACEs through policy approaches. In conclusion, this dissertation research makes a significant and innovative contribution to the literature focusing on social determinants of health, ACEs, and risk behaviors. It not only produces important evidence on how SSNRs can be considered protective factors against ACEs, but it also provides insight on feasible policy and program options that can address ACEs as a root case of risk behaviors by promoting protective factors to help all children thrive in South Carolina.
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APPENDIX A

SC-BRFSS QUESTIONS

2016 Adverse Childhood Experiences Module

Prologue: I'd like to ask you some questions about events that happened during your childhood. This information will allow us to better understand problems that may occur early in life, and may help others in the future. This is a sensitive topic and some people may feel uncomfortable with these questions. At the end of this section, I will give you a phone number for an organization that can provide information and referral for these issues. Please keep in mind that you can ask me to skip any question you do not want to answer. All questions refer to the time period before you were 18 years of age. Now, looking back before you were 18 years of age.

1) Did you live with anyone who was depressed, mentally ill, or suicidal?

2) Did you live with anyone who was a problem drinker or alcoholic?

3) Did you live with anyone who used illegal street drugs or who abused prescription medications?

4) Did you live with anyone who served time or was sentenced to serve time in a prison, jail, or other correctional facility?

5) Were your parents separated or divorced?

6) How often did your parents or adults in your home ever slap, hit, kick, punch or beat each other up?
7) Before age 18, how often did a parent or adult in your home ever hit, beat, kick, or physically hurt you in any way? Do not include spanking. Would you say—

8) How often did a parent or adult in your home ever swear at you, insult you, or put you down?

9) How often did anyone at least 5 years older than you or an adult, ever touch you sexually?

10) How often did anyone at least 5 years older than you or an adult, try to make you touch sexually?

11) How often did anyone at least 5 years older than you or an adult, force you to have sex?

<table>
<thead>
<tr>
<th>Questions 1-4</th>
<th>Question 5</th>
<th>Questions 6-11</th>
</tr>
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<tbody>
<tr>
<td>1=Yes</td>
<td>1=Yes 2=No</td>
<td>1=Never</td>
</tr>
<tr>
<td>2=No</td>
<td>8=Parents not married</td>
<td>2=Once</td>
</tr>
<tr>
<td>7=Don’t Know/Not Sure</td>
<td>7=Don’t Know/Not Sure</td>
<td>3=More than once</td>
</tr>
<tr>
<td>9=Refused</td>
<td>9=Refused</td>
<td>7=Don’t Know/Not Sure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9=Refuse</td>
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</table>
2016 Protective Factors Questions

For how much of your childhood was there an adult in your household who made you feel safe and protected? Would you say never, a little of the time, some of the time, most of the time, or all of the time? (NOTE: OK TO PROBE. THIS COULD BE ANY ADULT IN THE HOUSEHOLD, NOT JUST A PARENT.)

1 = NEVER
2 = A LITTLE OF THE TIME
3 = SOME OF THE TIME
4 = MOST OF THE TIME
5 = ALL OF THE TIME
7 = DON’T KNOW
9 = REFUSED

For how much of your childhood was there an adult in your household who tried hard to make sure your basic needs were met? Would you say never, a little of the time, some of the time, most of the time, or all of the time? (NOTE: OK TO PROBE. THIS COULD BE ANY ADULT IN THE HOUSEHOLD, NOT JUST A PARENT. BASIC NEEDS ARE FOOD, CLOTHING, HOUSING, & MEDICAL CARE.)

1 = NEVER
2 = A LITTLE OF THE TIME
3 = SOME OF THE TIME
4 = MOST OF THE TIME
5 = ALL OF THE TIME
7 = DON’T KNOW
9 = REFUSED

2016 Risk Behaviors Questions

Section 9. Tobacco Use

9.1 Have you smoked at least 100 cigarettes in your entire life?

(193) INTERVIEWER NOTE: “For cigarettes, do not include: electronic cigarettes (e-cigarettes, NJOY, Bluetip), herbal cigarettes, cigars, cigarillos, little cigars, pipes, bidis, kretek, water pipes (hookahs) or marijuana.”

NOTE: 5 packs = 100 cigarettes

• 1 Yes
• 2 No [Go to Q9.5]
• 7 Don’t know / Not sure [Go to Q9.5]
• 9 Refused [Go to Q9.5]

9.2 Do you now smoke cigarettes every day, some days, or not at all?

• 1 Every day
• 2 Some days
• 3 Not at all [Go to Q9.4]
• 7 Don’t know / Not sure [Go to Q9.5]
• 9 Refused [Go to Q9.5]

9.4 How long has it been since you last smoked a cigarette, even one or two puffs?

• 1 Within the past month (less than 1 month ago)
• 2 Within the past 3 months (1 month but less than 3 months ago)
• 3 Within the past 6 months (3 months but less than 6 months ago)
• 4 Within the past year (6 months but less than 1 year ago)
• 5 Within the past 5 years (1 year but less than 5 years ago)
• 6 Within the past 10 years (5 years but less than 10 years ago)
• 7 10 years or more
• 8 Never smoked regularly
• 7 7 Don’t know / Not sure
• 9 9 Refused

Section 11. Alcohol Consumption

11.1 During the past 30 days, how many days per week or per month did you have at least one drink of any alcoholic beverage such as beer, wine, a malt beverage or liquor?
  • 1 __ Days per week
  • 2 __ Days in past 30 days
  • 8 8 8 No drinks in past 30 days [Go to next section]
  • 7 7 7 Don’t know / Not sure [Go to next section]
  • 9 9 9 Refused [Go to next section]

11.2 One drink is equivalent to a 12-ounce beer, a 5-ounce glass of wine, or a drink with one shot of liquor. During the past 30 days, on the days when you drank, about how many drinks did you drink on the average? NOTE: A 40 ounce beer would count as 3 drinks, or a cocktail drink with 2 shots would count as 2 drinks.
  • __ Number of drinks
  • 7 7 Don’t know / Not sure
• 9 9 Refused

11.3 Considering all types of alcoholic beverages, how many times during the past 30 days did you have X [CATI X = 5 for men, X = 4 for women] or more drinks on an occasion?

• 88 None

• 77 Don’t know / Not sure

• 99 Refused

11.4 During the past 30 days, what is the largest number of drinks you had on any occasion?

• 77 Don’t know / Not sure

• 99 Refused

Adapted from:

https://www.cdc.gov/brfss/questionnaires/pdfques/2016_brfss_questionnaire_final
APPENDIX B

INTERVIEW PROTOCOLS

Interview Guide: Child-and Family-Serving Professionals

The purpose of this study is to understand the ways in which we can help South Carolina’s children succeed. We want to hear your experiences, stories, and insight. Do you have any questions before we get started? I am turning on the recorder now.

1. I would like to start off by hearing a little about your work with children and families as child-serving professional. Can you briefly describe some of the work you’ve done pertaining to children and families?

2. What are the top three children’s issues that are most important to you?
   i. Why do you think these issues are so important?

3. Let’s talk a little more about the topics you mentioned. How do you educate yourself on children’s issue?
   - Are there people you turn to for information? If so, who?
   - What kind of data or research do you use?
   - How do you determine what types of information are trustworthy?
   - What types of information do you consider credible?
     i. [if stuck] Give me an example of something you recently used or someone you recently turned to help inform your decision about an issue.

4. As you know, this interview is about adverse childhood experiences. Many people have not heard of this term. Have you heard of this term before? [if hesitant] it is okay if you have not
   - [If yes:] In your own words, what does the term “adverse childhood experiences” mean to you?
     i. Can you give me some examples of experiences that you think would qualify as adverse childhood experiences?
     ii. When did you first hear about adverse childhood experiences?
• [If no:] In your own words, what do you think the term “adverse childhood experiences” means?

  i. Can you give me some examples of experiences that you think would qualify as adverse childhood experiences?

  *Remember, there are no right or wrong answers.*

5. There is a lot of work going on around childhood trauma. In your own words, what does the term “childhood trauma” mean to you?

• How do you think the terms “childhood trauma and “adverse childhood experiences” relate to one another – do you think they refer to the same thing, or are they different?

  i. [If same:] In what ways do these terms refer to the same thing?

    1. Which term do you prefer?
    2. Why do you prefer (insert preferred term)?

  ii. [If different:] In what ways are these terms different?

    1. In what ways, if any, are these terms similar?
    2. Which term do you prefer?
    3. Why do you prefer (insert preferred term)?

[Hand over card listing types of ACEs] This card contains a list of experiences that some people consider adverse childhood experiences or ACEs. It also lists the percentages of people that report experiencing these things in childhood. For the questions moving forward, we’re going to talk specifically about these traumatic experiences.

6. How, if at all, do you think adverse childhood experiences affect children?

• Do you think these ACEs have any long-term effects on children [when they are adults?]

  i. What would be some examples of these long-term consequences?

  • Tell me more about what you mean by that.

7. Thinking about the top issues that you listed earlier [say them back], how do you think they have a relationship to ACEs?

  • Are ACEs linked to other children’s issues?

8. To what extent, if any, do you think that the state can prevent adverse childhood experiences?

  i. What, if anything can the state do to prevent ACEs?

  ii. Who is responsible for preventing adverse childhood experiences in our state?
1. [if stuck] To what extent would you consider ACEs a state issue, or a community issue versus a home issue?

9. Thinking about your comments about who is responsible, who are the key public and private players needed to prevent adverse childhood experiences?

   • In your opinion, what are the top three most important state agencies that can help kids prevented from experiencing these challenges? Why?

   I really appreciate your insight so far, let’s delve further into how you think the state can help kids meet their full potential.

10. What do you think South Carolina’s children need in childhood to be successful and live happy, healthy lives?

   • Can you think of some examples of policies or programs or initiatives that support this?

11. Now, think about a child in your work that you know has faced a lot of traumatic experiences or adverse childhood experiences.

   • What do they need? How is are these things different than what kids who have not experienced (ACEs) might need?

   • Do you think that the child can still succeed in life after facing ACEs? How do you think this can happen?

12. Have you heard of the term “resilience” as it relates to children?

   • If so, how did you hear about it? How would you describe it?
     
     i. Can you give me an example of a child being resilient?
     
     ii. What do you think a child needs in their life to be resilient?

   • If not, what do you think it means?

   • How do you think resilience relates to ACEs or childhood trauma?

   • Do you use this term in your work?

13. In your experience as a child serving professional, what policies, or programs, or initiatives do you perceive as being the most beneficial for helping prevent adverse childhood experiences?

   • [if I need to reword] Are there any policies or programs in South Carolina that have been especially successful in addressing adverse childhood experiences?

   • [if stuck] Tell me a little more about the work you mentioned earlier around XYZ system. How well do you think it is working?

   • What existing policies or programs do you think we can build on to better address adverse childhood experiences in South Carolina?
14. What do you think are the biggest obstacles to preventing adverse childhood experiences in South Carolina?

- Any opportunities?

15. In an ideal setting, where things like funding, competing priorities, or political climate are not an issue, what would be a “dream” policy or program that you would create to address adverse childhood experiences?

- [if stuck] Maybe you could provide me with some examples within the agencies or programs mentioned earlier.

We are almost finished with the interview. I wanted to end by asking some information about raising further awareness of ACEs.

16. In the beginning you talked about the different kinds of information you use as a child-serving professional. When thinking about ACEs, what type of information, if any, do you need from researchers?

- What would be helpful in your work?

17. Is there anything I missed that you would like to share?

Thank you for your time. I greatly appreciate it. I will be following up with a policy brief that highlights the results of this study at its conclusion. In the meantime, please let me know if you have any questions.

Interview Guide: State Policymakers

The purpose of this study is to understand the ways in which we can help South Carolina’s children succeed. We want to hear your experiences, stories, and insight. Do you have any questions before we get started? I am turning on the recorder now.

1. I would like to start off by hearing a little about your work with children and families as a state policymaker. What are the top three children’s issues that are most important to you?

2. Can you briefly describe some of the work you’ve done pertaining to children and families in your role as a state policymaker?

   i. Interesting, tell me a little more about that bill/piece of legislation

   ii. Did this work occur because of your membership on a committee? What committee? How did you become involved?

   • What are some children’s issues that you’d like to work on or are planning to work on?

   i. Why do you think these issues are so important?
3. Let’s talk a little more about the topics you mentioned. What helps you make decisions about children’s issues?
   - Are there people you turn to for information? If so, who?
   - What kind of data or research do you use?
   - How do you determine what types of information are trustworthy?
   - What types of information do you consider credible?
     i. [if stuck] Give me an example of something you recently used or someone you recently turned to help inform your decision about an issue.

4. As you know, this interview is about adverse childhood experiences. Many people have not heard of this term. Have you heard of this term before? [if hesitant] it is okay if you have not
   - [If yes:] In your own words, what does the term “adverse childhood experiences” mean to you?
     i. Can you give me some examples of experiences that you think would qualify as adverse childhood experiences?
     ii. When did you first hear about adverse childhood experiences?
   - [If no:] In your own words, what do you think the term “adverse childhood experiences” means?
     i. Can you give me some examples of experiences that you think would qualify as adverse childhood experiences?
     ii. Remember, there are no right or wrong answers.

5. Recently, the general assembly has examined childhood trauma. In your own words, what does the term “childhood trauma” mean to you?
   - How do you think the terms “childhood trauma and “adverse childhood experiences” relate to one another – do you think they refer to the same thing, or are they different?
     i. [If same:] In what ways do these terms refer to the same thing?
       1. Which term do you prefer?
       2. Why do you prefer (insert preferred term)?
     ii. [If different:] In what ways are these terms different?
1. In what ways, if any, are these terms similar?

2. Which term do you prefer?

3. Why do you prefer (insert preferred term)?

[Hand over card listing types of ACEs] This card contains a list of experiences that some people consider adverse childhood experiences or ACEs. It also lists the percentages of people that report experiencing these things in childhood. For the questions moving forward, we’re going to talk specifically about these traumatic experiences.

6. How, if at all, do you think adverse childhood experiences affect children?
   - Do you think these ACEs have any long-term effects on children [when they are adults]?
     - What would be some examples of these long-term consequences?
   - Tell me more about what you mean by that.

7. Thinking about the top three issues that you listed earlier [say them back], how do you think they have a relationship to ACEs?
   - Are ACEs linked to other children’s issues?

8. To what extent, if any, do you think that the state can prevent adverse childhood experiences?
   - What, if anything can the state do to prevent ACEs?
   - Who is responsible for preventing adverse childhood experiences in our state?
     - [if stuck] To what extent would you consider ACEs a state issue, or a community issue versus a home issue?

9. Thinking about your comments about who is responsible, who are the key public and private players needed to prevent adverse childhood experiences?
   - In your opinion, what are the top three most important state agencies that can help kids prevented from experiencing these challenges?

I really appreciate your insight so far, let’s delve further into how you think the state can help kids meet their full potential.

10. What do you think South Carolina’s children need in childhood to be successful and live happy, healthy lives?
    - Can you think of some examples of programs or initiatives that support this?

11. Now, think about a child in your district that you know has faced a lot of traumatic experiences or adverse childhood experiences.
• What do they need? How is are these things different than what kids who have not experienced (ACEs) might need?

• Do you think that the child can still succeed in life after facing ACEs? How do you think this can happen?

12. Have you heard of the term “resilience” as it relates to children?

• If so, how did you hear about it? How would you describe it?
  i. Can you give me an example of a child being resilient?
  ii. What do you think a child needs in their life to be resilient?

• If not, what do you think it means?

• How do you think resilience relates to ACEs or childhood trauma?

• Do you use this term in your work?

13. In your experience as a policymaker, what policies, or programs, or initiatives do you perceive as being the most beneficial for helping prevent adverse childhood experiences?

• [if I need to reword] Are there any policies or programs in South Carolina that have been especially successful in addressing adverse childhood experiences?

• [if stuck] Tell me a little more about the work you mentioned earlier around XYZ system. How well do you think it is working?

• What existing policies or programs do you think we can build on to better address adverse childhood experiences in South Carolina?

14. What do you think are the biggest obstacles to preventing adverse childhood experiences in South Carolina?

• Any opportunities?

15. In an ideal setting, where things like funding, competing priorities, or political climate are not an issue, what would be a “dream” policy or program that you would create to address adverse childhood experiences?

• [if stuck] Maybe you could provide me with some examples within the agencies or programs mentioned earlier.

We are almost finished with the interview. I wanted to end by asking some information about raising further awareness of ACEs.
16. I know that you are greatly invested in issues that affect children. What do you think would it take for your colleagues in the General Assembly to become more engaged in this issue?

- Do you think your colleagues understand the terms adverse childhood experiences childhood trauma or resilience? Can they use these terms?
  
  i. If not, what do they use?
  
  ii. What terms do you think should be used to explain this issue?

- Are there any political barriers to supporting this issues that should be considered?

17. What type of information would be most important to help them understand adverse childhood experiences?

18. In the beginning you talked about the different kinds of information you use. When thinking about ACEs, what type of information do you need from advocates and researchers to make decisions about policies related to adverse childhood experiences more easily?

- [if stuck] think about policy briefs, one pages, testimony, office visits etc.

19. Is there anything I missed that you would like to share?

Thank you for your time. I greatly appreciate it. I will be following up with a policy brief that highlights the results of this study at its conclusion. In the meantime, please let me know if you have any question.
APPENDIX C

IRB LETTER EXAMPLE

Dear NAME,

My name is Aditi Srivastav. I am a doctoral candidate in the Department of Health Promotion, Education, and Behavior at the University of South Carolina and a researcher at the Children’s Trust of South Carolina. I would like to invite you to participate to my study which explores community and policy perspectives on adverse childhood experiences (ACEs), childhood trauma, and building resilience among South Carolina children.

By interviewing child-serving professionals, who have worked directly with children and families, we can begin to shed understanding on what factors are most beneficial to protecting our children from the effects of traumatic experiences and what action is needed to help communities build resilience in children.

You will be asked for your perspectives, opinions, and stories about your knowledge of ACEs and resilience and how you have seen children beat the odds of traumatic experiences. You may also be asked for insight on policies and programs that are most beneficial to children’s well-being. There are no right or wrong answers, we just really want to hear about your experience.

Participation in this project is entirely voluntary. You can ask questions at any time, and you may choose not to answer any questions you do not wish to answer. If for any reason you wish to discontinue the interview, please just let me know and they will do so immediately and without question. Taking part in this study is not likely to benefit you personally. However, this research may help us understand what factors are most beneficial to protecting our children from the effects of traumatic experiences and what action is needed to help communities build resilience in children.

We would like to audio record or video record this interview. The interview will not be recorded without your permission. Please let me know if you do not want the interview to be recorded; you also can change your mind after the interview starts, just let me know.

Participation is confidential. All information gathered will be confidential. To protect your privacy, we will only use your first name in the audio recorded interviews. Furthermore, once the interviews are transcribed for analysis, we will remove your name from the transcripts and assign an identification number to the transcript. The results of the study may be published or presented at meetings, but your identity will not be revealed.

The study poses minimal cost to you. The interview will take place at a time of your choosing. Interviews take about 1 hour. You will receive a $25 gift card for your participation in this research study.

I would be happy to answer any questions you have about the study. You may contact us at 803-733-5430 or by emailing me at the address listed below.

With kind regards,
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