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Resilience Among Survivors of Adverse Childhood Experiences in Appalachia

Bridget Jeter
East Tennessee State University

Resilience Among
Survivors of Adverse Childhood Experiences in Appalachia

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by

Bridget Reeves Jeter

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Jill Stinson, Ph.D, Chair

Andi Clements, Ph.D

Stacey Williams, Ph.D

Julia Dodd, Ph.D

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ABSTRACT

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The empirical investigation of adverse childhood events (ACEs) and their relationship with health and well-being outcomes in later life is increasing. Less is known about factors that may promote resilience for those who have survived such challenges, such as how resilience may be facilitated for those with ACEs residing in a marginalized region such as South Central Appalachia. Multidimensional spirituality, social support, stigma related to ACEs, and Appalachian acculturation may serve as both valid cultural factors and potential indicators of resilience. Cross-sectional, simultaneous multiple regression analysis was performed on data collected from 272 adult patients of a South Central Appalachian based medically assisted treatment (MAT) program utilizing PROCESS macro (Hayes, 2018). Participants were 53.8% male, 94.4% Caucasian, 44.9% aged 35-50 years old, and 63.6% employed. Endorsement of increased spirituality was helpful for those in MAT in South Central Appalachia who self-reported ACEs. However, as one endorsed an increasing number of ACEs, spirituality was no longer salient but instead was associated with worsened health outcomes and lessened hope. The three dimensions of spirituality (Ritualistic, Theistic, and Existential) moderated these relationships in similar but nuanced ways. Social support, on the other hand, improved mental health regardless of ACE score. Stigma and Appalachian acculturation were only related to other variables at the bivariate level but not within the hypothesized moderation model. Our study offers preliminary insight into culturally relevant resilience within South Central Appalachia,

however additional investigation is needed to better understand the complex facets of health and well-being outcomes in this marginalized region.

DEDICATION

This project is dedicated to the strong, intelligent, courageous, and persevering Appalachian women who have served as models of resilience for me over the course of my life. They taught me how to laugh, how to question, be curious, search and find truth, how have a voice, how to listen, how to be a mother, how to love, how to overcome adversity, the meaning of life, about heritage and true grace. It is my hope that the impact of the struggles, faith, and victories of those who came before and alongside me will live on through this work and continue to inspire future scientific contributions in years to come.

Margie Reeves

Deborah Reeves

Donis Carter

Betty McCray

Norma Phares

Conna Lee Blevins

Nancy Hunt

Betty Craft

Vicky Manuel

Pam Manuel

Margaret Manuel

Flora Jeter

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Mae Harmon

Verlene Garland

Kathy Whitehead

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Nancy Jeter

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INTRODUCTION

Child Maltreatment and Adverse Childhood Experiences

In 2017, there were an estimated 674,000 victims of child maltreatment in the United States alone, as reported by the U.S. Department of Health and Human Services Children's Bureau (2019). That equals 9.1 child victims per 1,000 children, which represents an increase from 8.8 in 2013. The World Health Organization recently declared child maltreatment a worldwide epidemic, and the U.S. Centers for Disease Control and Prevention (CDC, 2019) has determined that one in four children in the U.S. will experience some form of maltreatment before the age of eighteen.

While not all cases of child maltreatment are reported to child protective services, the number of officially-reported cases is staggering. There were 4 million referrals involving 3.5 million children in 2017 (U.S. Department of Health and Human Services Children's Bureau, 2019). Of cases that were investigated and substantiated, around 74% involved child neglect, 13% physical abuse, 7% sexual abuse, and 6% other various forms of maltreatment (U.S. Department of Health and Human Services Children's Bureau, 2019). Of the total estimated 674,000 victims, 1,720 children died as the result of abuse and neglect in the U.S. (U.S. Department of Health and Human Services Children's Bureau, 2019).

The CDC's report, *Child Maltreatment Surveillance*, defines child maltreatment as "any act or series of acts of commission or omission by a parent or caregiver that results in harm, potential for harm, or threat of harm to a child" (Leeb, Paulozzi, Melanson, Simon, & Arias, 2008, p.11). Acts of commission may include physical, sexual, and psychological abuse, while acts of omission may include physical, emotional, medical, or educational neglect; inadequate

supervision; and exposure to violence. Child maltreatment is often retrospectively measured by assessing Adverse Childhood Experiences (ACEs) during the first 18 years of an individual's life (CDC, 2017).

Adverse Childhood Experiences have been organized into categories of abuse, neglect, and family/household dysfunction within one questionnaire including 10 possible ACEs (CDC, 2017). The first widespread study by CDC-Keiser Permanente investigated ACEs among 17,337 participants, examining also aspects of their mental and physical health (CDC, 2017; Felitti et al., 1998). These initial studies concluded that 36.1% of participants reported 0 ACEs, 26.0% reported one experience, 15.9% reported two, 9.5% reported three, and 12.5% reported four or more. Additionally, 15.2% of women compared to 9.2% of men reported having four or more ACEs. Of the ten possible experiences characterized by the questionnaire, the most prevalent included physical abuse (28.3%), household substance use (26.9%), parental separation and/or divorce (23.3%), and sexual abuse (20.7%). Early research also found that as the number of ACEs increases, so does the intensity of negative consequences for health and well-being.

ACE and Outcomes

While the initial ACE research is relatively recent in comparison with the historically available literature describing impacts of individual forms of childhood maltreatment, the number of studies describing associations between ACEs and physical health outcomes is striking. In one epidemiological study, child maltreatment and adverse events reported by adults were linked with significant decreases in life expectancy compared to adults with no reports of childhood maltreatment (Corso, Edwards, Fang, & Mercy, 2008). The average loss for those reporting maltreatment was 11 days per year. An analysis of original data from the Behavioral Risk Factor Surveillance System (BRFSS) found that those reporting ACEs had increased risk of

premature mortality, and that those with ACE scores of 6 or more assumed the greatest risk (Brown et al., 2009). In addition, multiple or cumulative ACEs hasten disease processes lending to premature death.

ACEs are not only associated with shorter life expectancies but also specific chronic medical conditions, as demonstrated by years of research. For example, prevalence of all types of cancer is 10% higher among those reporting ACEs compared to national epidemiological estimates (Brown, Thacker, & Cohen, 2013). ACEs and ischemic heart disease are also significantly related (Dong et al., 2004), with the relationship mediated by health factors such as smoking, physical inactivity, obesity, having a history of diabetes and hypertension, and psychological factors such as anger and depression. The relationship between childhood maltreatment and COPD varied significantly by gender (Cunningham et al., 2014). Among women, several individual ACEs as well as cumulative ACE score predicted higher rates of COPD, though these outcomes were not the same among men.

ACEs are similarly associated with increased experiences of psychopathology, as has been repeatedly demonstrated regarding increases in depression, anxiety disorders, suicidality and psychiatric hospitalization, and substance-related disorders (Chapman et al., 2004; Dube et al., 2001; Edwards, Holden, Anda, & Felitti, 2003). However, more recent research has additionally examined factors beyond presence of symptoms or diagnosis. In one sample of primary care patients, at least 70% had been exposed to at least one ACE, and singular exposure as well as total ACE scores predicted increased incidence of depressive symptoms (Poole, Dobson, & Pusch, 2017). Importantly though, resilience factors worked to moderate the ACE-depression relationship. ACEs also significantly impact psychological health factors like mental health symptoms, perceived wellbeing, and impairment in daily living activities (Nurius, Green,

Logan-Greene, & Borja, 2015). In addition, exposure to ACEs impacts continued health inequalities over the life-course, as higher ACE scores are associated with low SES, high adversity, and diminished resilience resources (Nurius et al., 2015). Similarly, for parents, maternal ACEs are associated with increased parental stress, even after controlling for poverty level and SES (Steele et al., 2016), though stress remains higher for those who are more impoverished.

These investigations indicate how ACEs may compound stress, contributing to a cascading effect of intergenerational risk to further ACE exposure, adversity, and poor physical and mental health. The earliest ACE related research did much to establish relationships between ACEs and poor physical and mental health. While more recently, ACE research has evolved to focus on mental health quality of life, resilience, stress, and intergenerational risks and impacts of ACE exposure.

ACEs and Risk

ACEs are not only associated with direct mental and physical health consequences but also significant behavioral risks. Most notably, the ACE pyramid illustrates hypothesized mechanisms through which ACEs lead to problematic risks to health and well-being and ultimately early death (see Figure 1). Increased ACE scores are related to increased risks for alcohol use and abuse, illicit drug use, smoking, obesity, and risky sexual behavior.

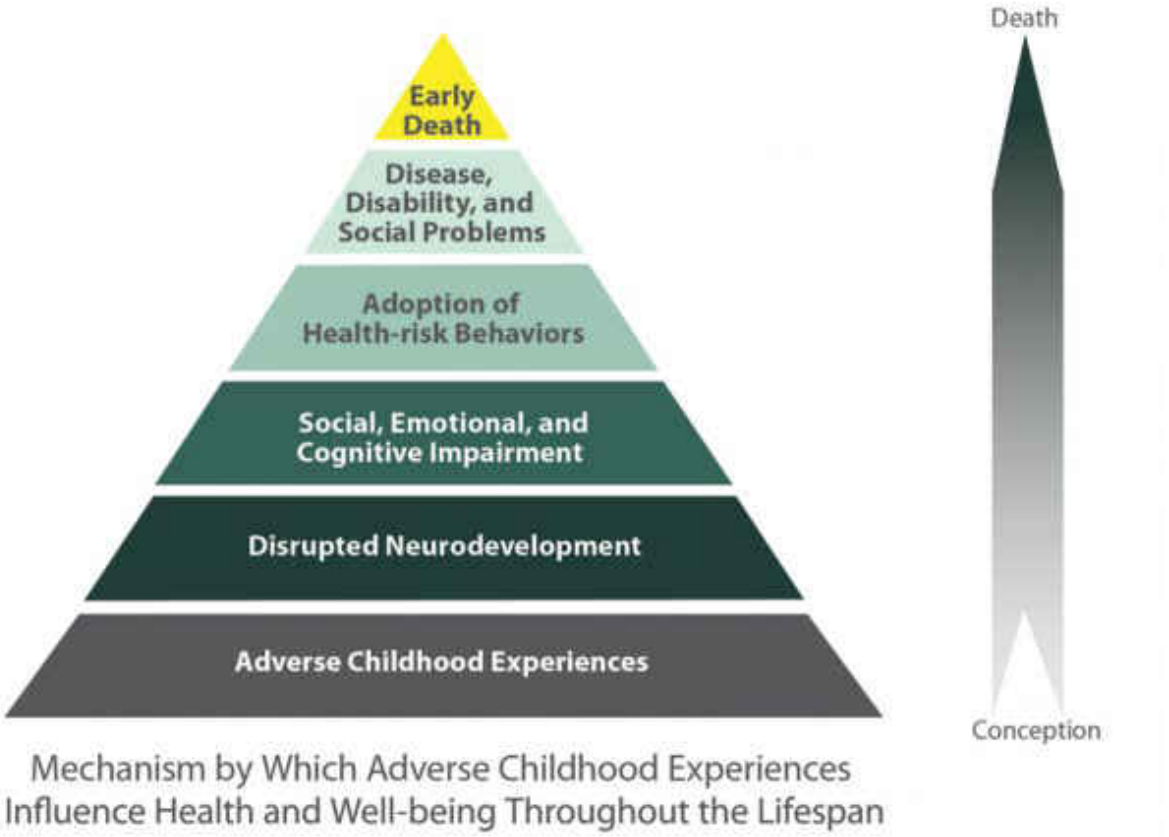

Figure 1. The ACE Pyramid (CDC, 2010)

While the full scope of underlying mechanisms linking ACEs to long-term health have yet to be firmly established, researchers have found that risky behaviors often serve as mediating and moderating factors. Using BRFSS data from 2011, researchers discovered that those who endorsed ACEs had increased odds of risky behavior, morbidity, and disability, even after controlling for socioeconomic status (Campbell, Walker, & Edege, 2016). Specifically, increased ACEs predict increased smoking, HIV behavioral risks, depressive symptoms, and use of disability services due to poor health. Specific types of maltreatment were independently and

directly related to specific behavioral and health factors, again suggesting a greater degree of nuance in relationships between ACEs, ACE score, and relevant outcomes in adulthood.

Other studies investigating ACE exposure and behaviors potentially harmful to one's health have associated ACEs with increased smoking, substance use, and poor diet (Bellis et al., 2017), as well as the adoption of multiple risky and harmful behaviors. However, having a trustworthy adult available during childhood and beyond helped mitigate these risks as an element of resilience (Bellis et al., 2017). For women who experience exposure to ACEs, especially violence of any type, they are more likely to engage in early onset intercourse, endorse having 30 or more lifetime sexual partners, and endorse an increased self-perceived risk of contracting AIDS (Hillis, Anda, Filitti, & Marchbanks, 2001).

Ample research exists implicating the significant impact of ACEs on later alcohol, nicotine, and illicit substance abuse (Campbell, Walker, & Edege, 2016; Ford et al., 2011; Frankenberger, Clements-Nolle, & Yang, 2015), noting that these represent significant health risks following long-term or other unsafe use (Felitti et al., 1998). There is a strong correlation between ACE exposure and current, as well as, lifetime smoking (Ford et al., 2011). Having been exposed to sexual abuse, physical abuse, or a witness to violence was significantly related to having a diagnosis of substance dependency (Douglas et al. 2010). Further, if the individuals grew up in a home with substance users, they were also more likely to be dependent on alcohol, cocaine, and/or opioids at a rate of nearly double. Risky behaviors, such as substance use, especially pose a challenge for those who are pregnant. One investigation found a dose-response relationship between ACE exposure and alcohol use during pregnancy after controlling for pre-pregnancy alcohol use (Frankenbarger, Clements-Nolle, & Yang, 2015). The study also found

that ACEs were significantly increased for those who drank during pregnancy compared to those who did not. Unfortunately, the risks were associated with substance use during pregnancy.

Resilience

Not all persons who experience childhood adversity endure the same outcomes, which suggests a role of resilience in differentiating lifespan consequences of early childhood maltreatment and dysfunction in the individual's household of origin. The physical and mental health consequences of childhood maltreatment are relatively widespread and well-known in the literature in comparison to indicators of resilience in children and adults. Resilience may offer psychological protection during or after the experience of maltreatment. Resilience may be characterized as a complex, dynamic, and interactive process, beginning during early development and continuing into late adulthood, in which an individual increases the capacity through which they navigate and negotiate with their biological, psychological, social, familial, cultural, and/or community resources in the context of significant adversity.

Previous studies of ACE-related risks and outcomes have indicated that aspects of social support and coping characteristics may serve as resilience resources (Bellis et al., 2017; Poole, Dobson, & Pusch, 2017; Youssef et al., 2017). These characteristics are internalized protective factors generally known to facilitate coping under adversity and stress, such as self-confidence, self-efficacy, self-control, spirituality, problem-solving ability, tolerance of negative affect. As such, one study found that characteristics of resilience moderated the relationship between exposure to multiple forms of maltreatment in childhood and resulting psychological distress (Edwards et al., 2014). When resilience factors were high, there was no distinguishable empirical difference between those who had been maltreated and those who had not.

While the study of resilience in the context of ACEs is meager, resilience is not a contemporary construct but one that is complex and subject to theoretical conflict and has prompted the development of various definitions and models (Ungar, 2011). Ungar's work captures the essence of ecological variability and emphasizes the additional impact of a child's environment, along with individual traits and neurobiological processes, in the development of resilience. Within this model, resilience is defined as follows: "In the context of exposure to significant adversity, whether psychological, environmental, or both, resilience is both the capacity of individuals to navigate their way to health-sustaining resources, including opportunities to experience feelings of well-being, and a condition of the individual's family, community, and culture to provide these health resources and experience in culturally meaningful ways" (Ungar, 2008, p.225). Ungar (2013) stresses that these processes are best strengthened and optimized when the individual's environment has the ability and wherewithal to promote culturally meaningful, helpful, and sensitive resources to the individuals who need them.

Ungar's (2013) social-cultural-ecological model includes his definition of resilience as the combination of processes that individuals, families, and communities utilize to cope, adapt, and take advantage of assets when facing significant stress. Ungar argues that environmental context, especially including one's culture, is a primary factor, and that the individual's biology is a secondary factor in the context of resilience (Ungar, 2011). He further proposes four assumptions or principles of resilience as a social-cultural-ecological construct, including decentrality, complexity, atypicality, and cultural relativity.

Decentrality is the idea that resilience-related inquiry should be focused away from the individual but instead focus on the individual's environment (Ungar, 2011). This shifts shame

and blame away from the victim and places it onto the environment which let them down and may continue to do so well into adulthood. Individual traits, long the center of resilience research, tend to "change their utility over time and in different environments" (Ungar, 2011, p. 5). For a child reared in adverse conditions there is a symbiotic relationship between the individual's ecology and the processes through which resources are presented to that individual. Decentrality in practice may involve evaluating number and quality of community support resources, perceived social support, and adequacy of trusted adults and/or caregivers.

Complexity emphasizes the tendency of resilience research to too narrowly focus on testability and parsimony (Ungar, 2011). This principal also highlights the realization that resilience processes for individuals who have endured adversity are complex, heterogeneous, and evolve over the course of development. As individuals navigate their ever-changing environments, they will naturally experience periods of progress and periods of difficulty. An assessment at one singular time point may not accurately reflect what resilience is. Ungar states that, "The principle of complexity suggests the need to develop contextually and temporally specific models to explain resilience related outcomes" (Ungar, 2011, p. 7).

Atypicality refers to resilience being regarded and investigated as a process rather than a characteristic or set of characteristics. This notion highlights a shift from evaluating purely dichotomous outcomes to recognizing the usefulness of resilience-related qualities in an individual's set of circumstances. It may be atypical or unusual to consider some facet of risky behavior as an indicator of resilience, but for some individuals these qualities may represent a mechanism of coping through which they may survive adversity and better themselves. Ungar (2011 terms these qualities "hidden resilience," or "functional but culturally nonnormative substitute adaptations" (p. 8). A relevant example of atypicality is described in a qualitative study

of teen motherhood in Appalachia (Dalton, 2015). The study notes that it is common for adolescent girls to seek out early relationships and pregnancy in an attempt to escape family dysfunction and drug culture, seeking unconditional love from an infant and redemption from family and community.

Lastly, *cultural relativity* promotes the idea that children are not raised within a culturally deprived, homogenous vacuum, and that resilience research should reflect such (Ungar, 2011). Ungar (2011) explains, "To appreciate resilience as a complex construct with varied outcomes, the competing truth claims of the intersecting cultures in which children's lives are lived need to be accounted for" (p. 9), and these processes do not end in adulthood. This cultural perspective intersects and reinforces both complexity and atypicality principles. Through his emphasis of cultural relativity, the author (Ungar, 2011) warns of the over-generalizability of demographic data while compelling investigation that is sensitive to the impact of the individual's social ecology.

Appalachian Culture

The U.S. Appalachian region is a complex topographical, ecological, and sociological area encompassing over 205,000 square miles, thirteen states, and 420 counties, and spanning from northern Mississippi to southern New York - home to 25 million people (Appalachian Regional Commission, n.d.a). It was not officially recognized as a distinctive region until the early 1960's when the Appalachian Regional Commission (ARC) was conceived by President Kennedy and enacted by President Johnson and the U.S. Congress to address the War on Poverty (Appalachian Regional Commission, n.d.a). Despite the region's seemingly rich natural resources, many of its inhabitants were not benefiting from them, lending to one in three people living in poverty, unfortunate living conditions, and unemployment so high that over 2 million

residents migrated from the region to seek work elsewhere (Mather, 2004; Pollard, 2004). Today the ARC still serves as a partnership of federal, state, and local governments with a mission to address economic viability, workforce opportunities, infrastructure, natural and cultural assets, and community leadership through research, innovation, and investment (Appalachian Regional Commission, n.d.a).

During the late 19th and early 20th centuries, the general Appalachian region was stereotyped for its seemingly all white "backwards" culture, mountain characters, mountain music, moonshining, feuding, illiteracy, and poverty, all of which were mocked by various media (i.e., local authors, radio, and television). Business leaders who came to the region to extract natural resources also exploited the land and the people and benefited from perpetuating the stereotypes. Unfortunately, these attributions continued from the 20th century well into the 21st (Denham, 2016; Elder, Griffith, Merkel, & Robinson, 2018; Mather, 2004). While the ARC and others began to address these stereotypes through data driven investigation and resources, many of these stereotypes persist today. The incessant propagation of "Trump Country" rhetoric before and after the 2016 election provides evidence that these stereotypes have not evolved so much (Catte, 2018a, Catte, 2018b). Despite the expansiveness of the Appalachian region, perhaps the most common, yet damaging thought is that the region, the people, and the culture are homogeneous (Denham, 2016).

While the Appalachian region has been historically portrayed as a homogenous culture, uniformly sharing the same values, characteristics, and behaviors, there is overwhelming evidence to the contrary (Denham, 2016). Denham (2016) states, "the temptation to over generalize, misunderstand, and form stereotypical images is an inherent danger linked with all cultures, but has long been viewed as a recurrent problem when Appalachia is considered" (p.

94). The vastness of the region, as well as its diversity in resources and landscape, weather patterns, demographic profile, and economies are but a few indicators of the territory's heterogeneity despite being unified along the 1,500-mile Appalachian mountain range (Appalachian Regional Commission, n.d.a). It has been divided into five major sub regions: Northern, North Central, Central, South Central, and Southern Appalachia (See Figure 2). Although roughly 42% of the Appalachian population is classified as rural, around 60% of inhabitants live in metropolitan counties, and at least 25% live in metro-adjacent counties (Appalachian Regional Commission, n.d.a; Diddle & Denham, 2010).

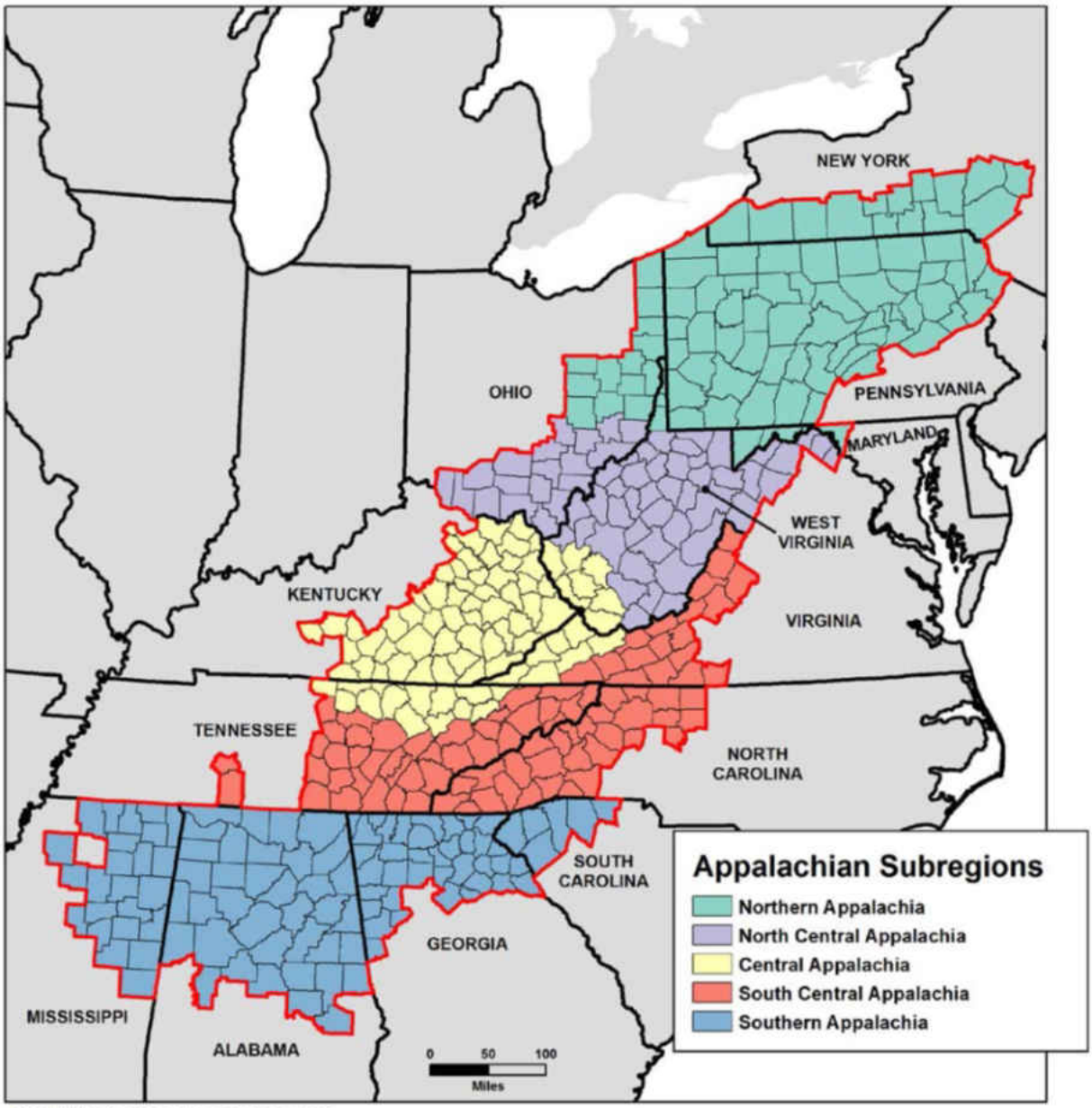

Figure 2. Appalachian Subregions (ARC, 2017)

Settlers to the region during the 17th and 18th centuries were long considered primarily Scots, Irish, German, Welsh, and English (Denham, 2016; Diddle & Denham, 2010). While this is true, many overlook the influence and heritage of the native American Indians who predated

the settlers, as well as Africans who accompanied the explorers as slaves or free men, and other nationalities drawn to the region for various reasons (i.e., Spanish, Italian, Middle-Eastern, and Portuguese; (Catte, 2018a; Elder et al., 2018, Mather, 2004). Migration impacting the region's diversity has been a key characteristic of Appalachia since the time of the explorers and remains an important feature of the region today.

More recently, the out-migration of many impoverished individuals in the region, particularly African Americans, left the area with less diversity than was true during the pre-Civil War era (Mather, 2004; Pollard, 2004). Although African Americans have long been the most populous minority group in the region, since the early 1990s the Hispanic and Latino populations have more than tripled. In fact, the general Appalachian population experienced an influx of residents during this time with four of five Appalachian counties experiencing population growth and 75% of those experiencing a net in migration. As such, the share of minorities in Appalachia increased from 9% in 1990 to 12% in 2000. The in- and out-migration that has occurred over the last 50 years also suggests that there may be a significant number of Appalachian residents who do not endorse Appalachian heritage and/or ancestry. Denham refers to Appalachia "more like a salad bowl than a melting pot," citing "distinctions and uniqueness exhibited geographically in various counties of the region" (Denham, 2016, p. 96). However, stereotypical "monolithic" views of Appalachians' heritage and ancestry, along with negative connotations associated with the region, continue to be promulgated (Diddle & Denham, 2010).

General perceptions of Appalachian culture typically include long-repeated over-generalizations, making it difficult to accurately assess what may define the culture (Denham, 2016). While it is important to acknowledge the stereotypes and why they exist, and to delineate fact from fiction, without substantial, reliable research and dissemination of accurate

information, stereotypes and associated stigma will prevail (Zhang et al., 2008). Additionally, inability or unwillingness to acknowledge the diversity of the region and its people lends to misinterpretations and faulty assumptions rather than earnest service or aid to the inhabitants of Appalachia (Catte, 2018a; Mather, 2004).

Common attributions about Appalachians include pride, rugged independence, fatalism, having a nonconfrontational manner, isolation, distrust of outsiders, loyalty to family, and spirituality (Denham, 2016; Diddle & Denham, 2010, Elder & Robinson, 2018). While many may qualitatively agree that Appalachians have a sense of pride for their ancestry, heritage, place, and way of life, it is empirically founded that many within the region are downtrodden and impoverished. Over approximately 50 years, the poverty rate has shifted. In the mid-1960s when the ARC was created in reaction to the War on Poverty, the poverty rate in the region was 31%, and 295 counties exhibited poverty rates more than 1.5 times the national average (Pollard & Jacobsen, 2017). However, that number has gradually dropped to 17.1% following the period from 2011-2015, still leaving it nearly 2 percentage points above the national average of 15.5%, despite a 1.5% rise between 2006-2010. In 2015, poverty was indicated by a yearly family income of $24,036 for two adults and two children. It is important to note that poverty rates vary greatly from sub-region to sub-region, with the greatest increases in poverty occurring within the Central and Southern Appalachian sub-regions. Additionally, poverty rates increased threefold for young adults (age 18-24) in Southern Appalachia and the region's rural counties (see in Figure 3).

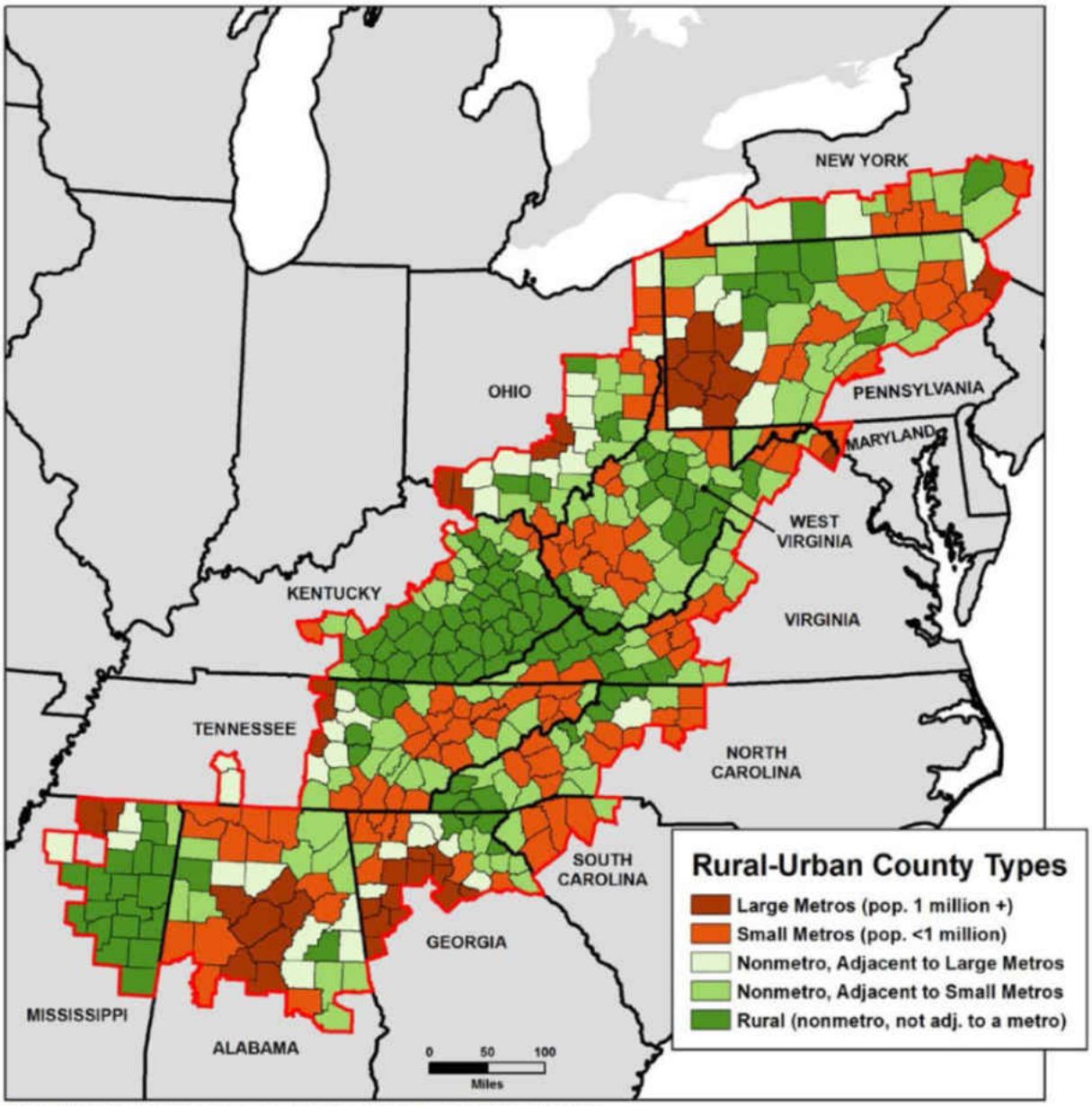

Figure 3. Rural-Urban County Types (ARC, 2017)

During the 2011-2015 period, one in six Appalachians were reported to have one or more disabilities for which they were receiving support (Pollard & Jacobsen, 2017). Similar to poverty rates, prevalence of disability is much higher in certain regions, including Kentucky and West

Virginia, where disability rates exceed 20% (the US average is 12.4%). Within 134 of the counties with the highest disability prevalence, 15% of residents are aged 65 or older.

Many have qualitatively noted that Appalachians are generally skeptical and mistrusting of outsiders, though there is little evidence to indicate that their skepticism is any different or stronger than that of any other group of people (Denham, 2016). Notions of the mountaineer's rugged independence, desire for isolation, and lack of trust for outsiders have lasted beyond the last century (Denham, 2016; Diddle & Denham, 2010). While these profiles of mountaineer communities certainly resonated during the age of prohibition and were later sensationalized by national media, there is little evidence that the majority of Appalachians currently espouse these characteristics. As such, of the 25.5 million residents of Appalachia, 65% live in large and small metropolitan areas, while only 10% live in truly rural areas (e.g., not adjacent to a metro area; Pollard & Jacobsen, 2017). Additionally, approximately two of three counties boasted fewer than 50,000 residents, and 126 counties had 20,000 or fewer residents by 2015. On the other hand, the mountains provide opportunity for isolation in the most rural communities, alcoves, and hollers (Elder et al., 2018).

Given the poverty, job loss, and transition from coal-based and other manufacturing jobs inherent to the region, it is perhaps easy to view Appalachians as fatalistic or hopeless (Behringer & Friedell, 2006; Denham, 2016; Pollard & Jacobsen, 2017). In addition to the poor economic situation, some have surmised that Appalachians' beliefs in "God's will" and their strong identity as people of Christian faith may further contribute to increased fatalism and passivity, especially toward their overall health and well-being (Behringer & Friedell, 2006). However, there is little evidence to substantiate these claims. In fact, Behringer and Friedell (2006) found that neither

Appalachians' faith nor endorsement of an external locus of control (i.e., fatalistic beliefs) were related to barriers toward health care and seeking medical solutions.

"Agency," which is similar to self-efficacy, has been attributed as an aspect of hope and describes feeling as if one has the qualities necessary to complete a goal. Hope, as Snyder and colleagues (1991) defined it, is also comprised of "pathways," or the idea that one understands and sees the path necessary to reach a known goal. Self-reliance, which in practice demands both agency and pathways, is generally thought of as a value common within Appalachian culture (Elder & Robinson, 2018; Snyder, Irving, & Anderson, 1991). Hope, conceptualized in this way, has been shown to also be related to health. However, these specific constructs have not been investigated in the context of Appalachian culture.

Religion and spirituality have long been identified as central components of Appalachians' daily way of life (Coyne, Demian-Popescu, & Friend, 2006; Diddle & Denham, 2010). Historical associations with religious teachings promoted by the early settlers - who in fact resettled to avoid religious persecution - and the later era of reformation are still found in the non-denominational mountain churches. However, just as these separatist churches may be found, likewise are mainstream American community and well-established denominational churches. As such, beliefs regarding what may be permissible, sinful, or tolerated vary greatly within single communities and even within families. "God's will be done" is an expression of faith, as is offering prayers for the sick, suffering, or "lost." Likewise, forgiveness is often discussed as a product of confession of faith, obedience, and a requirement for salvation. While the religiousness that is associated with Appalachian culture is often thought of as protective in some respects, it may also be problematic in other ways, especially in regard to the promotion of stigma. Health providers in the region are often unassumingly tasked with the burden of

addressing religious beliefs and expectations, especially when matters of health behaviors, illness, and end of life care arise, as health and religious expression are often intertwined (Behringer & Friedell, 2006; Diddle & Denham, 2010). However, as the minority population within Appalachia grows, as fewer individuals endorse religious affiliation, and as older generations pass on, the religious topology and climate may shift as well.

Investigating the multidimensional aspect of spirituality may clarify how spirituality and religion are relevant to the daily lives of Appalachian people beyond stereotypical notions and conjecture (Webb, Toussaint & Dula, 2013). As such, some of the beliefs and practices commonly associated with Appalachian culture have been defined by Webb and colleagues (2013) as both "ritualistic" and "theistic" but may vary depending on the individual and to which denomination they may ascribe. Ritualistic spirituality generally values attendance, organized worship, observing a formalized belief system, and obedience or compliance. Theistic spirituality generally values belief in and acknowledgement of a deity or deities as the creator(s), and who holds a purpose for one's life, maintains control, and has the power to judge. As noted previously, the religious topology is likely changing within Appalachia and may lend to shifts toward increased endorsement of existential spirituality. Existential spirituality has been defined by Webb et al., (2013) to include valuing altruism, responsibility toward nature, humanity, and community, and self-knowledge, as well as finding meaning and purpose rather than belief in a deity or deities. While Appalachian people may be more likely to endorse one dimension of spirituality over the other, such predictions are merely based on anecdotal information rather than empirical data, as these aspects of spirituality have not been investigated within that population.

As some researchers have worked to identify connections between the religious ideology of Appalachians and their health, there is still more needed to understand what connections, if any exist (Diddle & Denham, 2010). However, it is clear that physical and mental health concerns should be priority for investigation (Behringer & Friedell, 2006; Elder et al., 2018; Lane et al., 2012; Pollard & Jacobsen, 2017; Zhang et al., 2008). Analysis beyond that of residents' attitudes toward their own physical and mental health care indicates that rural areas and especially those in Appalachia experience significant disparities in comparison to the remainder of the U.S. (Burton, Lichter, Baker, & Eason, 2013; Halverson, Ma, & Harner, 2004; McGarvey et al., 2011).

Data have consistently indicated that Appalachians are subject to increased rates of premature mortality, and that those in the most economically deprived areas are even further at risk (Halverson & Bischak, 2008; Halverson, Ma, & Harner, 2004; Lane, Lutz, & Baker, 2012). Specifically, premature death related to cancer and heart disease are more prevalent in the central and southern regions of Appalachia compared to most other regions of the country. Halverson and Bischak's (2008) analysis concluded that these disparities, including overall premature mortality, were related to poverty rate and percentage of persons without health insurance. However, a later analysis performed by Lane, Lutz, and Baker (2012), which incorporated other relevant healthcare variables, found that for these Appalachian regions of concern, factors other than economic distress and having health insurance may be driving premature mortality, including specific county location.

Despite the need for more research to thoroughly understand the driving forces behind premature mortality rates, we do know that there are more individuals in the Appalachian region who are enrolled in Medicare, Medicaid, and Social Security Disability, especially in the Central

and Southern regions (Lane, Lutz, & Baker, 2012). These counties ironically receive the lowest healthcare reimbursement percentages in the U.S., as dictated by the Federal and State governments. As a result, all healthcare employees are paid at lower rates (for comparable services) than those in the northern and western areas of the Appalachian region, and especially those outside of Appalachia. These disparities affect not only the local economies but also the placement of and therefore access to specialized healthcare services within rural regions; there are also significant effects on the supply of qualified providers within these areas. Analyses indicate that home health, mental health, and drug and alcohol treatment services are much less available in these rural areas, which is especially troubling as healthcare is one of the current primary economic drivers in Appalachia.

Literature investigating health disparities between Appalachian counties in the state of Virginia compared to urban counties in Virginia found that that health status was much poorer in the Appalachian region and remained so independent of having health insurance (McGarvey et al., 2013). The authors suggest that due to cultural factors, such as self-reliance and/or fatalism, Appalachian individuals tend not to utilize preventative services and often wait until health circumstances are dire before seeking treatment, regardless of whether or not they have health insurance. Use of BRFSS data comparing pre-maternal/preconception health in Appalachian and non-Appalachian women found that Appalachian women reported poorer preconception health. Specifically, they were more likely to have lower income and less education, were younger overall, ate fewer fruits and vegetables, and were more likely to be obese, to smoke, to experience only fair to poor health, and to have no health insurance, yearly checkup, or regular pap smear, (Short, Oza-Frank, & Conrey, 2012). Particularly, if the women resided in a county

with an especially poor economy, their preconception physical health and mental health indicators worsened.

In a report commissioned by the Appalachian Regional Commission, Zhang and colleagues (2008) found significant mental health disparities in Appalachian residents, as well. Compared to the rest of the nation, there is a higher prevalence of reported mental health disorders and increased psychological distress and diagnoses of major depression (Elder & Robinson, 2018). Region by region comparisons indicated that mental health was disproportionately worse in Central Appalachia and more acute in economically distressed counties. However, despite previous research suggesting that such factors were largely due to substance abuse co-morbidities, Zhang et al. (2008) did not.

They found alcohol and cigarettes to be the primary substances of use in the Appalachian region, with most individuals entering treatment facilities for alcohol abuse rather than for other substances (Zhang et al., 2008). While methamphetamine manufacturing and use is commonly equated with Appalachia, the rates of use are actually lower than nationally. Marijuana, cocaine, and heroin use are also lower than the national rate. However, opiates and synthetic opioid usage rates are higher and growing at a faster pace in Appalachia's coal mining regions. Most treatment facilities in the Appalachian region are outpatient, and while comparable to the number or treatment facilities available nationally, few of them offer detox services. There are fewer inpatient facilities for substance treatment in Appalachia than are available nationally.

Contrary to other similar studies, Zhang and colleagues (2008) found that access to mental health treatment in Appalachia was comparable to other regions of the U.S. (Thornton & Deitz-Allyn, 2010). However, disproportionately more Appalachian residents entered mental health and/or substance treatment by first presenting at their regional emergency room rather

than a community treatment facility (Zhang et al., 2008). This was especially true of those residing in economically distressed areas. The study also indicated specific barriers to seeking and receiving treatment for mental health and/or substance treatment services in Appalachia, including stigma associated with receiving treatment (Snell-Rood et al., 2017), lack of adequate transportation, lack of payment options, lack of privacy in small, rural communities, lack of facility choice, and family related barriers (Thornton & Deitz-Allyn, 2010; Zhang et al., 2008).

An exploratory study of substance use, unemployment, and mental health disparities in southwestern Virginia surveyed individuals seeking free health services at a Remote Area Medical Health Expedition in Wise County, Virginia (Thornton & Deitz-Allyn, 2010). Most survey respondents presenting for services were unemployed, uninsured, single, non-Hispanic white females with two or more children. Surprisingly, most had at least a high-school level education, and 26.3% had attended college. The authors hypothesized that the level of education despite unemployment was an indication of the dire economic circumstances and employment availability in the region. As such, Thornton and Deitz-Allyn (2010) found that unemployment was significantly related to both alcohol and drug use. The fact that most respondents were women raising children and functioning as sole bread-winners is consistent with literature describing inequalities associated with current rural life. Burton and colleagues (2013) describe poor economic conditions during and after the Great Recession of the mid-2000s that contributed to a greater burden of carrying the household shifting to rural women. The mental health implications of increased worry, depression, and overall distress are apparent (Snell-Rood et al., 2017).

The review of the literature thus far provides prevalence data and empirical relationships crucial to understanding the current landscape of Appalachia but is primarily limited to research

questions and reports commissioned by the Appalachian Regional Commission. The literature also presents historical accounts of Appalachian history, migration shifts, and perceptions of Appalachian culture from outsiders and by those within. Common ideas and attributions of the homogeneity of Appalachian culture have also been challenged. The available literature highlights the lack of research to inform driving forces behind economic and health disparities and their interactions with Appalachian culture. The review has also revealed gaps in the literature and other possible explanatory mechanisms relatively under-discussed.

Stigma associated with seeking mental health treatment in Appalachia is often associated in the extant literature with the cultural perceptions and attitudes reviewed above (Thornton & Deitz-Allyn, 2010). Religious factors, independence, and self-reliance are often targeted as barriers to seeking health-related help. There may also be stigma associated with having been exposed to adverse childhood experiences, especially in small, rural communities in which news and gossip travel quickly and may become widespread. Deitz, Williams, Rife, and Cantrell (2015) found that for women who were victims of sexual violence within their intimate relationships, self-stigma was significantly related to trauma symptoms. The authors also suggest that cultural beliefs and available social support networks may impact the level and type of stigma endured by victims. And as noted previously, the long-term impact of ACEs may be associated with not only the experience of trauma but also environmental responses to the event and the victim(s).

While the relationship between ACEs and health has been established, as well as the relationship between Appalachian residency and increased health disparities (Elder et al., 2018). There is a clear paucity of investigation regarding the presence of ACEs in Appalachia their association with current problematic mental and physical health outcomes. This study seeks to

bridge the gap, not only adding to our understanding of ACEs and health in Appalachia, but also culturally relevant factors that may lend to increased resilience.

In general, there are many physical and mental health disparities associated with current Appalachian residency, but residency does not always imply level of acculturation, as in- and out-migration has significantly impacted the region over the past 30 to 50 years. Feelings of disconnection from Appalachian cultural heritage and increasing lack of pride of place, belonging, spirituality, and social support may also work to increase health disparities (Ungar, 2011; Ungar, 2013; Ungar et al., 2007). When considering individuals exposed to great adversity during childhood, higher levels of these culturally-relevant resilience factors may be related to better health outcomes, as well as hope for the future.

Purpose and Hypotheses

The purpose of this study is to test culturally-relevant aspects of the social ecological model of resilience in individuals seeking drug and alcohol treatment in South Central Appalachia who also report exposure to adverse childhood experiences (ACEs). Our overarching hypothesis is that ACEs will be significantly related to health and hope, with this relationship moderated by social support, spirituality, and Appalachian acculturation. The specific hypotheses for this study are as follows:

Hypothesis 1

ACEs will be significantly associated with demographic, clinical, and treatment related variables, in a manner consistent with previous ACE literature:

a. Being female will be significantly associated with increased ACE scores.
b. ACEs will be negatively associated with highest education level attained and reported work status.

c. ACEs will be negatively associated with age of onset of substance use and positively related to number of days in treatment.

Hypothesis 2

ACEs will significantly impact health and hope such that increased ACEs will be negatively associated with both physical and mental health, as well as hope.

Hypothesis 3

Social support will moderate ACE and health and hope relationships with increased levels of social support associated with better health and increased hope.

Hypothesis 4

Multi-dimensional spirituality will moderate the association between ACEs and health and hope such that:

a. increased levels of ritualistic spirituality will be negatively associated with health and hope;
b. increased levels of theistic spirituality will be positively associated with health and hope; and
c. increased levels of existential spirituality will be positively associated with health and hope.

Hypothesis 5

Appalachian acculturation will moderate the relationships between ACEs and health and hope, with higher levels of acculturation positively associated with both health and hope.

Hypothesis 6

Public and self-stigma, individually, will moderate the associations between ACEs and health and hope, with higher levels of stigma inversely related to both health and hope.

CHAPTER 2

METHODS

Participants

Participants include adults in medical assisted treatment (MAT) (*N*=272) from four Watauga Recovery Center (now ReVIDA Recovery) Tennessee locations (i.e., Johnson City, Knoxville, Newport, and Morristown). The sample includes individuals residing in 24 different Tennessee counties and one in Virginia (i.e., Wise), representing three different levels of economic distress (e.g., Transitional, At-Risk, and Distressed), as designated by the Appalachian Regional Commission (ARC, 2018). The current sample of MAT patients included mostly males (53.8%; *n*=140) who were Caucasian (94.4%; *n*=251), between the ages of 35 to 50 (44.9%; *n*=122), and employed (63.6%; *n*=173). Additionally, the study was limited to participants aged 18 and over who were English-speaking individuals enrolled in Watauga Recovery Center services at the time of survey dissemination.

Participants for this study were recruited through dissemination of survey materials to all Watauga Recovery Center locations, an Appalachian-based outpatient medication assisted treatment organization. At the time of the study, Watauga Recovery Centers (WRC) operated treatment facilities in seven different Appalachian counties within two states, including:

- Tennessee
    - Washington Co.
    - Knox Co.
    - Cocke Co.
    - Greene Co.
- Virginia

- Scott Co.
- Washington Co.
- Wythe Co.

Participants voluntarily completed self-report measures within a paper packet survey administered in person by WRC staff. One hundred surveys and a locked collection box were delivered to each facility for dissemination on a staggered basis beginning on July 19, 2018 and completed by October 31, 2018. Power analysis results suggested that 208 participants were needed to maintain an appropriate level of statistical power (see Statistical Analyses), which is roughly 13% of the available and active WRC clientele. Due to various location limitations, surveys were received back from four of the seven locations, resulting in a total of 272 completed surveys.

The content, recruitment methods, and feasibility of this study were vetted and approved by appropriate administrators at Watauga Recovery Centers. The point of contact at WRC is Angelee Murray, the Director of Corporate and Community Development. Of note, WRC was purchased after the completion of data collection, in December 2018, and renamed ReVIDA Recovery. This study was approved by the Campus Institutional Review Board of East Tennessee State University prior to data collection, and appropriate permissions were obtained from WRC.

Measures

Demographic Information and ACEs

Demographic information collected included sex, age, zip code, ethnicity, highest level of education, work status, sexual orientation, marital status, number of days in the current treatment program, and age of onset of substance use. Appendix A provides details regarding how

demographic information was coded and scored. Of note, sexual orientation was dichotomized as 1 = "heterosexual," and all other categories were combined to 2 = "other," to provide potentially larger comparison groups within the sample. County economic status was determined from looking up zip code information on the Appalachian Regional Commission's interactive map indicating economic status and county distress designation information for 2018 (ARC, 2018)

Adverse childhood experiences were measured using the ACE-IQ scale (WHO, 2012), a 35-item self-report measure of an individual's exposure to experiences that fall under the categories of marriage and family demographics, protection, neglect, household dysfunction, abuse (emotional, physical, and sexual), peer violence, community violence, and collective violence prior to the age of 18 (WHO, 2012). Each domain was utilized except for that of collective violence, which is more specific to international experiences of genocide, refugee status, and other experiences of war. Participants had the option of answering "yes," "no," or "refuse" to some questions, and "many times," "a few times," and "never" to other questions. According to WHO (2012), the measure has shown good psychometric properties since development (Almuneef et al., 2016; Almuneef, Qayad, Aleissa, & Albuhairan, 2014). While validity and reliability evidence for ACE-IQ is meager, Kazeem (2015) worked to validate the scale within a sample from Nigeria and found an internal consistency of .80 for all 38 items. Additionally, Cronbach's α were found to be .80 for scores on the ACE-IQ as compared to .91 for scores on the Child Trauma Questionnaire (CTQ), also utilized in that study (Kazeem, 2015). In the current study, good convergent/divergent validity between ACE-IQ and CTQ was found at $r = .72$, $p < .01$, for the total scale, indicating a large effect size. Validity calculations were also performed for each of the subscales. As such, sexual abuse and physical neglect were correlated with family environment on ACE-IQ ($r = .65$ and $r = .52$ respectively at $p < .01$). Physical abuse

was correlated with peer violence on the ACE-IQ, with $r = .49$, $p < .01$. Emotional abuse was correlated with community violence and war violence on the ACE-IQ ($r = .56$ and $r = .62$ respectively at $p < .01$). Emotional neglect was correlated with relationship to parents/guardians on the ACE-IQ with $r = .23$, $p < .05$. Of note, alphas above .70 are generally considered acceptable, above .80 considered good, and above .90 are considered excellent (DeVells, 2012).

Perceived Stigma

Both public and self-stigma were assessed using eight items adapted from Mickelson (2001). The original measure utilized in Mickelson's study tested for perceived stigma specifically related to parenting a special needs child. For this study, the items were adjusted to test for perceived stigma related to the adverse childhood experiences the participants may have endured. This measure was similarly adapted to measure perceived stigma related to being a victim of sexual assault in a previous study (Deitz, Williams, Rife, & Cantrell, 2015). For example the four *internalized* or *self*-stigma items are:

(1) "I feel that I am odd or abnormal because of my adverse childhood experiences."

(2) "There have been times when I have felt ashamed because of my adverse childhood experiences."

(3) "I never feel self-conscious when I am in public."

(4) "I never feel embarrassed about my adverse childhood experiences."

The latter two items are to be reverse-scored. The four *public* or *experienced* stigma items are:

(1) "I feel that others look down on me because of my adverse childhood experiences."

(2) "People treat me differently because of my adverse childhood experiences."

(3) "I have found that people say negative or unkind things about me behind my back because of my adverse childhood experiences."

(4) “I have been excluded from work, school, and/or family functions because of my adverse childhood experiences.”

Respondents were asked to indicate their level of agreement with each statement using a 5-point scale ranging from “definitely disagree – 1” to “definitely agree – 5.” Previous studies with a similarly adapted scale found items to be internally reliable (e.g., public stigma α = .83; self-stigma α = .84; Deitz, Williams, Rife, & Cantrell, 2015; Mickelson & Williams, 2008). The seminal investigation utilizing the Perceived Stigma scale found the internal consistency among the original eight items to be α = .76 at time one and retest reliability of α = .78 at time two (Mickelson, 2001). While this scale demonstrated good psychometric properties in the original usage and again when converted for use in investigating sexual assault victims, there is little evidence that the properties remain when adapted for the purposes of this study. The current study found good reliability estimates for the public stigma subscale (α = .87) and excellent for the self-stigma subscale (α = .90).

Appalachian acculturation

Acculturation status was determined based on participants’ self-assessed ratings on six statements adapted from the Abbreviated Multidimensional Acculturation Scale (Zea, Asner-Self, Birman, & Buki, 2003). Currently, a measure has not been developed to specifically measure Appalachian acculturation. As such, this is the first time the construct was studied. The Abbreviated Multidimensional Acculturation Scale has previously been modified to assess acculturation for various cultures around the globe and within the U.S. The original measure has three subscales (i.e. *cultural identity*, *language competence*, and *cultural competence*), however only the first subscale measuring cultural identity is applicable to this study. (Matsudaira, 2006; Zea, Asner-Self, Birman, & Buki, 2003). For example:

(1) “I think of myself as being Appalachian.”

(2) “I feel good about being Appalachian.”

(3) Being Appalachian plays an important part in my life.”

(4) I feel that I am part of Appalachian culture.”

(5) “I have a strong sense of being Appalachian.”

(6) I am proud of being Appalachian.”

The answers were coded on a four-point Likert scale anchored by 1 = Strongly disagree, 2 = Disagree somewhat, 3 = Agree somewhat, and 4 = Strongly agree. There are good psychometric properties for the cultural identity subscale of α = .90 to α = .96 (Zea, Asner-Self, Birman, & Buki, 2003). Appropriate discriminant validity was found in relation to the Multigroup Ethnic Identity Measure, with *r* =.19 for the Ethnic identity subscale and r = .05 for the Other group orientation subscale. The US cultural identity subscale, which was utilized and modified for this study, was directly related to the number of years of residence in the US (*r*s = .44 to .58). My study found excellent reliability estimates for the AMAS items, ranging from α = .91 to α = .96. As such, while this scale has provided good psychometric properties in the original usage, there is little evidence that the properties remain when adapted for the purposes of this study.

Spirituality

The Ritualistic, Theistic, & Existential Measure of Spirituality (RiTE) was used to assess multidimensional spirituality-related characteristics (Webb, Toussaint & Dula, 2013). While other more common measures of spirituality exist, none are more comprehensive, nor do they measure spirituality in a multidimensional fashion. As such, measures of religious attendance, religious affiliation, and positive and/or negative religious coping may only reflect common

standards of "religious" behavior and exclude the wider and more subjective scope of spirituality. While Appalachian culture has traditionally taken a more conservative religious stance, which some have suggested has had a negative impact on health outcomes (Behringer & Friedell, 2006), this notion has not been tested in a way that takes into account the multidimensional characteristics of one's spiritual beliefs.

The RiTE measure is a 30-item self-report instrument consisting of three subscales of ten items each: 1) ritualistic spirituality or a structured connection with deity and most closely aligned with traditional concepts of religiousness, placing focus on actions and religiously based behaviors, 2) theistic spirituality or a non-structured connection with deity and most closely aligned with common notions of spirituality, which strongly attends to belief and faith, and 3) existential spirituality or a non-theistic search for meaning and purpose that is transcendent and non-theistic, yet still spiritual. Each item is scored on a five-point Likert scale anchored by 1=Strongly Disagree and 5=Strongly Agree.

The measure has shown good psychometric properties in a large sample of college students at a mid-sized university in Southern Appalachia (Webb et al., 2013). Reliability estimates observed for the subscales were: ritualistic ($\alpha = .92$), theistic ($\alpha = .98$), and existential ($\alpha = .91$). Further, Chang et al. (2015) examined construct validity for the RiTE scale in concordance with the NEO-FFI and found that the NEO-FFI accounted for 42% (f^2=.72) indicating a large effect size) of the variance in ritualistic spirituality, 34% of the variance in theistic spirituality (f^2=.51), and 52% of the variance in existential spirituality (f^2=1.08). Due to the newness of the scale, more investigation is needed to provide reliable psychometric information. My study found good reliability estimates for the ritualistic subscale ($\alpha = .88$),

excellent reliability estimates theistic (α = .91), and acceptable reliability for existential (α = .70) spirituality.

Hope

Self-reported levels of hope were measured with the 12-item Hope Scale (Snyder et al., 1991). Snyder's Hope Scale measures an individual's level of intrinsic motivation, self-efficacy, and defined ways and means to reach a goal. Snyder describes these characteristics as agency and pathways (also subscales), and the instrument captures something categorically different from the common usage of the word "hope" that denotes optimism or wishful thinking. This measure was identified as a key indicator of resilience, as the perception of one's ability to find (pathways), plan for, and capitalize on an environment's resources (agency) is paramount to increased well-being (Snyder et al., 1991; Snyder, 2002; Ungar, 2008). This scale is also uniquely relevant to the cultural aspect of resilience, such that the notion continues to be put forth that Appalachians tend to be fatalistic while also independent and self-determined (Denham, 2016; Diddle & Denham, 2010).

The Hope Scale uses a four-point Likert scale with the anchors being 1 = definitely false and 4 = definitely true. Four items represent the agency component of hope (e.g., "I energetically pursue my goals.") and four are representative of pathways (e.g., "Even when others get discouraged, I know I can find a way to solve the problem."). The remaining four items are "fillers" incorporated to help disguise the scale's purpose. Snyder (1991) evaluated the scale's internal consistency in six samples of college students and two samples of persons receiving psychological treatment, which provided alphas ranging from .63-.80 for the pathways subscale, .71-.76 for agency, and .74-.84 for the total scale. Convergent/divergent validity were examined with the Life Orientation Test, which evaluates optimism and pessimism, and the Hopelessness

Scale, with good psychometric findings ($r = .60$, $r = .50$, $p < .005$ and $r = .58$, $p < .005$, respectively (Snyder, 1991). My study found acceptable reliability estimates for hope scale items ranging from $\alpha = .56$ to $\alpha = .72$. and good reliability estimates for the subscales agency ($\alpha = .86$) and pathways ($\alpha = .86$).

Social Support

Socially supportive behavior and assessment of how often an individual receives assistance was measured through self-report on the Inventory of Socially Supportive Behaviors (ISSB; Barrera, Sandler, & Ramsay, 1981). The scale has 40 items that are factored into three categories (i.e., guidance, emotional support, and tangible assistance) using a five-point Likert scale that ranges from "not at all = 1" to "about every day = 4". Items include indicating how often the activities have occurred over the past four weeks (i.e., "Gave you information on how to do something", "Provided you with some transportation", and "Loaned you over $25").

The ISSB has been widely employed in domestic and international studies and offers a comprehensive, multidimensional measurement of objective indicators of an individual's support environment. Rather than measuring perception of support or satisfaction with support, this scale measures aspects of received guidance, emotional support, and tangible assistance received from one's environment, which is another key indicator of resilience as defined by Ungar (2008, 2011). This measure is widely used and has been found to have good psychometric properties with internal consistencies of $\alpha = .93$ to $\alpha = .94$ (Barrera, Sandler, & Ramsay, 1981). Good convergent and divergent validity were found in relation to measures of distress ($r = .25$, $p < .001$; Barrera & Ainlay, 1983), negative events ($r = .41$, $p < .001$; Barrera, 1981), and positive events ($r = .50$, $p < .001$; Cohen, McGowan, Fooskas, & Rose, 1984). My study found excellent reliability estimates for the category of guidance and emotional support items ($\alpha = .95$ and $\alpha =$

.94, respectively) and good reliability estimates for the tangible category (α = .87) within the ISSB.

Physical and Mental Health Status

General mental health was measured using select items from the 2016 Behavioral Risk Factor Surveillance System (BRFSS) questionnaire. The BRFSS questionnaire is administered to upward of 400,000 participants per year, and the data are utilized by the CDC, Substance Abuse and Mental Health Services Agency (SAMHSA), and other agencies worldwide (CDC, 2010). Health-related BRFSS data have also been widely used in conjunction with the ACE questionnaire; thus in order to maintain continuity and comparability between studies, the following items were identified and will be used in the current study:

(1) "Thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?"

(2) "Has a doctor, nurse, or other health professional ever told you that you had a depressive disorder (including depression, major depression, minor depression or dysthymia)?"

(3) "During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?"

General physical health will be measured using select items from the 2016 BRFSS questionnaire. Items include:

(1) "Would you say that in general your health is 1-Excellent, 2-Very Good, 3-Good, 4-Fair, 5-Poor?"

(2) “Thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?”

(3) “Has a doctor, nurse, or other health professional ever told you that you had any of the following: heart attack, coronary heart disease, stroke, cancer, fibromyalgia, diabetes, or kidney disease.”

Pierannunzi, Shaohua, & Lina (2013) performed a systematic review of literature assessing the psychometric qualities of the BRFSS and found overall good validity and reliability. However, more differences were found for validity, as the BRFSS is significantly different in wording, topics, mode, and length from other surveys. Specifically, regarding the items utilized for this study, *k*s ranged from .57 to .75 for test/retest reliability among Missouri respondents in a study by Andresen, Catlin, Wyrwich, & Jackson-Thompson (2003) and *k*s from .57 to .75 for test/retest reliability among cancer survivors in a study by Kapp, Jackson, Petroski, & Schootman (2009). More investigation is needed regarding these specific items in order to provide clarity regarding their psychometric properties. Additionally, it is unknown how the properties may differ when exorcised from the complete survey.

Statistical Analyses

To examine whether ACE scores were related to health and hope among MAT patients in South Central Appalachia, including the moderating properties of perceived stigma, social support, spirituality, and acculturation, a series of bivariate and multivariate analyses were conducted. Concerning the first and second hypotheses, bivariate correlations among all variables were calculated for the purposes of examining zero-order associations. These analyses will also aid in determining appropriate covariates that may need to be considered in higher order analyses. A cutoff of $r = .70$ was established in order to remove any problematic variables

preventing the confounding influence of multicollinearity (Tabachnick & Fidell, 2001). Also, in order to preserve statistical power, the demographic variables that were non-significant at the bivariate level of analysis were discarded from multivariate analyses (see Table 1). Regarding testing the third through fifth hypotheses, multivariate simultaneous linear regression through conditional PROCESS analysis (Hayes, 2018) was used to determine moderating relationships.

Frequency and descriptive statistics were examined in order to analyze data for input errors and unusual data presentations. Survey data were not included if illegible, if very few markings were provided, or if no survey information was provided. Eleven participants began filling out the demographic information and then discontinued. In this event, their survey data were not used. All other surveys were input regardless of measure completion. As noted above, mean imputation was not utilized; thus SPSS determined participants with 100% completed measures for each of the analyses prescribed. As a result, for each of the analyses there is slight variation in the sample number. This method of automatically discarding missing values aids in the preservation of data integrity.

A total of 20 variables utilized within analyses included one independent variable (i.e., ACE score), three dependent variables (i.e., physical health, mental health, and hope), seven moderating variables (i.e., social support, ritualistic spirituality, theistic spirituality, existential spirituality, public stigma, self-stigma, and Appalachian acculturation), and eleven potential covariates (i.e., sex, age, county economic status, education, age of substance use onset, number of days in treatment, level of education, sexual orientation, and marital status). Hierarchical linear regression was conducted with each dependent variable to determine covariates to be included in each multivariate analysis. Altogether, sex, work status, sexual orientation, and education were determined to be covariates.

CHAPTER 3

RESULTS

Bivariate Associations

A bivariate correlation matrix was devised to examine zero-order associations between variables (see Table 1). Details regarding the nature of identified relationships are described further in Tables 1 through 4. With regard to demographic variables, county economic status (i.e., transitional, at risk, distressed) was correlated with Appalachian acculturation ($r = .239$, $p \leq .001$), such that the more economically distressed the area in which the participant resides the more likely they are to endorse increased Appalachian acculturation. Sex, specifically being female, was directly related to public stigma ($r = .247$, $p \leq .0001$), such that females were more likely to endorse public stigma related to experience of ACEs. The endorsement of difficulties with mental ($r = .393$, $p \leq .0001$) and physical health ($r = .214$, $p \leq .001$) were more likely among female participants as well. Sexual orientation was significant in that the more likely it was that an individual endorsed "other," the greater were the odds of experiencing stigma related to ACEs ($r = .182$, $p \leq .01$). Age was significantly related to both number of days the individual had been in substance treatment ($r = .178$, $p \leq .01$) and age they began using substances ($r = .18$, $p \leq .01$), such that the older the individual, the longer they had been in treatment and the older they were when they began using. The lower the age one began using was also related to higher levels of existential spirituality ($r = -.192$, $p \leq .01$) and vice versa.

Table 1.
Descriptive Statistics and Intercorrelations

Variable	1	2	3	4	5	6	7	8	9	10
1. Sex	-									
2. Age	-.05	-								
3. County status	.01	-.02	-							
4. Ethnicity	.08	-.11	.02	-						
5. Education	.07	.02	-.08	.09	-					
6. Sexual Orientation	.12	-.03	-.10	.09	-.08	-				
7. Work Status	.10	.16*	.16*	-.13*	-.02**	-.00	-			
8. Days in Treatment	.12	.18**	.05	-.06	.02	-.00	-.13	-		
9. Age began using	.15*	.18**	.01	.08	.22**	.09	.02	.02	-	
10. ACE	.13†	-.06	-.05	-.03	-.14*	.04	.07	.03	-.21**	-
11. Stigma	.21*	-.09	-.07	.04	-.17*	.18**	.16*	-.03	-.14*	.64**
12. Ritualistic Spirituality	.14*	.07	.01	-.04	.05	-.06	.18**	-.07	.05	-.07
13. Theistic Spirituality	.13*	.03	-.03	.00	.06	-.13	.06	.05	-.10	-.02
14. Existential Spirituality	.16*	-.09	-.01	.02	.10	-.05	-.01	.14*	.11	.11
15. Hope	-.10	-.07	-.08	.03	.17**	.01	-.02	.05	.05	-.01
16. ISSB	.05	-.03	.10	-.03	.06	.14	.01	-.03	.01	.06
17. AMAS	-.13	.09	.23**	.03	.00	-.07	.04	-.05	.04	.09
18. Mental Health	.40**	.01	.01	-.04	-.08	.11	.39**	-.08	-.07	.39**
19. Physical Health	.21**	.17*	.05	-.13†	-.11	.17*	.37**	-.08	-.07	.21**
M	1.46	2.68	1.39	3.94	3.25	1.27	2.20	2.53	2.93	39.95
SD	.68	.79	.68	.58	1.11	.94	1.94	1.16	.99	13.27

Note. $N = 272$. ACE = Adverse Childhood Experiences; ISSB = Inventory of Socially Supportive Behaviors; AMAS = Abbreviated Multidimensional Acculturation Scale; †$p < .05$, *$p < .01$, **$p < .001$.

Table 1 Continued
Descriptive Statistics and Intercorrelations

Variable	11	12	13	14	15	16	17	18	19
1. Sex									
2. Age									
3. County status									
4. Ethnicity									
5. Education									
6. Sexual Orientation									
7. Work Status									
8. Days in Treatment									
9. Age began using									
10. ACEs									
11. Stigma	-								
12. Ritualistic Spirituality	.05	-							
13. Theistic Spirituality	-.01	.72**	-						
14. Existential Spirituality	.04	.42**	.48**	-					
15. Hope	-.07	.31**	.19**	.33**	-				
16. ISSB	.03	.20**	.15*	.17*	.27**	-			
17. AMAS	.04	.23**	.22**	.21**	.23**	.20**	-		
18. Mental Health	.47**	.01	.05	.06	-.16*	.10	.00	-	
19. Physical Health	.33**	.03	.02	0	-.14*	.06	-.04	.66**	-
M	6.64	32.61	38.57	43.92	23.48	79.76	15.75	6.56	6.83
SD	5.65	10.29	12.57	7.44	3.94	30.60	6.38	2.83	2.22

Note. $N = 272$. ACE = Adverse Childhood Experiences; ISSB = Inventory of Socially Supportive Behaviors; AMAS = Abbreviated Multidimensional Acculturation Scale; County status=ARC economic status $^{\dagger}p < .05$, $^{*}p < .01$, $^{**}p < .001$.

Education was associated with work status (r = -.201, $p \leq .01$), age began using substances (r = .217, $p \leq .0001$), stigma (r = .174, $p \leq .01$), and hope (r = .172, $p \leq .01$). To better explain these relationships, the more education one has the more likely they are also employed and the more likely they were older when they began using substances. Having acquired more education was also related to endorsing less stigma from ACEs, as well as increased hope. Work status was also associated with ritualistic spirituality (r = .184, $p \leq .01$), mental health (r = .387, $p \leq .0001$), and physical health (r = .376, $p \leq .0001$), such that the more likely the individual was unemployed or unable to work the more likely they endorsed ritualistic spirituality, as well as increased mental and physical health difficulties.

ACEs were significantly related to the age participants began using substances (r = -.136, $p \leq .05$) in a negative direction, while stigma (r = .64, $p \leq .0001$), mental health (r = .39, $p \leq .0001$), and physical health (r = .211, $p \leq .01$) were all correlated in a positive direction. Thus, increased ACEs were related to a lower age of initial substance use, increased stigma, and increased mental and physical health challenges. Stigma was also significantly associated with both physical (r = .469, $p \leq .0001$) and mental health (r = .332, $p \leq .0001$) such that increased mental health problems were also related to increased physical health problems (r = .664, $p \leq .0001$).

All dimensions of spirituality were related to both hope (rs = .185 to .332, $p \leq .01$) and Appalachian acculturation (rs = .206 to .264, $p \leq .01$ to $p \leq .001$) and all in a salutary direction. All dimensions of spirituality were positively related to social support (rs = .147 to .223, $p \leq .05$ to $p \leq .001$) but varied in degree of significance. Hope, Appalachian acculturation, and social support were also all significantly related to each other in positive directions (rs = .196 to .271, $p \leq .01$ to $p \leq .001$).

Hierarchical linear regression was performed for each outcome variable (physical health, mental health, and hope) to determine which demographic variables to include as covariates within the subsequent multiple regression analyses (see Tables 2 through 4). As such, sex, work status, education, and sexual orientation were included in moderation analyses as covariates. Hierarchical linear regression was also performed to understand bivariate relationships.

Table 2
Demographic Variables, ACEs, and Physical Health via Linear Regression

Independent Variables	*B*	*SE B*	*β*	*t*	*p*	*95% CI*	
ACEs	.025	.013	.164	2.02	.045	.001	.050
County status	-.037	.236	-.012	-.157	.876	-.505	.431
Sex	.326	.324	.080	1.007	.316	-.314	.966
Age	.342	.219	.135	1.56	.121	-.092	.776
Race/ethnicity	-.307	.372	-.063	-.826	.410	-1.04	.428
Education	.074	.139	.042	.529	.598	-.202	.349
Work status	.297	.086	.273	3.45	.001	.127	.467
Sexual orientation	.386	.176	.171	2.19	.031	.037	.735
Marriage status	.594	.360	.139	1.65	.101	-.118	1.31
Days in treatment	-.066	.142	-.036	-.462	.645	-.348	.216
Age began using	-.049	.173	-.023	-.283	.777	-.391	.293

Note. n=146; County status = ARC economic status

Table 3
Demographic Variables, ACEs, and Mental Health via Linear Regression

Independent Variables	*B*	*SE B*	*β*	*t*	*p*	*95% CI*	
ACEs	.068	.016	.328	4.35	.000	.037	.099
County status	-.350	.298	-.082	-1.17	.243	-.939	.240
Sex	1.55	.402	.282	3.84	.000	.751	2.34
Age	.042	.278	.012	.151	.880	-.507	.591
Race/ethnicity	.345	.468	.052	.737	.462	-.581	1.27
Education	.051	.170	.007	.091	.928	-.320	.351
Work status	.425	.107	.293	3.96	.000	.213	.637
Sexual orientation	.095	.222	.031	.428	.669	-.344	.534
Marriage status	-.113	.451	-.020	-.250	.803	-1.01	.779
Days in treatment	-.009	.179	-.004	-.052	.958	-.364	.345
Age began using	.000	.212	.000	-.001	.999	-.419	.418

Note. n=148; County status = ARC economic status

Table 4
Demographic Variables, ACEs, and Hope via Linear Regression

Independent Variables	*B*	*SE B*	*β*	*t*	*p*	*95% CI*	
ACEs	.008	.024	.030	.338	.736	-.040	.056
County status	-.869	.472	-.154	-1.842	.068	-1.80	.064
Sex	-.401	.641	-.054	-.625	.533	-1.67	.866
Age	-.496	.457	-.103	-1.08	.280	-1.40	.408
Race/ethnicity	-.433	.771	-.047	-.562	.575	-1.96	1.09
Education	.567	.270	.180	2.096	.038	.032	1.10
Work status	.109	.178	.053	.609	.543	-.244	.461
Sexual orientation	.009	.355	.002	.025	.980	-.692	.710
Marriage status	.644	.721	.083	.893	.373	-.782	2.07
Days in treatment	.208	.283	.062	.734	.464	-.352	.768
Age began using	-.059	.336	-.015	-.175	.861	-.723	.606

Note. n=151; County status = ARC economic status

Hierarchical linear regression was performed to identify the relationship between ACEs and county economic status and Appalachian acculturation. Results indicated that when accounting for both sex and age participants began using substances, the overall model was significant. When including sex and age of initial substance use, county economic status accounted for less than 1% of the variance (see Table 5). However, sex and age of initial substance use explained 7% of the variance. Likewise, when accounting for sex and age began using substances, Appalachian acculturation explained less than 1% of the relationship between ACEs and Appalachian acculturation (see Table 6). However, sex and age began using accounted for 8% of the variance. This was also true for the relationship between ACEs and work status, which only accounted for less than 1% of the variance (see Table 7). Sex and age began using substances also accounted for 7% of the variance between ACEs and work status.

Table 5
ACEs and County Status via Hierarchical Linear Regression

Independent Variables	*Partial Correlation*	*B*	*SE B*	*β*	R^2	*Adj.* R^2	*F*	*p*
Block 1					.003	-.001	.750	.387
County status	.058	-1.14	1.31	-.058				
Block 2					.079	.066	6.21	.000
County status		-1.19	1.27	-.061				
Sex	.132	4.48	1.75	.169*				
Age began using	-.219	-3.30	.890	-.244***				

Note. n=220; County status = ARC economic status; †$p < .05$, *$p < .01$, **$p < .001$, ***$p < .0001$

Table 6
ACEs and Appalachian Acculturation via Hierarchical Linear Regression

Independent Variables	*Partial Correlation*	*B*	*SE B*	*β*	R^2	*Adj.* R^2	*F*	*p*
Block 1					.005	.000	1.05	.308
Appalachian acculturation	.073	.154	.151	.073				
Block 2					.071	.057	4.99	.002
Appalachian acculturation		.215	.149	.101				
Sex	.140	4.64	1.88	.174†				
Age began using	-.193	-2.92	.933	-.218*				

Note. n=198, †$p < .05$, *$p < .01$, **$p < .001$, ***$p < .0001$

Table 7
ACEs and Work Status via Hierarchical Linear Regression

Independent Variables	*Partial Correlation*	*B*	*SE B*	*β*	R^2	*Adj.* R^2	*F*	*p*
Block 1					.004	-.001	.782	.378
Work status	.062	.422	.477	.062				
Block 2					.076	.062	5.47	.001
Work status		.343	.463	.051				
Sex	.129	4.48	1.80	.172†				
Age began using	-.209	-3.17	.916	-.240**				

Note. n=202, †$p < .05$, *$p < .01$, **$p < .001$, ***$p < .0001$

Hierarchical linear regression was also performed to understand the relationship between ACEs and days in treatment. Results indicated that when accounting for sex and education, the relationship was significant (See Table 8). Days in treatment only accounted for less than 1% of the relationship between ACEs and days in treatment. Sex and education accounted for 2% and 3% respectively. The same tests were performed to identify the relationship between ACEs and sex (See Table 9). Results show that when accounting for education and age of initial substance use, the relationship was significant. As such, when including education and age began using, sex accounted for only 2% of the variance between sex and ACEs for adults in medically-assisted substance abuse treatment in South Central Appalachia. However, 7% of the variance was explained by education and age began using.

Table 8
ACEs and Days in Treatment (tx) via Hierarchical Linear Regression

Independent Variables	*Partial Correlation*	*B*	*SE B*	*β*	R^2	*Adj.* R^2	*F*	*p*
Block 1					.004	-.001	.760	.384
Days in tx	.060	.737	.846	.060				
Block 2					.049	.035	3.48	.017
Days in tx		.825	.831	.068				
Sex	.140	3.98	1.84	.148†				
Education	-.152	-1.89	.808	-.159†				

Note. n=208, $^{\dagger}p < .05$, $^{*}p < .01$, $^{**}p < .001$, $^{***}p < .0001$

Table 9
ACEs and Sex via Hierarchical Linear Regression

Independent Variables	*Partial Correlation*	*B*	*SE B*	*β*	R^2	*Adj.* R^2	*F*	*p*
Block 1					.016	.012	3.68	.056
Sex	.128	3.42	1.78	.128				
Block 2					.090	.078	7.21	.000
Sex		4.48	1.74	.168				
Education	-.170	-1.51	.78	-.128†				
Age began using	-.243	-2.98	.903	-.219**				

Note. n=221, $^{\dagger}p < .05$, $^{*}p < .01$, $^{**}p < .001$, $^{***}p < .0001$

Multivariable Associations

The models described in Tables 10 through 16 (see Figures 4 through 16 for conceptual and statistical diagrams) depict the combined results of the analyses (Hayes, 2018) and display the unstandardized regression coefficients and *p* values for each variable in the models and the highest unconditional interaction. Overall, ACEs were examined as a predictor of mental and physical health and hope, moderated by multidimensional spirituality (i.e., theistic, ritualistic, existential), social support, public and self-stigma and Appalachian acculturation within separate regression models. These results are described in further detail below.

Spirituality

Please see Table 10 for information related to the relationship between ACEs and mental health, physical health, and hope, with multidimensional spirituality as the moderating variable.

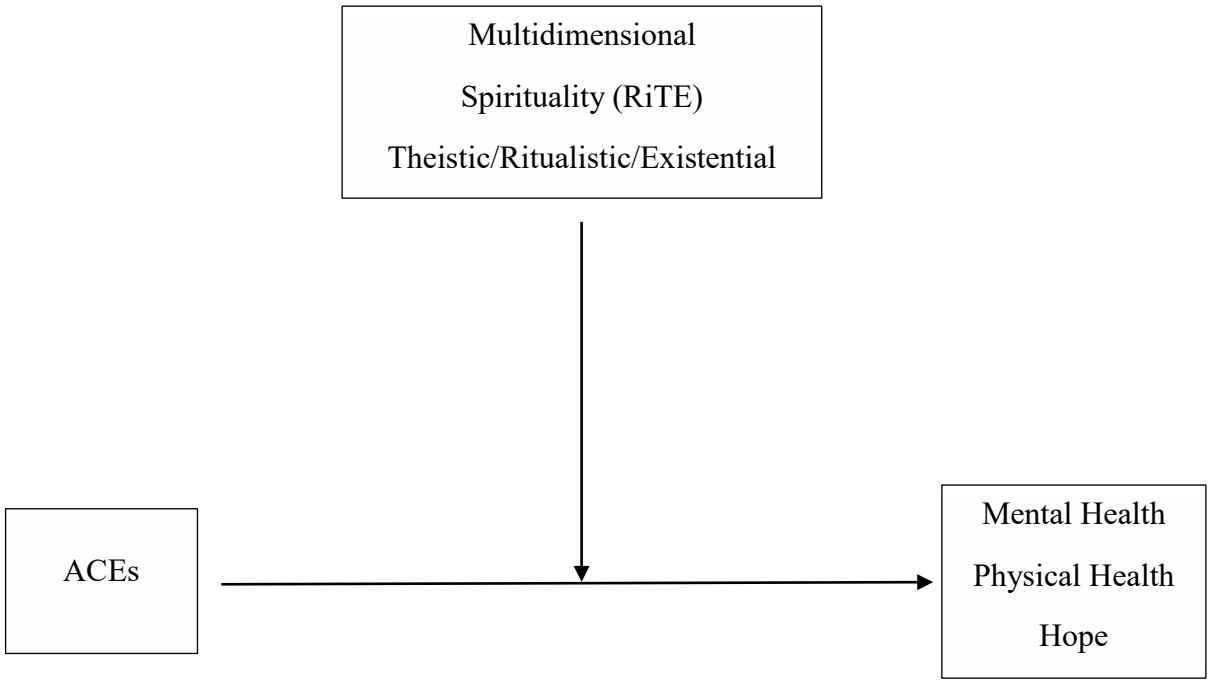

Figure 4: Conceptual Diagram of Moderation of the Effect of ACEs on Health/Hope Outcomes by Multidimensional Spirituality

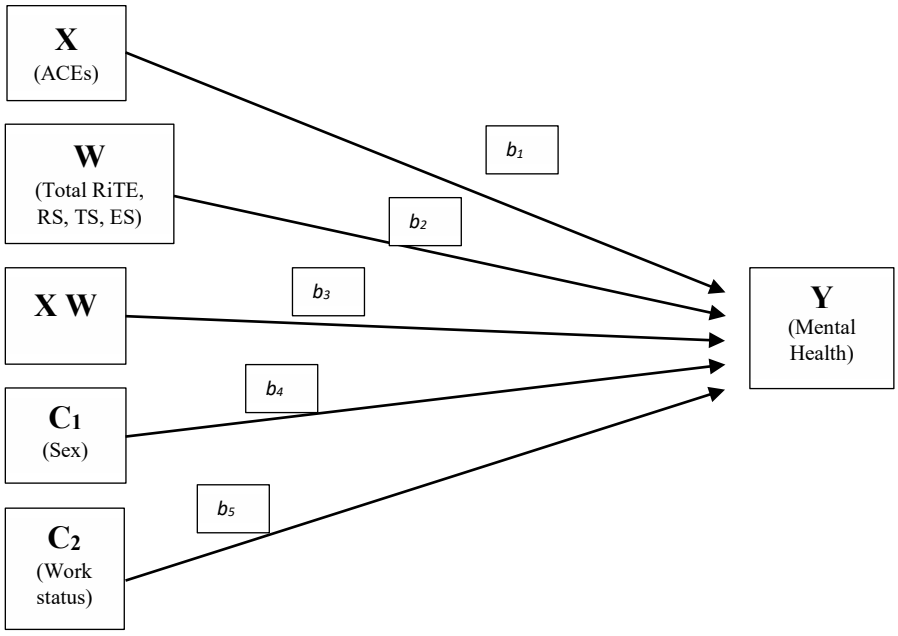

Figure 5: Statistical diagram of moderation of the effect of ACEs on Mental Health outcomes by multidimensional spirituality

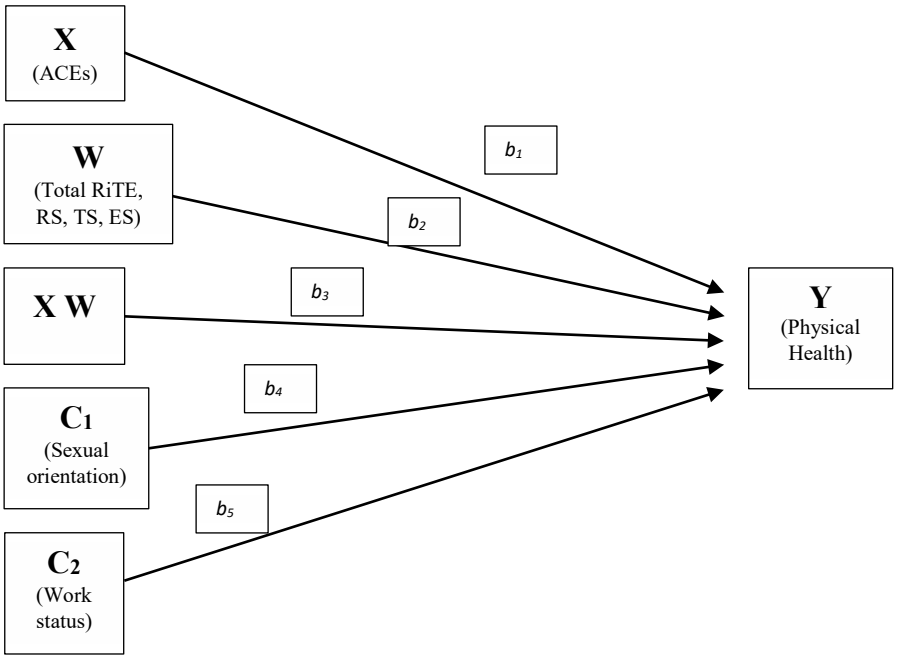

Figure 6: Conceptual Diagram of Moderation of the Effect of ACEs on Physical Health Outcomes by Multidimensional Spirituality

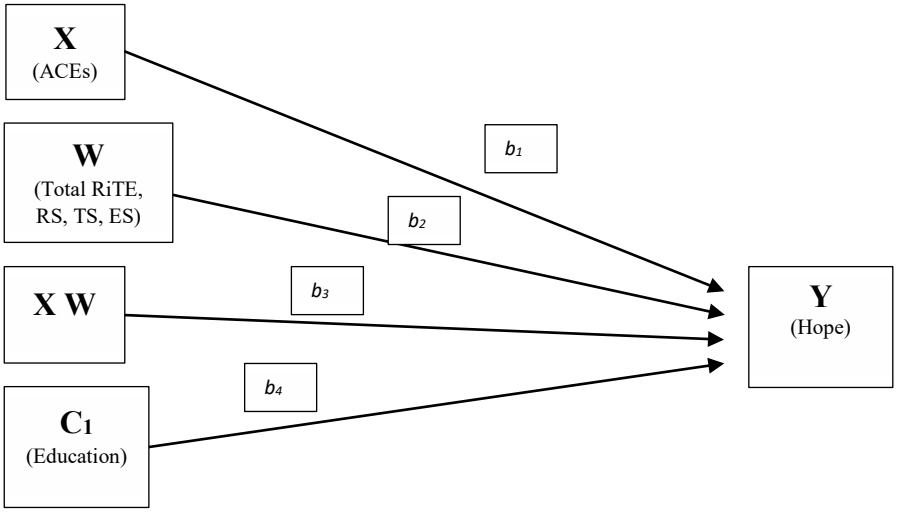

Figure 7: Conceptual Diagram of Moderation of the Effect of ACEs on Health/Hope Outcomes by Multidimensional Spirituality

Table 10
Moderated Multiple Regression Models by Total Rite

	Mental Health			*Physical Health*			*Hope*		
Predictor	*Value*	*β*	*SE*	*Value*	*β*	*SE*	*Value*	*β*	*SE*
1. Sex (cov)		1.75***	.374						
2. Work status (cov)		.355**	.101		.352***	.084			
3. Sexual orientation (cov)					.265	.184			
4. Education (cov)								.395	.240
5. ACEs		.061***	.014		.027	.012		.010	.021
6. Total RiTE		-.004	.007		.002	.006		.047***	.010
7. ACE x Total RiTE		**.001**	**.001**		**.001**†	**.001**		**-.002**†	**.001**
ΔR^2	**.013**			**.036**			**.018**		
Overall F	14.92			7.33			8.99		
Overall R^2	.332			.205			.167		
95% CI	-.000, .002			.000, .002			-.003, .000		

Note. n=156, n=148, n=184 †$p < .05$, *$p < .01$, **$p < .001$, ***$p < .0001$

Mental Health. First, to test the hypothesis that the relationship between mental health outcomes and ACEs may be moderated by multidimensional spirituality (Total RiTE), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, total multidimensional spirituality, and the two covariates, sex and work status (see Table 3), accounted for a significant amount of variance in mental health outcomes (n = 156, R^2 = .319, F(4, 151) = 17.9, $p < .001$). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and Total RiTE was created (Hayes, 2018). The interaction between ACEs and Total RiTE was not significant (ΔR^2 = .013, ΔF(1, 150) = 2.98, b = .001, t(150) = 1.73, $p < .10$) (see Table 10).

Second, to test the hypothesis that the relationship between mental health outcomes and ACEs may be moderated by theistic spirituality (TS), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, TS, and the two covariates, sex and work status (see Table 3), accounted for a significant amount of variance in mental health outcomes (n = 165, R^2 = .31, F(4, 160) = 14.5, p < .001). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and TS was created (Hayes, 2018). The interaction between ACEs and TS was not significant (p = .526) (see Table 11).

Table 11
Moderated Multiple Regression Models by Theistic Spirituality

	Mental Health			*Physical Health*			*Hope*		
Predictor	*Value*	*β*	*SE*	*Value*	*β*	*SE*	*Value*	*β*	*SE*
1. Sex (cov)		1.47***	.369						
2. Work status (cov)		.433***	.100		.400***	.081			
3. Sexual orientation (cov)					.295	.183			
4. Education (cov)								.460	.247
5. ACEs		.061***	.014		.026	.012		.002	.021
6. Theistic		-.009	.015		.003	.013		.066*	.022
7. ACE x Theistic		**.001**	**.001**		**.002†**	**.001**		**-.003**	**.002**
ΔR^2	**.002**			**.029**			**.012**		
Overall F	14.08			8.17			4.54		
Overall R^2	.307			.214			.087		
95% CI	-.002, .003			.000, .004			-.006, .001		

Note. n=165, n=156, n=195 †p < .05, *p < .01, **p < .001, ***p < .0001

Third, to test the hypothesis that the relationship between mental health outcomes and ACEs may be moderated by ritualistic spirituality (RS), a simultaneous multiple regression

analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, RS, and the two covariates, sex and work status (see Table 3), accounted for a significant amount of variance in mental health outcomes (n = 168, R^2 = .325, F(4, 163) = 20.74, p < .001). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and RS was created (Hayes, 2018). The interaction between ACEs and RS accounted for a significant proportion of the variance in mental health outcomes (ΔR^2 = .016, ΔF(1, 162) = 3.99, b = .003, t(162) = 2.00, p < .05) (see Table 12). Of note, the conditional effects of the ACEs on mental health are illustrated as a function of the values of RS (at 1 SD t(162) = 4.46, p < .001). Examination of the interaction plot showed an enhancing effect, in that as ACEs and ritualistic spirituality increased, mental health symptoms increased, as well. However, at low levels of ACEs, ritualistic spirituality was related to better mental health outcomes. At the mean score of ACEs, mental health outcomes were similar for low, average, or high ritualistic spirituality. At higher levels of ACEs, endorsing ritualistic spirituality predicted worsened mental health outcomes (see Figure 8).

Table 12
Moderated Multiple Regression Models by Ritualistic Spirituality

	Mental Health			*Physical Health*			*Hope*		
Predictor	*Value*	*β*	*SE*	*Value*	*β*	*SE*	*Value*	*β*	*SE*
1. Sex (cov)		1.77***	.362						
2. Work status (cov)		.368***	.100		.322***	.082			
3. Sexual orientation (cov)					.370†	.175			
4. Education (cov)								.436	.228
5. ACEs		.063***	.014		.032*	.012		.005	.019
6. Ritualistic		-.025	.018		.005	.015		.125*	.025
7. ACE x Ritualistic		**.003†**	**.001**		**.002†**	**.001**		**-.004**	**.002**
ΔR^2	**.016**			**.009**			**.017**		
Overall F	16.75			6.87			9.48		
Overall R^2	.341			.185			.164		
95% CI	.002, .006			-.001, .004			-.008, .000		

Note. n=168, n=157, n=198 †$p < .05$, *$p < .01$, **$p < .001$, ***$p < .0001$

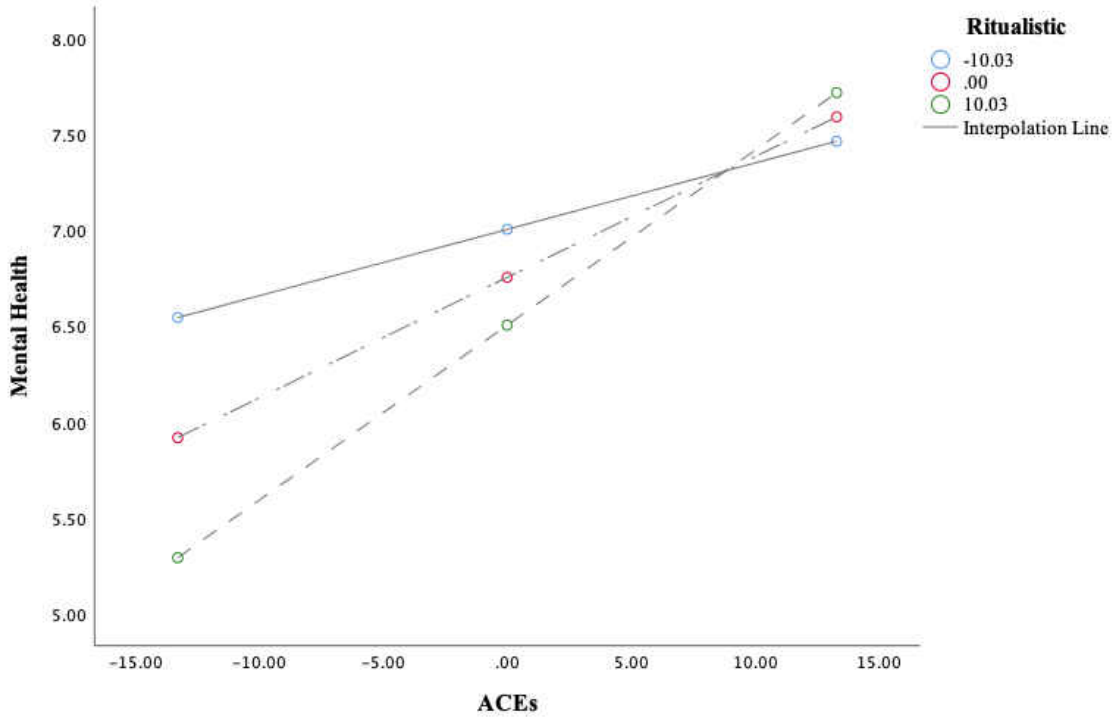

Figure 8: A Visual Representation of the Conditional Effects of Endorsement of Ritualistic Spirituality on Mental Health Outcomes Among Low, Moderate, and High ACE Scores.

Fourth, to test the hypothesis that the relationship between mental health outcomes and ACEs may be moderated by existential spirituality (ES), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, ES, and the two covariates, sex and work status (see Table 3), accounted for a significant amount of variance in mental health outcomes (n = 177, R^2 = .314, F(4, 172) = 18.26, p < .001). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and ES was created (Hayes, 2018). The interaction between ACEs and ES was not significant (p = .157) (see Table 13).

Table 13
Moderated Multiple Regression Models by Existential Spirituality

	Mental Health			*Physical Health*			*Hope*		
Predictor	*Value*	*β*	*SE*	*Value*	*β*	*SE*	*Value*	*β*	*SE*
1. Sex (cov)		1.54***	.358						
2. Work status (cov)		.427***	.092		.338***	.080			
3. Sexual orientation (cov)					.263	.182			
4. Education (cov)								.456†	.222
5. ACEs		.061***	.013		.031*	.011		.002	.019
6. Existential		.002	.028		-.008	.024		.160***	.036
7. ACE x Existential		**.003**	**.002**		**.005†**	**.002**		**-.004**	**.003**
ΔR^2	**.008**			**.028**			**.007**		
Overall F	16.24			8.32			9.26		
Overall R^2	.322			.208			.156		
95% CI	-.001, .008			.001, .008			-.009, .002		

Note. n=177, n=165, n=205 †$p < .05$, *$p < .01$, **$p < .001$, ***$p < .0001$

Physical Health. First, to test the hypothesis that the relationship between physical health outcomes and ACEs may be moderated by multidimensional spirituality (Total RiTE), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, total multidimensional spirituality, and the two covariates, work status and sexual orientation (see Table 2), accounted for a significant amount of variance in physical health outcomes ($n = 148$, $R^2 = .17$, $F(4, 143) = 13.7$, $p < .001$). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and Total RiTE was created (Hayes, 2018). The interaction between ACEs and Total RiTE accounted for a significant proportion of the variance in physical health outcomes ($\Delta R^2 = .036$, $\Delta F(1, 142) = 6.37$, b = .001, $t(142) = 2.52$, $p < .05$) (see Table 10). Of note, the conditional effects of the ACEs on

physical health are illustrated as a function of the values of Total RiTE (at 1 SD $t(142) = 3.20$, $p < .01$). Examination of the interaction plot showed an enhancing effect that as ACEs and multidimensional spirituality increased, physical health symptoms increased, as well. However, at lower levels of ACEs, multidimensional spirituality was related to better physical health outcomes. At 1 SD above the mean score of ACEs, physical health outcomes were similar for low, average, or high multidimensional spirituality. At higher levels of ACEs, endorsing multidimensional spirituality predicted worsened physical health outcomes (see Figure 9).

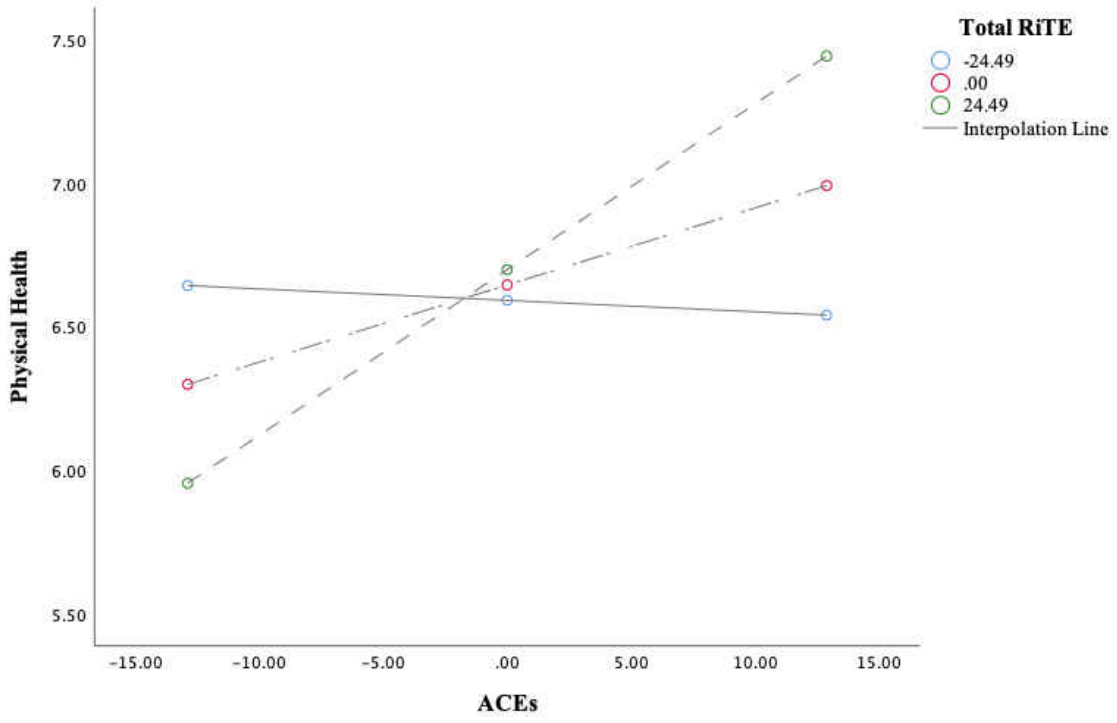

Figure 9: A Visual Representation of the Conditional Effects of Endorsement of Total Multidimensional Spirituality on Physical Health Outcomes Among Low, Moderate, and High ACE Scores.

Second, to test the hypothesis that the relationship between physical health outcomes and ACEs may be moderated by theistic spirituality (TS), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, TS, and the two covariates, work status and sexual orientation (see Table 2), accounted for a significant amount of variance in physical health outcomes ($n = 156$, $R^2 = .19$, $F(4, 151) = 13.68$, $p < .001$). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and TS was created (Hayes, 2018). The interaction between ACEs and TS accounted for a significant proportion of the variance in physical health outcomes ($\Delta R^2 = .029$, $\Delta F(1, 150) = 5.51$, b = .002, $t(150) = 2.35$, $p < .05$) (see Table 11). Of note, the conditional effects of the ACEs on physical health are illustrated as a function of the values of TS (at 1 SD $t(150) = 3.08$, $p < .01$). Examination of the interaction plot showed an exacerbating effect, in that as ACEs and theistic spirituality increased, physical health symptoms increased, as well. However, at lower levels of ACEs, theistic spirituality buffered the relationship. At the mean score of ACEs, physical health outcomes were similar for low, average, or high theistic spirituality. At higher levels of ACEs, endorsing theistic spirituality predicted physical health outcomes (See Figure 10).

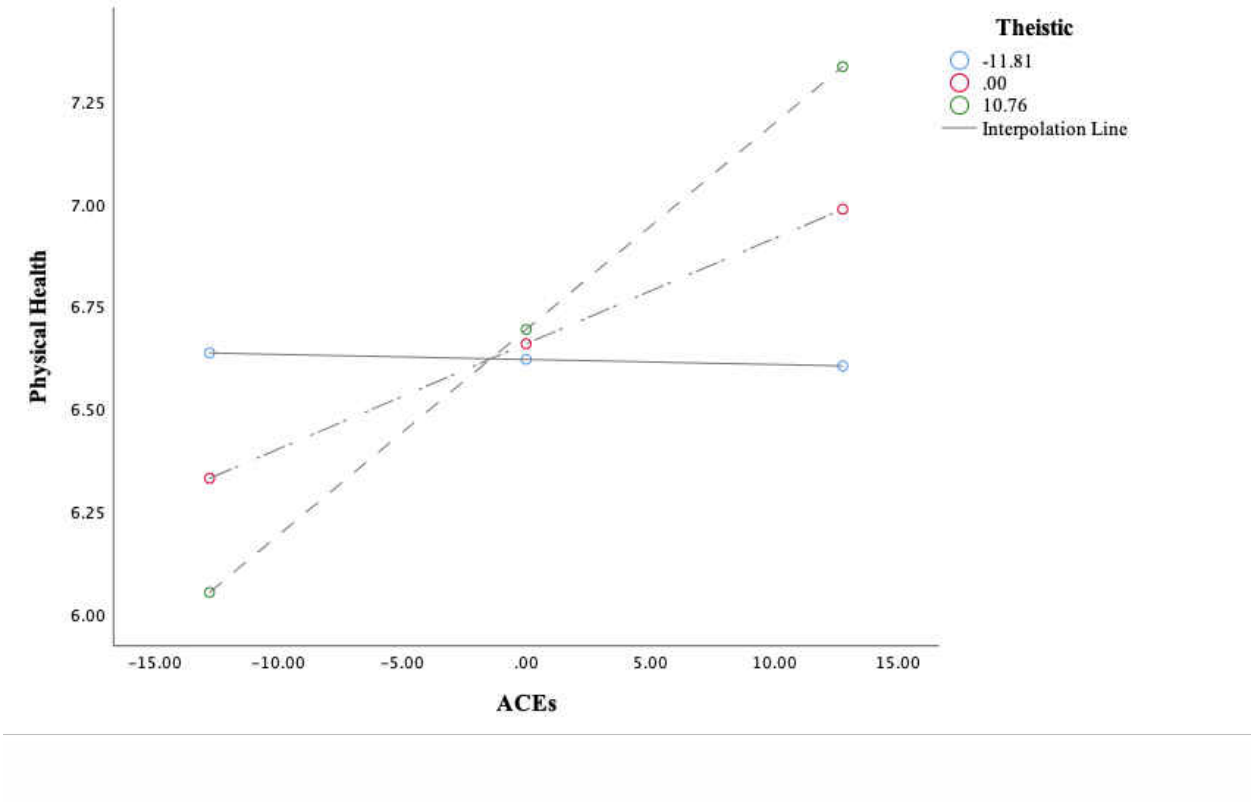

Figure 10: A Visual Representation of the Conditional Effects of Endorsement of Theistic Spirituality on Physical Health Outcomes Among Low, Moderate, and High ACE Scores.

Third, to test the hypothesis that the relationship between physical health outcomes and ACEs may be moderated by ritualistic spirituality (RS), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, RS, and the two covariates, work status and sexual orientation (see Table 2), accounted for a significant amount of variance in physical health outcomes (n = 157, R^2 = .18, $F(4, 152) = 8.61$, $p < .001$). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and RS was created (Hayes, 2018). The interaction between ACEs and RS was not significant (p = .189).

Fourth, to test the hypothesis that the relationship between physical health outcomes and ACEs may be moderated by existential spirituality (ES), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, ES, and the two covariates, work status and sexual orientation (see Table 2), accounted for a significant amount of variance in physical health outcomes (n = 165, R^2 = .18, F(4, 160) = 13.92, p < .001). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and ES was created (Hayes, 2018). The interaction between ACEs and ES accounted for a significant proportion of the variance in physical health outcomes (ΔR^2 = .028, ΔF(1, 159) = 5.60, b = .005, t(159) = 2.37, p < .05) (see Table 13). Of note, the conditional effects of the ACEs on physical health are illustrated as a function of the values of ES (at 1 SD t(159) = 3.55, p < .001). Examination of the interaction plot showed an exacerbating effect that as ACEs and existential spirituality increased, physical health symptoms increased, as well. However, at lower levels of ACEs, existential spirituality was related to better physical health outcomes. At the mean score of ACEs, physical health outcomes were similar for low, average, or high existential spirituality. At higher levels of ACEs, endorsing existential spirituality predicted worsened physical health outcomes (See Figure 11).

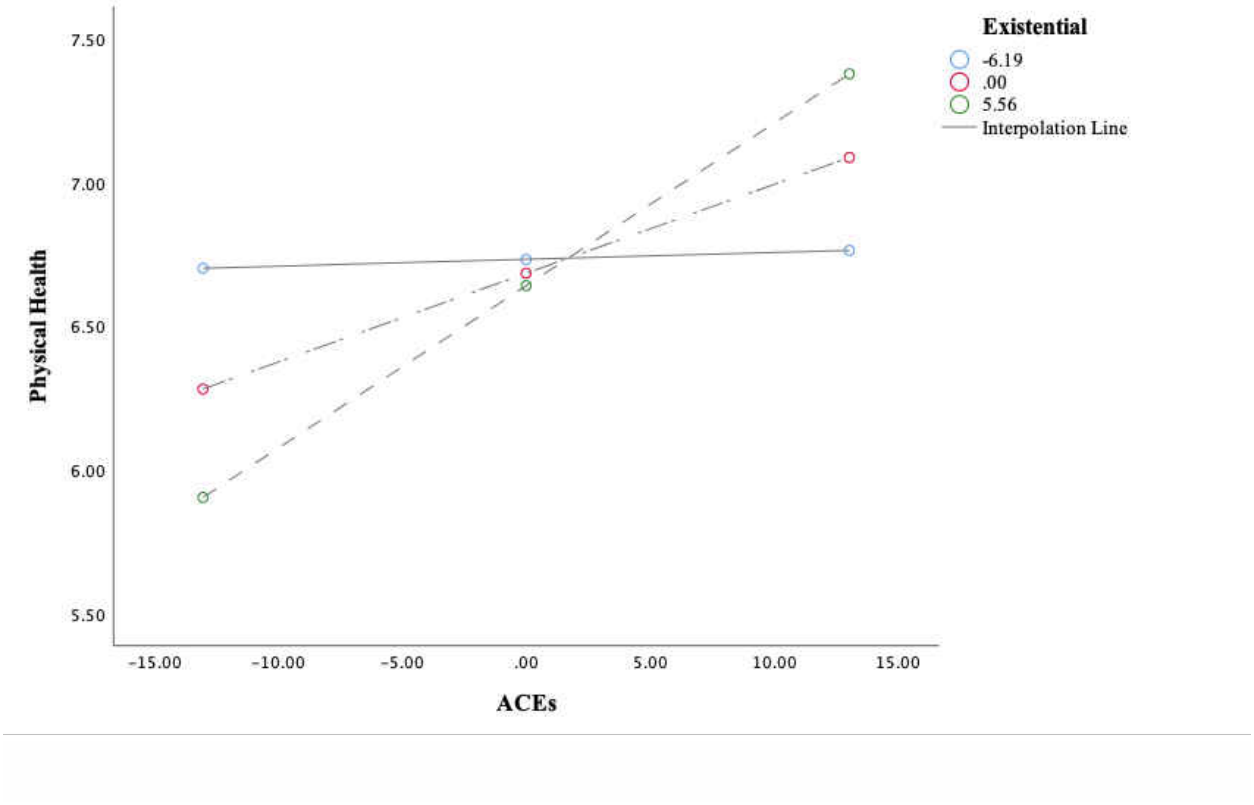

Figure 11: A Visual Representation of the Conditional Effects of Endorsement of Existential Spirituality on Physical Health Outcomes Among Low, Moderate, and High ACE Scores.

Hope. First, to test the hypothesis that the relationship between hope and ACEs may be moderated by multidimensional spirituality (Total RiTE), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, total multidimensional spirituality, and one covariate, education (see Table 4), accounted for a significant amount of variance in hope (n = 184, R^2 = .149, F(3, 180) = 12.9, p < .001) (see Table 10). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and Total RiTE was created (Hayes, 2018). The interaction between ACEs and Total RiTE accounted for a significant proportion of the variance in hope (ΔR^2 = .018, ΔF(1, 179) = 3.91, b = -.002, t(179) = -1.98, p < .05). Examination of the interaction plot showed an overall

deleterious direction, in that as ACEs and multidimensional spirituality increased, hope decreased. However, at low, moderate, and high levels of ACEs, multidimensional spirituality continued to buffer the relationship (See Figure 12).

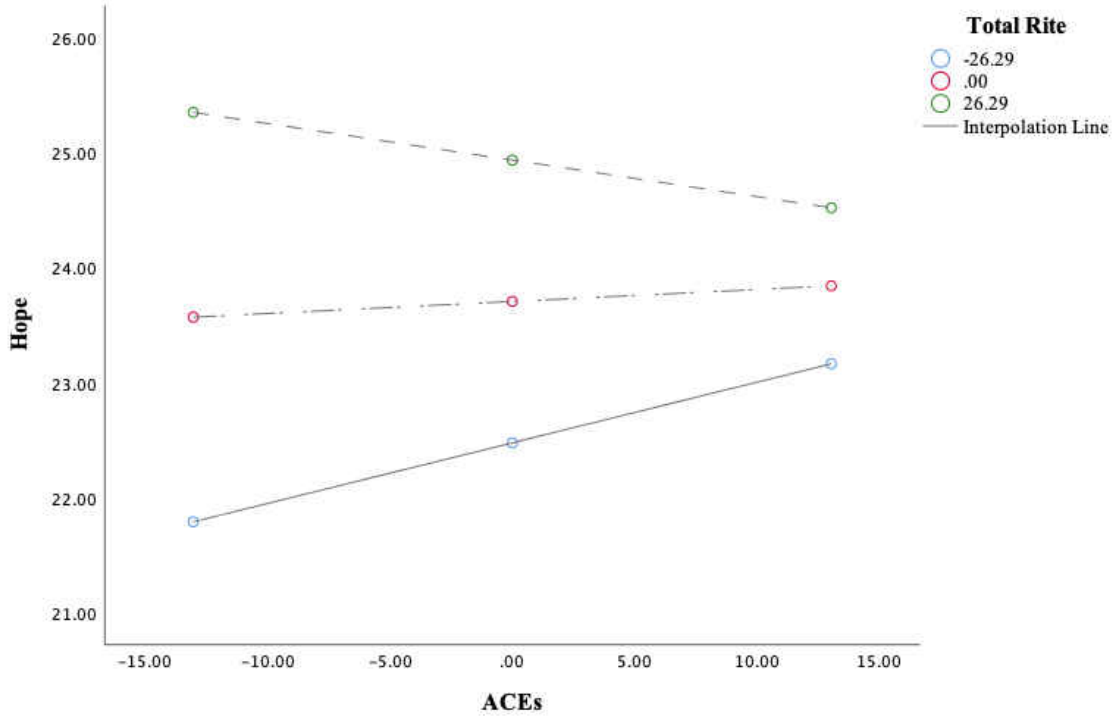

Figure 12: A Visual Representation of the Conditional Effects of Endorsement of Total Multidimensional Spirituality on Hope Outcomes Among Low, Moderate, and High ACE Scores.

Second, to test the hypothesis that the relationship between hope and ACEs may be moderated by theistic spirituality (TS), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, TS, and one covariate, education (see Table 4), accounted for a significant amount of variance in hope (n = 195, R^2 = .08, F(3,

191) = 7.06, $p < .01$) (see Table 11). The variables were centered in order to minimize potential multicollinearity and an interaction term between ACEs and TS was created (Hayes, 2018). The interaction between ACEs and TS was not significant ($p = .114$).

Third, to test the hypothesis that the relationship between hope and ACEs may be moderated by ritualistic spirituality (RS), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, RS, and one covariate, education (see Table 4), accounted for a significant amount of variance in hope ($n = 198$, $R^2 = .148$, $F(3, 194) = 13.32$, $p < .001$) (see Table 12). The variables were centered in order to minimize potential multicollinearity and an interaction term between ACEs and RS was created (Hayes, 2018). The interaction between ACEs and RS accounted for a significant proportion of the variance in hope ($\Delta R^2 = .017$, $\Delta F(1, 193) = 3.83$, b = -.004, $t(193) = -1.96$, $p < .10$). Examination of the interaction plot showed an overall deleterious direction, in that as ACEs and ritualistic spirituality increased, hope decreased. However, at low, moderate, and high levels of ACEs, ritualistic spirituality continued to buffer the relationship (See Figure 13).

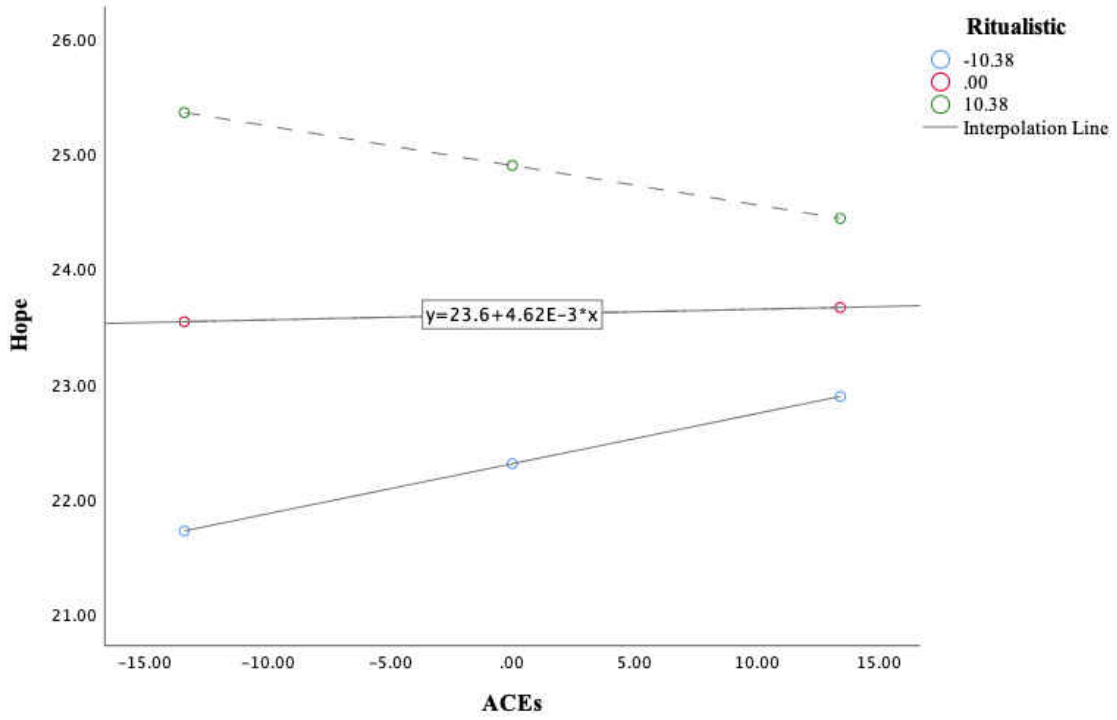

Figure 13: A Visual Representation of the Conditional Effects of Endorsement of Ritualistic Spirituality on Hope Outcomes Among Low, Moderate, and High ACE Scores.

Fourth, to test the hypothesis that the relationship between hope and ACEs may be moderated by existential spirituality (ES), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, ES, and one covariate, education (see Table 4), accounted for a significant amount of variance in hope (n = 205, R^2 = .149, F(3, 201) = 10.89, p < .001) (see Table 13). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and ES was created (Hayes, 2018). The interaction between ACEs and ES was not significant (p = .204).

Social Support

The relationship between ACEs and mental health, physical health, and hope, with social support as the moderating variable, are described further in Table 14. Simple moderation analysis was conducted via ordinary least squares path analysis. First, to test the hypothesis that the relationship between mental health outcomes and ACEs may be moderated by social support (ISSB), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, ISSB, and the two covariates, sex and work status (see Table 3), accounted for a significant amount of variance in mental health outcomes (n = 149, R^2 = .32, F(4, 144) = 18.32, p < .001). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and ISSB was created (Hayes, 2018). The interaction between ACEs and ISSB accounted for a significant proportion of the variance in mental health outcomes (ΔR^2 = .018, ΔF(1, 143) = 3.88, b = -.001, t(143) = -1.97, p < .05). Of note, the conditional effects of the ACEs on mental health are illustrated as a function of the values of ISSB (at -1 SD t(143) = 3.58, p < .001). Examination of the interaction plot showed an overall buffering effect, in that as ACEs and ISSB increased, mental health symptoms decreased. However, at low and moderate levels of ACEs, ISSBs did not seem to be beneficial to the relationship until ACE scores were at least 2 SD above the mean (See Figure 18).

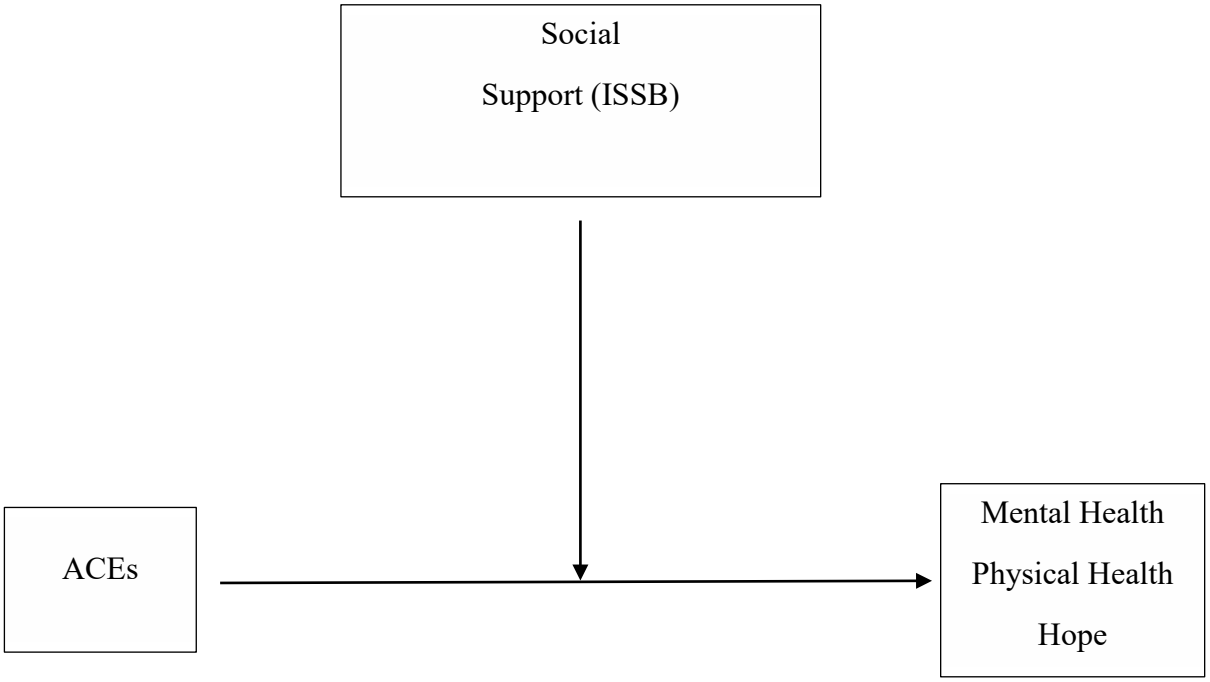

Figure 14: Conceptual Diagram of Moderation of the Effect of ACEs on Health/Hope Outcomes by Social Support

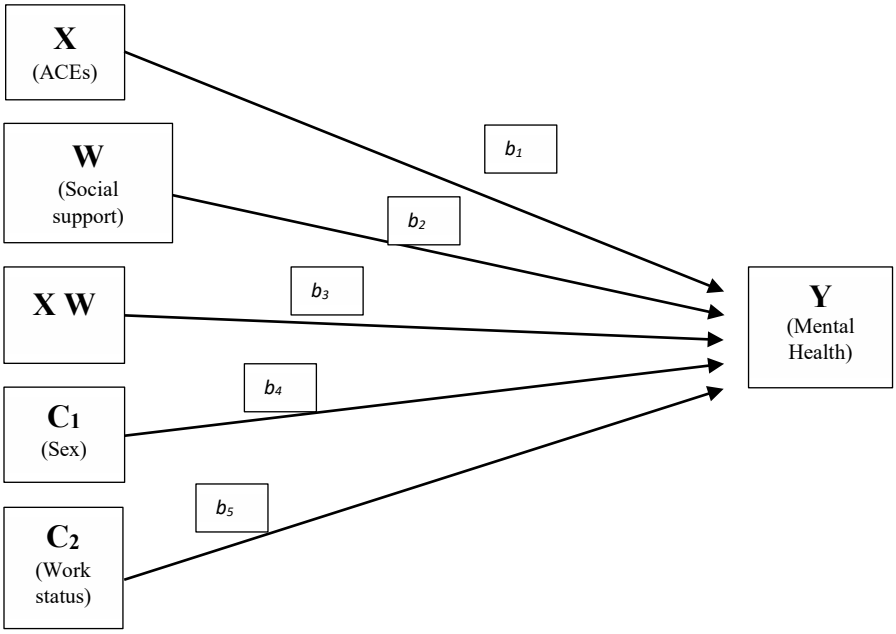

Figure 15: Conceptual Diagram of Moderation of the Effect of ACEs on Mental Health Outcomes by Social Support

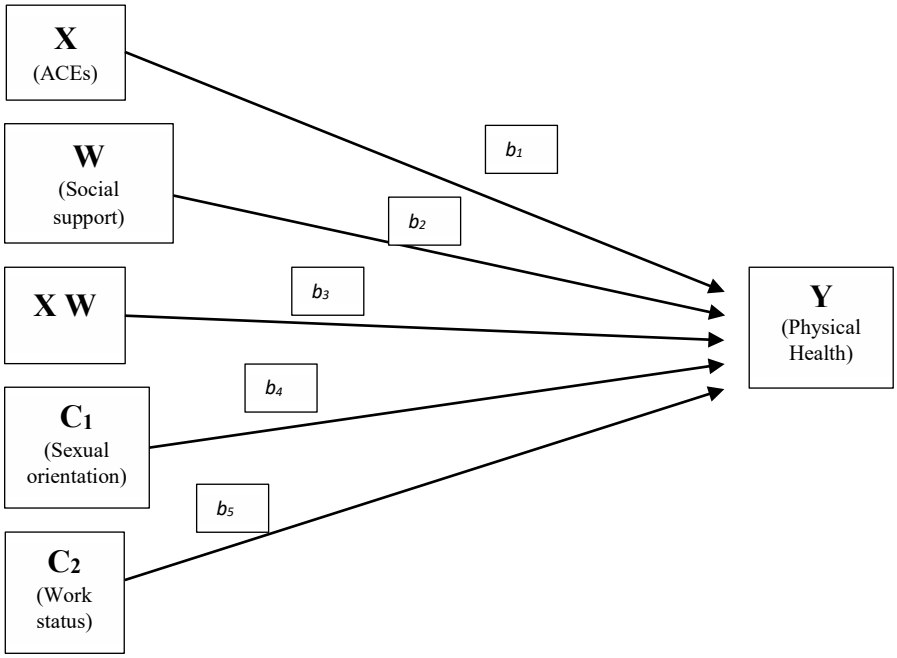

Figure 16: Conceptual Diagram of Moderation of the Effect of ACEs on Physical Health Outcomes by Social Support

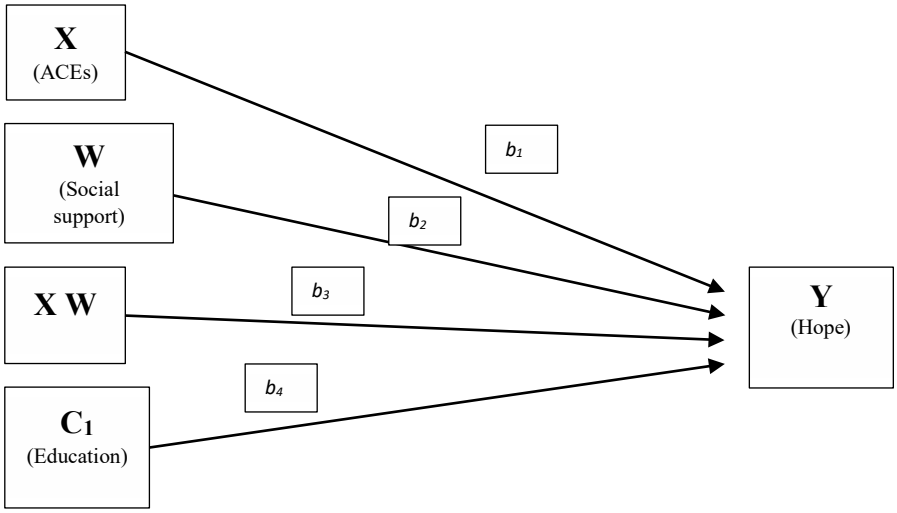

Figure 17: Conceptual Diagram of Moderation of the Effect of ACEs on Hope Outcomes by Social Support

Table 14
Moderated Multiple Regression Models by Social Support

	Mental Health			*Physical Health*			*Hope*		
Predictor	*Value*	*β*	*SE*	*Value*	*β*	*SE*	*Value*	*β*	*SE*
1. Sex (cov)		1.84***	.374						
2. Work status (cov)		.470***	.102		.352***	.088			
3. Sexual orientation (cov)					.407	.226			
4. Education (cov)								.788**	.248
5. ACEs		.044*	.015		.021	.012		.003	.021
6. Social support		.009	.006		.003	.005		.038***	.009
7. ACE x Social support		**-.001**†	**.001**		**-.001**	**.001**		**-.001**	**.001**
ΔR^2	**.018**			**.016**			**.006**		
Overall F	14.44			5.98			13.55		
Overall R^2	.336			.183			.156		
95% CI	-.002, .000			-.001, .001			-.002, .001		

Note. n=149, n=140, n=177 †$p < .05$, *$p < .01$, **$p < .001$, ***$p < .0001$

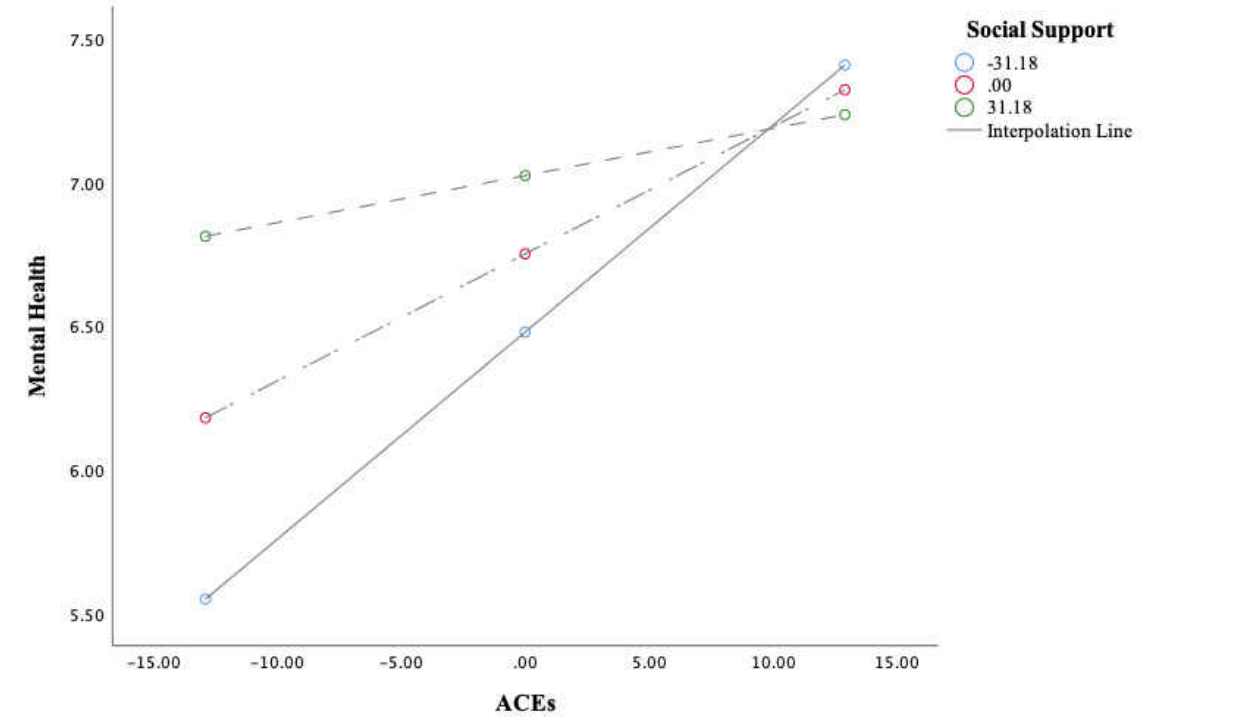

Figure 18: A Visual Representation of the Conditional Effects of Endorsement of Social Support on Mental Health Outcomes Among Low, Moderate, and High ACE Scores.

Second, to test the hypothesis that the relationship between physical health outcomes and ACEs may be moderated by social support (ISSB), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, ISSB, and the two covariates, work status and sexual orientation (see Table 2) accounted for a significant amount of variance in physical health outcomes ($n = 140$, $R^2 = .17$, $F(4, 135) = 8.55$, $p < .001$) (see Table 14). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and ISSB was created (Hayes, 2018). The interaction between ACEs and ISSB was not significant ($p = .111$).

Finally, to test the hypothesis that the relationship between hope and ACEs may be moderated by social support (ISSB), a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, ISSB, and one covariate, education (see Table 4), accounted for a significant amount of variance in hope (n = 177, R^2 = .15, F(3, 173) = 9.17, p < .001) (see Table 14). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and ISSB was created (Hayes, 2018). The interaction between ACEs and ISSB was not significant (p = .268).

Stigma

Analyses are included in Table 15 describing the relationships between ACEs and mental health, physical health, and hope, with total stigma as the moderating variable. Simple moderation analysis was conducted utilizing ordinary least squares path analysis. First, to test the hypothesis that the relationship between mental health outcomes and ACEs may be moderated by total stigma, a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, total stigma, and the two covariates, sex and work status (see Table 3), accounted for a significant amount of variance in mental health outcomes (n = 183, R^2 = .355, F(4, 178) = 20.6, p < .001). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and total stigma was created (Hayes, 2018). The interaction between ACEs and total stigma was not significant (p = .353).

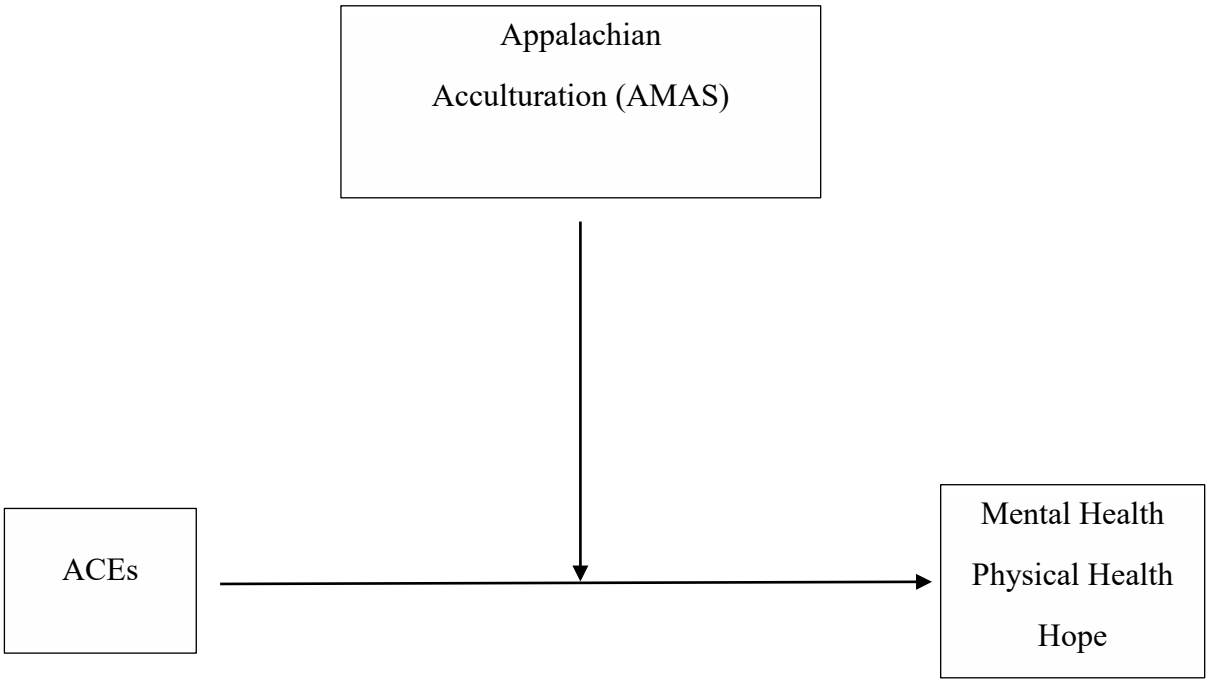

Figure 19: Conceptual Diagram of Moderation of the Effect of ACEs on Health/Hope Outcomes by Appalachia Acculturation

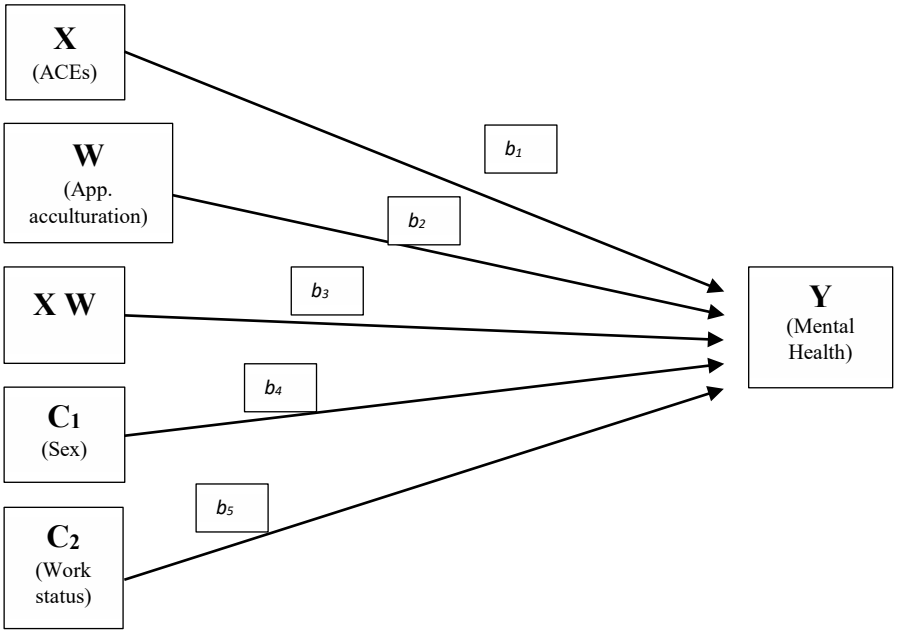

Figure 20: Conceptual Diagram of Moderation of the Effect of ACEs on Mental Health Outcomes by Appalachian Acculturation

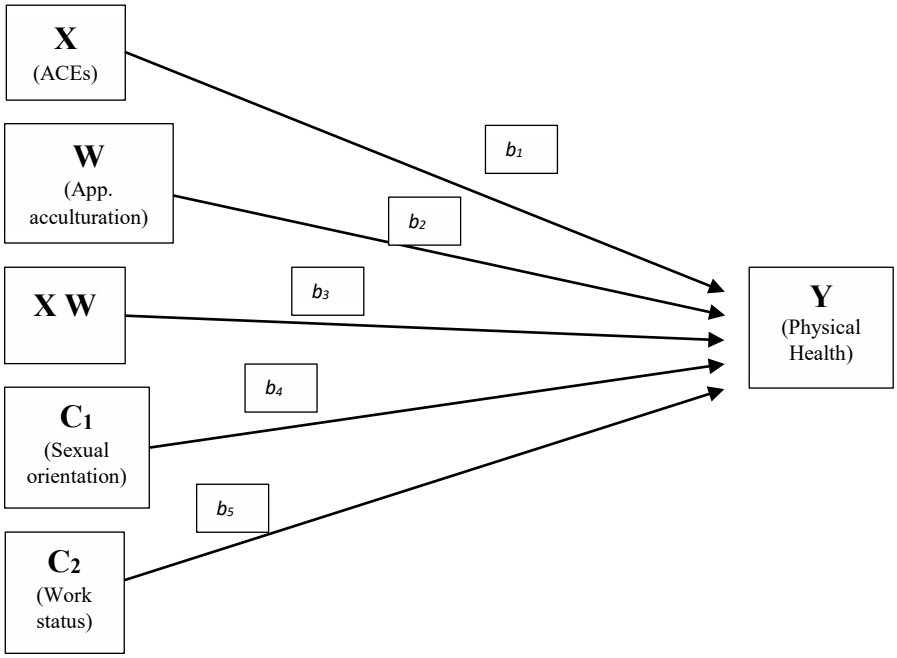

Figure 21: Conceptual Diagram of Moderation of the Effect of ACEs on Physical Health Outcomes by Appalachian Acculturation

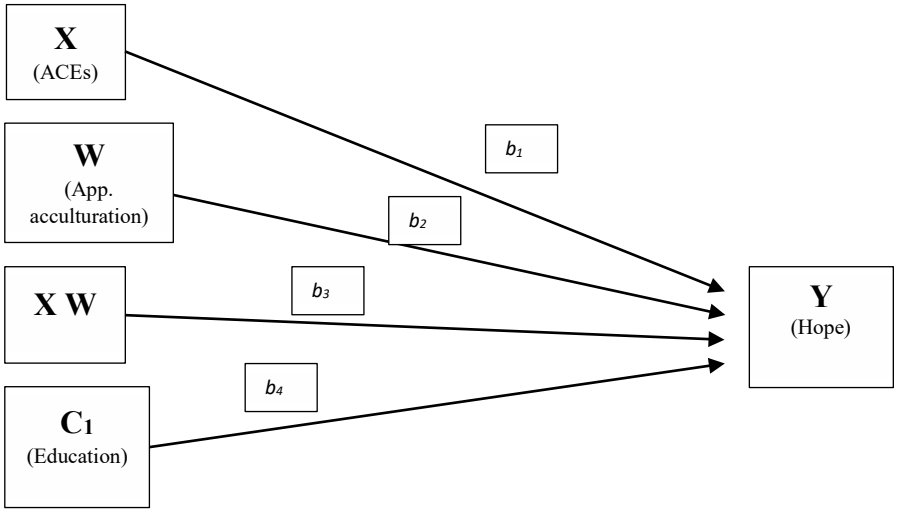

Figure 22: Conceptual Diagram of Moderation of the Effect of ACEs on Hope Outcomes by Appalachia Acculturation

Table 15
Moderated Multiple Regression Models by Total Stigma

	Mental Health			*Physical Health*			*Hope*		
Predictor	*Value*	*β*	*SE*	*Value*	*β*	*SE*	*Value*	*β*	*SE*
1. Sex (cov)		1.38***	.345						
2. Work status (cov)		.428***	.088		.377***	.079			
3. Sexual orientation (cov)					.314	.173			
4. Education (cov)								.500†	.227
5. ACEs		.028	.017		.009	.014		-.004	.025
6. Total stigma		.114*	.040		.076†	.034		.011	.062
7. ACE x Total stigma		**.002**	**.002**		**-.001**	**.002**		**-.004**	**.003**
ΔR^2	**.003**			**.000**			**.005**		
Overall F	19.70			9.86			1.67		
Overall R^2	.358			.233			.032		
95% CI	-.002, .007			-.004, .003			-.010, .003		

Note. n=183, n=168, n=209 †$p < .05$, *$p < .01$, **$p < .001$, ***$p < .0001$

Second, to test the hypothesis that the relationship between physical health outcomes and ACEs may be moderated by total stigma, a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, total stigma, and the two covariates, work status and sexual orientation (see Table 2), accounted for a significant amount of variance in physical health outcomes ($n = 168$, $R^2 = .23$, $F(4, 163) = 9.94$, $p < .001$) (see Table 15). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and ISSB was created (Hayes, 2018). The interaction between ACEs and ISSB was not significant ($p = .774$).

Finally, to test the hypothesis that the relationship between hope and ACEs may be moderated by total stigma, a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). The model including ACEs, ISSB, and one covariate, education (see Table 4), did not account for the variance in hope and was not significant (n = 177, p = .1595) (see Table 15).

Appalachian Acculturation

The relationship between ACEs and mental health, physical health, and hope, with Appalachian acculturation as a moderating variable, is described further in Table 16. Simple moderation analysis was conducted utilizing ordinary least squares path analysis. First, to test the hypothesis that the relationship between mental health outcomes and ACEs may be moderated by Appalachian acculturation, a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, Appalachian acculturation, and the two covariates, sex and work status (see Table 3), accounted for a significant amount of variance in mental health outcomes (n = 168, R^2 = .28, F(4, 163) = 14.97, p < .001). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and Appalachian acculturation was created (Hayes, 2018). The interaction between ACEs and Appalachian acculturation was not significant (p = .183).

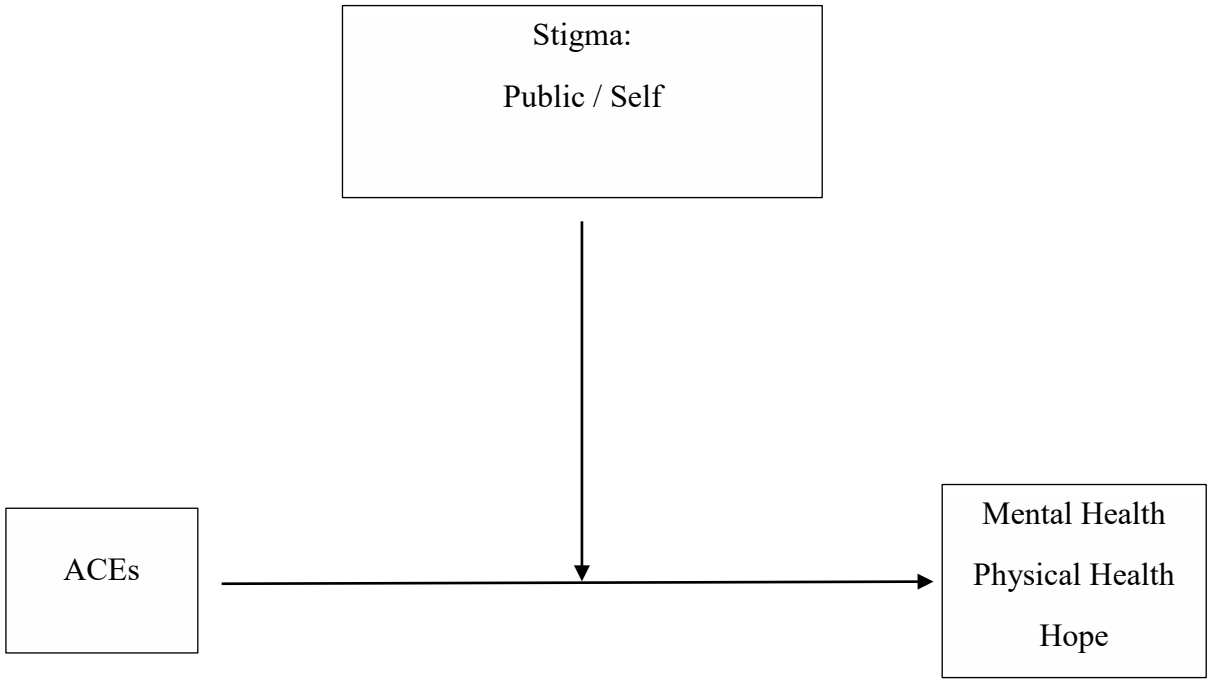

Figure 23: Conceptual Diagram of Moderation of the Effect of ACEs on Health/Hope Outcomes by Stigma

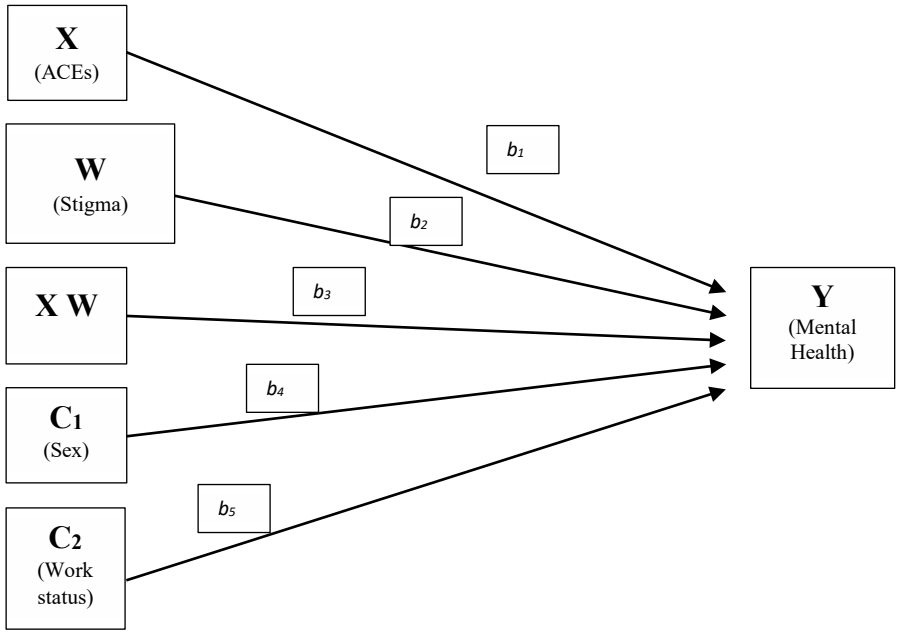

Figure 24: Conceptual Diagram of Moderation of the Effect of ACEs on Mental Health Outcomes by Stigma

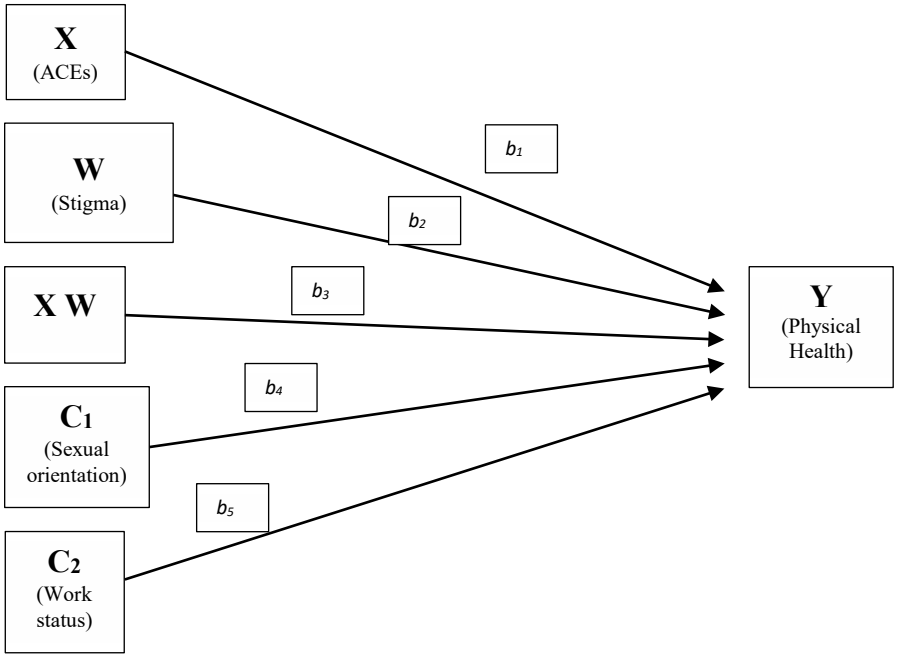

Figure 25: Conceptual Diagram of Moderation of the Effect of ACEs on Physical Health Outcomes by Stigma

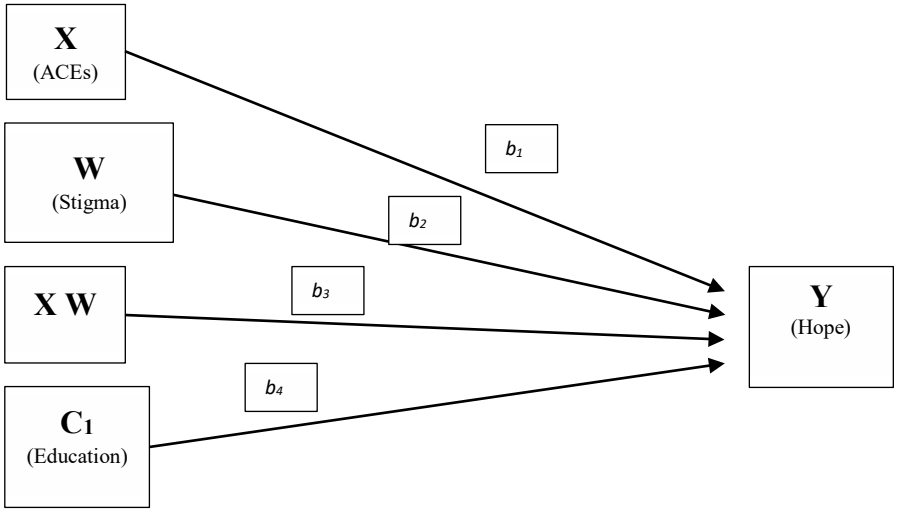

Figure 26: Conceptual Diagram of Moderation of the Effect of ACEs on Hope Outcomes by Stigma

Table 16
Moderated Multiple Regression Models by Appalachian Acculturation (AA)

	Mental Health			*Physical Health*			*Hope*		
Predictor	*Value*	*β*	*SE*	*Value*	*β*	*SE*	*Value*	*β*	*SE*
1. Sex (cov)		1.36**	.371						
2. Work status (cov)		.457***	.095		.376***	.080			
3. Sexual orientation (cov)					.170	.198			
4. Education (cov)								.563†	.233
5. ACEs		.053**	.014		.023	.012		.001	.020
6. AA		.004	.031		.007	.025		.156***	.043
7. ACE x AA		**.003**	**.003**		**.001**	**.002**		**-.001**	**.003**
ΔR^2	**.008**			**.000**			**.000**		
Overall F	13.18			5.84			5.09		
Overall R^2	.289			.163			.097		
95% CI	-.002, .008			-.004, .005			-.007, .006		

Note. n=168, n=156, n=195 †$p < .05$, *$p < .01$, **$p < .001$, ***$p < .0001$

Second, to test the hypothesis that the relationship between physical health outcomes and ACEs may be moderated by Appalachian acculturation, a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, Appalachian acculturation, and the two covariates, work status and sexual orientation (see Table 2), accounted for a significant amount of variance in physical health outcomes ($n = 156$, $R^2 = .16$, $F(4, 151) = 5.91$, $p < .001$) (see Table 16). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and Appalachian acculturation was

created (Hayes, 2018). The interaction between ACEs and Appalachian acculturation was not significant ($p = .798$).

Finally, to test the hypothesis that the relationship between hope and ACEs may be moderated by Appalachian acculturation, a simultaneous multiple regression analysis was conducted utilizing PROCESS macro (Hayes, 2018). ACEs, Appalachian acculturation, and one covariate, education (see Table 4), accounted for a significant amount of variance in hope ($n = 195$, $R^2 = .097$, $F(3, 191) = 5.12$, $p < .001$) (see Table 16). The variables were centered in order to minimize potential multicollinearity, and an interaction term between ACEs and Appalachian acculturation was created (Hayes, 2018). The interaction between ACEs and Appalachian acculturation was not significant ($p = .868$).

CHAPTER 4

DISCUSSION

Overall, spirituality, including each of its multidimensional components, was found to moderate the relationships between ACEs and mental health, physical health, and hope. Social support moderated these relationships in a very limited fashion, and stigma and Appalachian acculturation did not function as moderators. Here, I will review each of the five hypotheses in light of current findings, note how results relate to previous literature, describe study limitations, and present areas for future research.

Evaluation of Hypotheses

Hypothesis 1

The first hypothesis presumed that ACEs would be significantly associated with demographic, clinical, and treatment-related variables in a manner consistent with previous ACEs literature. Specifically, intermediate hypotheses were devised regarding several bivariate relationships. First, being female was hypothesized to be significantly associated with increased ACE scores. This hypothesis was not supported in that being female was not directly related to ACEs as it did not reach significance at the $p < .05$ level (See Table 1). Any attributable relationship may better be accounted for by effects of individuals' education levels and age at which they began using illicit substances, in accordance with to subsequent analyses. Second, ACEs were hypothesized to be negatively associated with highest education level attained and work status. This hypothesis was partially supported. Level of education was inversely related to increased ACEs at the bivariate level (see Table 1). ACEs were not significantly related to work status at the bivariate level until the effects of sex and age of first illicit substance use were taken into consideration within subsequent analyses. The third intermediate hypothesis suggests that

ACEs would be negatively associated with age of onset of substance use and positively related to number of days in treatment. This hypothesis was also partially supported. Age of onset of substance use was inversely related to ACEs at the bivariate level (see Table 1). Days in treatment was initially not significantly related to ACEs until the effects of sex and education attained were considered.

Hypothesis 2

The second primary hypothesis suggested that ACEs would significantly impact health and hope such that increased ACEs would be negatively associated with both physical and mental health, as well as hope. This hypothesis was partially supported. Physical health and mental health were directly related to ACEs such that both physical health and mental health were related to high ACE scores (see Table 1). Hope was not directly related to ACEs.

Hypothesis 3

The third hypothesis posited that the relationships between ACEs and health and hope would be moderated by social support, with increased levels of social support bolstering both health and hope in the face of ACEs. This hypothesis was partially supported. After social support was introduced within each of the three models, the models as a whole were significant. However, social support only significantly moderated the relationship between ACEs and mental health.

Hypothesis 4

The fourth hypothesis indicated that the relationships between ACEs and health and hope would be moderated by multi-dimensional spirituality, which was generally supported. Specifically, it was hypothesized that increased levels of ritualistic spirituality would negatively impact the health and hope relationship. This hypothesis was partially supported. Ritualistic

spirituality moderated the relationship between ACEs and mental health and the relationship between ACEs and hope. It did not moderate the association between ACEs and physical health. Increased levels of theistic spirituality were hypothesized to be positively associated with the health and hope relationship. This hypothesis was partially supported. Theistic spirituality moderated the relationship between ACEs and physical health such that theistic spirituality was related to worsened physical health outcomes. It did not moderate ACEs and mental health, nor the relationship between ACEs and hope. However, the predicted directionality was inconstant with results, as theistic spirituality decreased as ACEs increased. It was also proposed that existential spirituality would associated with the health and hope relationship. This hypothesis was partially supported. Existential spirituality moderated the relationship between ACEs and physical health such that existential spirituality was related to worsened physical health outcomes. It was not significantly related to the associations between ACEs and mental health nor ACEs and hope. However, the predicted directionality was inconstant with the results, as existential spirituality exacerbated the relationship as ACEs increased.

Hypothesis 5

The fifth hypothesis suggested that the relationship between ACEs and health and hope would be moderated by Appalachian acculturation, with higher levels of acculturation positively associated with both health and hope. This hypothesis was not supported. Appalachian acculturation did not significantly moderate the relationships between ACEs and physical health, mental health, and hope individually.

Hypothesis 6

The final hypothesis posed that the relationship between ACEs and health and hope would be moderated by public and self-stigma individually, and that higher levels of stigma

would be inversely related to both health and hope. This hypothesis was not supported. While public and self-stigma did not moderate the relationships between ACEs and health and hope, both public and self-stigma are significantly related to ACEs in a direct and detrimental fashion.

Summary of Hypotheses

Findings suggest that spirituality may play a more complex role in the relationships between ACEs and health and hope than originally proposed. Of the moderating variables hypothesized within the study, only social support was found to moderate, in a limited fashion, the ACEs - mental health relationship. Other bivariate associations were of particular importance, such as stigma being strongly correlated with ACEs rather than serving a moderating function. Both education level and age at which substance use began were both strongly correlated with ACEs at the bivariate level. Physical health and mental health were also strongly correlated with ACEs at the bivariate level, as predicted.

Implications of Findings

ACEs and Health

Results indicate that for individuals living in Southern Appalachia who participate in medically-assisted substance abuse treatment, having adverse childhood experiences are associated with mental and physical health concerns during adulthood. These findings are consistent with prior research conducted on ACEs and health outcomes (Brown, Thacker, & Cohen, 2013; Dong et al., 2004). While I did not evaluate specific health conditions or disease processes, I investigated respondents' perceived health status through self-reports of physically and mentally unhealthy days. These findings contribute to the literature by illustrating the impact of various forms of problematic childhood experiences and events on Appalachians' health in

community samples. Health disparities are an especially salient topic for persons in Appalachia and a focus of researchers and public servants (Health in Appalachia, 2019).

While there is a current focus on substance abuse and associated health challenges, there is also the question of what the solution(s) might be, particularly given recent data revealed by the National Safety Council (2019) finding that opioid deaths now exceed deaths due to car accidents. Additionally, poisoning mortality rates are 146% higher in South Central Appalachia than in the nation as a whole (Health in Appalachia, 2019). The current study has sampled a group of persons who struggle with and are in treatment for addiction. They are also residents of the South Central Appalachian region. This population was chosen especially for two critical reasons: (1) according to previous literature, individuals struggling with substance use are more likely to have increased ACE scores in comparison to the general public, making it a suitable population in which to explore qualities of resilience (Campbell, Walker, & Edege, 2016, Stein et el., 2017); and (2) to date, ACEs and resilience factors have not been studied within this unique population.

Additionally, level of educational attainment and the age of the individual when they began using illicit substances were both significantly related to ACE scores, which is consistent with the latest research on the relationship between ACEs and opioid use (Stein et al., 2017). Less educational attainment was associated with increased ACE scores. As such, 3% of respondents endorsed middle school as their highest level of completed school, and 17% endorsed leaving high school before graduating. Further, the lower the age of first substance use was also related to increased ACE scores; 4.5% of respondents endorsed that their use began prior to the age of ten, and 27% endorsed starting drug and/or alcohol use between the ages of ten and thirteen. Public health experts have suggested that increased educational opportunities

plus increased levels of education attained may function as resilience factors (Metzler et al., 2017). School attendance, whether in elementary or higher grade levels, provides the environmental opportunity for reprieve from maladaptive and potentially abuse home life, contact with supportive adults, and the opportunity for corrective experiences and mentorship.

It may be that the resilience component of education works through some other function, such as lending to increased hope or providing more opportunities for social support, leading to better outcomes (Bellis et al., 2017). There is some evidence of intergenerational effects of lower educational attainment that are carried through from generation to generation (Schofield & Abraham, 2017; Schofield et al., 2018; Schofield, Lee, & Merrick, 2013). Thus, the more educational attainment and hope for the future has been emphasized by older generations or parental figures, the more likely younger generations will internalize that sense of hope. They may also have a clearer sense of how to work toward their goals and what resources and pathways may be available to them if they have seen others in their household work toward similar goals. My bivariate results do indicate that higher levels of education are related to increased hope.

Resilience

Within the past few years, public attention has been drawn to the challenges within South Central Appalachian region resulting in focus groups being formed, and policies put into place related to economic, environmental, health, and social solutions (Catte, 2018a; Dasgupta, Beletsky & Ciccarone, 2017; Dunn, Behringer, Bowers, & Jessee, 2010; Elder et al., 2018; Krometis et al., 2017; Wykoff, Pack, & Egen, 2018). Considering these developments, Ungar would likely remind us of the concept of complexity (Ungar, 2011). Complexity related to studying, understanding, explaining, and developing treatment or policy to bolster resilience is

especially salient considering the unique, internally and externally branded Appalachian culture. Concepts of Ungar's social-cultural-ecological model will be threaded throughout the remainder of this discussion in light of these results (Ungar, 2011; Ungar, 2013).

Appalachian Culture. The Appalachian region, its people, and overall culture continue to find themselves in the news. "Trump Country" often takes the blame for the ills of the nation yet is simultaneously judged and questioned for its apparent fatalism (Catte, 2018a; Catte, 2018b, Denham, 2016; Diddle & Denham, 2010; Elder et al., 2018). Scholarly authors with deeply personal experiences and politically polar opinions disagree about whose voice rightly owns the telling of the Appalachian story, while millions of others have their own story to tell (Catte, 2018a; Vance, 2016) Thousands are silenced daily from "diseases of despair" with no solution or end in sight (Dasgupta, Beletsky & Ciccarone, 2017; Stein & Remington, 2019).

My earlier discussion focused on the historical underpinnings of Appalachia, governmental classification and aid, and characteristics and stereotypes. Previous literature also expanded on whether or not Appalachia should be considered a culture unique unto itself, as well as homogeneity versus the diversity found within the region (Catte, 2018a; Catte, 2018b; Denham, 2016). Both the extensive literature review and the consideration of the social-cultural-ecological model expose the need to pay careful attention to micro-ecologies as well as macro-ecologies, but especially the need to view the Appalachian culture from a dialectical perspective (Ungar, 2011; Ungar, 2013).

The results related to Appalachian acculturation in this study highlight the concepts noted above, in that 47% of respondents endorsed disagreeing with the statement "I have a strong sense of being Appalachian." Moreover, 44% of respondents endorsed disagreeing with feeling a part of Appalachian culture. While all of these individuals live in South Central Appalachia, one

might argue that they are not entirely acculturated, also considering their own perspectives of what it means to be Appalachian. While Appalachian acculturation did not moderate the relationships between ACEs and health and hope and was not directly related to ACEs, mental health, physical health, or hope, Appalachian acculturation was related to hope and social support in a salutary fashion.

Appalachian acculturation was also associated with all dimensions of spirituality. Thus, individuals in substance treatment who live in Appalachia but who are not acculturated report lessened hope, social support, and spirituality. As a result, those who feel less connected to the culture of the region may be less able to draw on sources of hope, connection, and support than are needed to offset experiences of early adversity and stigma associated with ACEs and substance abuse. Additionally, those who are not acculturated may not value religion and spirituality to the degree those who are acculturated do, and thus may not draw support and coping from spiritual constructs and organizations. Appalachian acculturation was further related to county economic distress status, meaning that residing in more economically distressed counties and being more likely to be unemployed were related to increased sense of belonging and acculturation.

Maintaining a dialectical perspective – that two seemingly opposed ideas could both be relevant or true – based on these results, it appears that although an individual may reside in an economically distressed region and be unemployed, he or she may also maintain hope and increased social support (Bardach, Tarasenko, & Schoenberg, 2011). It may be that those who are acculturated, and who have a greater sense of spirituality and hope, may have differing effects when unemployed because they may be reaching out to others in similar situations for support. Those within faith communities in economically distressed regions may also feel

compelled to provide additional support. Thus, those who are acculturated but who may also be unemployed and residing within distressed regions may actually receive more social support and be more hopeful compared to those who are not acculturated. This notion also supports the atypicality that may materialize when cultural context is taken into consideration.

Spirituality. Spirituality has long been considered a central component of Appalachian culture. The current findings support the prediction that spirituality is important to individuals in South Central Appalachia who are currently in addiction treatment, and especially for those who experienced traumatic childhoods. In fact, various dimensions of spirituality were found to be helpful in different ways and to varying degrees. However, at the bivariate level, all dimensions of spirituality were significantly positively related to Appalachian acculturation, hope, and social support. These results are also consistent with Koenig and Larson's (2001) conceptualization of the mechanisms of spirituality in individuals' lives.

Mechanisms of Spirituality. Koenig and Larson (2001) suggested that spirituality may engender qualities and positive worldviews such as hope, meaning, purpose, optimism, and motivation, especially during times of significant stress. They also suggested that spirituality and religiosity support pro-social values like forgiveness and compassion and provide increased opportunity for social support (Brewer-Smyth & Koenig, 2014; Diddle & Denham, 2010; Webb, Phillips, Conway-Williams, & Bumgarner, 2013). The authors also posited that spirituality/religiousness may be directly and indirectly related to health and well-being. My current findings are consistent with Koenig and Larson's (2001) conceptualization in that total spirituality is strongly correlated with both hope and social support, but also indirectly related through moderating the relationship between ACEs and health and well-being (Koenig & Larson, 2001). However, the literature also suggests that these relationships may be nuanced due

to individuals' experiences of trauma during their early lives (Chen & Koenig, 2006a; Chen & Koenig, 2006b; Lee, Park, & Hale, 2016; Park et al., 2017a).

Other investigators have questioned the helpfulness of traditional Appalachian spiritual values as promoting poor health behaviors (Behringer & Friedell, 2006, Elder et al., 2018). My results indicate that spirituality, overall, is helpful and bolsters health outcomes at low to moderate levels of ACE scores, which is consistent with the general consensus of literature on religion and spirituality to date (Brewer-Smyth & Koenig, 2014; Pargament et al., 2013). However, for those endorsing higher levels of ACEs, the indicating high levels of spirituality becomes problematic in relation to health outcomes.

It may be that individuals are more likely to endorse higher levels of spirituality if they have experienced a high number of ACEs, as well as overall poor health. In a recent study of combat Veterans, Park and colleagues (2017) found similar outcomes. They investigated moderating effects of both positive and negative religious coping on both post-traumatic stress disorder (PTSD) and perceived post-traumatic growth (PPTG) in those who had experienced combat. As hypothesized, negative religious coping was related to increased PTSD and less PPTG. However, contrary to their predictions, high positive religious coping was related to high levels of PTSD for those who experienced high levels of combat exposure. The authors had difficulty providing explanation for these novel outcomes, though it may be that at very high trauma exposure exhausts every reserve that the individual has in order to survive the internal and external consequences of those experiences. Conceptualizing religious coping, overall spirituality, hope, physical health, mental health, and even social support as reserves that can be depleted past a breaking point may allow a framework for understanding my nuanced findings (Bardach, Tarasenko, and Schoenberg, 2011; Freidland, 2014).

Multidimensional spirituality and trauma. Findings also support the notion that spirituality/religiousness may have a multidimensional nature, which is evidenced from current findings and in this specific Appalachian population (Koenig & Larsen, 2001; Lee, Park, & Hale, 2016; Pargament et al., 2013). The spirituality literature has historically been imprecise regarding definitions and uses of the terms spirituality and religiousness, often using them interchangeably or together. Webb, Toussaint, and Dula (2013) developed, defined, measured, and validated a multidimensional measure of spirituality, the RiTE model and measure of spirituality. Lee, Park, and Hale (2016) found that investigating multidimensional aspects of spirituality help us better understand the interaction of trauma experiences and religious belief and practices. As such, RiTE was appropriate for use in the current study.

It is critical to examine how beliefs and behaviors functionally operate within this particular population (Pargament, Mahoney, & Shafranske, 2013; Park et al., 2017a). For those who have experienced trauma, religion and spirituality tend to become increasingly salient as a means of coping, making meaning of the transgression(s), and searching for significance (Park, Currier, Harris, & Slattery, 2017b). While the investigation of the relationship between religion/spirituality and trauma is comparatively new, Park and colleagues (2017b) suggested that trauma forces survivors to address existential issues and threats in their lives naturally drawing them toward religious/spiritual paradigms (Park, Currier, Harris, & Slattery, 2017b; Chen & Koenig, 2006a; Chen & Koenig, 2006b). This spiritual journey provides opportunity to come into contact with pro-social constructs such as forgiveness, compassion, social connection, identity, impulse control, emotion regulation, support, meaning, and justice beyond one's own self and circumstances (Koenig & Larsen, 2001.)

Many prior studies of spirituality/religiousness have focused on aspects that somewhat align with the ritualistic dimension, focusing on factors such as worship attendance, prayer, religious practices, rituals, and traditions (Pargament et al., 2013; Park & Slattery, 2012). My results are relatively consistent such that ritualistic spirituality was found to moderate the relationship between ACEs and mental health and ACEs and hope, but not ACEs and physical health. However, I had predicted that ritualistic spirituality would have a detrimental effect on health and well-being. This prediction was only supported in cases where ACE exposure was very high. It may be that individuals in the Appalachian region value ritualistic practices in a way such that increased religious activity, be it attendance, prayer, or religious conviction, bolsters their mental health. Consistent with my findings, Slusher, Withrow-Fletcher, and Hauser-Whitaker (2010) found that church attendance, along with access to healthcare, predicted increased self-care in a sample of Appalachian women, lending to physical and mental health benefits.

Generally, being religious or spiritual may help those who have experienced trauma manage their stress and even help make sense or meaning of their trauma, potentially benefiting their mental health (Park, Currier, Harris, & Slattery, 2017a). Zell and Baumeister (2013) suggest that prayer may also assist with this process. However, a spiritual struggle may ensue in response to adverse experiences, especially with greater levels of trauma if the global meaning attributed regards to being abandoned or punished by God, or being beyond God's control (Wortmann, Park, & Edmonson, 2011). There is also evidence that distress may increase if the individual perceives their faith community as non-supportive, which is more likely to occur when perceived stigma is present (Park, Currier, Harris, & Slattery, 2017a). These results highlight the need for

more clarification of the mechanisms and functionality of ritualistic spirituality in this unique population.

Prior investigations of religious belief, which are a similar measure to the theistic dimension of spirituality, found belief to predict less psychological distress (Ross, 1990). In a recent investigation of the RiTE measure of spirituality, Chang, Jilani, Yu, Fowler Lin, Webb, & Hirsch (2015) found that theistic spirituality was related to decreased depression scores on the NEO-FFI. Prosocial orientation, sociability, and unconventionality were also significant predictors of theistic spirituality (Chang et al., 2015). My results are rather consistent in that endorsement of theistic spirituality moderated the ACEs – physical health relationship, promoting better physical health outcomes in spite of problematic childhood experiences.

Our understanding of why theistic spirituality would only be related to physical health outcomes rather than mental health and well-being is limited and gives rise to the need for more research on theistic spirituality and special populations, including those in substance abuse treatment in Appalachia. However, despite the lack of association with mental health and well-being in the current study, theistic spirituality can be generally understood as engendering health through what Cole and Pargament (1999) described as the concept of "spiritual surrender." The authors reported that this belief and surrender is especially critical during extreme challenges and events occurring beyond the individual's control. Spiritual surrender may also precipitate connection with a higher calling or purpose beyond the individual's immediate circumstances. Clements & Ermakova (2012) determined that spiritual surrender was a predictor of lower levels of stress among a sample of pregnant Appalachian women. In line with this, findings in the current study indicate that this aspect of spirituality also has health benefits for those in addiction treatment in Appalachia.

Much like my results for theistic spirituality, existential spirituality moderated the relationship between ACEs and physical health but not mental health or hope. Likewise, the relationship was salutary until ACE scores reached very high levels. Chang and colleagues (2015) found that existential spirituality was positively related to depression and self-reproach scores on the NEO-FFI. Additionally, prosocial orientation, unconventionality, and goal orientation were predictors of existential spirituality. The bivariate correlations did reveal, however, that existential spirituality, unlike the other two dimensions, was directly correlated with both days in treatment and age substance use began. As such, endorsement of existential spirituality was related to greater number of days in treatment as well as lower age at which one began using illicit substances.

There is a possibility of endorsing existential spirituality and while not believing in a deity or being agnostic. Thus, those who live in Appalachia and initiated substance use at a young age may be more likely to reject traditional Appalachian faith practices and beliefs. They may also be more likely to seek out assistance and support from non-traditional sources, such as substance treatment, resulting in increased length of participation in those programs. While these individuals may not endorse more traditional religious and spiritual characteristics, they value fulfillment, meaning/purpose, and helping the community and others. More research is necessary to better understand the nature of these relationships.

In sum, it is clear that multidimensional spirituality is applicable to Appalachian culture and to the process of uncovering factors contributing to resilience in those who have experienced developmental adversity. It is of additional interest that various dimensions of spirituality are related to health and well-being in differential and sometimes seemingly contradictory ways. However, taken in whole, the results indicate that rigidity in religious and spiritual practices (as

illustrated by high RiTE scores), beliefs, and judgments relate to poor physical and mental health, as well as decreased hope, among those with very high ACE scores. High RiTE scores may also be an indication of rigidity in general and black-and-white thinking, limited motivation or ability to consider alternatives. Mental flexibility is generally thought of as an adaptive quality that facilitates recovery and resilience across situations, challenging life events, and time.

The differences evidenced within the results here support Ungar's model of resilience, which emphasizes how culturally relative processes intersect with regard to both complexity and atypicality. This intersectionality is illustrated clearly in my investigation of spirituality. I was careful not to overemphasize demographic data but to be sensitive to the respondent's social ecology and support offered within those ecologies in whole. Applying appropriate sensitivity to Appalachian cultural processes relevant to resilience challenges us to allow the literature to guide in differentiating stereotypes from legitimate cultural characteristics, as well as the functionality of these processes. However, the literature investigating this unique population is limited.

Social Support. It is important to note that the population sampled herein is operating within a specific treatment-based social ecology along with other social ecologies that overlap and intersect. While this program has a medically assisted treatment focus, participants are required to see case managers on a monthly basis in order to continue receiving their medication. There is some degree of perceived support associated with even presenting to the facility for assistance on a regular basis. However, this does not negate respondents' need and values for other forms of assistance and social support within that individual's social ecology.

Current findings show that social support is relevant in direct and indirect ways. As previously stated, social support was directly and positively related to every dimension of spirituality, hope, and Appalachian acculturation. These results also suggest that the more

acculturated these individuals feel, the more support and motivation to manage future endeavors they may have. Conversely, it may be that social support and connection lends to acculturation. Social support has been repeatedly investigated in relation to various mental health concerns among adults and children, and in consideration of resilience factors, has been generally thought of as an essential component of most individuals' social environments (Brewin, Andrews, & Valentine, 2000; Hamby, Grych, & Banyard, 2018). My results indicate that social support moderates the relationship between ACEs and mental health but not ACEs and physical health nor ACEs and hope.

The social support scale used in this study measures aspects of perceived social support but also includes more concrete indications of support being received (i.e., gave you over $25; provided you with transportation), though it does not measure provider support in an outright manner. One study suggests that perceived support from professional medical experts is critically important within the rural Appalachian culture, which is highly influenced by a culture of self-reliance, scarcity of resources, and medicalization of needs, including emotional needs (Bardach, Tarasenko, & Schoenberg, 2011). Individuals within this cultural context place a disproportionate amount of trust, faith, and desire for support from their providers, often over that of their family and friends. These individuals tend to be protective of their family's emotional and physical reserves and desire not to be a burden on that system, feeling that it is more appropriate to seek support from experts. The ability to seek and gain needed physical/medical support without having to tap into family support reserves may translate into a sense of accomplishment, satisfaction, and ultimately, peace of mind.

It may be that receiving informal support as I have measured it in some way also translates to internalized emotional support and peace of mind, providing benefits beyond those

most immediate and tangible (Roberts, Banyard, Grych, & Hamby, 2017). For persons who have experienced traumatic experiences throughout childhood and who continue to struggle with the challenges of addiction, food insecurity, unemployment, and the like, these effects may be especially critical and even exaggerated. Bardach and colleagues (2011) stated, in regard to rural Appalachian participants,

> "This hesitation to seek and accept information support seemed to stem from a conflux of factors: a culture of self-reliance, a desire not to be a burden to others with similarly limited resources, and perhaps, a sense that one should wait to take advantage of support until it was really needed. Social support can also be considered as a social 'fund,' implying that taking also requires giving, and those with limited personal resources may not want to assume this responsibility." (p. 766)

The value placed on such exchange highlights the potential impact that informal support may foster in the recipient, likely lending to decreased stress and anxiety alongside increased feelings of connectedness and belonging. It may also suggest that if the individual considers themselves a recipient, they are also very likely mutually involved, suggesting that they have human/emotional capital to offer others in return. This notion promotes an added sense of responsibility that potentially contributes to the individual's meaning and purpose. This study bolsters our understanding us of why perception of social support would serve as a buffer between ACEs and mental health for Appalachian adults in medically assisted treatment.

Stigma. A growing body of research evaluates the experience of stigma within various marginalized populations (Griffith & Kohrt, 2015). The stigma of having experienced ACEs, the

stigma of having an addiction, the stigma of being the recipient of any type of substance-related or mental health treatment, and the stigma of having to ask for assistance may impede the internal effects of the otherwise salutary aspects of social support (Deitz, Williams, Rife, & Cantrell, 2015). Thus, there are several reasons to suspect that individuals receiving addiction treatment in South Central Appalachia might be especially vulnerable to experiencing varied forms of stigma. For this study, I was particularly interested in investigating stigma related to ACEs. I was also interested in individuals' particular experiences of that stigma, whether it was experienced publicly or self-directed. Griffith and Kohrt (2016) suggest that there are five types of stigma particularly relevant to individuals with mental health challenges, including: (1) peril stigma, (2) moral stigma, (3) disruption stigma, (4) empathy fatigue, and (5) courtesy stigma. If and when any of these forms of stigma become internalized, it may be particularly difficult to buffer and becomes a "lens for self-perception" (p. 341).

Deitz, Williams, Rife, and Cantrell (2015) determined that self-stigma was significantly related to trauma symptoms for women who were victims of sexual violence within their intimate relationships. The authors also suggested that the type and level of impact from the stigma experienced may be affected by an individuals' cultural ecology and available social support networks. My results are consistent with previous literature. Findings indicate that experiencing adverse childhood events was also associated with stigma related to those experiences throughout life. This was the case for both public and self-stigma. However, public and self-stigma did not moderate the relationships between ACEs and health and hope as predicted. Considering the strength of the relationship between ACEs and ACE-related stigma, it could be that this stigma functions instead as a mediator or moderated mediator. The literature also suggests that stigma contributes to psychological distress through maladaptive emotion

regulation processes, namely increased rumination (Hatzenbuehler, Nolen-Hoeksema, & Dovidio, 2009). Additionally, stigma drives to decreased help-seeking behavior, resulting in less support received, especially the more easily concealed the attribution (Quinn & Chaudoir, 2015). More information is needed to better understand the mechanisms involved.

Interestingly, the measure of ACE-related stigma used may also indirectly indicate other forms of stigma the individual may be experiencing, suggesting the possibility of multiple stigmas. Results show that at the bivariate level, ACE-related stigma (public and self-stigma) was directly related to being female, having less educational attainment, being unemployed, endorsing a non-heterosexual orientation, and poor mental and physical health. A recent study of persons receiving outpatient substance treatment in Brazil found that that being female was associated with having more self-stigma than was the case among males (da Silveira et al., 2018). Additionally, unemployment was related to higher degree of stigma internalization. Self-stigma was also related to decreases in self-esteem and increased depression serving as threats to overall well-being, which is also consistent with my findings.

Investigating ACE-related stigma supports the concept of decentrality, which suggests that resilience-related inquiry should be focused away from the individual and instead toward the individual's environment (Ungar, 2011). This may aid us in considering the ways in which an individual's environment shifts throughout his or her life and long after ACEs were initially experienced. Decentrality also works to shift shame and blame away from the victim, placing some responsibility instead onto the individual's environment.

Current results do help us understand that females in substance treatment may be especially vulnerable to ACE-related stigma (public and self) and also experience decreased well-being. For those who may also have low educational attainment, who are unemployed,

and/or who identify as anything other than heterosexual, the same risk is present, though it is unknown exactly how the impact of having multiple stigmas may affect this already marginalized group of individuals. Based on prior literature, these persons may benefit from increased attention and support from their social environments, especially for those whose trauma may be concealed (i.e., sexual trauma, physical/emotional abuse,) (Quinn & Chaudoir, 2015; Williams & Mickelson, 2008). However, it can be inferred based on current results that Appalachian females in substance treatment likely fall into at least one of those categories.

Limitations and Future Directions

The present study posed a number of unique challenges and limitations. Because of the study's cross-sectional nature, causation and directionality of relationships between variables is unknown. However, the selection and ordering of variables, as well as the analyses utilized, were based upon previous theoretical investigations and specifically based on Ungar's social-cultural-ecological model of resilience (Ungar, 2013). As a result, it may be that other relevant potential moderating variables and covariates have been excluded from this study (e.g., negative/positive religious coping, spiritual surrender, spiritual distress, stress, and length of Appalachian residence). Likewise, the removal of variables that are closely related to each other but not related to the outcome may have in combination provided significant results.

Further investigation using other etiological conceptualizations, methodologies, and relevant variables is needed to offer more comprehensive examination and to determine causality and directionality among these relationships. Ungar (2013) has in fact called for additional investigation with mixed-methodologies, including qualitative and longitudinal methods to help uncover additional and nuanced information specific to that culture that cannot be acquired in a one-time self-report survey. Further, the current study is the first of its kind within the

Appalachian region; thus, more research will be necessary to better understand the relationships between variables and to place them in their proper context.

This study also includes self-report data, affecting the degree to which one may base conclusions upon a particular set of responses. Specifically, participants completed study measures during prescheduled appointments at their MAT clinic, which may influence their responses to study questions. Responses may be skewed favorably, taking social desirability into account. Dishonesty and inaccuracy may also pollute responses (Dodou & de Winter, 2014). Future studies with a similar sample may wish to control for social desirability. Such factors were not included in the present study in order to aid preservation of statistical power.

Mental and physical health data were measured subjectively by self-report, thus subject to potential inaccuracies. Mental health diagnostic tools were not used, nor were symptoms verified by independent mental healthcare professionals. Likewise, objective physical health indicators were not measured or verified by medical professionals. Social support received by participants was largely based on their perceptions of support. While the ISSB includes some "objective" indicators of support, actual support received is difficult to quantify, also contributing to potential inaccuracies.

Due to the specific nature of the sample represented here (e.g., South Central Appalachian MAT patients), the data and findings from the present analysis may not generalize to individuals from other locations or others who are not in substance-related treatment. As such, the current sample may not be representative of all Appalachians, or even all South Central Appalachians. Similarly, the current sample may not be representative of all individuals who are in substance-related treatment, as there are many other types and modalities of substance treatment that do not include medication. It may also be the case that individuals who select

MATs have similar qualities (e.g., increased ACEs, increased employment and income, increased health difficulties) which may also distort the results. Further, the demographic variable "Days in Treatment" may have limited utility given that some individuals just began treatment at the time of the survey and may continue for any number of days, while others may have been in treatment for several years, but are nearing completion. Altogether, it may provide little information about their recovery process.

The current study highlights multiple opportunities for additional investigation. As previously mentioned, there is a paucity of research regarding Appalachian culture related to health and poor outcomes. Additionally, further investigation related to spirituality in Appalachia may be helpful in better understanding how religion and spirituality function in contributing to physical and mental health outcomes. While these findings are substantive, qualitative and other mixed-methods evaluations may be useful in describing the nuanced mechanisms through which important outcomes occur.

Further, it is evident from this study that ACEs should be a central component of ongoing investigation in Appalachia and in the recovery communities. However, there is adequate evidence for implementing interventions focused on providing acknowledgement, support, and care for survivors of ACEs, especially in the South Central Appalachian region. Integrating trauma-informed care within medical communities may be the most effective means of reaching those who have poor access to care (Cutuli, Alderfer, & Marsac, 2019). Further, as evidenced in the discussion regarding social support, these individuals highly value their medical providers' attention and support.

Findings support acknowledging the contribution that spirituality makes to individuals' well-being across development, which is increasingly true for ACE survivors. Further

investigation is needed to better understand the mechanisms lending to such nuanced outcomes. However, one clear finding is that spirituality matters to individuals in South Central Appalachia and in a way that affects their physical and mental health and motivation. Thus, in addition to implementing trauma-informed care initiatives in medical communities, faith communities may also serve as an appropriate resource. The effectiveness of trauma-informed care could also be increasingly bolstered if it was also spiritually-informed, and vice versa.

The interface between the medical and faith communities could be strengthened in a way that significantly increases tangible and perceived social support, which was found to be especially helpful for mental health outcomes, Appalachian acculturation, and hope. Faith organizations are also in a unique position to provide support that may indirectly impact individuals' physical health, as well. For instance, most organizations (even those in rural areas) have church buses that do not operate during the week but represent an untapped resource for providing transportation to medical appointments for those who have none or who find transportation opportunities very limited due to rurality, distance, or lack of social support. In addition to increased medical care, a service like this would increase access to other resources, perceived support, and faith organizations' understanding of community/individual needs while also indirectly decreasing stigma. Taken together, a service like this would lend to emotional and physical health benefits for South Central Appalachian communities who are desperately in need of novel support.

As program initiatives like trauma-informed and spiritually-informed care are presented, medical provider buy-in may be a challenge. Providers may feel underqualified, concerned about uncovering emotional issues that they are not prepared to treat, or burdened by the time needed to potentially attend to these matters. As such, the integration of clinically-trained psychologists

into hospital, primary care, urgent care, MAT, and other rehabilitation settings may aid this process (Hamberger, Barry, & Franco, 2019). Clinical psychologists have diverse training and expertise that allows them to function in roles as consultants, liaisons, behavioral health providers, group presenters (for providers and patients), and data/process/program evaluators (Mihelicova, Brown, & Shuman, 2018). In-house mental health expertise and increased support could help bridge the gap between provider and patient concerns in a seamless and flexible manner.

In sum, Ungar's (2011, 2013) model of resilience provides a novel approach to investigating and understanding resilience, as well as developing culturally appropriate intervention. As such, I have proposed ongoing research efforts within the Appalachian region especially highlighting mixed methodologies. I additionally proposed approaches to providing care and support within the region to help address the complexity of issues community members and providers face. Just as a novel approach to the investigation of resilience is required, a novel approach for developing and implementing interventions is also required. Importantly, the goal should not be to change the Appalachian culture, or individuals' values within the auspices of healthcare, but rather to illuminate their best qualities and aid them in living in a manner consistent with those values.

Conclusions

Empirical examination of ACEs and their relationship with health outcomes in later life has burgeoned in recent years. Less is known about factors that may increase resilience for those who have survived such challenges, and even less is known about how resilience may be manifested and bolstered for those with ACEs residing in an economically and socially marginalized region like South Central Appalachia. Ungar's (2011, 2013) social-cultural-

ecological model of resilience places cultural humility as a foundational component and, correspondingly, served as a core focus of this study. Multidimensional spirituality, social support, stigma related to ACEs, and Appalachian acculturation serve as both valid cultural factors within Appalachian life and also potential indicators of resilience. Endorsement of increased spirituality was generally helpful for those in MAT in South Central Appalachia who self-reported ACEs. However, as one endorsed an increasing number of ACEs, spirituality exacerbated health and hope outcomes. Social support, on the other hand, was related to improved mental health outcomes regardless of ACE score. Stigma and Appalachian acculturation were only related to other variables at the bivariate level and not within the hypothesized moderation model. Findings demonstrate the utility of seemingly positive values and characteristics as spirituality and social support, but also the limitations thereof. The results also illustrate the unique qualities of the sample while also demonstrating aspects distinctive to Ungar's resilience model, including decentrality, complexity, and atypicality. However, it is evident that additional investigation is needed to better understand drivers and mitigators of health outcomes in South Central Appalachia. This study offers preliminary insight into promoting resilience within South Central Appalachia and offers insight into cultural nuances that should not be dismissed but that are key elements in explaining physical and mental health outcomes in Appalachia, as well as culturally appropriate intervention.

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APPENDICES

Appendix A

ACE-IQ

(WHO, 2012)

Demographics & ACE-IQ							
1	What is your current zip code of residence?	_____					
2	Sex:	(1) Male	(2) Female	(3) Trans	(4) Other		
3	How old are you?	(1) 18 to 25	(2) 26 to 34	(3) 35 to 50	(4) 51 to 65	(5) over 65	
4	How would you describe your race or ethnicity?	(1) Native American	(2) Asian / Pacific Islander	(3) African American	(4) Caucasian / White	(5) Hispanic / Latino	(6) Multiracial
5	What is the highest level of education you have completed?	_____					
6	Which of the following best describes your MAIN work status over the last 12 months?	(1) Self-employed	(2) Student	(3) Homemaker	(4) Retired	(5) Unemployed - able to work	(6) Unemployed - unable to work
7	What is your sexual orientation?	(1) Heterosexual	(2) Gay	(3) Bisexual	(4) Lesbian	(5) Other	
8	What is your marital status?	(1) Married	(2) Not married but living as couple	(3) Divorced / Separated	(4) Single	(5) Widowed	
9	How many days have you been in treatment at WRC?	_____					
10	At what age did you begin using alcohol and/or drugs?	_____					

Marriage							
11	Have you ever been married?	(1) No	(2) Yes	**If Yes, answer next four questions…			
12	At what age were you first married?	_____ _____					
13	At the time of your first marriage did you yourself choose your husband/wife?	(1) No	(2) Yes				
14	At the time of your first marriage if you did NOT choose your husband/wife yourself, did you give your consent to the choice?	(1) No	(2) Yes	(3) Does not apply			
15	If you are a mother or father what was your age when your first child was born?	_____					

Relationship with Parents/Guardians							
When you were growing up, during the first 18 years of your life…							
16	Did your parents/guardians understand your problems and worries?	(1) Never	(2) Rarely	(3) Sometimes	(4) Most of the time	(5) Always	
17	Did your parents/guardians REALLY know what you were doing with your free time when you were not at work or school?	(1) Never	(2) Rarely	(3) Sometimes	(4) Most of the time	(5) Always	
18	How often did your parents/guardians NOT give you enough food even when they could easily have done so?	(1) Never	(2) Rarely	(3) Sometimes	(4) Most of the time	(5) Always	
19	Were your parents/guardians too drunk or intoxicated by drugs to take care of you?	(1) Never	(2) Rarely	(3) Sometimes	(4) Most of the time	(5) Always	
20	How often did your parents/guardians NOT send you to school even when it was available?	(1) Never	(2) Rarely	(3) Sometimes	(4) Most of the time	(5) Always	

Family Environment							
When you were growing up, during the first 18 years of your life…							
21	Did you live with a household member who was a problem drinker or alcoholic, or misused street or prescription drugs?	(1) No	(2) Yes				
22	Did you live with a household member who was depressed, mentally ill or suicidal?	(1) No	(2) Yes				
23	Did you live with a household member who was ever sent to jail or prison?	(1) No	(2) Yes				
24	Were your parents ever separated or divorced?	(1) No	(2) Yes	(3) Does not apply			
25	Did your mother, father, or guardian die?	(1) No	(2) Yes	(3) Don't know / Not sure			
These next questions are about certain things you may actually have heard or seen IN YOUR HOME. These are things that may have been done to another household member but not necessarily to you.							
When you were growing up, during the first 18 years of your life…							
26	Did you see or hear a parent or household member in your home being yelled at, screamed at, sworn at, insulted or humiliated?	(1) Never	(2) Once	(3) A few times	(4) Many times		
27	Did you see or hear a parent or household member being slapped, kicked, punched or beaten up?	(1) Never	(2) Once	(3) A few times	(4) Many times		
28	Did you see or hear a parent or household member in your home being hit, cut with an object, or shot?	(1) Never	(2) Once	(3) A few times	(4) Many times		

These next questions are about certain things YOU may have experienced.							
When you were growing up, during the first 18 years of your life…							
29	Did a parent, guardian or other household member yell, scream or swear at you, insult or humiliate you?	(1) Never	(2) Once	(3) A few times	(4) Many times		
30	Did a parent, guardian or other household member threaten to, or actually, abandon you or throw you out of the house?	(1) Never	(2) Once	(3) A few times	(4) Many times		
31	Did a parent, guardian or other household member spank, slap, kick, punch, or beat you up?	(1) Never	(2) Once	(3) A few times	(4) Many times		
32	Did a parent, guardian or other household member hit, cut you with an object, or shoot you?	(1) Never	(2) Once	(3) A few times	(4) Many times		
33	Did someone touch or fondle you in a sexual way when you did not want them to?	(1) Never	(2) Once	(3) A few times	(4) Many times		
34	Did someone make you touch their body in a sexual way when you did not want them to?	(1) Never	(2) Once	(3) A few times	(4) Many times		
35	Did someone attempt oral, anal, or vaginal intercourse with you when you did not want them to?	(1) Never	(2) Once	(3) A few times	(4) Many times		
36	Did someone actually have oral, anal, or vaginal intercourse with you when you did not want them to?	(1) Never	(2) Once	(3) A few times	(4) Many times		

These next questions are about BEING BULLIED when you were growing up. Bullying is when a young person or group of young people say or do bad and unpleasant things to another young person. It is also bullying when a young person is tease a lot in an unpleasant way or when a young person is left out of things on purposed. It is not bullying when two young people of about the same strength or power argue or fight or when teasing is done in a friendly fun way.							
When you were growing up, during the first 18 years of your life…							
37	How often were you bullied?	(1) Never	(2) Once	(3) A few times	(4) Many times	**If never, skip the next question.	
38	How were you bullied most often?	(1) I was hit, kicked, pushed, shoved around, or locked indoors	(2) I was made fun of because of my accent, race, nationality, or color	(3) I was made fun of because of my religion	(4) I was made fun of with sexual jokes, comments, or gestures	(5) I was left out of activities on purpose or completely ignored	(6) I was made fun of because of how my body or face looked
This next question is about PHYSICAL FIGHTS. A physical fight occurs when two young people of about the same strength or power choose to fight each other.							
When you were growing up, during the first 18 years of your life…							
39	How often were you in a physical fight?	(1) Never	(2) Once	(3) A few times	(4) Many times		

These next questions are about how often, when you were a child, YOU may have seen or heard certain things in your NEIGHBORHOOD OR COMMUNITY (not in your home or on TV, movies, or radio)							
When you were growing up, during the first 18 years of your life…							
40	Did you see or hear someone being beaten up in real life?	(1) Never	(2) Once	(3) A few times	(4) Many times		
41	Did you see or hear someone being stabbed or shot in real life?	(1) Never	(2) Once	(3) A few times	(4) Many times		
42	Did you see or hear someone being threatened with a knife or gun in real life?	(1) Never	(2) Once	(3) A few times	(4) Many times		

ACE-IQ (WHO, 2012) descriptives as compared to ACE scale (Felitti et al., 1998) categories					
		Binary Descriptives		Frequency Descriptive	
		Number Endorsed	Percentage Endorsed	Number Endorsed	Percentage Endorsed
1	Physical Abuse	168	62.5	69	25.4
2	Emotional Abuse	186	69.2	68	25
3	Sexual Abuse & Contact	88	33.2	88	33.2
4	Alcohol & Drug Abuse	129	47.4	129	47.4
5	Incarceration	95	34.5	95	34.5
6	Mental Health Concerns	124	46.1	124	46.1
7	Household Violence	209	77.9	103	38.4
8	Parental Separation	172	64.2	172	64.2
9	Emotional Neglect	139	52.3	139	52.3
10	Physical Neglect	82	30.6	14	5.2
11	Bullying	153	58.1	38	14.4
12	Community Violence	238	92	63	23.9

Note: Binary and frequency descriptives were calculated utilizing Section D: Guidance for Analyzing ACE-IQ (WHO, 2012)

Appendix B

Public & Self Stigma Scale

Adapted from Mikelson, 2001

Please mark the number from the scale that best corresponds to your answer. When answering please refer to the previous questionnaire regarding any **negative childhood experiences before age 18.**

	Strongly Disagree	Disagree Somewhat	Agree Somewhat	Strongly Agree
1. I feel that I am odd or abnormal because of my negative childhood experiences.	1	2	3	4
2. There have been times when I have felt ashamed because of my negative childhood experiences.	1	2	3	4
3. I never feel self-conscious when I am in public.	1	2	3	4
4. I never feel embarrassed about my negative childhood experiences.	1	2	3	4

	Strongly Disagree	Disagree Somewhat	Agree Somewhat	Strongly Agree
1. I feel that others look down on me because of my negative childhood experiences.	1	2	3	4
2. People treat me differently because of my negative childhood experiences.	1	2	3	4
3. I have found that people say negative things about me behind my back because of my childhood experiences.	1	2	3	4
4. I have been excluded from work, school, and/or family functions because of my negative childhood experiences.	1	2	3	4

Appendix C

RiTE Spirituality Measure

Webb, Toussaint, & Dula, 2013

Please read each of the items below and circle the response that comes closest to how you think, feel, or believe. Keep in mind, deity/deities may have several meanings such as God, spiritual being, higher power, etc.

	Strongly Disagree	Disagree	Neutral/ No Opinion	Agree	Strongly Agree
1. A deity or deities was/were responsible for the creation of the universe.	1	2	3	4	5
2. The world was created by a deity or deities.	1	2	3	4	5
3. I believe in a deity or deities.	1	2	3	4	5
4. I believe in a deity or deities who know/s me.	1	2	3	4	5
5. A deity or deities is/are at some time going to judge the rightness or wrongness of the actions of individuals.	1	2	3	4	5
6. I feel connected to a deity or deities.	1	2	3	4	5
7. I feel belief in a deity or deities is very important.	1	2	3	4	5
8. I believe in a deity or deities who has/have a purpose/plan for my life.	1	2	3	4	5
9. I believe in a deity or deities who has/have power to control world events.	1	2	3	4	5
10. It is important to acknowledge the existence or reality of a deity or deities.	1	2	3	4	5
11. I regularly perform traditional spiritual practices.	1	2	3	4	5
12. I observe or follow the rules of a formal belief system.	1	2	3	4	5
13. I regularly attend organized worship services.	1	2	3	4	5
14. I feel faith-related rituals and/or practices are very important.	1	2	3	4	5
15. I set aside time to contemplate issues related to religious or spiritual teachings.	1	2	3	4	5
16. I regularly meditate as I have been taught in my faith.	1	2	3	4	5
17. I feel good after I attend organized worship services.	1	2	3	4	5
18. Observing or following traditions is a very important part of spirituality or faith.	1	2	3	4	5

19. It is important to tell others about one's own spiritual path in order to try and convince them of the correct path.	1	2	3	4	5
20. I would not be good in the judgment of a deity or deities if I did not practice my faith as prescribed.	1	2	3	4	5
21. I feel that helping others is very important.	1	2	3	4	5
22. Helping other people is very important.	1	2	3	4	5
23. I feel that understanding oneself is very important.	1	2	3	4	5
24. I believe that finding meaning and purpose in life is very important.	1	2	3	4	5
25. I feel that understanding oneself is very important.	1	2	3	4	5
26. I believe that finding meaning and purpose in life is very important.	1	2	3	4	5
27. I feel that understanding oneself is very important.	1	2	3	4	5
28. I believe that finding meaning and purpose in life is very important.	1	2	3	4	5
29. I feel that understanding oneself is very important.	1	2	3	4	5
30. I believe that finding meaning and purpose in life is very important.	1	2	3	4	5

Appendix D

The Hope Scale

Snyder et al., 1991

Directions: Read each item carefully. Using the scale shown below, please select the number that best describes YOU and put that number in the blank provided.

	Definitely False	Mostly False	Mostly True	Definitely True
1. I can think of many ways to get out of a jam.	1	2	3	4
2. I energetically pursue my goals.	1	2	3	4
3. I feel tired most of the time.	1	2	3	4
4. There are lots of ways around any problem.	1	2	3	4
5. I am easily downed in an argument.	1	2	3	4
6. I can think of many ways to get the things in life that are most important to me.	1	2	3	4
7. I worry about my health.	1	2	3	4
8. Even when others get discouraged, I know I can find a way to solve the problem.	1	2	3	4
9. My past experiences have prepared me well for my future.	1	2	3	4
10. I've been pretty successful in life.	1	2	3	4
11. I usually find myself worrying about something.	1	2	3	4
12. I meet the goals that I set for myself.	1	2	3	4

Appendix E

Inventory of Socially Supportive Behaviors

Barrera, Sandler, & Ramsay, 1981

We are interested in learning about some of the ways that you feel people have helped you or tried to make life more pleasant for you over the *past four weeks*. Below you will find a list of activities that other people might have done for you, to you, or with you in recent weeks. Please read each item carefully and indicate how often these activities happened to you during the *past four weeks.*

	Not at All	Once or Twice	About Once a Week	Several Times a Week	About Every Day
1. Looked after a family member when you were away	1	2	3	4	5
2. Was right there with you (physically) in a stressful situation	1	2	3	4	5
3. Provided you with a place where you could get away for awhile	1	2	3	4	5
4. Watched after your possessions when you were away (pets, plants, home, apartment, etc.)	1	2	3	4	5
5. Told you what she/he did in a situation that was similar to yours	1	2	3	4	5
6. Did some activity together to help you get your mind off of things	1	2	3	4	5
7. Talked with you about some interests of yours	1	2	3	4	5
8. Let you know that you did something well	1	2	3	4	5
9. Went with you to someone who could take action	1	2	3	4	5
10. Told you that you are OK just the way you are	1	2	3	4	5
11. Told YOU that she/he would keep the things that you talk about private--just between the two of you	1	2	3	4	5
12. Assisted you in setting a goal for yourself	1	2	3	4	5
13. Made it clear what was expected of you	1	2	3	4	5
14. Expressed esteem or respect for a competency or personal quality of yours	1	2	3	4	5
15. Gave you some information on how to do something	1	2	3	4	5
16. Suggested some action that you should take	1	2	3	4	5
17. Gave you over $25.	1	2	3	4	5
18. Comforted you by showing you some physical affection	1	2	3	4	5

19. Gave you some information to help you understand a situation you were in	1	2	3	4	5
20. Provided you with some transportation	1	2	3	4	5
21. Checked back with you to see if you followed the advice you were given	1	2	3	4	5
22. Gave you under $25.	1	2	3	4	5
23. Helped you understand why you didn't do something well	1	2	3	4	5
24. Listened to you talk about your private feelings	1	2	3	4	5
25. Loaned or gave you something (a physical object other than money) that you needed	1	2	3	4	5
26. Agreed that what you wanted to do was right	1	2	3	4	5
27. Said things that made your situation clearer and easier to understand	1	2	3	4	5
28. Told you how he/she felt in a situation that was similar to yours	1	2	3	4	5
29. Let you know that he/she will always be around if you need assistance	1	2	3	4	5
30. Expressed interest and concern in your well-being	1	2	3	4	5
31. Told you that she/he feels very close to you	1	2	3	4	5
32. Told you who you should see for assistance	1	2	3	4	5
33. Told you what to expect in a situation that was about to happen	1	2	3	4	5

Appendix F

Adapted from Abbreviated Multidimensional Acculturation Scale

Zea, Asner-Self, Birman, & Buki, 2003

Please mark the number from the scale that best corresponds to your answer.

	Strongly Disagree	Disagree Somewhat	Agree Somewhat	Strongly Agree
1. I think of myself as being Appalachian.	1	2	3	4
2. I feel good about being Appalachian.	1	2	3	4
3. Being Appalachian plays an important part in my life.	1	2	3	4
4. I feel that I am part of Appalachian culture.	1	2	3	4
5. I have a strong sense of being Appalachian.	1	2	3	4
6. I am proud of being Appalachian.	1	2	3	4

Appendix G

Adapted from 2016 BRFSS Questionnaire

(CDC, 2017)

(1) Thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?

(2) Has a doctor, nurse, or other health professional ever told you that you had a depressive disorder (including depression, major depression, minor depression or dysthymia)?

(3) During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?

(4) Would you say that in general your health is 1-Excellent, 2-Very Good, 3-Good, 4-Fair, 5-Poor

(5) Thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?

(6) Has a doctor, nurse, or other health professional ever told you that you had any of the following: heart attack, coronary heart disease, stroke, cancer, fibromyalgia, diabetes, or kidney disease.

VITA

BRIDGET R. JETER

Education:

Ph.D., Clinical Psychology
East Tennessee State University
Dissertation: Resilience Among Survivors of Adverse Childhood Experiences in Appalachia; 2019

M.A., Clinical Psychology
East Tennessee State University
Thesis: Spirituality and Psychological Well-Being among ALS Caregivers: Hope and Perceived Stress as Mediators; 2016

B.B.A., Accounting
East Tennessee State University
Undergraduate Thesis: Community Bank Loan Servicing Issues: 2002

Clinical Experience:

Psychology Staff
James H. Quillen VA Medical Center
Mountain Home, TN; 2019 - Present

Psychology Intern
James H. Quillen VA Medical Center
Mountain Home, TN; 2018-2019

Behavioral Health Consultant
James H. Quillen VA Medical Center
Mountain Home, TN; 2016 - 2017

Graduate Student Therapist Peer Supervisor
Behavioral Health and Wellness Clinic
East Tennessee State University; 2016 – 2017

Behavioral Health Consultant
Mountain City Extended Care Clinic
Mountain City, TN; 2015 – 2016

Graduate Student Therapist Volunteer
Johnson City Medical Center
Johnson City, TN; 2014 – 2016

Extern Therapist
Camelot Care Centers
Kingsport, TN; 2014 – 2015

Student Clinician
Behavioral Health and Wellness Clinic
East Tennessee State University; 2013 - 2018

Student Clinician
Johnson City Family Medicine
East Tennessee State University; 2013

Publications: Webb, J. R., & Jeter, B. R. (2015). Forgiveness and problematic substance use. In L. L. Toussaint, E. L. Worthington, Jr., & D. R. Williams (Eds.), *Forgiveness and health*: *Scientific evidence and theories relating forgiveness to better health*. (pp.139-154) New York: Springer.