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Zachary Wilde

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EXAMINING THE MODERATING EFFECTS OF ADULT SOCIAL SUPPORT ON

THE RELATIONSHIP BETWEEN

ADVERSE EXPERIENCES AND PSYCHOSOCIAL ADJUSTMENT

by

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A Thesis
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ABSTRACT

Exposure to adverse experiences during childhood place adolescents at a disproportionately high risk of developing physical and mental health problems later in life (Anthony et al., 2019; Basto-Pereira et al., 2016; Brown & Shillington, 2016; Felitti et al., 1998). Further, at-risk adolescents, conceptualized as children and adolescents who lack resources for upward mobility, are more likely to be exposed to adverse experiences and thus are at greater risk for these negative outcomes when compared to adolescents who are not considered at-risk (Fernandes-Alcantara, 2018). To obtain better specificity of what outcomes adverse childhood experiences (ACEs) predict in a sample of vulnerable adolescents, this study examined the relationship between ACEs and various domains of psychosocial adjustment as reported by at-risk adolescents and their parents. Additionally, social support was examined as a potential protective factor of the negative outcomes associated with ACEs. Archival data comprising a sample (N=110) of at-risk adolescents (and their parents) who were enrolled in a quasi-military residential program were analyzed for the purposes of this study. Results revealed that adolescent-reported ACEs was significantly predictive of adolescent-reported emotional symptoms whereas adolescent-reported adult social support was significantly predictive of hyperactivity/inattention, prosocial behaviors, and overall psychosocial adjustment. However, adult social support did not moderate the relationship between ACEs and psychosocial adjustment. Clinical implications from this study suggest that the presence of supportive adult relationships for at-risk adolescents may decrease the emergence of negative psychosocial outcomes and screening for ACEs when emotional symptoms are present would be helpful to better inform treatment decisions. Lastly, the continued

exploration of protective factors for ACEs is needed as well as understanding the

underlying mechanisms of social support that make it beneficial.

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CHAPTER I – INTRODUCTION

Adolescents exposed to adverse childhood experiences (ACEs) are at a higher risk of developing complex emotional, behavioral, and physical health problems as they mature and enter adulthood (Basto-Pereira et al., 2016; Brown & Shillington, 2016; Felitti et al., 1998). Given the broad range of maladaptive outcomes for adolescents, studies have shifted their focus from identifying predictors of ACEs and their effects to determining what factors may prevent or mitigate the negative consequences of these experiences. One such factor that has shown promise in protecting against the negative outcomes associated with ACEs is social support (Bellis et al., 2017; Keating et al., 2002; Scanlon et al., 2019; Wan et al., 2019). Although social support has been found to decrease the likelihood of developing externalizing behaviors (e.g., delinquency, truancy; Basto-Pereira et al., 2016) in adolescents (between the ages of 11-17 years) with a history of ACEs or criminal justice involvement, its protective influence for internalizing symptoms and other indicators of adjustment (e.g., prosocial behaviors) is less understood. Further, many studies examining social support as a protective factor have used samples comprised of adolescents involved with the criminal justice system or other social services (i.e., foster care and adoption agencies) with many studies relying on retrospective adult reports (Anthony et al., 2019; Wan et al., 2017). Few studies exist that have investigated the protective influence of social support on the negative outcomes associated with adversity among adolescents who are at-risk of entering the criminal justice system or developing more severe psychological difficulties (e.g., adolescents in alternative school placements). As it is important not to generalize findings from studies using samples of different developmental stages (e.g., childhood, adulthood) or levels of

severity (i.e., justice-involved adolescents) to other at-risk populations, this will be the first known study to simultaneously examine ACEs, social support, and psychosocial adjustment in a sample of adolescents attending a quasi-military residential facility who have a history of disruptive behaviors and educational difficulties.

At-Risk (Vulnerable) Adolescents. At-Risk adolescents are often characterized as adolescents who come from underserved households, communities, and schools; are exposed to abandonment, recurring violence, or conflict; or have a lack of emotional support, resources, and guidance from their caregivers or other adults in their lives (Fernandes-Alcantara, 2018). As a result, these adolescents are more likely to become homeless, enter the criminal justice system, exhibit conduct problems in social settings (e.g., school), and abuse substances (Fernandes-Alcantara, 2018). Children and adolescents who are often grouped under the vulnerable adolescents' umbrella also include emancipated minors, runaways, immigrants, and those dealing with chronic physical and mental health concerns (Fernandes-Alcantara, 2018). Given the number of risk factors that may impact the developmental trajectory of these adolescents, it is essential that studies examine the interplay between adjustment and ACEs as well as elucidate what factors may protect vulnerable adolescents from the detrimental outcomes associated with ACEs.

This study focused on a sample of at-risk adolescents who were attending a 22-week residential military program designed to assist adolescents in career mentoring and improving their academic performance and self-regulation. This population is of interest as these adolescents have yet to become involved in the criminal justice system or develop more severe forms of psychopathology. Additionally, adolescence is an

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important time in development to evaluate potential protective factors of the negative consequences associated with adversity from a prevention perspective. In fact, a great deal of psychological and physiological change occurs during adolescence (Bonnie et al., 2019; Chein et al., 2010), as adolescents are experiencing substantial influxes of hormones (e.g., testosterone, estrogen) that impact physical growth/characteristics and, are involved in the dopaminergic and serotonergic neurotransmitter systems which are implicated in adaptive cognitive and emotional control (Barth et al., 2015; Kuther, 2021). Further, these hormones seem to have the greatest influence on the limbic system, which is widely responsible for behavioral and emotional regulation (Kuther, 2021).

Considering the limbic system is undergoing this rapid development before other brain regions (i.e., prefrontal cortex), adolescents are more susceptible to risky behaviors due to underdeveloped executive control and a heightened sensitivity to reward (Chein et al., 2010; Kuther, 2021; O'Brien et al., 2011). Further, adolescents are becoming more independent and spending less time with their family, so the influence of their peers is greater, which increases the likelihood of their exposure to risky behaviors (Chein et al., 2010; O'Brien et al., 2011). In sum, adolescence is a period of development that is particularly challenging to navigate and places some adolescents, especially those with a history of ACEs, at greater risk for conduct problems, substance abuse, and other negative outcomes, which may result in more dire consequences than what is typically found in childhood (e.g., criminal justice involvement; Bonnie et al., 2019; Steinberg & Monahan, 2007; Tymulla et al., 2012). Thus, studies aimed at identifying factors (e.g., social support) that may alter the developmental trajectory of at-risk adolescents are greatly needed.

Adverse Childhood Experiences. Childhood adversity has received a great deal of research attention given the immediate and potential long-term harm it inflicts on youths who experience it and, the high level of resources it requires to address it at the state and federal level (e.g., welfare, healthcare, child protective services; Campbell et al., 2016; Felitti et al., 1998; Fernandes-Alcantara, 2018; Keating et al., 2002). ACEs have been defined as traumatic or stressful events that impact the physical or mental well-being of youths and may range from childhood maltreatment (e.g., neglect, abuse), to family dysfunction (e.g., parental incarceration or divorce), to living in poverty or unsafe/violent communities (Felitti et al., 1998). Since the early 2000s, ACEs have widely been measured using the adverse childhood experiences questionnaire (ACE-Q), which is comprised of items capturing childhood abuse, neglect, grief, oppression, and household dysfunction (Felitti et al., 1998). This questionnaire was originally developed to examine how environmental or social factors may predict the emergence and severity of psychological and medical outcomes (e.g., cancer, depression, heart disease, substance abuse, suicide attempts; Felitti et al., 1998). Findings from the seminal study by Felitti and colleagues (1998) found that a significant and proportional relationship existed between many negative health outcomes (e.g., heart disease, cancers, mood disorders) and the number of ACEs endorsed (i.e., psychological, physical, or sexual abuse; violence against mother; household member(s) abusing substances, mental illness, parental incarceration). More specifically, Felitti and colleagues (1998) found that participants who experienced four or more ACEs were 4 to 12 times more likely to develop substance use problems, depression symptoms, or suicide-related behaviors and, 2 to 4 times more likely to engage in risky sexual behavior, contract a sexually

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transmitted disease or develop an eating disorder in comparison to participants who reported no instances of ACEs (Felitti et al., 1998). Therefore, increased exposure to adversity seems to result in a greater risk of negative health outcomes later in life.

Since the original study by Felitti and colleagues (1998), numerous studies have set out to replicate and expand upon their results. For example, a systematic review and meta-analysis conducted by Norman and colleagues (2012) revealed that across 124 studies examining the link between ACEs and mental/physical health outcomes, neglect, physical abuse, and emotional abuse were the strongest predictors of mood disorders, substance abuse, eating disorders, sexually transmitted infections, and conduct problems. Likewise, another systematic review by Oh and colleagues (2018) focusing on medical outcomes emerging prior to 20 years of age found that ACEs were also associated with cognitive delays, blunted stress responses, somatic complaints, and alterations to the immune and inflammatory response. Given these findings, studies designed to identify factors that prevent or mitigate the effects of ACEs are a worthwhile research endeavor.

Psychosocial Adjustment. Psychosocial adjustment is typically understood as how one adjusts to social situations or other environmental demands given their psychological functioning (Larsen, 2019; Madariaga et al., 2014; Piqueras et al., 2019). The way that psychosocial adjustment is defined varies across disciplines; however, within the psychological literature, it is commonly assessed by evaluating the presence of externalizing and internalizing symptoms or the degree of interpersonal effectiveness when navigating the social world by tapping one's ability to cope with or tolerate distress (Anthony et al., 2019; Basto-Pereira et al., 2016; Brown & Shillington, 2016; Goodman 2001). Although there exist numerous measures to operationalize and assess aspects of

psychosocial adjustment (e.g., well-being questionnaires), one measure that appears to be widely used, has adequate psychometric properties, and broadly evaluates most facets of psychosocial adjustment as defined in the psychological literature is the Strengths and Difficulties Questionnaire (SDQ; Anthony et al., 2019; Goodman, 2001; Goodman & Goodman 2009; Kersten et al., 2015; Vugteveen et al., 2019; Yao et al., 2009). Specifically, the SDQ assesses five domains of psychosocial adjustment including conduct problems (e.g., temper tantrums, bullying), emotional symptoms (e.g., somatization, sadness, worry), hyperactivity/inattention (e.g., easily distracted, restlessness), peer relationship problems (e.g., plays alone, generally liked, victimized), and prosocial behaviors (e.g., considerate of others feelings) and was initially developed as a multi-dimensional measure to assess mental well-being in children and adolescents (Goodman, 2001; Goodman & Goodman 2009). Given the multifaceted nature of this measure, the SDQ screens for a range of psychosocial adjustment indicators making it a good tool to gain greater specificity of what outcomes may develop for at-risk adolescents with ACEs; an approach that will be taken for the purposes of this study.

Most studies examining the impact of childhood adversity on adolescents' psychosocial adjustment have taken a more narrowband approach by focusing on specific symptoms or symptom clusters (e.g., delinquency, substance use, suicide, depression symptoms) as outcomes. For studies focusing on externalizing behaviors as outcomes, Perez and colleagues (2016) looked at childhood adversity as a potential predictor of chronic delinquent acts (e.g., substance use, aggressive behaviors, deviant peer imitation, school difficulties) in a sample of 64,329 justice-involved adolescents. Their results revealed that higher ACEs scores significantly increased the likelihood of adolescents

repeatedly perpetrating violent acts. Similarly, Salo and colleagues (2021) followed 9,665

typically developing children into young adulthood from England and they found a strong

dose-response relationship between childhood adversity and violent behaviors (e.g.,

physical fights, weapon carrying) suggesting that more exposure to childhood adversity

increased the likelihood of violent behaviors. In a paper by Fagan and Novak (2017), a

total of 1,354 children aged 4 to 6 years with a history of child protective service

involvement were followed for 12 years. Their results revealed that the number of

adverse experiences youths were exposed to significantly increased the likelihood of

them reporting alcohol and marijuana use and perpetrating violent acts; a finding that was

specific to black youths and not white youths. Lastly, a recent study examining the

relationship between ACEs and substance use in justice-involved adolescents showed that

ACEs significantly predicted greater substance use severity (Weber & Lynch, 2021).

Given these findings, it appears as though ACEs is a notable predictor of conduct

problems, which in turn, may increase the risk of adolescents' involvement in the justice

system.

Additionally, several studies have examined the associations between symptoms of

inattention and hyperactivity and childhood adversity. In a study by Brown and

colleagues (2017), using a non-clinical sample of 76,227 children and adolescents (ages

4-17), it was found that children with Attention-Deficit/Hyperactivity Disorder (ADHD)

were at an increased risk of exposure to ACEs when compared to youths without ADHD.

Relatedly, another study showed that greater exposure to childhood adversity before the

age of 5 years was related to ADHD by the age of 9 years in an urban non-clinical sample

of 1,572 children (Jimenez et al., 2016). This finding suggests that early childhood

adversity may play a unique role in the presentation or development of ADHD. In addition to those broader findings, Ouyang et al. (2008) noted a similar result using a sample of 14,322 typically developing adolescents (grades 7-12). Their results showed that ADHD, predominately hyperactive-impulsive presentation, was associated with childhood maltreatment (i.e., neglect, physical abuse) to a lesser extent when compared to other ADHD diagnostic presentations (i.e., combined, inattentive), in contrast, predominantly inattention presentation was significantly more associated with supervision neglect and physical and sexual abuse. To note, the extant literature also suggests that ACEs may precede symptoms of inattention in youths. These symptoms may be indicative of a developing psychological disorder that is emerging in response to trauma (e.g., depression, anxiety, post-traumatic stress; Cohen et al., 2004; De Bellis et al., 2011; Mii et al., 2020; Paolucci et al., 2001; Szymanski et al., 2011; Weinstein et al., 2000). Therefore, in view of these findings, the presence of hyperactivity and inattention difficulties not only seems to suggest an increased level of risk for exposure to ACE's, but the presence of inattention symptoms may be indicative of an emerging trauma-related disorder among children with ACEs.

   With respect to studies looking at internalizing symptoms as outcomes, a recent study by Freeny and colleagues (2021) found a significant and negative relationship between ACEs and depression in a sample of typically developing black adolescents. In a large-scale study by Elmore and Crouch (2020) using a sample of typically developing children and adolescents, ACEs were found to be significantly associated with increased odds of developing anxiety or depression in adolescence. In addition to these findings, Wan and colleagues (2019) noted that suicide-related thoughts and behaviors (i.e., suicidal

ideation, suicide attempts, non-suicidal self-injury) in a sample of typically developing

Chinese adolescents (N = 14,820) was significantly associated with a greater number of

ACEs. Relatedly, a 4-year longitudinal investigation of children aged 7-10 years old with

a history of ACEs revealed that childhood adversity significantly predicted poor emotion

regulation and increased depression symptoms in early adolescence (Kim-Spoon et al.,

2013). Considering the evidence provided by these studies, it appears that ACEs have

been consistently shown to be related to internalizing symptoms (e.g., depression) in

typically developing youths.

In comparison, the extant literature evaluating the relationship between prosocial

behaviors and ACEs is limited. A recent 14-year longitudinal study by Bevilacqua and

colleagues (2021) aimed to address this paucity in the literature by investigating ACEs

and how it impacts the development of prosocial behaviors in a nationally representative

sample of 19,000 children from the United Kingdom. Their study, which assessed

prosocial behaviors and ACEs using the Prosocial Behavior subscale of the SDQ (e.g., "I

try to be nice to other people, I care about their feelings", "I usually share with others, for

example CD's, games, food") and the ACEs questionnaire (ACE-Q), revealed that

children exposed to three or more ACEs had worse prosocial outcomes when compared

to children with no ACEs. Similarly, another recent study by Yu and colleagues (2020)

on a sample of 897 typically developing Chinese adolescents assessed prosocial

behaviors and ACEs using the Prosocial Tendencies Measure (e.g., "When people ask me

to help them, I do not hesitate") and the Childhood Trauma Questionnaire-Short Form.

They found that ACEs were significantly and negatively associated with prosocial

behaviors (e.g., helping behaviors). In contrast, an earlier investigation by Flouri and

Kallis (2007) in a sample of 381 typically developing British adolescents assessed prosocial behaviors and ACEs using the SDQ and Adverse Life Events Scale and found no association between these two variables. This discrepancy in results as compared to other studies (i.e., Bevilacqua et al., 2021; Yu et al., 2020) may be due to their smaller sample size or their use of a different measure to assess childhood adversity (i.e., Adverse Life Events Scale versus the ACE-Q). Altogether, these studies suggest that a significant and negative relationship may exist between ACEs and prosocial behaviors in typically developing youths in the United Kingdom and China.

Finally, there have been a handful of studies that have taken a more broad-band approach when evaluating the link between childhood adversity and multiple domains of psychosocial adjustment. For instance, in a study by Lansford and colleagues (2002), a non-clinical sample of children were followed for 12 years, and it was found that participants who had a history of adversity early in life had higher levels of social problems, aggression, and symptoms of anxiety and depression in adolescence as compared to those participants with minimal or no exposure to adverse experiences. Moreover, a recent longitudinal study revealed that ACEs significantly predicted depression symptoms, substance use, and delinquency one year later in a sample of typically developing black adolescents (aged 11-17 years) from a Michigan school district (Hicks et al., 2021). Similar results were also found in a large-scale study conducted in a sample of children from the United Kingdom. Specifically, the odds of developing internalizing or externalizing symptoms or having inadequate prosocial behaviors in adolescence increased as a function of the number of ACEs endorsed by participants (Bevilacqua et al., 2021). For the purposes of this study, it is our intent to

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replicate these findings in an understudied sample of at-risk adolescents to broaden our understanding of how ACEs affect these adolescents' psychosocial development.

    Adult Social Support as a Moderator of Adversity and Psychosocial Difficulties. Adult social support is conceptualized as the presence of an influential adult(s) who is readily available to provide emotional or material support when it is needed (Center for Research on Health Care, 2015). Adult social support may come in many forms (e.g., parenting, teaching, tutoring, role modeling, career mentoring), be present in a variety of settings (e.g., household, education system, community outreach, health care), and has been shown to be a relevant protective factor at all stages of development (e.g., children, adolescents, adults; Grossman & Tierney,1998; Reblin & Uchino 2008). It has been suggested that the positive influence of adult social support is primarily a function of how well these adults impart knowledge; model adaptive behaviors (e.g., resilience); and provide a sense of security for adolescents (Brown & Shillington, 2016; Cheong et al., 2017; Ozbay et al., 2017). Although our understanding is mostly theoretical as to why adult social support is protective, a study by Grossman and Tierney (1998) using a large community sample of youths (aged 10-16 years) who participated in the Big Brothers Big Sisters program showed that the modeling and imparting knowledge aspects of adult social support was effective in preventing illegal substance use, aggression, and truancy among these youths. Therefore, there is some evidence to suggest that children who have a role model from which to learn how to navigate challenging life circumstances may be less likely to exhibit conduct problems than those children who do not have any form of social support.

Importantly, adult social support may be a particularly salient protective factor for at-risk adolescents with a history of ACEs given their basic needs are often not met in childhood and developmentally they may be able to change their circumstances if given the right guidance and support to do so. In fact, a few studies have found that adult social support can serve a protective function in some samples of at-risk adolescents. For instance, Singstad and colleagues (2021) found that adult social support was significantly and positively related to an improved quality of life (e.g., subjective perception of well-being across various areas of functioning) among adolescents who were receiving treatment for childhood maltreatment at a residential facility. Similar findings were also found in a sample of typically developing adolescents who were followed for 20 years (Scardera et al., 2020). Specifically, greater adult social support was linked to fewer mood disorder symptoms and suicide-related outcomes (e.g., ideation, attempts). Thus, this evidence suggests that adult social support appears to enhance quality of life and decrease the likelihood of mood disorder symptomology and suicide-related outcomes in adolescents.

In studies examining whether adult social support influences the link between childhood adversity and psychosocial adjustment, the positive effects of adult social support have been consistently found. Results from a study by Brown and Shillington (2016) revealed that adult social support moderated the relationship between ACEs (i.e., total score on ACE-Q) and substance use. Specifically, adversity appeared to be less likely to predict substance use problems when adolescents in the welfare system had one supportive adult in their life. Additionally, a study by Scanlon and colleagues (2019) revealed that among 12,288 randomly sampled adolescents in the United States, the

presence of a supportive adult significantly weakened the relationship between ACEs (i.e., total score on ACE-Q) and criminal justice involvement. Overall, it appears that social support may not only increase the likelihood of improved well-being but also be preventive of more specific outcomes for adolescents with and without a history of childhood adversity. Given these findings, this study aimed to build upon the extant literature by determining if social support acts as a moderator of ACEs and different facets of psychosocial adjustment that have not yet been explored in an understudied sample of at-risk adolescents.

Current Study. The primary objective of this study is to investigate the association between ACEs and psychosocial adjustment as well as the moderating effect of adult social support on this relationship in a sample of at-risk adolescents enrolled in a quasi-military residential program. This work has primarily been done with samples of adults who retrospectively report their ACEs, at-risk youths in the care of government funded agencies, or typically developing youths. Although findings from these studies are valuable, they should not be generalized to all vulnerable populations (e.g., Chang et al., 2019; McElroy & Hevey, 2013). To our knowledge, this is the first study to simultaneously examine childhood adversity, social support, and psychosocial adjustment in a sample of adolescents at-risk of entering the juvenile justice system or developing severe psychopathology during a time in development when elucidating preventive measures is so critical and when the effects of social support may be the strongest. Further, a broadband approach was taken to assess potential outcomes of childhood adversity to determine for which outcomes social support may be the most impactful. Finally, we attempted to lessen the effects of bias that often result from retrospective

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reporting and solely relying on self-report by having both the adolescents in this sample and their parents complete measures of ACEs and psychosocial adjustment.

Given that prior research on adult social support have revealed it to decrease the likelihood of certain psychosocial adjustment outcomes (e.g., substance use, aggression, mood disorder symptoms), it is expected that social support will be significantly and negatively associated with psychosocial adjustment (Hypothesis 1). Additionally, studies in extant literature have found that ACEs are significantly related to numerous maladaptive psychosocial outcomes such as delinquency, substance use, inadequate prosocial behaviors, and internalizing symptoms in samples of typically developing and at-risk adolescents (see Norman et al 2012; Perez et al., 2016; Weber & Lynch, 2021). As such, it is hypothesized that ACEs will significantly predict multiple domains of psychosocial adjustment as measured by adolescent and parent ratings on the SDQ (i.e., emotional symptoms, hyperactivity/inattention, prosocial behaviors, and conduct problems (Hypothesis 2). Lastly, based on results from previous studies that revealed social support moderating the relationship between childhood adversity and externalizing domains of psychosocial adjustment including criminality and substance abuse in a sample of typically developing adolescents in the US and adolescents involved in the welfare system (e.g., Anthony et al., 2019; Basto-Pereira et al., 2016; Wan et al, 2019), it is hypothesized that the association between ACEs and psychosocial adjustment will be stronger for adolescents with low levels of adult social support (Hypothesis 3).

CHAPTER II – METHODS

Participants

Adolescents in this study were recruited from a 22-week quasi-military residential

program located in the Pacific Northwest region of the United States. Adolescents

typically attend this program because they have either dropped out or are at-risk of

dropping out of high school and this program offers an alternative for them to obtain their

GED. Further, adolescents must meet the following eligibility criteria: voluntarily agree

to participate, 16-18 years of age upon admission, citizen or legal resident of the US and

the state in which the program is located, unemployed or underemployed, no current

involvement with the juvenile justice system, and physically and mentally capable of

participating in the program. Data were collected from July 2019 to May 2020 on 110

adolescents who ranged in age from 16-19 years old (M = 16.65 years, SD = .79). Males

represented the largest group by gender (n = 79; 71.8%), followed by females (n = 29;

26.3%), transgender (n = 1; 0.9%), and lastly genderfluid (n = 1; 0.9%). Regarding race

and ethnicity, most of the sample identified as White (74.5%) and a small minority

identified as either Hispanic (10%), Multiracial (6.4%), Native North American (2.7%),

African American (1.8%), Asian (1.8%), or as Other (2.7%). Ninety-eight parents or

legal guardians completed measures administered for the purposes of this study.

However, demographic data were not collected on parents, as data collection efforts had

to be streamlined by only administering measures that were tied to the main hypotheses

of the study given data were collected when parents were dropping off their children to

the facility. It should also be mentioned that certain data including academic records,

behavioral rule violations, and earned promotions (i.e., increase in cadet rank) or awards,

although originally planned for, could not be obtained as adolescents enrolled in the program were sent home because of the COVID-19 pandemic.

Self-Report Questionnaires

    ACEs Questionnaire (Bucci et al., 2015; Felitti, 1998). The ACE-Q was developed to measure various forms of adverse events that may be encountered in childhood such as Abuse (e.g., physical, sexual), Neglect (e.g., emotional, food or clothing), Grief (e.g., illness, loss of life), Oppression (e.g., racism, bullying) and Household Dysfunction (e.g., family member incarceration, divorce). The 19-item version of the ACE-Q was used for the purposes of this study as opposed to the commonly used 10-item ACE-Q to allow for more instances of adverse childhood events to be captured. The questionnaire asked participants (adolescents and parents/guardians) to read each adverse event statement (e.g., "someone pushed, grabbed, slapped or threw something at you OR you were hit so hard that you were injured or had marks", "you lived with someone who had a problem with drinking or using drugs") and write down the number of events that applied to them or their adolescent. The cumulative score was used as a measure of ACEs where lower scores represented fewer incidences of adverse events. Although few studies have reported the internal consistency of the ACE-Q considering it is conceptualized as an index rather than a scale, Murphy and colleagues (2014) reported a Cronbach's alpha of .88. The ACE-Q is considered to be a valid and time- and cost-efficient screener for the retrospective assessment of childhood adverse experiences, as it has been consistent in predicting the expected health and social outcomes across numerous studies (e.g., Chang et al., 2019; Felitti et al., 1998; Norman et al., 2012; Oh et al., 2018). In this study, however, internal consistency could not be estimated because the version of the ACE-Q

used asked participants to indicate the cumulative number of ACEs they had experienced based off the 19-items presented to them.

Caring Adult Scale (Center for Research on Health Care, 2015). The Caring Adult Scale is comprised of 32-items and was developed for use in the Pathways to Desistence study (Center for Research on Health Care, 2015). This scale was administered to adolescents and measures three aspects of social support including: 1) domains in which adolescents have access to or experience with supportive adults, 2) variety of social roles (e.g., mentor, teacher, parent) supportive adults may hold, and 3) the depth of the relationship between these adolescents and the adults in their life. For the purposes of this study, only the domains subscale was used, as the other two subscales were qualitive and did not provide a quantifiable score. This 8-item subscale (e.g., "If you needed some information or advice about something, is there someone you could talk to?", "Is there an adult you can depend on for help if you really need it?") was used to assess adolescents' experience with caring adults prior to their time at the residential military-style program. Items are set to a 5-point Likert scale (0 = '*None of the time*' to 4 = '*All of the time*') with higher scores indicating stronger perceptions of social support or actual relationships with adults. Internal consistency of the total score was reported to be $\alpha = .78$ at baseline in the Pathways to Desistence study and its stability over a 6-month follow-up period was $\alpha = .84$. In this study, internal consistency for the caring adult scale was found to be $\alpha = .93$

Strengths and Difficulties Questionnaire (Goodman 1997). The 25-item SDQ measure was administered to both parents and adolescents and was used to evaluate broad psychosocial adjustment and comprises the following five subscales: Conduct Problems (e.g., aggressive behaviors, lying, stealing), Emotional Symptoms (e.g., somatic

complaints, nervousness, sadness), Hyperactivity/Inattention (e.g., restlessness, attention difficulties), Peer Relationship Problems (e.g., victim of bullying, preference to be alone), and Prosocial Behaviors (e.g., considerate of others, sharing, helpfulness). Participants were instructed to use a 3-point response scale (i.e., *Not true*, *Somewhat true, Certainly true*) to indicate to what degree the item was true for them. In order to calculate a total score, one item from the Conduct Problems subscale (i.e., "I usually do as I am told"), two items from the Hyperactivity/Inattention subscale (i.e., "I think before I act," my attention is good"), and two items from the Peer Relationship Problems subscale (i.e., "I have one good friend or more," "Other people my age generally like me") must first be reversed scored. Further, the Prosocial Behaviors subscale was excluded from the total score calculation as recommended by scoring guidelines. Further, items on this measure were coded on a 1 to 3 rating scale, as such, the maximum possible score on the SDQ was a 60. Previously reported internal consistencies for the total score of the SDQ have ranged between .73 and .84 (Goodman, 2001; Kersten et al., 2015; Yao et al., 2009) and Cronbach alphas for the SDQ subscales have been reported to be .67 for Conduct Problems, .78 for Emotional Symptoms, .82 for Hyperactivity/Inattention, .59 for Peer Relationship Problems, and .87 for Prosocial Behaviors (Anthony et al., 2019; Yao et al., 2009). Lastly, the SDQ is also shown to have good convergent validity with measures that assess similar constructs (e.g., Child Behavior Checklist) and good discriminant validity with measures that assess different constructs (e.g., Intelligence Development Scales-2; Goodman, 1997; Kersten et al., 2015; Vugteveen et al., 2019). In this study, the internal consistency estimates for the adolescent-reported SDQ subscale scores were as follows: .71 for Emotional Symptoms, .60 for Conduct Problems, .77 for

Hyperactivity/Inattention, .56 for Peer Relationship Problems, and .66 for Prosocial

Behaviors. Additionally, the internal consistency estimates for the parent-reported SDQ

subscales scores were as follows: .77 for Emotional Symptoms, .72 for Conduct

Problems, .72 for Hyperactivity/Inattention, .63 for Peer Relationship Problems, and .74

for Prosocial Behaviors. Given the less than adequate internal consistencies of the

conduct problems and peer relationship problems subscales as reported by adolescents

and the less than adequate internal consistency of the peer relationship problems subscale

as reported by parents, these subscales were excluded from the main analyses for this

study when outcomes were examined at the subscale level. An exception was made for

the adolescent-reported Prosocial Behaviors subscale, as its internal consistency was

approaching adequacy; however, results should be interpreted with caution.

Demographic Questionnaire. A demographics questionnaire was developed by the

research team which asked participants the following questions: age (how old they are),

flight (group in the program are they are assigned), gender (how they describe their

gender), Hispanic or Spanish descent, and race/ethnicity (how they identify racially or

ethnically). Given that prior studies have revealed age and gender differences for the

social support, ACEs, and various psychosocial outcomes (e.g., substance use, emotional

symptoms, criminal justice involvement; Anthony et al., 2019; Brown & Shillington,

2017; Scanlon et al., 2019; Scardera et al., 2020), these variables were evaluated as

potential covariates via correlational analyses.

Procedure

An archival dataset from a study approved by the Institutional Review Board at

Washington State University was used for the purposes of this investigation. Specifically,

data were collected as part of a larger cross-sequential investigation that explored

contextual factors and psychosocial and behavioral traits as they relate to the construct of

Grit. Prior to data collection, parents or guardians provided consent to participate in the

study and permission for the research team to approach their adolescent about potentially

participating in the study. Parents or guardians completed a battery of measures in paper

form that included an assessment of adolescents' ACEs and psychosocial adjustment at

the time of their adolescents' admission to the program.

Approximately two weeks after parent data collection, adolescents whose parents or

guardians provided consent for them to participate in the study were approached. This

lapse in data collection for adolescent participants was intentional to allow them to

become relatively acclimated to their new routine and environment. Adolescents were

consented or assented (dependent on age) by a member of the research team who then

supervised the electronic survey administration (via Qualtrics platform) on a provided

laptop. Survey measures were presented in the same order for every participant as

follows: demographic questionnaire, ACE-Q, SDQ, and the Caring Adult Scale.

Permission was granted from the Primary Investigator of this larger-scale study to use

these de-identified data for secondary analyses for the purpose of this study.

CHAPTER III – RESULTS

Missing Data

Approximately one percent of data were considered missing for participants in this study. These missing data were only found for the ACEs measure, as one participant did not complete the measure. Given that the ACEs is a major variable in this study and was not reported for one of the participants, they were excluded from analyses. Parent participant data were also examined, and no missing data were identified, thus no further action was needed to address missingness.

Preliminary Analyses

Descriptive analyses (See Table 1) were performed to gain a better understanding of the sample, ensure that values were within the expected range, and to confirm that certain assumptions of the prearranged statistical tests were not violated (e.g., normality via skewness and kurtosis statistics). Normality was tested by creating a normality plot with unstandardized and standardized residuals via SPSS and determining whether the data were normally distributed through a visual inspection of the plot. Linearity was assessed by creating a simple scatterplot where ACEs and adult social support were entered as the independent variables (IV's) and SDQ was entered as the dependent variable (DV). The assumption of linearity was not violated as evidenced by equally dispersed residuals around the line of best fit with no apparent patterns.

Data were also screened for skewness, kurtosis, and outliers to identify extreme data points. Results from this screen revealed that only the caring adult scale was skewed and, that it had three significant outliers. As such, the outliers were corrected via winsorization (i.e., replacing the values with the next highest value), which addressed the skewness of

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this variable. Additionally, homoscedasticity was assessed by creating a scatter plot with standardized residual values and standardized predicted values and then assessing the plot for equal distribution. A visual check of this plot indicated that the assumption of homoscedasticity was not violated. Multicollinearity was assessed by selecting the collinearity diagnostic option within SPSS's linear regression dialog box. Results from this diagnostic check indicated that the assumption of multicollinearity was not violated, as the tolerance statistic was above a value of .20 and the variance inflation factor (VIF) was below 10.

Table 1 *Descriptive Statistics of Main Study Variables and Age*

Study Variables	n	M	SD	Min	Max
ACEs (A)	109	7.16	4.33	0	17
Emotional Symptoms (A)	110	9.15	2.57	5	15
Hyperactivity/Inattention (A)	110	10.26	2.50	5	15
Prosocial Behaviors (A)	110	12.53	1.96	5	15
SDQ Total Score (A)	110	36.04	6.41	23	52
SDQ Total Modified (A)	110	19.40	4.14	12	30
Adult Social Support (A)	110	4.04	.95	1	5
ACEs (P)	98	5.97	3.72	0	19
Emotional Symptoms (P)	98	9.09	2.59	5	15
Hyperactivity/Inattention (P)	98	11.28	2.36	6	15
Conduct Problems (P)	98	9.10	2.46	5	15

Prosocial Behaviors (P)	98	12.30	2.08	6	15
SDQ Total Score (P)	98	37.48	6.51	23	51
SDQ Total Modified (P)	98	29.46	5.47	18	43
Age	110	16.65	.79	16	19

Note: Adolescent-Reported = (A); Parent-Reported = (P)

Correlations Between Main Study Variables and Covariates. Bivariate correlations were conducted to assess if the variables of interest shared a relationship to each other as predicted (Hypothesis 1) and to determine what covariates should be used in subsequent analyses. As predicted, results presented in Table 2 indicate that adolescent-reported adult social support was significantly and negatively related to adolescent-reported ACEs ($r = -.39$, $p < .001$), adolescent-reported emotional symptoms ($r = -.25$, $p = .006$) and hyperactivity/inattention symptoms ($r = -.21$, $p < .05$) from the SDQ, and the adolescent-reported SDQ total score ($r = -.36$, $p < .001$). Additionally, adolescent-reported adult social support was significantly and positively related to adolescent-reported prosocial behaviors ($r = .28$, $p < .01$). Regarding adolescent-reported ACEs, it was found to be significantly and positively related to adolescent-reported emotional symptoms ($r = .34$, $p < .001$) and the SDQ total score ($r = .30$, $p < .01$), which corresponds to findings in the extant literature. Regarding a potential covariate, adolescent gender was found to be significantly and positively correlated with adolescent-reported ACEs ($r = .19$, $p < .05$), adolescent-reported emotional symptoms ($r = .41$, $p < .001$), hyperactivity/inattention symptoms ($r = .20$, $p < .05$), and the SDQ total score ($r = .29$, $p < .01$).

Results presented in Table 3 indicate that parent-reported ACEs was significantly correlated with adolescent-reported adult social support ($r = -.22$, $p < .05$), and parent-reported emotional symptoms ($r = .22$, $p < .05$) from the SDQ. Additionally, adolescent-reported adult social support and parent-reported emotional symptoms from the SDQ were also found to be significantly correlated ($r = -.20$, $p < .05$). For the covariates, adolescent gender, and parent-reported emotional symptoms from the SDQ were found to be moderately correlated ($r = .34$, $p < .001$) whereas adolescent age and parent-reported conduct problems from the SDQ was found to be negatively correlated ($r = -.23$, $p < .05$). Given that gender and age were correlated with subscales of the SDQ, they were included as covariates in subsequent analyses.

Table 2 *Bivariate Correlations between Adolescent-Reported Study Variables and Covariates*

Study Variables	1	2	3	4	5	6	7
1. Gender							
2. Age	.03						
3. SDQ Emotional Symptoms	**.41*****	-.10					
4. SDQ Hyperactivity/Inattention	**.20***	-.17	**.33*****				
5. SDQ Prosocial Behaviors	-.01	.12	-.02	-.04			
6. SDQ Total Score	**.29****	-.17	**.80*****	**.70*****	-.20*		
7. Adult Social Support	-.08	-.01	**-.25****	**-.21***	**.28****	**-.36*****	
8. ACEs	**.19***	-.03	**.34*****	.04	-.01	**.30****	**-.39****

Note: Males were embedded as the constant for gender (coded as Male = 1 and Female = 2)

*p < .05; **p < .01; ***p < .001

Table 3 *Bivariate Correlations between Parent-Reported Study Variables, Adolescent-Reported Adult Social Support, and Covariates*

Study Variables	1	2	3	4	5	6	7	8
1. Gender								
2. Age	.03							
3. Emotional Symptoms (P)	**.34****	-.09						
4. Conduct Problems (P)	-.01	**-.23***	**.22***					
5. Hyperactivity/Inattention (P)	.08	-.06	**.34*****	**.40*****				
6. Prosocial Behaviors (P)	-.01	.07	.06	**-.34****	-.05			
7. SDQ Total Score (P)	.17	-.09	**.67*****	**.72*****	**.72*****	-.18		
8. Adult Social Support (A)	-.08	-.01	**-.20***	-.05	-.02	-.08	-.15	
9. ACEs (P)	.12	-.078	**.22***	.13	.09	.08	.20	**-.22***

Note: Adolescent-Reported = (A); Parent-Reported = (P); Males were embedded as the constant for gender (coded as Male = 1 and Female = 2)

*$p < .05$; **$p < .01$; ***$p < .001$

Lastly, as presented in Table 4, ratings across parents and adolescents on the ACEs and the SDQ total score were shown to be moderately correlated indicating some convergence across informants, which is consistent with findings in the extant literature (Frick et al., 2020).

Table 4 *Bivariate Correlations between Parent and Adolescent-Reported Study Variables*

Study Variables	1	2	3	4
1. SDQ Total Score (A)				
2. ACEs (A)	**.30****			
3. SDQ Total Score (P)	**.32****	.11		
4. ACEs (P)	.16	**.49****	**.20**	

Note: Adolescent-Reported = (A); Parent-Reported = (P)

*p < .05; **p < .001

Analytic Strategy for Main Analyses

To test Hypothesis 2 that ACEs would significantly predict multiple domains of psychosocial adjustment as measured by the SDQ and reported by adolescents and their parents, two multivariate regressions (with SDQ subscale scores as the outcome variables) and two linear regressions (with the SDQ total score as the outcome variable) were conducted. Specifically, for the first multivariate regression, the adolescent-reported SDQ subscale scores (i.e., emotional symptoms, hyperactivity/inattention, prosocial behaviors) were simultaneously entered as the DVs; the adolescent-reported ACEs and adult social support were entered as IVs; and gender and age were entered as covariates. For the second multivariate regression, parent-reported SDQ subscale scores (i.e.,

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emotional symptoms, hyperactivity/inattention, prosocial behaviors, conduct problems) were simultaneously entered as the DVs; parent-reported ACEs and adolescent-reported adult social support were entered as IVs; and gender and age were entered as covariates. For the first linear regression, the adolescent-reported SDQ total score was entered as the DV, adolescent-reported ACEs and adult social support were entered as the IVs, and gender and age were entered as covariates. For the second linear regression, the parent-reported SDQ total score was entered as the DV, parent-reported ACEs and adolescent-reported adult social support were entered as the IVs, and age and gender were entered as covariates. These regression analyses used the SDQ total score that was comprised of all items because the internal consistency for the total score was adequate. However, given the poor internal consistency estimates of some subscales on the SDQ, these analyses were re-run using a modified version of the SDQ total score where subscales with poor internal consistency (i.e., peer problems, conduct problems) were excluded. To test Hypothesis 3 that the association for ACEs and psychosocial adjustment will be stronger for adolescents with low levels of adult social support, a series of moderation analyses were run in SPSS using the PROCESS macro. Specifically, adolescent- or parent-reported ACEs was entered as the IV, adolescent-reported social support was entered as the moderator, and adolescent- or parent-reported outcome variables (i.e., SDQ total score and subscale scores) that were predicted by these IVs in previous regression analyses were entered as DVs in separate models.

Main Study Analyses

Multivariate Regression Models: ACEs and Adult Social Support Predicting SDQ Subscales. Results of the first multivariate regression using adolescent-reported measures (see Table 5) revealed that ACEs only significantly predicted emotional symptoms (B = .11, *SE* = .06, *t*(102) = 2.01, *p* < .05; 95% CI [-.01, .22]) from the SDQ whereas adult social support significantly predicted hyperactivity/inattention (B = -.60, *SE* = .30, *t*(102) = -2.14, *p* < .05; 95% CI [-1.15, -.04]) and prosocial behaviors (B = .60, *SE* = .22, *t*(102) = 2.60, *p* < .05; 95% CI [.14, -.1.03]) from the SDQ. Additionally, adolescent gender significantly predicted emotional symptoms (B = 2.10, *SE* = .50, *t* (102) = 4.30, *p* < .001; 95% CI [1.11, 3.07]) and hyperactivity/inattention (B = 1.20, *SE* = .52, *t* (102) = 2.30, *p* < .05; 95% CI [.16, 2.22]) from the SDQ. Lastly, adolescent age significantly predicted hyperactivity/inattention (B = -.60, *SE* = .30, *t* (102) = -2.03, *p* < .05; 95% CI [-1.20, -.01]) from the SDQ.

Results for the second multivariate regression using parent-reported measures (see Table 6) revealed that neither parent-reported ACEs nor adolescent-reported adult social support predicted parent-reported emotional symptoms, conduct problems, hyperactivity/inattention, or prosocial behaviors from the SDQ. However, age and gender predicted parent-reported conduct problems (B = -.78, *SE* = .36, *t* (102) = -2.14, *p* < .05; 95% CI [-1.50, -.06]) and emotional symptoms (B = 1.83, *SE* = .58, *t* (102) = 3.14, *p* = .002; 95% CI [.67, 2.98]) from the SDQ, respectively.

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Table 5 *Results of Multivariate Regression with Adolescent-Reported ACEs and Adult Social Support, Predicting SDQ*

subscales

Dependent Variables	IVs & Covariates	B	SE	t	p	CI (95%)
Emotional Symptoms	Adult Social Support	-.40	.6	-1.42	.16	-90 - .15
	ACEs	**.11**	**.06**	**2.01**	**.04**	-.01 - .22
	Age	-.40	.30	-1.34	.20	-.91 - .18
	Gender	**2.10**	**.50**	**4.30**	**< .001**	1.11 - 3.07
Hyperactivity/Inattention	**Adult Social Support**	**-.60**	**.30**	**-2.14**	**.04**	-1.15 - -.04
	ACEs	-.06	.06	-1.04	.30	-.18 - .06
	Age	**-.60**	**.30**	**-2.03**	**.045**	**-1.20 - -.01**
	Gender	**1.20**	**.52**	**2.30**	**.02**	**.16 - 2.22**
Prosocial Behaviors	**Adult Social Support**	**.60**	**.22**	**2.60**	**.01**	**.14 - 1.03**
	ACEs	7.52	.05	.002	.99	-.09 - .09
	Age	.32	.24	1.40	.17	-.15 - .80
	Gender	.04	.42	.10	.92	-.80 - .90

Table 6 *Results of Multivariate Regression with Parent-Reported ACEs and Adolescent-Reported Adult Social Support*

Predicting Parent-Reported SDQ Subscales

Dependent Variables	IVs & Covariates	B	SE	t	p	CI (95%)
Emotional Symptoms (P)	Adult Social Support (A)	-.34	.30	-1.19	.24	-.92 - .23
	ACEs (P)	.12	.07	2.00	.10	-.02 - .25
	Age	.33	.36	.90	.37	-.39 - 1.05
	Gender	**1.83**	**.58**	**3.14**	**.002**	**.67 - 2.98**
Conduct Problems (P)	Adult Social Support (A)	-.16	.30	-.55	.60	-.73 - .41
	ACEs (P)	.07	.07	1.00	.32	-.07- .21
	Age	**-.78**	**.36**	**-2.14**	**.04**	**-1.50 - -.06**
	Gender	-.15	.60	-.26	.79	-1.30 - 1.00
Hyperactivity/Inattention (P)	Adult Social Support (A)	-.04	.29	-.13	.90	-.61 - .53
	ACEs (P)	.04	.07	.57	.57	-.10 - .18
	Age	-.19	.36	-.54	.59	-.91 - .52
	Gender	.39	.58	.67	.50	-.76 - 1.53
Prosocial Behaviors (P)	Adult Social Support (A)	-.17	.25	-.66	.51	-.70 - .34
	ACEs (P)	.03	.06	.54	.59	-.10 - .15
	Age	.23	.32	.73	.47	-.40 - .86
	Gender	-.16	.51	-.31	.76	-1.17 - .85

Note: Adolescent-Reported = (A); Parent-Reported = (P)

Linear Regression Models: ACEs and Adult Social Support Predicting the SDQ Total

Score. As shown in Table 7, adolescent-reported ACEs did not predict the SDQ total

score; however, it was predicted by adolescent-reported adult social support (β = -.28,

t(103) = -3.04, p = .003; 95% CI [-3.30, -.70]), adolescent age (β = -.20, t(103) = -2.20, p

< .05; 95% CI [-3.00, -.15]), and adolescent gender (β = .27, t(103) = 3.04, p = .003; 95%

CI [1.30, 6.11]). In the second linear regression model inclusive of parent-reported

measures (Table 8), the parent-reported SDQ total score was not predicted by parent-

reported ACEs (β = .15, t(91) = 1.40, p = .17; 95% CI [-.11, .62]), adolescent-reported

adult social support (β = -.11, t(91) = -1.10, p = .30; 95% CI [-2.34, .70]), or the

covariates (age: β = -.09, t(91) = -.85, p = .40; 95% CI [-2.70, 1.09]; gender: β = .14,

t(91) = 1.41, p = .16; 95% CI [-.90, 5.21]). When the regression models were re-run using

the modified version of the SDQ total score (i.e., items from conduct problems and peer

problems removed), the pattern of results were quite similar given that adolescent-

reported adult social support still predicted the modified adolescent-reported SDQ total

score, and no significant predictors were revealed for the parent-reported model (Table

8).

Table 7 *Results of Linear Regression with Adolescent-Reported ACEs and Adult Social Support Predicting the SDQ Total Score*

			SDQ Total Score		
IVs & Covariates	β	SE	t	p	CI (95%)
Adult Social Support	**-.28**	**.65**	**-3.04**	**.003**	-3.30 - -.70
ACEs	.12	.14	1.22	.23	-.10 - .43
Age	**-.20**	**.70**	**-2.20**	**.03**	**-3.00 - -.15**
Gender	**.27**	**1.22**	**3.04**	**.003**	**1.30 - 6.11**

Table 8 *Results of Linear Regression with Parent-Reported ACEs and Adolescent-Reported Adult Social Support Predicting Parent-Reported SDQ Total Score*

			Parent-Reported SDQ		
IVs & Covariates	β	SE	t	p	CI (95%)
Adult Social Support (A)	-.11	.76	.10	.30	34 - .70
ACEs (P)	.15	.18	40	.17	.11- .62
Age	-.09	1.00	85	.40	2.70 - 1.09
Gender	.14	1.54	41	.16	.90 - 5.21

Note: Adolescent-Reported = (A); Parent-Reported = (P)

Moderation Analyses: Adult Social Support and its Impact on the Relationship

between ACEs and SDQ outcomes. A series of moderation analyses were run where an

interaction term comprising adolescent-reported ACEs and adult social support was

added to the models as an IV, select adolescent-reported SDQ outcome variables (i.e.,

Emotional Symptoms, Hyperactivity/ Inattention, Prosocial Behaviors, SDQ total score)

found to be predicted by our IVs (i.e., adult social support or ACEs) in prior regression

models were added separately to the models as DVs, and age and gender added as

covariates. This interaction term was not found to be a significant predictor for the SDQ

total score (β = .02, t(105) = .13, p = .90; 95% CI [-.26, .29]), the SDQ emotional

symptoms subscale (β = -.001, t(105) = .17, p = .90; 95% CI [-.12, .10]), the SDQ

hyperactivity/ inattention symptoms subscale (β = -.01, t(105) = -.17, p = .87; 95% CI [-

.13, .11]), and the SDQ prosocial behaviors subscale (β = -.02, t(105) = -.49, p = .62;

95% CI [-.12, .07]) indicating that adult social support did not moderate the relationship

between ACEs and psychosocial adjustment. See Table 9 for results. Moderation

analyses were not run for parent-reported measures, as no IVs from the parent-reported

regression models predicted the SDQ outcome variables.

Table 9 *Results of Moderation Analyses with the Interaction of Adolescent-Reported ACEs and Adult Social Support Predicting SDQ Subscales*

IVs & Covariates	β	SE	t	p	CI (95%)
Emotional Symptoms					
ACEs	.15	.24	.62	.30	-.33 - .63
Adult Social Support	-.28	.60	-.50	.46	-1.45 - .90
ACEs x Social Support	-.009	.05	-.20	.77	-.12 - .10
Age	-.40	.27	-1.33	.18	-.91 - .18
Gender	2.10	.49	4.30	<.001	1.12 – 3.08
Hyperactivity and Inattention Symptoms					
ACEs	-.02	.26	-.06	.94	-.53 - .50
Adult Social Support	-.50	.62	-.80	.43	-1.74 - .80
ACEs x Social Support	-.01	.06	-.17	.86	-.13 - .11
Age	-.60	.29	-2.01	.04	-1.18 - -.01
Gender	1.20	.53	2.28	.03	.20 - 2.25
Prosocial Behaviors					
ACEs	.10	.21	.48	.63	-.32 - .51
Adult Social Support	.81	.50	1.61	.11	-.20 – 1.81
ACEs x Social Support	-.02	.04	-.49	.62	-.12 - .07
Age	.32	.23	1.37	.17	-.14 - .80
Gender	.06	.42	.14	.88	-.78 - .90
SDQ Total Score					
ACEs	.09	.61	.15	.90	-1.11- 1.29
Adult Social Support	-2.13	1.45	-1.46	.15	-5.02 - .76
ACEs x Social Support	-.02	.14	.13	.90	-.26 - .29
Age	-1.50	.68	-2.20	.03	-2.85 - -.14
Gender	4.00	1.22	3.00	.003	1.25 - 6.12

CHAPTER IV – DISCUSSION

The present study sought to investigate the relationships between ACEs, adult social support and multiple domains of psychosocial adjustment as well as examine the potential moderating effect of adult social support on the relationship between ACEs and psychosocial adjustment in a sample of at-risk adolescents enrolled in a quasi-military residential program. To date, this work has primarily been conducted with samples of adults who retrospectively report their ACEs, children and adolescents in the custody of government-funded agencies, or typically developing youths. As it is important not to generalize findings across populations, this study evaluated these relationships in a sample of adolescents at-risk of entering the juvenile justice system or developing severe psychopathology. Examining whether social support is a potential protective factor of the deleterious effects of ACEs at a crucial time in development was deemed worthy of further exploration, as it could inform the timing of when these supportive relationships could have the most impact.

Given that adult social support has been found to mitigate negative psychosocial outcomes (e.g., substance use, mood disorder symptoms; Grossman & Tierney,1998; Reblin & Uchino 2008), we hypothesized that social support would be significantly and negatively associated with overall psychosocial adjustment (SDQ total score). As expected, our first hypothesis was supported given that adolescent-reported social support predicted the adolescent-reported SDQ total score. Additionally, adolescent-reported adult social support was significantly and positively related to adolescent-reported prosocial behaviors and significantly and negatively related to adolescent-reported emotional symptoms and hyperactive/inattention symptoms. These results are consistent

with the findings from Singstad and colleagues (2021) and Scardera and colleagues (2020), which found that social support shared a negative relationship with emotional symptoms and improved the overall well-being of youths. Although adolescent-reported social support was not predictive of any of the parent-reported outcomes from the SDQ, we did find a significant correlation between adolescent-reported adult social support and parent-reported emotional symptoms. It is also surprising that the results for adolescent-reported SDQ outcomes were not more aligned with the results for the parent-reported SDQ outcomes given the level of convergence across informants. Perhaps this finding suggests that adolescents are a more reliable informant of their behaviors and emotions than their parents. Adolescence is a developmental period where youths typically gravitate toward their peers and, as a result, parents may not be afforded the closeness they once had with their children. Additionally, certain behaviors or symptom presentations are not always observable by parents (e.g., internalizing symptoms) and so, adolescents may be better informants in these instances. Considering the correlations across informants were of moderate strength, which is consistent with the extant literature, it would be interesting to examine associations between parent-reported adult social support and psychosocial outcomes in future studies. Particularly, parental perspectives of what supportive relationships are available to their children may give unique insight about potential resources that are not captured by adolescent self-report.

Prior studies have shown that ACEs are significantly related to maladaptive psychosocial outcomes such as conduct problems (e.g., delinquency, substance use), inadequate prosocial behaviors, and internalizing symptoms in adolescents (Norman et al 2012; Perez et al., 2016; Weber & Lynch, 2021). As such, it was hypothesized that ACEs

would significantly predict multiple domains of psychosocial adjustment as measured by adolescent and parent ratings on the SDQ emotional symptoms, hyperactivity/inattention, prosocial behaviors, and conduct problems (parents only) subscales. However, adolescent-reported ACEs only significantly predicted the adolescent-reported emotional symptoms subscale. Further, parent-reported ACEs did not predict any of the parent-reported SDQ subscales or the SDQ total score. These results may be due to the timing of when the parent data were collected. Parents were asked to complete study measures on the day their children were admitted to the residential facility. Perhaps parents did not give their full attention when completing the measures or they may have endorsed greater psychosocial maladjustment given the need for their children to be enrolled in a specialized program. Results could have also been impacted by social desirability on behalf of parents where they were cautious in reporting ACEs in an effort to present themselves or others in a more favorable light. Additionally, the way in which the SDQ captures psychosocial adjustment (i.e., assessing internalizing/externalizing symptoms rather than adaptability) and the less than adequate internal consistencies demonstrated by the SDQ subscales may have obscured the relationship between ACEs and psychosocial adjustment.

Although prior research has shown that social support may moderate the relationship between childhood adversity and multiple domains of psychosocial adjustment (e.g., Anthony et al., 2019; Basto-Pereira et al., 2016; Wan et al, 2019), our results did not replicate these findings, which is not surprising given ACEs was predictive of only one domain of psychosocial adjustment. Thus, many of the limitations of our methodology discussed above may help explain our inability to detect moderating effects (e.g.,

relatively small sample size; less than adequate internal consistencies of SDQ subscales).

As such, future studies may want to consider other methods to measure psychosocial

adjustment (e.g., behavior observations, multi-method assessment) and the timing of their

data collection.

Strengths & Limitations

This study is the only known study to simultaneously examine childhood adversity,

adult social support, and psychosocial adjustment in a sample of adolescents at-risk of

entering the justice system or developing severe psychopathology. Additionally, we took

a broadband approach in assessing potential outcomes of adversity to determine for

which outcomes social support may be the most impactful. We also attempted to lessen

the effects of bias that often result from retrospective reporting and solely relying on self-

report by having both adolescents and their parents' complete measures of ACEs and

psychosocial adjustment. Although only one of our hypotheses were supported, we were

able to replicate the significant relationship between ACEs and emotional symptoms as

well as the relationship between adult social support and hyperactive/inattentive

symptoms, prosocial behaviors, and overall psychosocial adjustment (i.e., SDQ total

score) in a sample of at-risk adolescents.

Notwithstanding these strengths, like most research, this study does have its

limitations. First, our study did not collect demographic information (e.g., economic

status, race, marital status) on the parents/guardians of adolescents who participated in

the study. These data could have provided information on how parental race,

socioeconomic status, and household dynamics could impact an adolescents' ability to

find and engage with supportive adult figures (e.g., cultural customs or finances that

could limit access to adult social support). Similarly, parents/guardians did not complete

a measure of adult social support. Such information would allow for further comparisons

across informants and how parents perceive the impact of social support on their

adolescent's development. Another limitation to this study was the poor reliability

estimates of some of the SDQ subscales, which impeded our ability to fully test our

hypotheses. For example, we were unable to test whether adult social support or ACEs

were predictive of peer relationship problems and adolescent-reported conduct problems.

As such, it may be advisable in future iterations of this study to use other measures of

psychosocial adjustment that have good internal consistency across domains of

functioning. For example, broadband measures (e.g., Behavior Assessment System for

Children, Third Edition; Reynolds & Kamphaus, 2015), personality inventories

(Personality Assessment Inventory - Adolescent; Morey, 2007), and self-reflection rating

scales (e.g., Piers-Harris Children's Self-Concept Scale, Second Edition; Piers, 2002)

may be good options, as they have good psychometric properties and assess psychosocial

adjustment by incorporating emotional and behavioral functioning but also adaptability

across settings.

A third limitation of this study is how adult social support was assessed. Specifically,

the caring adult scale only asked whether adolescents had or have access to a supportive

adult figure. However, the scale did not assess whether adolescents are actually using

these individuals for support. As such, the effects of adult social support on the

relationship between ACEs and psychosocial adjustment are reflective of adolescents'

access to supportive adults rather than their engagement with supportive adults. Given

that, this study was limited in how social support was operationalized as certain facets of

social support were not captured. Generalizability of our results is yet another limitation

of this study. Although the at-risk sample allowed for the assessment of social support in

a unique population, the results are not generalizable to typically developing adolescents.

Relatedly, most of the sample identified as white and male, which also limits the

generalizability of our results to adolescents who identify as different genders, races, or

ethnicities. Lastly, as the ACEs measure used in this study only produced a cumulative

score (i.e., adolescents counted the number of adverse events applicable to them), our

ability to analyze domains of adversity was not possible. Although this method allowed

for greater confidentiality for youths and parents, it limited our ability to examine

relationships between different forms of ACEs (childhood abuse, neglect, grief,

oppression, and household dysfunction) and specific psychosocial adjustment domains

and subsequently for what forms of ACEs and psychosocial adjustment adult social

support may be more salient.

Implications

Our results highlight a few important clinical implications. For instance, our results

revealed that adolescent-reported adult social support was significantly related to

adolescent-reported ACEs, prosocial behaviors, hyperactive/inattention symptoms, and

overall psychosocial adjustment. These findings suggest that adult social support may

decrease the likelihood of at-risk adolescents developing psychosocial adjustment

difficulties. Therefore, clinician or mentors who work with at-risk adolescents with a

potential history of ACEs should take a supportive role by offering emotional or practical

support (e.g., validation, help accessing treatment), meeting regularly, and teaching or

modeling adaptive coping and self-regulation skills (Feeney & Collins, 2014; Ozbay et

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al., 2007) as this may help mitigate some maladaptive outcomes for these adolescents. In fact, adult social support has been recognized as vital for substance use recovery and the improvement of antisocial behaviors by an evidence-based resource guide on treatment considerations for youths and young adults (SAMHSA, 2021). Further, the success of interventions (e.g., multidimensional therapy) are often reliant on caregiver support and a lack of support has been often cited as a barrier to treatment (SAMHSA, 2021).

Additionally, our study showed that ACEs significantly predicted one domain of psychosocial adjustment (i.e., emotional symptoms) as measured by the SDQ. Although this finding is not novel, it emphasizes the idea that adolescents who have ACEs may be at increased risk of developing or having emotional symptom difficulties (i.e., anxiety and depression symptoms). Therefore, it may be useful to incorporate the ACE-Q or a similar measure assessing childhood adversity into the initial intake process especially for adolescent clients who present with symptoms of depression or anxiety, as the presence of ACEs may alter the primary approach for treatment. For example, a trauma-focused intervention may prove to be more impactful than a standard cognitive-behavioral approach if a trauma-related disorder proves to be the primary diagnosis.

Future Directions

Given the limitations of this study, future iterations of this research may want to consider a few things. First, researchers may want to better understand or uncover the mechanisms through which social support works as a protective factor. A few theories have been put forth like the one by Thoits (1995) which conceptualizes social support as a resource that is relied upon when facing life stressors. Feeney and Collins (2014) also proposed that social support is an interpersonal process and an avenue through which a

person may thrive (e.g., growth, development, prosperity). It has also been suggested that the positive benefits associated with social support is due to it serving the purpose of imparting knowledge, modeling adaptive behaviors, and providing a sense of security for adolescents (e.g., Ozbay et al., 2017). However, these models/theories appear to only imply or suggest potential mechanisms underlying social support. As such, additional work is needed, as suggested by Ozbay and colleagues (2007), to understand why social support may prevent the negative outcomes associated with ACEs.

Secondly, as revealed by prior studies, adolescents with a history of ACEs may have difficulties with support-seeking behavior, maintenance of social attachments, impulse control, and distress tolerance (Bellis et al., 2017; Cheong et al., 2017). Given this, future studies may want to evaluate these variables as possible impediments to the effectiveness of social support, so we have a better understanding of how to maximize the benefits of social support. Third, the continued exploration of protective factors (e.g., self-care, positive self-image, access to high performing schools) that could prevent the negative distal outcomes commonly associated with ACEs is encouraged. Finally, it may be worthwhile to examine ACEs at the subscale level to determine its relation to psychosocial difficulties, as this could elucidate what pathway may have the best outcome if a protective factor like adult social support was introduced or made accessible.

Conclusion

This study explored the relationship between ACEs, adult social support, and psychosocial adjustment in an understudied sample of at-risk adolescents. Results revealed that adolescent-reported ACEs was significantly predictive of adolescent-

reported emotional symptoms whereas adolescent-reported social support was significantly predictive of hyperactivity/inattention, prosocial behaviors, and overall psychosocial adjustment. Although social support did not moderate the relationship between ACEs and psychosocial adjustment, it is possible that cultivating supportive relationships within a therapeutic setting or linking adolescents with adults who are able to provide emotional or physical support and model adaptive coping methods may prove beneficial. Future studies should consider using psychometrically-sound broadband measures of emotional and behavioral functioning, adopting an ACEs measure that allows for the identification of event type, and taking a multi-informant approach to assessing adult social support in a larger sample. Further, the continued exploration of protective factors that may deter the negative outcomes associated with ACEs along with understanding the mechanisms through which social support works as a protective factor or variables that hinder its benefits would better inform our approach to working with vulnerable adolescents who have a history of ACEs.

APPENDIX

Appendix A. IRB Approval Letter

Office of Research Integrity

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NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident submission on InfoEd IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.

PROTOCOL NUMBER: 21-394

PROJECT TITLE: Examining the Moderating Effects of Adult Social Support on the Relationship between Adverse Childhood Experiences and Psychosocial Adjustment

SCHOOL/PROGRAM Psychology

RESEARCHERS: PI: Zachary Wilde
Investigators: Wilde, Zachary~Smith, Stephanie~

IRB COMMITTEE ACTION: Approved

CATEGORY: Exempt Category

APPROVAL STARTING: 07-Feb-2022

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

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Appendix B. Data Transfer Letter

From: Dr. Chris Barry

Date: November 16, 2021

Re: Transfer of De-Identified Data for Secondary Analysis

This letter serves as notification that I, Chris Barry, of Washington State University, have agreed to transfer de-identified data for the purpose of secondary analysis to Dr. Stephanie Smith and Zachary C. Wilde of the University of Southern Mississippi.

Zachary is a former student of mine who was actively involved in the project entitled *Assessment of Behavioral Traits that Contribute to Grit for Adolescents in a Residential Intervention Program*. This project is no longer active, and the IRB has been closed. However, Zachary and his Major Professor, Dr. Stephanie Smith, have requested use of the de-identified data to be used for secondary analysis for his Master's thesis project entitled *Examining the Moderating Effects of Adult Social Support on the Relationship between Childhood Adverse Experiences and Psychosocial Adjustment*. This project aims to assess the protective capabilities adult social support may have on the negative psychosocial outomces for youths exposed to early childhood adversity. I have agreed to transfer the de-identified data to Dr. Smith and Zachary, and I approve the use of these data for this project. Dr. Smith will serve as Zachary's research advisor for this project.

_____

Chris Barry, Ph.D.

Appendix C. Demographics Questionnaire

Demographics

Age: 15   16   17   18   19   20

What flight are you in at IDYCA? _____

How do you describe your gender?
- Male
- Female
- Trans male
- Trans female
- Non-binary
- Other _____

Are you of Hispanic, Latino/Latina, or Spanish descent?   Yes   No

How do you describe your race/ethnicity?
- American Indian or Alaska Native
    - Tribe: _____
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- Latino/a
- Middle Eastern
- White or Caucasian
- Multiracial
    - Please describe: _____
- Other _____

Where did you live right before coming to Youth Challenge? (choose only one):
- With both biological (birth) parents
- With one biological (birth) parent
- With my adopted parent(s)
- With my foster parent(s)
- With relatives who are not my parents (for example, with siblings or grandparents)
- With someone who is not related to me (for example, with a friend)
- Other_____

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