Adverse Childhood Experiences and Juvenile Justice Outcomes: The Moderating Role of Individual and External Protective Processes

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Abstract

Justice-involved youth experience significantly higher rates of adverse childhood experiences (ACEs), such as childhood maltreatment and household dysfunctions, compared to the general population. These experiences lead to a host of negative outcomes, including greater criminal involvement and the development of mental health disorders. Literature has emphasized the need to examine the role of protective factors, or individual traits and experiences that buffer the effects of adversity, on the development of these negative outcomes. This study conceptualized protective factors into two processes, specifically traits resulting from individual processes (i.e., the person's self-systems) and from external processes (i.e., the person's external environment) and sought to understand the predictive and moderating role of these processes on the relations between ACEs and the negative outcomes of interest. It was found that ACEs significantly predicted the likelihood for criminal involvement and development of mental health symptoms for justice-involved youth. Additionally, individual protective processes were predictive of less criminal involvement. Neither of the protective processes moderated the effects of ACEs on either negative outcome. Supplemental analyses provided further information concerning the findings for external protective processes, indicating significant associations and moderations effects for the external protective traits. Limitations, future directions, and implications of these findings are discussed.

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Chapter I

Introduction

Literature has established a relationship between adverse childhood experiences (ACEs), such as childhood maltreatment and household dysfunctions, with a multitude of negative life outcomes (Felitti et al., 1998). These include events such as poorer health, greater risk for alcohol and drug abuse, and increased chance of suicide (Fellitti et al., 1998). Of growing interest is the impact ACEs have on juvenile offenders, and the related negative outcomes that may be uniquely experienced by this population. It has been found that a greater prevalence of ACEs is associated with a higher risk for the presence of mental health disorders, and effects offending trajectories in juvenile populations (Baglivio, et al., 2014; Baglivio, et al., 2015; Fox, et al., 2015). These relationships are influenced by the development of adolescents and their environmental experiences, which emphasizes the need to understand how protective processes such as individual characteristics, family dynamics, and the community influence the relationship between ACEs and outcomes faced by justice-involved youth. Understanding what these processes are, and how they impact ACEs, mental health, and risk for juvenile offending, may aid in a more cohesive comprehension of the protective factors that may be enhanced to help decrease negative life outcomes. This type of research could be used to guide the development and utilization of strategies to treat youth with mental health problems, as well as better comprehend what impacts a juvenile's likelihood of delinquency, most specifically when these needs are associated with the accumulation of traumatic experiences from childhood (Desai et al., 2006; Logan-Green et al., 2017).

The proposed study seeks to examine the moderating effect of protective processes on the relationship between ACEs and mental health, and ACEs and juvenile delinquency within a juvenile sample. Specifically, how individual protective processes and external protective processes may buffer the effect of ACEs on the development of these negative outcomes faced by justice-involved youth.

Adverse Childhood Experiences (ACEs) and Juvenile Justice Outcomes

Adverse Childhood Experiences (ACEs) refer to trauma related experiences such as childhood maltreatment and household dysfunctions. These have been categorized by the Centers for Disease Control and Prevention (CDC) into 10 specific childhood experiences: emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, violent treatment towards mother, household substance abuse, household mental illness, parental separation or divorce, and having an incarcerated household member (Baglivio et al., 2014; CDC, 2015; Felitti et al., 1998). This conceptualization has emphasized the cumulative nature of these traumatic experiences, which allows for a broader understanding of how these events impact future negative outcomes. The ACE score is the sum of these 10 experiences, each measured dichotomously, such that one adverse experience is counted as one point (Felitti et al., 1998; Wolff et al., 2015). The identification of these experiences has exposed a variety of negative correlates, such as health-related ailments (Bellis, et al., 2014; Felitti et al., 1998; Fox et al., 2015;), higher risk for poor education and employment outcomes (Bellis et al., 2014), and higher risk for the presence of psychopathology (Anda, et al., 2010; Bellis et al., 2014; Fox et al., 2015).

In the context of justice-involved youth, the prevalence rate of adversity compared to the general population is much higher, with an average of three ACEs or more (Abram et al., 2004; Baglivio et al., 2014; Dierkhising et al., 2013). For these juveniles, the accumulation of multiple ACEs has been associated with a greater likelihood of earlier age of first arrest (Baglivio et al., 2015), increased risk of criminal behavior (Fox et al., 2015), and increased likelihood of a shorter time between re-arrests (Wolff et al., 2015). In a sample of sexually violent juvenile offenders, those with a greater accumulation of developmental and environmental risk factors, such as participation in criminal activity at a young age, heightened impulsivity, and multiple incidents of ACEs, were 35% more likely to become "serious, violent, and chronic juvenile offenders" while controlling for other common risk factors of criminal behavior (Fox et al., 2015).

Baglivio and colleagues (2015) examined the relationship between ACEs and juvenile offending patterns, where they specifically examined ACEs and offending trajectories while controlling for relevant criminal risk factors (e.g., aggressive behavior, impulsivity, familial risk factors, school behavior, etc.). They found that a greater number of ACEs significantly predicted chronic offending behavior, and those with six or more ACEs were more predictive of being in the "early-starter" category of offending trajectories. Wolff and colleagues (2015) found that a higher presence of ACEs in a juvenile population shortened the time between the number of days between completion of their sentence and re-arrest. This held true after controlling for demographics, and individual and personal history risk factors (i.e., age at first offense, prior felony, school behavior). These studies demonstrate that ACEs, importantly the accumulation of

multiple adverse experiences, have a significant impact on a juvenile's risk of developing further offending behaviors.

Additionally, justice-involved youth are more likely to experience mental health problems compared to adolescents in the general population (Fazel et al., 2008; Hoeve et al., 2015). While examining the prevalence of mental health disorders among the Northwestern Juvenile Project, which consists of 1,829 youth in detention within a 3-year period (1995-1998), it was found that even after controlling for conduct disorder, a common disorder within this population, approximately 60% of males and two-thirds of females met diagnostic criteria for one or more mental disorders (Teplin et al., 2002). Within this same sample, Teplin and colleagues (2012) followed up with participants to determine the persistence and prevalence of mental health disorders five years after their time in detention. Adolescents aged 14 to 24 were among those who had persistent rates of mental health disorders, with half of males and 30% of females having one or more mental disorders. The high prevalence and persistence of mental health disorders may be influenced by a youth's high exposure to ACEs (Hoeve et al., 2015).

Kerig and colleagues (2009) found that trauma exposure within justice-involved youth was positively associated with posttraumatic stress disorder (PTSD), which was subsequently related to other mental health problems (i.e., anxiety, depression, conduct-related problems, and substance use). Hoeve and colleagues (2015) examined the associations between childhood trauma and mental health problems in justice-involved males, and how these associations would differ between childhood-onset and adolescent-onset offenders. Childhood maltreatment significantly predicted mental health problems within both offender types, with a stronger relationship in the adolescent-onset offender

group (childhood trauma and covariates explained 45% of the variance, compared to 20% in the childhood-onset group). Additionally, Vahl and colleagues (2016) found that within detained adolescents, emotional abuse was uniquely associated with internalizing and externalizing mental health problems, specifically over and above the effects of other types of maltreatment.

This extant research helps demonstrate that ACEs pose a number of challenges to the healthy development of justice-involved youth. While the identification of these experiences is beneficial for understanding the outcomes resulting from ACE exposure, this information does not help determine the areas of intervention that may assist in targeting these negative outcomes. Thus, there is a critical need to understand the mechanisms that buffer youth from greater risk of delinquency and developing symptoms of psychopathology resulting from ACE exposure.

Protective Factors and Processes

Protective factors are those that moderate risk and adversity and enhance developmentally appropriate outcomes (Werner, 2000). They include the identification of characteristics and traits that assist in overcoming adversity, thereby modifying, alleviating, or changing an individual's response to these experiences (Resnick, 2000; Rutter, 1985). These traits are those that may have come from experiences or processes that have developed over time, particularly during the adolescent period. From a developmental perspective, these factors are those that originate from external processes (e.g., extra-familial environments such as peers, community, and school, and familial environments). Additionally, individual processes (e.g., self-system processes such as self-confidence, social skills, self-beliefs, cognitions) are those that originate within the

individual (Chase-Landsale et al., 1995; Resnick, 2000). These individual processes and external processes involve the development of the psychological, social, and physical resources that are needed to successfully progress in the context of adverse experiences (Ungar et al., 2013) and decrease the likelihood of negative outcomes (Betancourt & Khan, 2008). These protective variables interact with multiple areas that play an important role in the context of individual development, comparable to Bronfrenbrenner's bio-psycho-social model of human development (Bronfrenbrenner, 1979; Ungar et al., 2013).

In the context of justice-involved youth, these developmentally-based protective factors are useful in reducing risky behaviors that lead to delinquency. For example, Benson and colleagues (2006) have found that the more protective assets youth possess, such as family support, positive adult role models, and positive self-values like responsibility and integrity, the less likely they are to be involved in violent behavior and substance use. Additionally, protective factors have been found to assist justice-involved youth's trajectory into adulthood by allowing them to avoid criminality and be more successful within their community (Todis et al., 2001; Unruh, Povenmire-Kirk, & Yamamoto, 2009). Thus, based on the current literature, the effects between adverse experiences, juvenile delinquency, and mental health may interact with protective factors resulting from individual processes and/or external processes for justice-involved youth.

Protective Factors and ACEs.

Within the context of ACEs, there is literature to support the presence of specific factors resulting from protective processes that buffer the effect of these adverse experiences over time. These include an individual's personal characteristics, attachment

to a caregiver, close personal relationships with others, and having a protective community (Masten et al., 2009; Sciaraffa et al., 2017). Among individual characteristics, some of the most important factors are effective problem-solving skills, self-regulation, and adaptability to stress. For family-related factors, secure attachments and positive family environments are found to be the most important. Within the community, the most salient factors are effective schools, ties to prosocial organizations, and high collective efficacy within the individual's neighborhood (Masten et al., 2009). Thus, adverse experiences can be buffered through protective factors that result from individual processes, such as self-regulation and coping skills, or external processes, such as the family unit, peer association, school involvement, and positive communities.

For example, Brady and colleagues (2008) helped demonstrate that adaptive coping, a protective factor resulting from individual processes, can help safeguard against the harmful effects of being exposed to adverse experiences. They examined the association between community violence exposure and later violent behavior, and the buffering effect of a youth's engagement in adaptive coping strategies. Coping was defined as the effectiveness of the youth to respond to or deal with violent events over 4 time waves, which was coded into seven levels of coping responses (i.e., learning new skills, proactively confronting others, seeking advice, accepting the situation, etc.) based on the pattern of their responding. It was found that greater community violence was associated with later violent behavior for youth whose coping strategies were poor, but not for those who coped well. Those who had adaptive coping strategies over a long-term period used strategies such as seeking advice from others, focusing on the positive aspects of their lives, and engaging in activities that enhanced their self-esteem. Those

who did not have adaptive coping strategies were more likely to use substances, argue with others, isolate themselves from others, and reported enjoying watching others being beat up.

Protective Factors and Juvenile Offending.

The assessment and identification of protective factors for juvenile offenders can be found within frequently used risk assessment measures. For example, the Structured Assessment of Violence Risk in Youth (SAVRY; Borum et al., 2005) is a valid and reliable adolescent risk assessment that has three risk domains and a protective domain, which contains six items (Pro-social involvement, strong social support, strong attachments and bonds, positive attitude toward intervention and authority, strong commitment to school, and resilient personality traits) and are measured dichotomously to result in a total protective factor score. The Youth Level of Service/Case Management Inventory YLS/CMI; Hoge & Andrews, 2011) is a commonly used risk/needs instrument that includes a "strength" box that can be checked by the rater for each subscale of the measure. These strengths include: education/employment, peer relations, family circumstances, attitudes/orientations, leisure recreation, substance use, and personality/behavior. Thus, while there are various conceptualizations for how to apply protective factors to juvenile offenders, there is research to support the inclusion and validity of these items in this population for various adverse outcomes.

Other literature demonstrates how protective factors impact a juvenile's risk level, which is used to help predict their likelihood to participate in future criminal behavior. Shepherd and colleagues (2016) sought to study if the presence of protective factors in a justice-involved sample would differ across offenders' risk level, and if they would affect

their time to reoffend across these risk levels. They utilized the protective domain of the SAVRY to demonstrate that high risk was associated with a lower presence of protective factors. Additionally, offenders with three or more protective factors were found to take longer to reoffend, compared to those with no protective factors who reoffended much earlier. Interestingly, the presence of multiple protective factors was associated with a significantly reduced time to recidivism for low-risk offenders, but was not associated for high-risk offenders. Thus, within this sample, high-risk offenders were not affected by the presence of a greater number of protective factors. These results contrast with those by Lodewijks and colleagues (2010), which found that a greater number of protective factors buffered the effect of recidivism in the high-risk and low-risk offender groups. Shepherd and colleagues (2018) conducted a second study examining the impact of "strength" items within the YLS/CMI. Youth with no strength items were more likely to be categorized as either high risk or very high risk, with no youth in the very high risk category possessing any strength items. All youth categorized as low risk had at least one strength item. Additionally, if a youth had at least one strength item they were 3.2 times less likely to reoffend than a youth with no strengths. Finally, they found that having any amount of strength items had a negative relationship with reoffending after controlling for risk level, which contrasted their findings from their original study in 2016 (Shepherd et al., 2016).

A few studies specifically examine the moderating role of protective factors on the relationship between adverse experiences and juvenile offending. Chen and colleagues (2016) examined the effect of promotive factors on the relationship between community violence exposure and adolescent delinquency. The promotive factors were

measured within four domains: individual (i.e., future expectations), family (i.e., family warmth), school (i.e., school attachment), and community (i.e., neighborhood cohesion) All promotive factors were associated with lower levels of delinquency, with stronger effects for family warmth and school attachment than future expectations and community cohesion. In addition, it was found that future expectations were the only domain of promotive factors to moderate the relationship between community violence exposure and adolescent delinquency when examining all promotive domains simultaneously. Specifically, they found lower levels of adolescent delinquency for those who had higher levels of future expectations compared to lower levels. This research demonstrated that individual protective processes had more of a moderating effect between adverse experiences and delinquency, compared to external-based protective processes. While this research used a different operationalization for these buffering factors, the domains are aligned with the previously mentioned research by Masten et al. (2009) that emphasizes the importance of different domains of protective variables, such as individual and external protective processes.

Consistent with the findings of Chen and Colleagues (2016), So and colleagues (2018) examined the moderating effects of future orientation, a protective individual characteristic, on community violence exposure and delinquent behavior among African American adolescents. Delinquent behavior was measured as the participation in illegal, norm-violating, and aggressive behaviors over a 12-month period. It was found that future orientation was a significant moderator of community violence exposure with delinquent behavior, such that high levels of exposure was more predictive of higher levels of delinquent behavior, with a stronger effect when future orientation levels were

low. Additionally, Craig and colleagues (2017) investigated the effects of social bonds, a protective factor resulting from external protective processes, on the relationship between ACEs and reoffending in a sample of justice-involved youth. Social bonds were defined as a form of attachment to others, having prosocial community ties, having prosocial friends, and feeling close to a prosocial parent or caretaker. Having a higher ACE score significantly increased the chance of re-arrest for those with both strong and weak social bonds. They found that among youth with zero to five ACEs, those with stronger social bonds were less likely to be rearrested compared to those with weaker bonds. But once youth reached six or more ACEs, this relationship was no longer present, indicating that the effect of social bonds in the context of ACE exposure reaches a threshold for protective effects. Thus, among these studies, it is found that individual protective processes have moderating effects between adverse experiences and aspects of juvenile delinquency, but evidence is not as strong for the protective effects of external protective processes.

Protective Factors and Psychopathology.

Mental health disorders among adolescents may be buffered by the effect of protective factors resulting from individual and external protective processes. In a sample of adolescents studied over the course of three years, Olives and colleagues (2013) found that self-reported mental health problems were positively affected by external protective processes, specifically the influence of a healthy home environment (i.e., family cohesion, parents' availability, and perception of support by family). Brown et al. (1999) found differential effects for individual and external protective processes within a sample of juvenile offenders who met diagnostic criteria for any mental health disorder. Those

who had higher family cohesion, developed through external protective processes, were less likely to have comorbid mental health disorders. Additionally, those with higher emotional bonding with peers, developed through individual protective processes, were less likely to have internalizing mental health disorders. Furthermore, youth who have high levels of self-compassion (Muris, 2016), optimism, and self-esteem (Dooley et al., 2015; Kassis et al., 2017), which are encompassed among individual protective processes, have been found to have lower levels of psychopathology.

Additionally, there is research to support the moderating role that protective factors have on the relationship between adverse experiences and the development of psychopathology among justice-involved youth. Rosenberg and colleagues (2014) examined the relationship between trauma, mental health, and resiliency factors in a population of justice-involved youth. They utilized the Youth Resiliency Checklist that is divided into six subscales that test for protective factors (i.e., social skills, involvement, family strengths, school strengths, social supports, and positive outlook). It was found that while a total score of resiliency did not moderate the effect of trauma on depression or PTSD, the subscale Involvement (which assesses for protective factors such as volunteer work, belonging in a community group, and employment), similar to external protective processes, moderated the relationship between trauma and depression, such that higher involvement lessened the effect of trauma on depressive symptoms.

Another study examined 116 male juvenile offenders to determine if the relationship between community violence exposure and psychological distress is moderated by caregiver adult support and caregiver control (Ball et al., 2007). Psychological distress was measured using the Massachusetts Youth Screening

Instrument (MAYSI; Grisso & Barnum, 1998), and psychological distress was dichotomized into internalizing symptoms (depressed-anxious subscale) and externalizing symptoms (alcohol/drug use scale). They found that the relationship between community violence exposure and alcohol/drug use, and between community violence exposure and depression/anxiety, was significant when caregiver adult support was low, but not when support was high. Additionally, Logan-Green and colleagues (2017) found that coping resources, specifically social support, was a moderator between childhood maltreatment and suicidal ideation, such that having low social support and high childhood maltreatment made suicidal ideation more likely. Thus, Ball et al. (2007) and Logan-Green et al. (2017) help demonstrate that external protective processes have moderating effects between adverse experiences and the development of psychopathology among justice-involved youth.

Current Study

The current literature discussed has demonstrated that ACEs are related to a host of negative outcomes, particularly among justice-involved youth. The negative outcomes of interest in this study, specifically enhanced risk of delinquent behavior and development of psychopathology, may be moderated by protective factors that result from individual and external processes. Similar to Bronfrenbrenner's bio-psycho-social model, protective traits may result from multiple areas such as within the individual and through microsystems, or external processes, such as the family, the community, etc. Based on the theoretical conceptualizations of protective factors for adolescents, emphasis has been placed on domains such as individual, family, and community processes (Chase-Lansdale et al., 1995; Masten et al., 2009; Ungar et al., 2013). Research

has stressed that the development of protective factors includes positive development of individual characteristics, such as emotion regulation, as well as external processes, such as family dynamics (Masten et al., 2009). Many studies have examined and emphasized the need for understanding the role of protective factors in the development of emotional, behavioral, and social outcomes in youth in the juvenile justice system who have extremely high rates of exposure to adversity (Brown et al., 1999; Fitzpatrick, 1997; Hamby, et al., 2018; Masten et al., 2009). Yet, most research has examined the effects of individual protective traits/characteristics, or protective factors resulting from external processes independently, without examining how these two areas may interact or differ across negative outcomes. However, it is important to understand how these different levels of protective factors operate in order to design more efficient, targeted intervention programs that can reduce negative outcomes across domains. (Dekovic, 1999; Masten et al., 2009).

Additionally, the available research inconsistently examines adverse experiences, with some research utilizing a total ACE score, and others examining individual facets of ACEs. The previous literature discussed has almost universally examined the effect of ACEs separately when searching for moderating effects of protective factors. Dong and colleagues (2004) underscored the importance of exploring the interconnected nature of ACEs based on the notion that when co-occurrence is not considered, false assumptions can be made about the impact of one type of ACE over another. Thus, the current research seeks to examine the moderating role of protective factors resulting from individual processes and external processes. Specifically, on the relationship between ACEs and juvenile delinquency, and ACEs and symptoms of psychopathology. This

research is designed to better conceptualize how distinct domains of protective variables may differentially effect negative outcomes among justice-involved youth as a result of an accumulation of adverse experiences, rather than merely examining the role of protective processes with one type of ACE exposure. Thus, this study seeks to uniquely examine three areas: 1) the impact of multiple ACE exposure, 2) the effects of multiple protective processes, and 3) examining these effects on multiple negative outcomes among justice-involved youth.

Chapter II

Purpose

This study aims to investigate the buffering effect of individual protective processes and external protective processes on the relation between ACEs and negative outcomes among justice-involved youth. These outcomes include history of juvenile delinquency and the presence of psychopathology. A moderation model will be utilized to determine the effects of the individual and external protective processes. Individual protective processes will consist of optimism, emotional insight, positive cognitions, social skills, and empathy. External protective processes will consist of a family support network, family involvement, prosocial peers, an encouraging school environment, and a prosocial community.

Research Questions and Hypotheses

Research Question 1a. Is there a statistically significant relationship between ACEs and a juvenile's criminal history among this sample?

Hypothesis 1a. It is expected that ACEs will be significantly correlated with juveniles' history of delinquency. Specifically, a greater accumulation of ACEs will be strongly associated with more severe levels of criminal history.

It has been well-researched that justice-involved youth have a high prevalence rate of experiencing ACEs, especially compared to the general adolescent population (Abram et al., 2004; Baglivio et al., 2014; Wolff et al., 2015). These high rates emphasize the need to better understand how these experiences are contributing to juveniles' lives (Baglivio et al., 2014; Wolff et al., 2015). Other studies demonstrate that this high prevalence rate also contributes to a juvenile's likelihood of being involved in delinquent behavior in the future (Baglivio et al., 2015; Craig et al., 2017; Fox et al., 2015; Wolff et

al., 2015). To build upon this growing area of literature, this study seeks to establish the relationship between ACEs and a juvenile's history of delinquency among this sample to later determine the moderating effects of protective factors on this relationship.

Research Question 1b. Is there a statistically significant relationship between ACEs and overall mental health symptoms among this sample?

Hypothesis 1b. It is expected that ACEs will be significantly correlated with overall mental health symptomology. Specifically, it is expected that a higher accumulation of ACEs will be more strongly associated with a greater amount of mental health symptoms.

Previous research has demonstrated that there is a relationship between adverse childhood experiences, such as childhood trauma and maltreatment, and mental health disorders (Felitti et al. 1998; McLaughlin et al., 2012; Mullen et al.,1996). In juvenile justice populations, there is a high prevalence rate of specific ACEs (i.e., childhood maltreatment) and mental health disorders (Atkins et al., 1999; Hoeve et al., 2013; Teplin et al., 2002), as well as literature that supports the relationship between the two (Colins et al., 2010; Hoeve et al., 2015; Kerig et al., 2009). As most research has examined the effects of ACEs of mental health diagnoses, limited research has examined how ACEs are related to dimensions of mental health symptoms. Thus, the current study will examine the association between ACEs and dimensions of mental health symptoms among this specific juvenile sample. While multiple research studies support the relationship between ACEs and specific mental health disorders among justice-involved youth, there is little research that demonstrates how ACEs may be related to lower-order symptoms, which may provide greater detail about the impact of ACEs on mental health symptomology.

Research Question 2a. To what extent is the relationship between ACEs and a juvenile's history of delinquency moderated by individual protective processes?

Hypothesis 2a. Individual protective processes (i.e., optimism, emotional insight, positive cognitions, social skills, and empathy) will moderate the relation between ACEs and a juvenile's history of delinquency, such that the magnitude of the effect of ACEs on a juvenile's history of delinquency will be decreased with a greater accumulation of individual protective processes.

Research Question 2b. To what extent is the relationship between ACEs and mental health symptoms moderated by individual protective processes in a juvenile population?

Hypothesis 2b. Individual protective processes (i.e., optimism, emotional insight, positive cognitions, social skills, and empathy) will moderate the relation between ACEs and mental health symptoms, such that the magnitude of the effect of ACEs on mental health symptoms will be decreased with a greater accumulation of individual protective processes.

The current literature has examined a variety of protective factors that result from the individual's own processes that may be beneficial for enhancing psychosocial and developmental outcomes (i.e., self-regulation, adaptive coping). A limited amount of research examines how these protective processes may buffer the effects of negative life outcomes that result from ACEs, specifically among justice-involved youth. Future orientation, or perceiving future events in a positive light, has been found to moderate the relationship between community violence exposure and adolescent delinquency (Chen et al., 2016; So et al., 2018). Other research has found that youth aspirations, such as belief in future success, optimism, and goal setting, moderated the relationship between family dysfunction and mental health problems that interfered with probation involvement

(Logan-Green et al., 2017). As these youth experience many negative life outcomes that may result from their past adverse experiences, it is imperative to understand how individual processes may protect against the development of specific life outcomes. Additionally, it is necessary to understand these effects as a result of an accumulation of ACEs, rather than examining individual adverse experiences. Therefore, there is a need to examine if individual protective processes have a differential moderating effect for enhanced risk for reoffending vs. mental health symptoms resulting from the accumulation of ACEs.

Research Question 3a. To what extent is the relationship between ACEs and a juvenile's history of delinquency moderated by an external protective process?

Hypothesis 3a. The external protective process (i.e., family support network, prosocial peers, encouraging school environment) will moderate the relation between ACEs and a juvenile's history of delinquency, such that the magnitude of the effect of ACEs on a juvenile's history of delinquency will be decreased with a greater accumulation of variables related to their external protective process.

Research Question 3b. To what extent is the relationship between ACEs and mental health symptoms moderated by an external protective process in a juvenile population?

Hypothesis 3b. The external protective process (i.e., family support network, prosocial peers, encouraging school environment) will moderate the relation between ACEs and mental health symptoms, such that the magnitude of the effect of ACEs on mental health symptoms will be decreased with a greater accumulation of variables related to their external protective process.

Similarly, the current research has only limitedly examined the buffering effects of external protective processes on the impact of negative life outcomes for justice-

involved youth resulting from ACEs. Craig and colleagues (2017) found that social bonds were more beneficial for youth with a minimal history of ACE exposure when examining re-arrest rates, but not for youth with a higher rate of ACEs. External variables such as social support, community involvement, and caregiver support have been found to have significant moderating effects between different types of adverse experiences and the development of mental health symptoms (Ball et al., 2007; Logan-Green et al., 2017; Rosenberg et al., 2014). This limited research emphasizes the need to more comprehensively understand the effect that external protective processes have on the relationship between ACEs and negative life outcomes in justice-involved youth. Additionally, it is necessary to understand these effects as a result of an accumulation of ACEs, rather than examining individual adverse experiences. Therefore, there is a need to examine if external protective processes have a differential moderating effect for enhanced risk for reoffending vs. mental health symptoms resulting from the accumulation of ACEs.

Research Question 4a. Do individual protective processes or external protective processes have a stronger moderating role in buffering the relationship between ACEs and a juvenile's history of delinquency?

Research Question 4b. Do individual protective processes or external protective processes have a stronger moderating role in buffering the relationship between ACEs and mental health symptoms among justice-involved youth?

There is no research that examines the cumulative effects of individual protective processes and external protective processes on the relationship between ACEs and negative outcomes for justice-involved youth. Consequently, there is little basis to predict if individual or external protective processes will have a stronger moderating effect, if present. Rosenberg's study (2014), which examined how resilience (broken down into

facets of protective factors) impacted the relationship between trauma and mental health, found that only external types of resiliency traits had any association. Chen's study (2016), which examined how promotive factors (broken down into individual, family, and community levels) effected the relationship between community violence exposure and adolescent delinquency, only found that internal types of promotive factors had any moderating effects. Additionally, there is no research that examines how the moderation effects of individual protective processes and external protective processes may differ among negative life outcomes. Given this gap, it would be useful to understand if there is any difference between the strength of the effects of individual and external protective processes on the relationship between ACEs and negative life outcomes for justice-involved youth assuming buffering effects are found. Additionally, it would be useful to understand if individual processes and external processes have differing buffering strengths for different outcomes. With the speculative nature of these hypotheses, no a priori hypotheses will be made.

Chapter III

Methods

Power Analysis

A power analysis was conducted using G*Power to determine the sample size required for a moderation analysis (Faul et al., 2009). The analysis was based off the hierarchical linear regression that will be utilized for this study. With a medium effect size (f^2) of .15, an alpha of .05, a standard power level of .80, and a total of 3 predictors, the results of the analysis showed that a minimum sample size of 77 participants would be required to achieve the appropriate power level for this study. The current sample of this study before and after deletion of missing cases is sufficient to perform a moderation analysis.

Participants

Previous data was collected from the Montgomery County, Texas Juvenile Probation Department (MCJPD), and provided by Noble Software Group, LLC, the company which maintains the Positive Achievement Change Tool (PACT) database for MCJPD. Montgomery County is the 11th largest county in Texas (U.S. Census Bureau, 2018), and had a total of 56,515 juveniles referred to probation in 2016 (TJJD, 2016). The total sample consists of 549 juveniles who received a full PACT assessment between January 1, 2011 and December 31, 2013. The full PACT is administered at MCJPD for those who were screened as moderate risk to reoffend or higher with the PACT Pre-Screen upon formal or informal referral to the facility. Data for juveniles with only PACT Pre-Screens were not collected to keep a cohesive representation of juvenile offenders. Participants were 54.8% White, 30.2% Hispanic, and 13.8% African American. 83% of

the sample were male, and 16.6% were female, with ages ranging from 10-18 (M_{age}= 15.04, SD=1.45). Table 1 depicts the descriptive information of this sample.

Measures

The Positive Achievement Change Tool (PACT)

The Positive Achievement Change Tool (PACT) is a risk assessment measure designed to assess for a youth's overall risk to reoffend and rank-order criminogenic needs/dynamic risk factors (Baglivio et al., 2014). It was developed in conjunction with the Florida Department of Juvenile Justice (FDJJ) and Assessment.com, a proprietary vendor. The PACT is based off of the valid and reliable Washington State Juvenile Court Assessment, Back On Track!, with the addition of questions encompassing mental health, suicide, and depression (Baglivio, 2009). The Full PACT contains 12 domains – 1) record of referrals, 2) gender, 3A) school history, 3B) current school status, 4A) historic use of free time, 4B) current use of free time, 5A) employment history, 5B) current employment, 6A) history of relationships, 6B) current relationships. 7A) family history, 7B) current living arrangements, 8A) alcohol and drug history, 8B) current alcohol and drugs, 9A) mental health history, 9B) current mental health history, 10) attitudes/behaviors, 11) aggression, and 12) skills. Appendix A lists all items in these domains. From these domains, the Full Assessment produces a criminal history score, a social history score, and an overall risk score that is based on the criminal history and social history scores. The PACT is administered through opened-ended, structural interviews where the interviewer matches the youth's responses to the multiple-choice coding system in the PACT scoring software.

Baglivio (2009) sought to validate the PACT, which found that the overall risk to reoffend variable was predictive of recidivism rates, where those rated as high risk were more likely to reoffend. This variable was predictive of recidivism for both males and females. Additionally, they found that youth with high criminal history scores were more likely to reoffend. The AUC effect size was .593 which is within the range of AUC effect sizes for other validated juvenile risk assessment measures. For example, the YLS/CMI has had a reported AUC effect size of .579 (Schwalbe, 2007). A second validation study by Baglivio & Jackowski (2013) found an AUC value of .590 which is consistent with their prior validation study.

Despite its low predictive validity score, the PACT is commonly used across juvenile justice facilities as it has a pre-screen measure to assess youth when they first enter the facility, with the full PACT utilized for youth scoring between moderate and high risk (Baglivio, 2014). This measure is then re-administered to help track changes during detainment and while on probation. It is useful to work with measures that are being used in actual practice as this closes the common gap between research and system level use.

Adverse Childhood Experiences (ACE) Score. The PACT has been utilized and validated to derive a total ACE score based on the original ACE Study (Baglivio et al., 2014; Felitti et al., 1998). The 10 ACE's consist of: 1) Emotional Abuse, 2) Physical Abuse, 3) Sexual Abuse, 4) Emotional Neglect, 5) Physical Neglect, 6) Family Violence, 7) Household Substance Abuse, 8) Household Mental Illness, 9) Parental Separation or Divorce, and 10) Household Member Incarceration. Each ACE item will be coded dichotomously, representing the presence (1) or absence (0) of each, and then summed

for each ACE domain. A total ACE score will be calculated, ranging from 0 to 19, by summing the number of ACE items endorsed by each youth. Appendix B is adapted from Baglivio and colleagues (2014) article that depicts the process of creating ACE variables from the PACT.

Juvenile Delinquency. The PACT utilizes an "overall risk to reoffend" classification (low, moderate, high) for all youth given the assessment. It is based on two sub-scores that assess for items related to a youth's criminal history (i.e., age at first offense, adjudicated felonies, secure detention placements) and their social history (i.e., current school enrollment, academic performance, current friends). The social history score uses variables related to abuse and neglect, which overlaps with the variables used to create the ACE score. For the purpose of this study, the criminal history score will be utilized as a measure of juvenile delinquency. The literature has consistently supported that prior offense history, using variables such as age at first arrest, number of prior offenses, and number of prior commitments, is significantly predictive of recidivism, and is a commonly used variable to understand a juvenile's likelihood for future offending (Cuevas et al., 2017; Hamilton, 2015). The items that encompass this variable are depicted in Table 2 and result in a score between 0-31.

Protective Variables. Using valid and reliable measures of resilience as a reference, (Adolescent Resilience Questionnaire (ARQ; Gartland et al., 2011; Child and Youth Resilience Measure; Ungar & Liedenberg, 2011), variables for the protective processes were derived from the PACT and cohesively dichotomized into individual processes and external processes. As the PACT contains a variety of protective variables within the 12 domains, the relevant variables were matched onto domains found within

the ARQ to create a list of protective variables. Tables 3 and 4 provides a list of the relevant PACT variables that matched onto the ARQ domains, broken into individual processes and external processes. Five items were included for individual processes (Optimism, Emotional Insight, Positive Cognition, Social Skills, and Empathy) and have a Cronbach alpha of $\alpha = .72$. Five items were included for the external process (Family Support Network, Family Involvement, Prosocial Peers, Encouraging School Environment, and Prosocial Community) and have a Cronbach alpha of $\alpha = .56$. As this is a poor alpha level, an additional variable was added (School Involvement) that increased the alpha level to $\alpha = .61$. While this alpha level is still not within range of an acceptable level, it contains the maximum number of items that can be included to create the external process variable. Conclusions will be made with caution based on these findings.

The method for creating a total score for protective individual processes and protective external processes is shown in Tables 5 and 6. Each item has a specific coding scheme, where the score for each item will be summed to create a total score for individual processes, ranging from 0-13, and for external processes, ranging from 0-13.

The Massachusetts Youth Screening Instrument – Version 2

The Massachusetts Youth Screening Instrument – 2 (MAYSI-2; Grisso & Barnum, 2000) is a 52- item screening tool that is specifically made for use in juvenile detention centers. It is designed to be easily administered by detention and probation staff and uses a yes/no answer format. It contains 7 subscales: Alcohol/Drug Use, Anger-Irritability, Depression-Anxiety, Somatic Complaints, Suicide Ideation, Thought Disturbance, and Traumatic Experiences. All subscales, except Thought Disturbance,

have been validated for both boys and girls. The subscales are not intended to provide diagnostic information, but instead provides relevant and useful information about the presence or absence of mental health problems among juveniles while being detained (Archer et al., 2010). Prior studies have established convergent validity with the Child Behavior Checklist Youth Self Report and Millon Adolescent Clinical Inventory (*rs* = 0.35 – 0.65; Archer et al., 2010; Grisso and Barnum, 2006; Grisso and Quinlan, 2005). There is additional evidence of internal consistency (median Cronbach α = .70; median item-total correlations = 0.35 - 0.62, with none below 0.20) and retest reliability (median intraclass correlation = .0.74). Ford et al. (2007) found adequate Cronbach α for all subscales except for Thought Disturbances and Traumatic Experiences. In this sample, all subscales except for Thought Disturbances and Traumatic Experiences were used to create a summed total score for mental health symptoms. Table 7 depicts the subscales, their descriptions, and the total score for each subscale. A summed variable will be used for analyses that ranges from 0-37.

Statistical Analysis

The data was examined to test for all assumptions of multiple regression (i.e., normality, linearity, collinearity, skew, constant variance, and modality) and screened for outliers. All multiple regression analyses will control for age, ethnicity, and gender. Descriptive statistics will be gathered for all variables.

Hypothesis 1a & 1b

To determine the statistical association between ACEs and mental health symptoms, and ACEs and juvenile delinquency, a Pearson product-moment *r* correlation will be conducted. The Pearson *r* correlation is a bivariate measure of strength or

association between the relationship of two variables, assuming that the variables are continuous and have a linear relationship. The *r* correlation coefficient ranges from +1 to -1, with a value of 0 indicating no relationship between the variables, and a value of +/-1 indicating a perfect positive or negative linear relationship. A positive correlation coefficient indicates that as one variable increases, the other variable increases. A negative correlation coefficient indicates that as one variable increases, the other variable decreases. Cohen's (1988) guidelines for effect sizes will be used to determine the magnitude of the correlation coefficients.

Hypothesis 2a & 2b

To determine if the relationship between ACEs and juvenile delinquency and ACEs and mental health symptoms is buffered by individual protective processes, where increasing the presence of individual protective variables will decrease the effect of ACEs on juvenile delinquency and mental health symptoms, separate multiple regression analyses will be conducted. ACEs will be entered as the independent variable, individual protective processes will be entered as the moderator, and juvenile delinquency and mental health symptoms will be entered as the outcome variables. To reduce multicollinearity and increase interpretation, ACEs and individual protective processes will be centered at their means. The interaction term will be examined to determine whether individual protective processes moderates the relationship between ACEs and juvenile delinquency, and ACEs and mental health symptoms. In accordance with the procedure proposed by Aiken and West (1991), new moderator variables will be created and additional multiple regression analyses will be conducted on the new moderator variables to further explore the interaction effect. The simple slopes will then be tested

using *t*-tests at the mean, at one standard deviation above the mean, an at one standard deviation below the mean to determine if the simple slopes (for high and low individual protective processes) of the relationship between ACEs and juvenile delinquency and ACEs and mental health symptoms are significantly different than zero.

Hypothesis 3a & 3b

To determine if the relationship between ACEs and juvenile delinquency and ACEs and mental health symptoms is buffered by external protective processes, where increasing the presence of external protective variables will decrease the effect of ACEs on juvenile delinquency and ACEs and mental health symptoms, separate multiple regression analyses will be conducted. ACEs will be entered as the independent variable, external protective processes will be entered as the moderator, and juvenile delinquency and mental health symptoms will be entered as the outcome variables. To reduce multicollinearity and increase interpretation, ACEs and external protective processes will be centered at their means. The interaction term will be examined to determine whether external protective processes moderates the relationship between ACEs and juvenile delinquency, and ACEs and mental health symptoms. In accordance with the procedure proposed by Aiken and West (1991), new moderator variables will be created and additional multiple regression analyses will be conducted on the new moderator variables to further explore the interaction effect. The simple slopes will then be tested using *t*-tests at the mean, at one standard deviation above the mean, an at one standard deviation below the mean to determine if the simple slopes (for high and external protective processes) of the relationship between ACEs and juvenile delinquency and ACEs and mental health symptoms are significantly different than zero.

Hypothesis 4a &b

If individual protective processes and external protective processes independently moderate the relationship between ACEs and mental health symptoms, and ACEs and juvenile delinquency, then interaction effect sizes will be referred to compare if individual or external protective process have a stronger buffering effect. Additionally, they will be compared to each other among the different outcomes to determine if there are differing buffering effects. The most common measure of effect sizes in a multiple regression analysis testing for moderation is f^2 (Aiken & West, 1991), which looks at the unique variance explained by the interaction term divided by the sum of the error and interaction variances. In other words, it is the amount of incremental variance explained by the interaction term (independent variable x moderator) after the first-order effects (effect of independent variable, effect of moderator) have been controlled. Cohen (1988) has indicated that f^2 effect sizes range from 0.02 as small, 0.15 as medium, and 0.35 as large.

Data Analytic Plan and Data Management

Descriptive analyses for primary variables and demographic variables of interest, specifically means, standard deviations, and ranges are reported in Table 8. Data were analyzed using the statistical software package SPSS (IBM SPSS Statistics) and PROCESS, which uses the Aiken and West (1991) method for moderation analyses (Hayes, 2017). Pearson correlations were used to examine the bivariate relationships between the outcomes variables (mental health symptoms and criminal history scores), the predictor variables (internal and external protective processes and ACEs), and demographic variables. The demographic variables, specifically age, ethnicity, and

gender, were used as control variables in the regression analyses. For each of the dependent and moderator variables examined, separate hierarchical regression analyses were conducted. ACEs served as the independent variable in all regression models. In the first block of all regression analyses, ACEs, control variables, and one of the protective processes was entered, followed by the interaction between the two in the second block.

Missing Data.

Missing data was addressed using multiple imputation and listwise deletion. There were 30 participants who had missing data from the MAYSI variables due to expunged files and refusal to participate. Listwise deletion was used to delete the data from these 30 participants, resulting in a final sample of $N = 519$. Multiple imputation was used for all other missing data as this technique has multiple advantages over other methods, such as making no assumptions about whether data are randomly missing and retaining sampling variability (Tabachnick & Fidell, 2013). The mice package in R was utilized, as this package is based on the fully conditional specification approach that "specifies the multivariate imputation model on a variable-by-variable basis by a set of conditional densities, one for each incomplete variable" (Buuren & Groothuis-Oudshoorn, 2011, pp. 2). The main steps in this approach include copying the dataset multiple times, replacing the missing values with slightly different imputed values in each copy of the dataset, where imputed datasets are then analyzed and results are pooled into the final dataset.

Linearity, Homoscedasticity, and Normality

The assumptions for linearity, homoscedascticity, and normality were assessed using histograms, P-P plots, and residual plots of standardized residuals and standardized

predicted values. The models for the second (2a & 2b) and third hypotheses (3a & 3b) examining youth's mental health symptoms and criminal history violated assumptions of homoscedasticity and normality. Therefore, a square root transformation was applied to the dependent variables. After examination of the new histograms, P-P plots, and residual plots, the square root transformation improved the positive skew and the funneling effects of the residuals. Because the results of the transformed and non-transformed models for hypotheses 2a and 3a were similar, the non-transformed models for the outcomes of the criminal history variable were used for ease of interpretation.

Multicollinearity

To assess for multicollinearity, the independent variables were regressed on other variables of interest. Tolerance and variance inflation factors (VIF) were assessed, where tolerance values were not < 0.10 and VIF were not > 10. Additionally, bivariate correlations among the variables did not exceed .90 (Tabacknick & Fidell, 2013).

Outliers

Standardized residuals, Mahalanobis distance, and Cook's distance statistics were used to determine potential outliers and influential data. As recommended by Tabachnick and Fidell (2013), a probability estimate of $p < .001$ for the chi-square value based on the degrees of freedom in the model resulted in a chi-square value of 20.515 to assess for multivariate outliers via Mahalanobis distance. The maximum value of the Mahalanobis distance for all four full regression models did not exceed this value. When examining standardized residuals, values that fell outside ± 3.3 were considered as potential multivariate outliers. After transformations of the dependent variables, no values fell outside of this range.

Table 1.
Demographic Variables

Variable	*N*	%
Gender		
Male	433	83.4%
Female	86	16.6%
Age		
10	2	0.4%
11	8	1.5%
12	17	3.3%
13	37	7.1%
14	72	13.9%
15	147	28.3%
16	175	33.7%
17	58	11.2%
18	3	0.6%
Ethnicity		
White, Non-Hispanic	282	54.3%
Hispanic	159	30.6%
Black, Non-Hispanic	72	13.9%
Other	6	1.2%

Table 2.
PACT Criminal History Items

Item	Responses
Age at first offense	Over age sixteen, sixteen, fifteen, thirteen to fourteen, twelve or under
Adjudicated misdemeanors	None or one referral, two referrals, three or four referrals, five or more referrals
Adjudicated felonies	No felony referrals, one referral, two referrals, three or more referrals
Total weapon offenses	No weapon referrals, one or more referrals
Total against-person misdemeanors	No against-person misdemeanor referrals, one referral, two or more referrals
Secure detention placements	No detention confinements, one confinement, two confinements, three or more confinements
Commitment placements	No residential commitments, one placement, two or more placements
Total escape adjudications	No history of escape, one attempt or actual escape, two or more attempts or actual escapes
Total failure to appear pick up orders	No pick up orders for failure to appear, one pick up order, two or more pick up orders

Note. Items used to calculate a criminal history score which is utilized to categorize risk level. Table adapted from "The assessment of risk to recidivate among a juvenile offending population," by M.T. Baglivio, 2009, Journal of Criminal Justice, 37, p. 596-607. Adapted with permission.

Table 3.
Individual Protective Variables for ARQ and PACT Domains

ARQ Domain and Definitions	PACT Domain and Definitions
Confidence (self/future) *Self-confidence and future expectations*	Optimism *Level of aspirations and sense of purpose*
Emotional Insight *Understanding and regulating emotions*	Impulsiveness *Thinking before acting*
Negative Cognition *Tendency to worry, ruminate, pessimism*	Belief in Success *Believes he/she will be successful*
Social Skills *Communication skills and connecting with others*	Skills - Dealing with Others *Has basic social skills in dealing with others*
Empathy/Tolerance *Capacity to understand others' feelings*	Empathy/Remorse *Has empathy/remorse for their victims*

Note. Definitions are italicized for each domain

Table 4.
External Protective Variables for ARQ and PACT Domains

ARQ Domain and Definitions	PACT Domain and Definitions
Family Connectedness *Nurturing and supportive familial environment*	Family Support Network *Presence of a familial support network*
Family Availability *Family's availability to offer support and advice*	Family Willingness - Support *Prevalence of familial willingness to support youth*
Peer Availability *Ability to develop and maintain friendships*	Current Friends *Prevalence and type of friendships*
School Connectedness *Engagement with school socially and academically*	School Involvement *Interested and involved in school activities*
Supportive School Environment *Support from teachers and staff*	School Encouragement *Belief that school is encouraging*
Community Connectedness *Belongingness and support from community*	Prosocial Community *Prevalence of prosocial community ties*

Note. Definitions are italicized for each domain

Table 5.
Coding Individual Protective Process Items from PACT

Item	Domain	Responses	Coding
Optimism	Domain 10_Q3	*Believes nothing matters; he or she will be dead for long*	0
		Low aspirations: little sense of purpose or plans for better life	1
		Normal aspirations: sense of purpose, commitment to better life	2
		High aspirations: some sense of purpose	3
Emotional Insight	Domain 10_Q4	*Highly impulsive; usually acts before thinking*	0
		Impulsive; often acts before thinking	1
		Some self-control; sometimes thinks before acting	2
		Uses self-control; usually thinks before acting	3
Positive Thoughts	Domain 12_Q5	*Does not believe he or she will be successful*	0
		Unsure if he or she will be successful	1
		Believes he or she will be successful	2
Social Skills	Domain 12_Q5	*Lacks basic social skills in dealing with others*	0
		Has basic social skills, lacks advanced skills in dealing with others	1
		Sometimes uses advanced social skills in dealing with others	2
		Often uses advanced social skills in dealing with others	3
Empathy	Domain 10_Q6	*Does not have empathy for his or her victim(s)*	0
		Has some empathy for his or her victim(s)	1
		Has empathy for his or her victim(s)	2

Table 6.
Coding External Protective Process Items from PACT

Item	Domain	Response	Coding
Family Support Network	Domain 7B_Q7	*No support network*	0
		Some support network	1
		Strong support network	2
Family Involvement	Domain 7B_Q8	*Hostile, berating and/or belittling of youth; Little or no willingness to support youth*	0
		Inconsistently willing to support youth	1
		Consistently willing to support youth	2
Prosocial Peer Presence	Domain 12_Q5	*Only anti-social friends; No consistent friends or companions*	0
		Pro-social and anti-social friends	1
		Only pro-social friends	2
Encouraging School Environment	Domain 3B_Q5	*Does not believe school is encouraging*	0
		Somewhat believes school is encouraging	1
		Believes school is encouraging	2
School Involvement	Domain 3B_Q7	*Not interested in school activities*	0
		Interested but not involved in any activities	1
		Involved in 1 activity	2
		Involved in 2 or more activities	3
Prosocial Community	Domain 6B_Q5	*No pro-social community ties*	0
		Some pro-social community ties	1
		Has strong pro-social community ties	2

Table 7.
MAYSI-2 Subscales and Sum Scores

Subscales	Description	Total Score
Alcohol/Drug Use (8 items)	Frequency and pervasiveness of use of substances	8
Angry-Irritable (9 items)	Feelings of preoccupying anger and vengefulness, irritability, and "touchiness"	9
Depressed-Anxious (9 items)	Depressed and/or anxious feelings	9
Somatic Complaints (6 items)	Bodily aches and pains often related to depressed or anxious feelings	6
Suicide Ideation (5 items)	Thoughts and intentions about self-harm, feelings of hopelessness	5

Table 8.
Means, Standard Deviations, and Ranges for Scales

Measure	**Mean**	**SD**	**Range**
ACEs	4.40	2.80	0-14
Criminal History	6.85	2.92	1-18
Mental Health Symptoms	9.35	7.85	0-37
Individual Protective Processes	7.12	2.66	0-13
External Protective Processes	5.45	2.50	0-12

Note. $N = 519$

Chapter IV

Results

Correlation Analyses

Pearson correlations were conducted to determine the bivariate relationship between the outcomes variables and primary variables of interest, including demographic variables, and are reported in Table 9. For the mental health outcome variable, individual processes ($r(517) = -.14$, $p < .001$), external processes ($r(517) = -.15$, $p < .001$), ACEs ($r(517) = .22$, $p < .001$), ethnicity ($r(517) = -.22$, $p < .001$), and gender ($r(517) = .20$, $p < .001$) were significantly associated, with age being the only variable not significantly related. For the criminal history outcome variable, individual processes ($r(517) = -.21$, $p < .001$), external processes ($r(517) = -.09$, $p = .03$), ACEs ($r(517) = .19$, $p < .001$), and age ($r(517) = -.10$, $p = .03$) were significantly associated, with ethnicity and gender having no significant association.

Hypothesis 1a. It was expected that ACEs and criminal history score would be positively associated, where a greater accumulation of ACEs would be significantly related to a more severe criminal history score.

As expected, ACEs had a small significant correlation with juveniles' criminal history score ($r(517) = .19$, $p < .001$).

Hypothesis 1b. It was expected that ACEs and mental health symptoms would be positively associated, where a greater accumulation of ACEs would be significantly related to more severe levels of mental health symptoms.

As expected, ACEs had a small significant correlation with juveniles' mental health symptom ($r(517) = .22$, $p < .001$).

Regression Analyses

Hierarchical regression analyses were conducted to examine the unique relationship between ACEs and protective factors on criminal history scores and mental health symptoms, as well as the moderating effects of ACEs and protective factors on both outcomes. Independent variables and controls were entered in the first step of the regression, with the interaction term entered in the second step.

Hypothesis 2a; criminal history. Hierarchical multiple regression analyses were conducted to examine the unique and specific relation between ACEs and individual protective processes on criminal history scores, as well as the interaction effects between ACEs and individual protective processes. As seen in Table 10, ACEs, individual protective processes, and control variables were entered at step 1, explaining 8.2% ($F(5,513) = 7.94$, $p < .001$) of the variance in criminal history scores with an effect size of $f^2 = .09$. The effect of ACEs on criminal history scores was positive and significant ($\beta = .16$, $p < .001$). Additionally, the effect of individual protective processes on criminal history scores was negative and significant ($\beta = -.18$, $p < .001$). Gender was the only covariate with a significant association ($\beta = -.86$, $p = .01$).

After addition of the interaction term in step 2, the total variance explained by the model as a whole was 8.5% (R^2 change = .003, $F(1,512) = 2.03$, $p = .15$) with an effect size of $f^2 = .003$. Analyses found the effects for ACEs was positive and significant ($\beta = .15$, $p = .002$), conditional on individual protective processes equaling 0. The effect of individual protective processes was negative and significant ($\beta = -.18$, $p < .001$), conditional on ACEs equaling 0. The interaction term was not significant ($\beta = -.02$, $p = .15$), therefore simple slopes were not examined.

It was hypothesized that individual protective processes would moderate the relation between ACEs and criminal history scores; however, this hypothesis was not supported.

Hypothesis 2b; mental health symptoms. Hierarchical multiple regression analyses were conducted to examine the unique and specific relation between ACEs and individual protective processes on mental health symptoms, as well as the interaction effects between ACEs and individual protective processes. As seen in Table 11, ACEs, individual protective processes, and control variables were entered at step 1, explaining 9.8% ($F(5,513) = 11.21$, $p < .001$) of the variance in mental health symptoms with an effect size of $f^2 = .11$. The effect of ACEs on mental health symptoms was positive and significant ($\beta = .07$, $p = .003$). Additionally, the effect of individual protective processes on mental health symptoms was negative but not significant ($\beta = -.05$, $p = .06$). The covariates ethnicity ($\beta = -.28$, $p < .001$) and gender ($\beta = .50$, $p = .004$) were significantly associated with mental health symptoms.

After entry of the interaction term in step 2, the total variance explained by the model as a whole was 10.4% (R^2 change = .006, $F(1,512) = 3.41$, $p = .06$). The effect of ACEs on mental health symptoms was positive and significant ($\beta = .08$, $p = .001$) conditional on individual protective processes equaling 0. The effect of individual protective factors was negative and approaching significance ($\beta = -.05$, $p = .06$) conditional on the effects of ACEs equaling 0. The interaction term was approaching significance ($\beta = .02$, $p = .06$). While not significant based on the preset alpha level, simple slopes were examined to better understand these effects had the alpha level been less conservative.

The effects of individual protective processes were examined at -1, 0, and +1 standard deviations. At -1 standard deviations, the relationship between ACEs and mental health symptoms was positive but not significant (β =.04, p = .19). At the mean, the relationship between ACEs and mental health symptoms was positive and significant (β = .08, p = .001). At +1 standard deviations, the relationship between ACEs and mental health symptoms was positive and significant (β = .12, p < .001). As depicted in Figure 1, at low frequencies of ACEs, those with greater internal protective factors have fewer mental health symptoms. At high frequencies of ACEs, the frequency of mental health symptoms was the same at low and high amounts of individual protective processes. Using Cohen's f^2 formula for calculating effect size by taking the proportion of variance accounted for by the full model subtracted from the proportion of variance accounted for by all variables except the interaction effect, divided by the residual variance of the full model, the interaction effect was found to have an effect size of f^2 = .007.

It was hypothesized that individual protective processes would moderate the relationship between ACEs and mental health symptoms. This hypothesis was not supported using the preset alpha level of .05. After exploring the interaction effect with a more conservative alpha level of .10, it was found that individual protective processes did moderate the effect of ACEs on mental health symptoms, such that the magnitude of the effect of ACEs on mental health symptoms was decreased with a greater accumulation of individual protective processes when ACEs were low.

Hypothesis 3a; criminal history score. Hierarchical multiple regression analyses were conducted to examine the unique and specific relation between ACEs and external protective processes on criminal history scores, as well as the interaction effects between

ACEs and external protective processes. As seen in Table 10, ACEs, external protective processes, and control variables were entered at step 1, explaining 6.2% ($F(5,513) = 6.78$, $p < .001$) of the variance in criminal history scores with an effect size of $f^2 = .07$. The effect of ACEs on criminal history scores was positive and significant ($\beta = .18$, $p < .001$). Conversely, the effect of external protective processes on criminal history scores was negative but not significant ($\beta = -.08$, $p = .15$). Significant covariates included gender ($\beta = -.89$, $p = .01$) and age ($\beta = -.21$, $p = .02$).

After entry of the interaction term in step 2, the total variance explained by the model as a whole stayed the same at 6.2%, demonstrating that the inclusion of the interaction term did not account for significantly more variance (R^2 change = .00, $F(1,512) = .43$, $p = .51$) with an effect size of $f^2 = .00$. The effect of ACEs on criminal history were positive and significant ($\beta = .18$, $p < .001$), conditional on external protective processes equaling 0. The effect of external protective processes was negative and not significant ($\beta = -.08$, $p = .13$), conditional on ACEs equaling 0. As the interaction term was not significant, simple slopes were not examined.

It was hypothesized that external protective processes would moderate the relationship between ACEs and criminal history scores; however, this hypothesis was not supported.

Hypothesis 3b; mental health symptoms. Hierarchical multiple regression analyses were conducted to examine the unique and specific relation between ACEs and external protective processes on mental health symptoms, as well as the interaction effects between ACEs and external protective processes. As seen in Table 11, ACEs, external protective processes, and control variables were entered at step 1, explaining

9.4% ($F(5,513) = 10.67$, $p < .001$) of the variance in mental health symptoms with an effect size of $f^2 = .10$. The effect of ACEs on mental health symptoms was positive and significant ($\beta = .07$, $p = .004$). Conversely, the effect of external protective processes on mental health symptoms was negative but not significant ($\beta = -.03$, $p = .28$). Significant covariates included ethnicity ($\beta = -.28$, $p < .001$) and gender ($\beta = .49$, p .004).

After entry of the interaction term in step 2, the total variance explained by the model as a whole was 9.7% (R^2 change = .003, $F(1.512) = 1.69$, $p = .19$) with an effect size of $f^2 = .003$, demonstrating that the inclusion of the interaction term did not account for significantly more variance. The effect of ACEs on mental health symptoms was positive and significant ($\beta = .08$, $p = .002$), conditional on external protective processes equaling 0. The effect of external protective processes was negative and not significant ($\beta = -.03$, $p = .36$), conditional on the effects of ACEs equaling 0. As the interaction term was not significant, simple slopes were not examined.

It was hypothesized that external protective processes would moderate the relationship between ACEs and mental health symptoms; however, this hypothesis was not supported.

Hypothesis 4. As there was only one interaction effect that was approaching significance, no effect size comparisons could be calculated and thus no hypotheses were formed about the strength of the moderating relationships of individual and external protective processes.

Supplemental Analyses

Hypotheses 3a and 3b were not supported and it was found that external protective processes were not significantly predictive of either outcome variable. This

may be impacted by the low Cronbach alpha for this variable, potentially indicating that a composite score dilutes the effects of one or more of the summed variables. Thus, to better understand the effects of the traits that encapsulate the external protective processes variable, all six traits were individually examined to determine if they are significant predictors and/or moderators for both criminal history scores and mental health symptoms.

Each external protective trait was entered into a separate hierarchical regression analysis with ACEs and control variables in step 1, and the interaction term entered in at step 2. Table 12 displays the results of these regression analyses. Based on hypothesis 3a, it was found that having consistent pro-social friendships ($\beta = -.53$, $p = .007$) was predictive of a decrease in criminal history scores, with an effect size of $f^2 = .08$. Additionally, being involved in school activities ($\beta = -.34$, $p = .009$) was predictive of a decrease in criminal history scores, with an effect size of $f^2 = .08$. Lastly, having a supportive family network was approaching significance ($\beta = .38$, $p = .09$), but indicated an unexpected positive relationship. None of the external protective traits were significant moderators.

Based on hypothesis 3b, it was found that none of the external protective traits were significant predictors of mental health symptoms. However, it was found that having a supportive family network was a significant moderator ($\beta = .09$, $p = .02$), with an effect size of $f^2 = .01$. The simple slopes of this interaction effect were examined to further understand these effects. Thus, the effects of family support were examined at -1, 0, and +1 standard deviations. At -1 standard deviations, the relationship between ACEs and mental health symptoms was positive but not significant ($\beta = .03$, $p = .39$). At the

mean, the relationship between ACEs and mental health symptoms was positive and significant ($\beta = .08$, $p < .001$). At +1 standard deviations, the relationship between ACEs and mental health symptoms was positive and significant ($\beta = .14$, $p < .001$). As depicted in Figure 2, at low frequencies of ACEs, those with greater family support have fewer mental health symptoms. At higher frequencies of ACEs (> 4), the frequency of mental health symptoms is the same at low and high levels of family support. These interaction effects mirror those found individual protective processes for hypothesis 2b, which were approaching significance.

Table 9.
Intercorrelations of Variables

	1	2	3	4	5	6	7
1. ACEs	-						
2. Mental Health Symptoms	.22**	-					
3. Criminal History	.19**	-.06	-				
4. Individual Protective Processes	-.32**	-.13**	-.22**	-			
5. External Protective Processes	-.46**	-.14**	-.10*	.51**	-		
6. Ethnicity	-.21**	-.21**	-.05	.01	-.02	-	
7. Gender	.19**	.17**	-.07	-.03	-.08	-.08	-
8. Age	-.01	-.03	-.10*	.10*	-.07	.07	.01

Note. ACEs = Adverse Childhood Experiences. * $p < .05$. ** $p < .01$

Table 10.
Hierarchical Regression Analyses of the Moderating Role of Individual Protective Processes and External Protective Processes in the Relation between ACEs and Criminal History Scores.

	β	SE	R^2	ΔR^2
Step 1			.082**	
ACEs	.16**	.05		
Individual Protective Processes	-.18**	.05		
Ethnicity	-.07	.14		
Age	-.17	.09		
Gender	-.86*	.34		
Step 2			.085**	0.003
ACEs	.15**	.05		
Individual Protective Processes	-.18**	.05		
Ethnicity	-.06	.14		
Age	-.16	.09		
Gender	-.86*	.34		
ACEs x Individual Protective Processes	-.02	.02		
Step 1			.058**	
ACEs	.18**	.05		
External Protective Processes	-.08	.05		
Ethnicity	-.04	.14		
Age	-.20*	.09		
Gender	-.89**	.34		
Step 2			.062**	.0008
ACEs	.18**	.05		
External Protective Processes	-.08	.05		
Table 10. Continued	β	SE	R^2	ΔR^2
Ethnicity	-.06	.14		
Age	-.21*	.09		
Gender	-.89**	.34		
ACEs x External Protective Processes	-.01	.02		

Note. *$p < .05$. ** $p < .01$

Table 11.

Hierarchical Regression Analyses of the Moderating Role of Individual Protective Processes and External Protective Processes in the Relation between ACEs and Mental Health Symptoms.

	β	SE	R^2	ΔR^2
Step 1			.098***	
ACEs	.07**	.02		
Individual Protective Processes	-.05	.02		
Ethnicity	-.27**	.07		
Age	-.01	.05		
Gender	.50**	.02		
Step 2			.104**	.006
ACEs	.08**	.03		
Individual Protective Processes	-.05	.03		
Ethnicity	-.27**	.07		
Age	-.01	.05		
Gender	.50**	.17		
ACEs x Individual Protective Processes	.02	.01		
Step 1			.096***	
ACEs	.07**	.03		
External Protective Processes	-.03	.04		
Ethnicity	-.28**	.07		
Age	-.03	.05		
Gender	.49**	.17		
Step 2			.100**	.004
ACEs	.08**	.03		
External Protective Processes	-.02	.03		
Table 11. Continued	β	SE	R^2	ΔR^2
Ethnicity	-.28**	.07		
Age	-.03	.05		
Gender	.50**	.17		
ACEs x External Protective Processes	.01	.01		

Note. *$p < .05$. ** $p < .01$

Table 12.

Regression-Based Tests of External Protective Traits on ACEs and Negative Outcomes

	Criminal History			Mental Health Symptoms		
	β	SE	*p*	*β*	SE	*p*
Family Support	0.38	0.22	.09	-0.13	0.11	.23
Family Support x ACEs	0.09	0.07	.23	**0.09**	**0.03**	**.01**
Family Involvement	-0.19	0.21	.36	0.02	0.10	.83
Family Involvement x ACEs	-0.05	0.06	.37	-0.01	0.03	.81
Prosocial Peers	**-0.53**	**0.19**	**.007**	-0.08	0.10	.42
Prosocial Peers x ACEs	-0.06	0.06	.30	0.02	0.03	.45
School Environment	-0.02	0.17	.87	-0.10	0.08	.20
School Environment x ACEs	-0.01	0.05	.81	0.02	0.03	.34
School Involvement	**-0.34**	**0.12**	**.009**	0.02	0.06	.74
School Involvement x ACEs	-0.06	0.04	.16	0.01	0.02	.70
Prosocial Community	0.24	0.22	.28	-0.12	0.11	.26
Prosocial Community x ACEs	0.07	0.07	.35	0.06	0.03	.09

Note. Significant effects are bolded.

Figure 1.

Interaction Plot of Individual Protective Processes and ACEs on Mental Health Symptoms

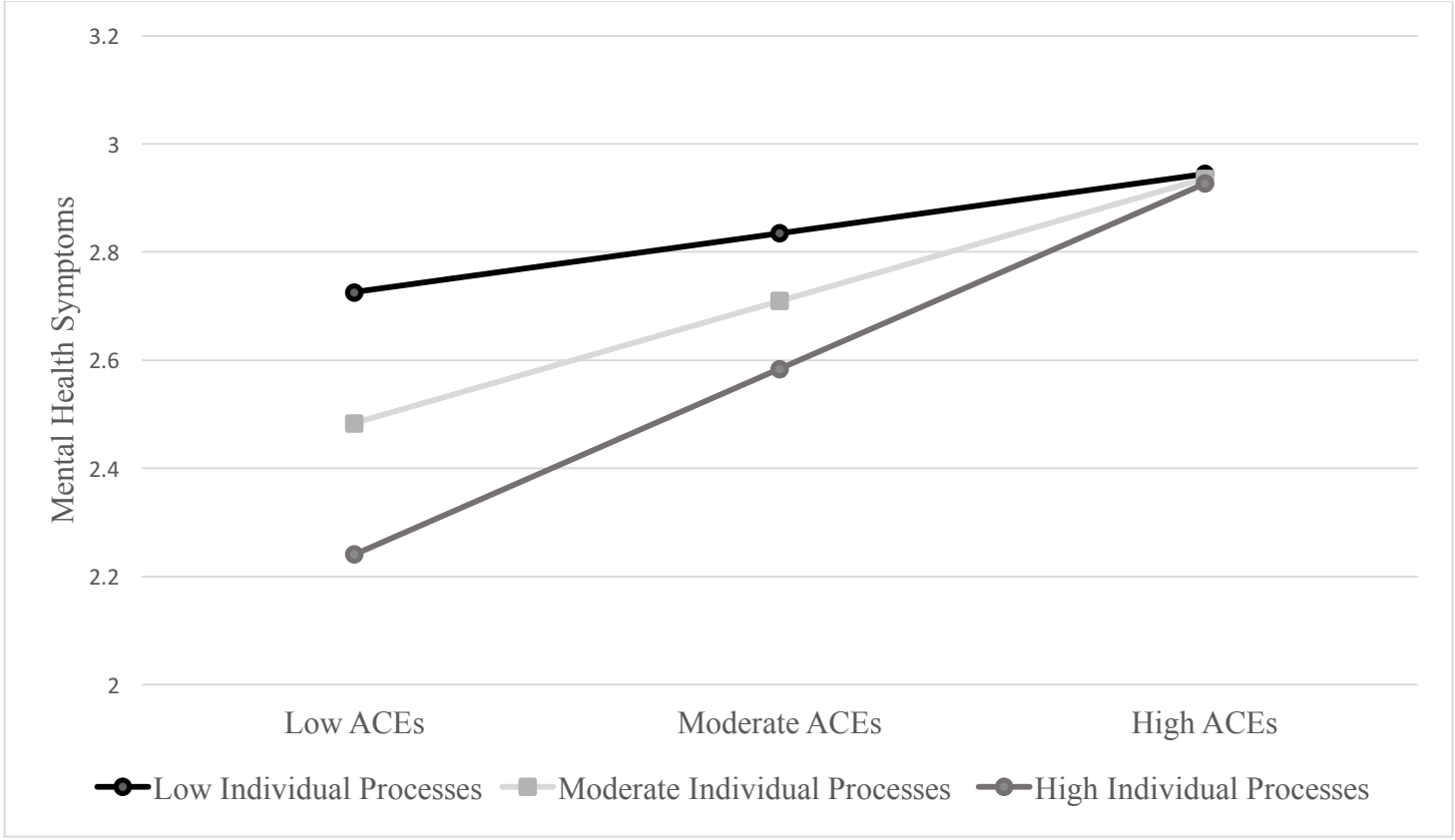
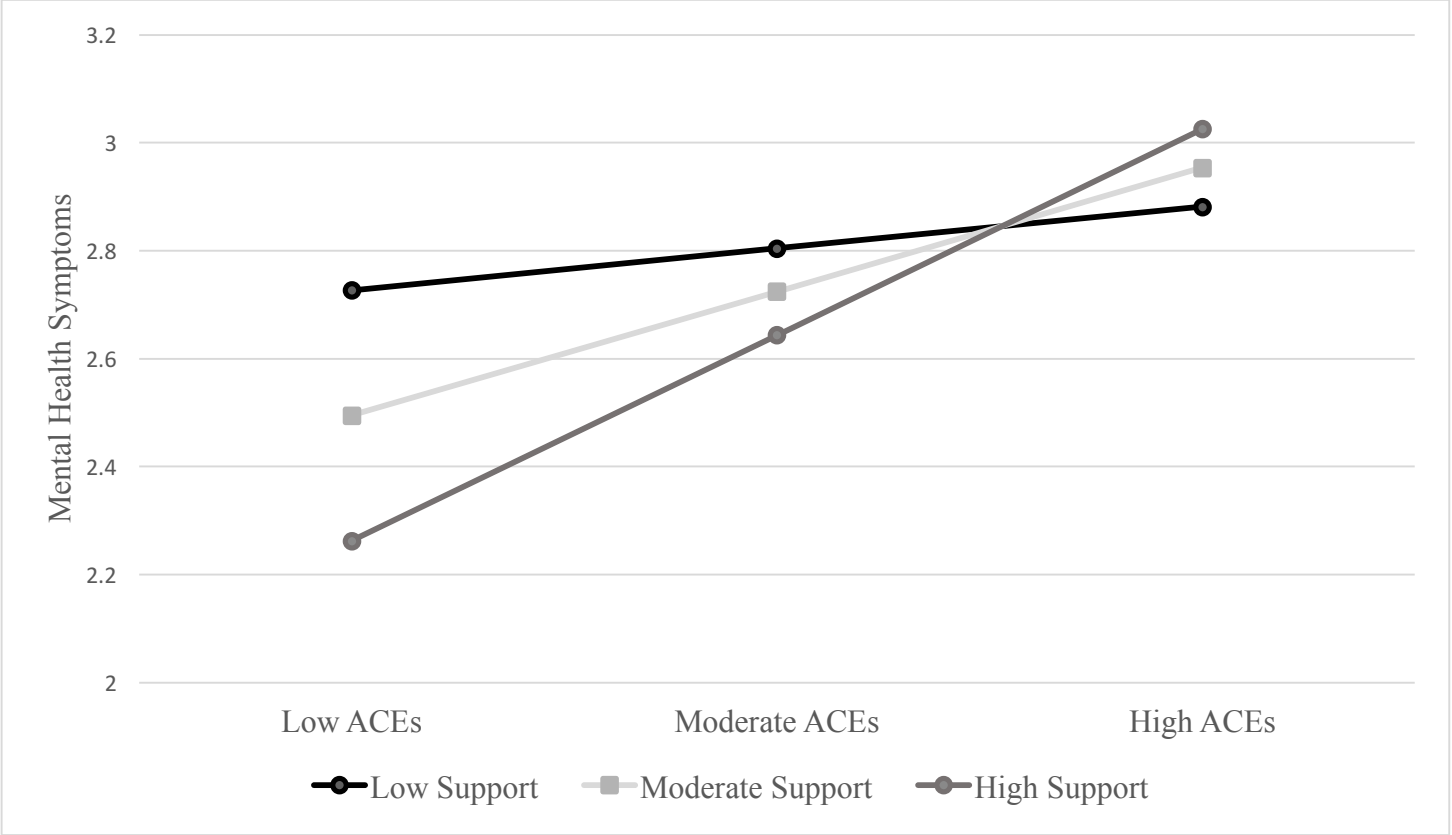


Figure 2.

Interaction Plot for Family Support and ACEs on Mental Health Symptoms



Chapter V

Discussion

This study sought to examine if individual and external protective processes would mitigate the relationship between ACEs and juvenile delinquency and ACEs and mental health symptoms. Prior research has found moderating effects for a variety of protective traits, such as social bonds, parental support, coping strategies, and future aspirations, between trauma and negative outcomes for juveniles (Ball et al., 2007; Brady et al., 2008; Craig et al., 2017; Logan-Greene et al., 2017). These protective traits develop from within the individual's self and from their external environment and can be conceptualized into two categories: individual protective processes and external protective processes. Less is known about how the mitigating effect of protective traits may differ in respect to the processes in which they developed. Therefore, this study examined the effects of these protective processes to better understand how they may differentially effect the relationships between total ACE scores and negative outcomes for justice-involved youth.

Among this sample, 93.8% ($N = 487$) experienced some form of adverse childhood experience, similar to other studies that have found a high frequency of ACE exposure among justice-involved youth (Baglivio et al., 2014; Logan-Greene et al., 2017). On average, this population experienced $M = 4.4$ ($SD = 2.80$) ACEs. It was hypothesized that ACEs would be significantly associated with a juvenile's criminal history and overall mental health symptoms, which was supported. A greater accumulation of ACEs is positively associated with a greater increase in variables related to a juvenile's criminal history (e.g., age at first offense, total misdemeanors/felonies,

detention placements, etc.) and a greater amount of mental health symptoms. In the hierarchical regression models, ACEs were predictive of both outcome variables after considering the variance associated with protective factors and demographic control variables. Specifically, they had a greater impact on criminal history scores than mental health symptoms. These findings support previous literature that has demonstrated that ACEs are related to greater involvement in delinquency for justice-involved youth, such as likelihood of earlier age of first arrest (Baglivio et al., 2015), increased risk of criminal behavior (Fox et al., 2015), and increased likelihood of a shorter time between re-arrests (Wolff et al., 2015). Additionally, it supports literature that has shown that greater ACE accumulation is associated with the development of mental health symptoms among justice-involved youth (Hoeve et al., 2015; Kerig et al., 2009).

ACEs are related to a prominent criminological theory, the Risk-Needs-Responsivity (RNR; Andrews et al., 1990) model, which has important implications about the relation of ACEs with criminal behavior. The RNR model conceptualizes an individual offender's risks and needs related to their offending that can be interpreted through the type of intervention best suited for them. Andrews and colleagues identified major risk factors related to offending, known as the 'central eight'. These include history of antisocial behavior, antisocial personality, antisocial attitudes, antisocial peers, family/marital difficulties, mental health problems, school/work problems, and poor use of leisure time (Andrews, Bonta, & Wormith, 2006). Other important risk factors are assessed that contribute to criminal behavior through the use of risk assessments based on the RNR model. Many of the ACE items can be interpreted through the lens of the RNR framework, such as family dysfunction, mental illness in the home, history of criminal

involvement in the family, etc., which may provide insight into how ACEs are predictive of past or future criminal involvement. While these RNR risk assessment measures may address some ACE items, the majority of these measures lack the inclusion of childhood trauma and/or trauma-related experiences that are known to be high among these populations (Bates-Maves & O'Sullivan, 2017). Additionally, trauma exposure is an important variable to assess as it may have the potential to impact or act as a mechanism of change for important risk factors under the RNR model, such as antisocial behavior, school/work problems, and leisure and recreation problems (Bates-Maves & O'Sullivan, 2017). Thus, ACEs play an important role in the responsivity aspect of the RNR model, as they may impact the ability to provide appropriate care and treatment for their current needs. A trauma-informed treatment approach would provide additional insight into the role of leading criminogenic risk factors, helping to both modify current behaviors and more appropriately address the responsivity principle of the RNR model (Bates-Maves & O'Sullivan, 2017). Therefore, it is prudent that both trauma and criminogenic risk factors be assessed and screened in juvenile populations to understand how to approach treatment and provide services that will help reduce the risk of recidivism.

Furthermore, it was hypothesized that individual protective processes would moderate the relations between ACEs and juvenile delinquency and ACEs and mental health symptoms. Contrary to hypotheses, individual protective processes did not moderate the relation between ACEs and juvenile delinquency as assessed by the criminal history score on the PACT. Additionally, the moderating effect between ACEs and mental health symptoms was approaching significance ($p = .06$), but did not support initial hypotheses. This moderation effect was probed despite not meeting alpha cutoffs

in order to understand the potential moderating effects of individual protective processes. At low levels of ACE exposure, mental health symptoms were greater for those with fewer traits related to individual protective processes compared to those with greater amounts of traits. Interestingly, when ACE exposure was high (> 5 ACEs), mental health symptoms were the same despite levels of individual protective processes. Thus, the potential mitigating effects of individual protective processes on mental health symptoms reaches a ceiling effect when ACEs are high. A similar moderation pattern was found by Craig and colleagues (2017) when they examined effect of social bonds on the relation between ACEs and re-arrest among juvenile offenders. They found that youth with strong social bonds are more protected from future likelihood of re-arrest when ACEs were low, but once ACEs surpassed six, the protective effect of strong social bonds was no longer strong enough to counteract the effect of ACEs on re-arrest. These findings demonstrate the detrimental effects of a high accumulation of ACEs for justice-involved youth and the negative outcomes they experience that are exacerbated because of their ACE exposures. Additionally, these potential mitigating effects for individual protective processes are similar to the moderation effects found by Logan-Greene et al. (2017), who found that aspirations for the future mitigated the effect between family dysfunction and mental health problems.

While individual protective processes did not have an interaction effect with ACEs for juvenile delinquency, there was a significant relationship among individual protective processes and juvenile delinquency such that the increase in individual protective processes results in a decrease in factors associated with juvenile delinquency. These results support other literature that demonstrates that prosocial attitudes and

behaviors that develop from within the individual are predictive of a decreased likelihood of recidivism (Cuevas et al., 2017; Shepherd et al., 2016; Shepherd et al., 2018; So et al., 2018).

Additionally, it was hypothesized that external protective processes would moderate the relations between ACEs and juvenile delinquency and ACEs and mental health symptoms. Contrary to hypotheses, external protective processes did not moderate either relationship. Interestingly, external protective processes were not significantly predictive of either juvenile delinquency or mental health symptoms. This is in opposition to the existing literature that demonstrates that external protective traits, such as social bonds, family support, and community involvement, are predictive of decreased likelihood of recidivism and mental health symptoms among justice-involved youth (Ball et al., 2007; Craig et al., 2017; Logan-Greene et al., 2017; Rosenberg et al., 2014). These findings may be impacted by the low Cronbach alpha for this variable, which may indicate that grouping these external protective traits into one process-based variable masks the individual effects of one or more of these variables. That is, the composite variable may dilute the impact of one or more of the summed variables, thus canceling the effect of the composite measure. To better understand how the composite variable may be affecting these findings, each external protective trait was individually entered into a regression model to understand how they influence criminal history scores and mental health symptoms. It was found that having prosocial friends and being involved in school activities was predictive of lower criminal history scores. These findings are aligned with prior research that supports the importance of healthy friendships and

involvement in school as protective against juvenile delinquency (Chen et al., 2016; Lodewijks et al., 2010; Morrow et al., 2019).

Conversely, having a supportive family environment was approaching significance as predictive of an increase in criminal history scores. This is in opposition to existing literature that demonstrates the importance of the role of healthy family environments in decreasing juvenile delinquency (Berg & Huebner, 2011; Pullman et al., 2006). This finding may indicate that while a youth appeared to have a supportive family network, they may have been supportive of antisocial or criminal attitudes, thus influencing the likelihood of criminal involvement. Previous findings by Jaffee et al. (2003) demonstrate that when examining the role and presence of antisocial fathers in the home, children fared worse when their highly antisocial fathers resided in the home compared to children whose antisocial fathers did not reside in the home. Thus, emphasizing prior theoretical work that the quality of parenting is more influential on children's behaviors than the type of family they are raised in (Bornstein, 1995; Jaffe et al., 2003). Based on this prior research, the current findings may represent that a family support variable does not inherently mean greater support will result in more protective effects against delinquent involvement, as the type of support is not specified. A more comprehensive family support variable that captures the quality of parenting may be a more appropriate representation of a protective variable against delinquent involvement, but more research is needed to support this proposition in the context of protective factors for justice-involved youth.

Furthermore, it was found that a supportive family environment was a significant moderator between ACEs and mental health symptoms. Specifically, those with greater

amounts of family support were more likely to experience less mental health symptoms when they experienced three or less ACEs. This mitigating effect was not present after ACEs surpassed 4, indicating the severity of ACEs on the development of mental health symptoms and the ceiling effect of family support to protect against the effects of ACEs. Other research has found moderating effects for family support on mental health symptoms. For example, Ball and colleagues (2007) found that family support was predictive of lower rates of internalizing and externalizing disorder symptoms among justice-involved youth, and was also a significant moderator between community violence exposure and these mental health disorders.

Investigating the effects of the external protective traits provided supplemental information to understanding these traits in the context of negative outcomes for justice-involved youth exposed to ACEs. While the external protective processes composite variable was not predictive of the negative outcomes nor found as a moderator, various traits encompassing this variable were found to have significant effects. Thus, the findings in this sample indicate that grouping various external protective traits is not an effective way to understand how these traits influence negative outcomes for justice-involved youth. This may be due to the specific and unique effects of each different type of external trait, as they are drawn from different external environments (e.g., friends, family, school, and community). This contrasts with the individual protective processes composite variable, as the traits encompassing it are related to psychological and personality-based traits that may be more similarly related based on how they develop.

Despite the lack of support for the original moderation hypotheses, the current findings have noteworthy implications. First, ACEs were found to contribute to the

criminal history scores and mental health symptoms for juvenile offenders. These effects were greater for criminal history scores than mental health symptoms, further supporting the existing literature that demonstrates the deleterious effects of ACEs on justice-involved youth (Abram et al., 2004; Baglivio et al., 2014; Baglivio et al., 2015; Dierkhising et al., 2013; Fox et al., 2015; Wolff et al., 2015). These findings demonstrate the importance of intervening with these youth as early as possible to help decrease the effects of ACEs on their trajectory in the juvenile justice system and into adulthood. It is also imperative to understand the role of ACEs in the development of mental health symptoms for justice-involved youth and emphasizes the need for the juvenile justice system to assess for mental health disorders as early as possible due to the high rates of trauma exposure among this population.

Second, while individual and external protective processes did not have any moderating effects on the relations of ACEs on juvenile delinquency and mental health symptoms, there were unique findings about their relationship with these negative outcomes. Individual protective processes were predictive of only criminal history scores, where a greater accumulation of these protective traits developing from within the individual results in fewer factors related to criminal offending. This demonstrates that traits such as optimism, emotional insight, empathy, positive thoughts and cognitions, and social skills are protective against criminal behavior. In contrast, external protective processes were not predictive of juvenile delinquency or mental health symptoms when examined as a composite variable. Whereas when the separate external traits were examined, prosocial friends and school involvement were predictive of lower criminal history scores, and supportive family networks were a significant moderator between

ACEs and mental health symptoms. In the context of juvenile delinquency, it appears that in this sample youth who had a greater accumulation of protective traits that developed from psychological, personality, and/or temperament processes, and external traits related to friends and school, were more protective against past criminal behavior compared to family and community – based external traits. This may be indicative of specific external environments that may not have been powerful enough to have a protective effect on their risk for criminal behavior.

In the context of mental health symptoms, protective traits resulting from either within the individual or from their environment are not protective against the development of mental health symptoms. This was surprising as other literature has demonstrated the protective role of traits related to both individual and external factors for juvenile delinquency and mental health disorders (Ball et al., 2007; Craig et al., 2017; Logan-Greene et al., 2017; Rosenberg et al., 2014). However, having a supportive family network was found to moderate the effects of low rates of ACEs on the development of mental health symptoms. This trait reached a ceiling effect once ACEs reached 4, which may indicate the severe and deleterious effect of ACEs on the development of negative outcomes for justice-involved youth. These findings indicate that the protective processes developed in this sample did not have a significant effect on the development of mental health symptoms or criminal involvement. Additionally, the creation of a composite score for external protective processes was not a functional way to understand the effects of protective traits developing from external environments.

Limitations

Several limitations should be noted in this study. First, the data was originally collected for gaining information from the PACT risk assessment, and only information collected from the PACT could be used to infer information for ACEs and protective variables. While the protective variables used in this study are based on a valid theoretical conceptualization of protective factors and were derived from a valid measure, they were not explicitly assessed using a validated measure expressly designed to evaluate these variables. Thus, the variables used may not fully capture the extent or complexity of protective factors operating within this population. This limitation is also supported in the low Cronbach alpha for the external protective processes variable. However, the items extracted from the PACT to represent protective processes are protective factors that have been validated and are distinct from other risk items, making them a valid representation of a measure of protective process variables (Craig et al., 2017; Fougere & Daffern, 2011; Hay et al., 2018). While the protective processes scales derived from the PACT did not moderate the proposed relations in this study, other validated measures of protective traits may be more relevant for exploring the relationships. Additionally, the derivation process for ACEs from the PACT has been validated by Baglivio and colleagues (2014) and multiple studies have used this process to understand the role of ACEs among justice-involved populations. Furthermore, while the PACT is a widely-used risk assessment measure for juvenile offenders, it has a relatively low predictive validity score. Nevertheless, the PACT's validity performs similarly to other valid and widely used youth risk assessment measures.

Second, the generalizability of this sample may be limited as it only contained youth detained in south east Texas and were given the full PACT as they were of moderate or high risk using a pre-screening measure of the PACT. Despite this limitation, the risk categorization of the sample was evenly spread across low, moderate, and high risk offenders Additionally, the demographics of this sample were variable and ranged in age and ethnicity. Third, as there was a very low recidivism rate in this sample, it was necessary to use a different variable that could measure juvenile delinquency, specifically the risk level variable. However, due to overlapping items with the risk level variable and the ACE items, this study was not able to use risk for reoffending as the main variable of interest. Instead this study used the criminal history scale, which is used in classifying offending risk categories, and is a theoretically strong representation of the likelihood of reoffending (Cuevas et al., 2017; Hamilton, 2015).

Fourth, this study used cross sectional data, and thus conclusions can only be made about associations between variables, with no conclusions being made about direct causal relationships. A fifth limitation was the positively skewed nature of the outcome variables, indicating that youth had less severe levels of mental health symptoms and criminal history scores, which limited the normality and homoscedasticity of the data and resulted in the use of transformations for the linear regression models. A sixth limitation is the unknown effects that gender may have on the importance of protective factors and processes on the relationships of interest. Literature has shown gender differences in the classification of risk and protective factors for delinquent males and females (Hart et al., 2007) demonstrating that gender differences may play a role in the moderating effects of protective processes. An additional limitation of the study were the null findings for the

moderation analyses, which limited the ability to make conclusions about Hypothesis 4a/b concerning the differences in effect sizes. A final limitation was the extensive missing data from the MAYSI scores, due to expunged files or refusal to participant which required listwise deletion of these participants from the data. Additionally, the MAYSI is a screening tool for detention staff to use to identify mental health needs and is not a comprehensive measure of mental health disorders. Thus, a more extensive and thorough measure of mental health may be more valid to represent the mental health functioning in this sample. Overall, these findings must be interpreted in light of the small to moderate effect sizes found and the present limitations.

Despite these limitations, the current study highlights meaningful and significant findings about the substantial impact of ACEs on justice-involved youth and the role of protective processes. First, it further supports the existing literature that emphasizes the detrimental effects of ACEs on the development of negative outcomes for justice-involved youth, specifically for greater criminal involvement and mental health symptoms. Second, it identified unique associations between protective processes and these negative outcomes, which underscored the need to better understand how to conceptualize and measure the traits that develop from these processes. Lastly, it provided distinct findings about the moderating role of protective traits and processes on the relations between ACEs and negative outcomes.

Future Directions

Findings from the present study indicate that more research is needed to clarify the mitigating role of protective traits resulting from differing developmental processes, specifically on the development of negative outcomes resulting from ACEs in justice-

involved youth. Based on the null findings for the individual and external protective processes, it would be useful to know if these findings would be replicated with validated measures of protective traits. As these processes were derived based on items in the PACT, it may be necessary to understand what other items would be essential to capture the two processes. For example, the Search Institute (n.d.) created a list of developmental assets, titled the *40 Developmental Assets*® which conceptualizes youth protective traits and divides them into two categories: internal factors (e.g., social competencies, positive identity, values) and external factors (e.g., support, constructive use of time, empowerment). These two categories list a variety of other protective traits not encapsulated in the scales utilized in this study, and may be a useful reference for future studies that seek to understand the differential effects of internal and externally-based protective factors. Additionally, as previous literature has examined the moderating effects of singular protective traits, it may be useful for future research to examine the effects of these two protective processes based on trait-level findings and utilize this method to draw conclusions about the differential effects of individual vs. external protective processes. Lastly, as some literature indicates differential effects of protective traits based on gender in JI youth samples, it may be useful to understand how the moderating effect of protective processes differs based on gender effects.

Clinical and Policy Implications

As these findings indicate the severe and deleterious effects of ACEs on the development of negative outcomes for justice-involved youth, it is necessary for detention facilities to thoroughly assess for and address the needs created by the development of adverse experiences. Based on the current results, the ability for

protective traits and/or processes to mitigate the effects of ACEs on the development of negative outcomes approach a ceiling effect once ACE exposure reaches a specific level. Thus, intervention efforts to develop and increase protective traits in justice-involved youth may not be as effective for those with an extensive history of adverse experiences. Therefore, it is necessary for more early intervention and prevention of ACE exposure before a youth may enter the justice system. This would require the involvement of a variety of systems involved in the child's life, such as school counselors, pediatricians, and other practitioners that can screen for the risk of ACE development and intervene with appropriate therapeutic programs to mitigate the negative outcomes that result from ACE exposure (Craig et al., 2017).

Additionally, these findings emphasize the importance of the development of protective traits, both developing from within the individual and from their environment, on a juvenile's involvement in the criminal justice system. While the current literature contains a variety of theories concerning the role of protective factors in offending patterns (Serin et al., 2016), the present findings identify the overall need to better understand how developing protective traits may mitigate, deter, and/or interact with a youth's risk for offending. This is especially crucial for youth, as a variety of these identified protective traits are most salient to their current circumstances as they are still developing social skills, interacting and building relationships in school and community environments, developing emotion-based reasoning, and relying upon family systems (Scales & Leffert, 1999). Thus, childhood and adolescence is the central time for the intervention and development of protective traits that may help mitigate and affect their

likelihood for criminal involvement, which may in turn influence the development of other negative outcomes.

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Appendix A: PACT Items and Descriptions

PACT Items and Description

Domain	Question Number and Item Description
1. Record of Referrals	1. Age at first offense
1. Record of Referrals	2. Misdemeanor referrals
1. Record of Referrals	3. Felony referrals
1. Record of Referrals	4. Weapon referrals
1. Record of Referrals	5. Crime against a person misdemeanor referral
1. Record of Referrals	6. Crime against a person felony referral
1. Record of Referrals	7. Sexual misconduct misdemeanor referrals
1. Record of Referrals	8. Felony sex offense referrals
1. Record of Referrals	9. Number of times youth was detained for 24 hours
1. Record of Referrals	10. Number of disposition orders where youth served at least 1 day confined in residential placement
1. Record of Referrals	11. Number of escapes from detention or residential facility
1. Record of Referrals	12. Number of warrants for failure to appear in court
2. Gender	1. Gender
2. Gender	2. Current Age
3A. School History	1. History of special education - mental retardation, behavioral, or ADHD/ADD
3A. School History	2. History of expulsion/suspensions
3A. School History	3. Age at first expulsion/suspension
3B. Current School Status	1. Youth has been enrolled in school for the last 6 months
3B. Current School Status	2. Current school enrollment status
3B. Current School Status	3. Type of school youth is enrolled in
3B. Current School Status	4. Youth believes there is value in getting an education
3B. Current School Status	5. Youth believes school provides an encouraging environment for him/her
3B. Current School Status	6. Teachers/staff/couches the youth likes or feels comfortable talking with
3B. Current School Status	7. Youth's involvement in school activities
3B. Current School Status	8. Current school conduct

3B. Current School Status	9. Number of expulsions/suspension in the most recent term
3B. Current School Status	10. Youth's attendance in the most recent term
3B. Current School Status	11. Youth's academic performance in the most recent term
3B. Current School Status	12. Interviewer's assessment of the likelihood that the youth will stay in and graduate from high school
4A. Historic Use of Free Time	1. History of structured recreational activities in the past 5 years
4A. Historic Use of Free Time	2. History of unstructured prosocial recreational activities in the past 5 years
4B. Current Use of Free Time	1. Current interest and involvement in structured recreational activities
4B. Current Use of Free Time	2. Types of structured recreational activities youth is involved in - community groups, hobbies/clubs, athletics, religious group, volunteer organizations
4B. Current Use of Free Time	3. Current interest and involvement in unstructured recreational activities
5A. Employment History	1. History of employment
5A. Employment History	2. History of successful employment
5A. Employment History	3. History of problems while employed
5A. Employment History	4. History of positive relationships with past employers or adult coworkers
5B. Current Employment	1. Understanding what is required to maintain a job
5B. Current Employment	2. Current interest in employment
5B. Current Employment	3. Current employment status
5B. Current Employment	4. Current positive personal relationships with employers or adult coworkers
6A. History of Relationships	1. History of positive adult non-family relationships not connected to school or employment
6A. History of Relationships	2. History of antisocial friends/companions
6B. Current Relationships	1. Current positive adult non-family relationships not connected to school or employment
6B. Current Relationships	2. Current prosocial community ties
6B. Current Relationships	3. Current friends/companions youth spends time with
6B. Current Relationships	4. Currently in a romantic intimate or sexual relationship
6B. Current Relationships	5. Currently admires or emulates antisocial peers
6B. Current Relationships	6. Current resistance to antisocial peer influence
7A. Family History	1. History of court ordered or child social service
7A. Family History	2. History of running away or getting kicked out of home
7A. Family History	3. History of non-delinquent petitions filed

7A. Family History	4. History of jail/imprisonment of family - Mother, Father, older sibling, younger sibling, other member
7B. Current Living Arrangements	1. Youth living under any adult supervision
7B. Current Living Arrangements	2. All persons with whom youth is currently living - living alone, transient, biological mother, biological father, non-biological mother, non-biological father, older siblings, younger siblings, grandparents, other relatives, long-term parental partners, short-term parental partners, youth's romantic partner, youth's child, foster group home, youth's friends
7B. Current Living Arrangements	3. Annual combined income of youth and family
7B. Current Living Arrangements	4. Jail/imprisonment history of persons currently in household - female caretaker, male caretaker, older sibling, younger sibling, other member
7B. Current Living Arrangements	5. Problem history of parents in household- alcohol, drugs, physical health, mental health, employment problems
7B. Current Living Arrangements	6. Problem history of siblings currently in household - alcohol, drugs, physical health, mental health, employment problems
7B. Current Living Arrangements	7. Support network for family
7B. Current Living Arrangements	8. Family willingness to help support youth
7B. Current Living Arrangements	9. Family provides opportunities for youth to participate in family activities and decisions
7B. Current Living Arrangements	10. Youth has run away or been kicked out of home
7B. Current Living Arrangements	11. Family members youth feels close to - mother/female caretaker, father/male caretaker, male sibling, female sibling, extended family
7B. Current Living Arrangements	12. Level of conflict between parents between youth and parents among siblings
7B. Current Living Arrangements	13. Parental supervision
7B. Current Living Arrangements	14. Parental authority and control
7B. Current Living Arrangements	15. Consistent appropriate punishment for bad behavior
7B. Current Living Arrangements	16. Consistent appropriate rewards for good behavior
7B. Current Living Arrangements	17. Parental characterization of youth's antisocial behavior
8A. Alcohol and Drug History	1. History of youth's alcohol use - no use, past use, alcohol disrupted education, alcohol caused family conflict, alcohol interfered with keeping prosocial friends, alcohol caused health problems, alcohol contributed to criminal behavior, youth needed increasing amounts of alcohol to achieve same level of intoxication or high, youth experienced withdrawal problems

8A. Alcohol and Drug History	2. History of youth's drug use - no use, past use, drugs disrupted education, drugs caused family conflict, drugs interfered with keeping prosocial friends, drugs caused health problems, drugs contributed to criminal behavior, youth needs increasing amounts o drugs to achieve the same level of intoxication or high, youth experienced withdrawal problems
8A. Alcohol and Drug History	3. History of referrals for drug or alcohol assessment
8A. Alcohol and Drug History	4. History of attending drug or alcohol education classes for a drug or alcohol problem
8A. Alcohol and Drug History	5. History of participating in drug or alcohol treatment program
8B. Current Alcohol and Drugs	1. Youth is currently using alcohol or drugs
8B. Current Alcohol and Drugs	2. Current alcohol use - no use, current use, alcohol disrupts education, alcohol causes family conflict, alcohol interferes with keeping prosocial friends, alcohol causes health problems, alcohol contributes to criminal behavior, youth needs increasing amounts of alcohol to achieve the same level of intoxication or high, youth experiences withdrawal problems
8B. Current Alcohol and Drugs	3. Current drug use - no use, current use, drugs disrupt education, drugs causes family conflict, drugs interfere with keeping prosocial friends, drugs cause health problems, drugs contribute to criminal behavior, youth needs increasing amounts of alcohol to achieve the same level of intoxication or high, youth experiences withdrawal problems
8B. Current Alcohol and Drugs	4. Types of drugs used
8B. Current Alcohol and Drugs	5. Alcohol or drug treatment program participation
9A. Mental Health History	1. History of suicidal ideation
9A. Mental Health History	2. History of suicidal indicators
9A. Mental Health History	3. History of violence or physical abuse - at home, in a foster group, by family member, by someone outside of the family, attacked with a weapon
9A. Mental Health History	4. History of witnessing violence - at home, in a foster group, in the community, family member killed as a result of violence
9A. Mental Health History	5. History of sexual abuse - family member, outside of the family
9A. Mental Health History	6. History of being a victim of neglect
9A. Mental Health History	7. History of ADD/ADHD
9A. Mental Health History	8. History of mental health problems
9A. Mental Health History	9. History of anger or irritability
9A. Mental Health History	10. History of depression/anxiety
9A. Mental Health History	11. History of somatic complaints
9A. Mental Health History	12. History of thought disturbance
9A. Mental Health History	13. History of traumatic experience

9B. Current Mental Health	1. Current mental health problems
9B. Current Mental Health	2. Current suicidal ideation
9B. Current Mental Health	3. Current suicide indicators
9B. Current Mental Health	4. Currently diagnosed with ADD/ADHD
9B. Current Mental Health	5. Mental health treatment currently prescribed excluding ADD/ADHD treatment
9B. Current Mental Health	6. Mental health medication currently prescribed excluding ADD/ADHD treatment
9B. Current Mental Health	7. Mental health problems currently interfere in working with the youth
9B. Current Mental Health	8. Currently as health insurance
10. Attitudes and Behaviors	1. Primary emotion when committing crimes within the last 6 months
10. Attitudes and Behaviors	2. Primary purpose for committing crimes within the last 6 months
10. Attitudes and Behaviors	3. Optimism
10. Attitudes and Behaviors	4. Impulsive acts before thinking
10. Attitudes and Behaviors	5. Belief in control over antisocial behavior
10. Attitudes and Behaviors	6. Empathy/remorse/sympathy or feelings for the victims of criminal behavior
10. Attitudes and Behaviors	7. Respect for property of others
10. Attitudes and Behaviors	8. Respect for authority figures
10. Attitudes and Behaviors	9. Attitudes toward responsible law abiding behavior
10. Attitudes and Behaviors	10. Accepts responsibility for antisocial behavior
10. Attitudes and Behaviors	11. Youth's belief in successfully meeting conditions for court supervision
11. Aggression	1. Tolerance for frustration
11. Aggression	2. Hostile interpretation of actions and intentions of others in a common non-confrontational setting
11. Aggression	3. Belief in yelling and verbal aggression to resolve a disagreement or conflict
11. Aggression	4. Belief in fighting and physical aggression to resolve a disagreement or conflict
11. Aggression	5. Reports evidence of violence- outbursts of temper, deliberately inflicting physical pain, threat with a weapon, fire starting, violent destruction of property, animal cruelty
11. Aggression	6. Reports of problems with sexual aggression - aggressive sex, sex for power, young sex partners, child sex, voyeurism, exposure
12. Skills	1. Consequential thinking
12. Skills	2. Goal Setting
12. Skills	3. Problem solving

12. Skills	4. Situational perception
12. Skills	5. Dealing with others
12. Skills	6. Dealing with difficult situations
12. Skills	7. Dealing with feelings and emotions
12. Skills	8. Monitoring of internal triggers/distorted thoughts that can lead to trouble
12. Skills	9. Monitoring of external triggers/events or situations that can lead to trouble
12. Skills	10. Control of impulsive behavior that gets youth into trouble
12. Skills	11. Control of aggression

Appendix B: ACEs

Creation of PACT ACE Score Measures

ACE Study Measures	**PACT ACE Measures**
Measure 1: Emotional Abuse	
1. How often did a parent, stepparent, or adult living in your home swear at you, insult you, or put you down?	1. Domain 7B, Q8. Family Willingness to help support youth: a. Consistently willing to support youth b. Inconsistently willing to support youth c. Little or no willingness to support youth d. Hostile, berating, and/or belittling to youth
2. How often did a parent, stepparent, or adult living in your home act in a way that made you afraid that you might be physically hurt?	2. Domain 7b Q12. Level of conflict between parents, between youth and parents, among siblings: a. Some conflict is well managed b. Verbal intimidation, yelling, heated arguments c. Threats of physical abuse d. Domestic violence: physical/sexual abuse
Identification: A respondent was defined as being emotionally abused during childhood if the response was either often or very oten to question 1 or sometimes, often, or very often to question 2.	Identification: A respondent would be defined as being emotionally abused during childhood if the response was d. on question 1 (hostile, berating, and/or belittling to youth) or answers b. or c. on question 2 (verbal intimidation, yelling, heated arguments; or threats of physical abuse).
Measure 2: Physical Abuse	

1. How often did a parent, stepparent, or adult living in your home push, grab, slap, or throw something at you?	1. Domain 9A Q3. History of violence/physical abuse: (Includes suspected incidents of abuse, whether or not substantiated, but excludes reports proven to be false): a. Not a victim of violence/physical abuse b. Victim of violence/physical abuse at home c. Victim of violence/physical abuse in a foster/group home d. Victimized or physically abused by family member e. Victimized or physically abused by someone outside the family f. Attacked with a weapon
2. How often did a parent, stepparent, or adult living in your home hit you so hard that you had marks or were injured?	2. Domain 7B Q12. Level of conflict between parents, between youth and parents, and among siblings: a. Some conflict that is well managed b. Verbal intimidation, yelling, heated arguments c. Threats of physical abuse d. Domestic violence: physical/sexual abuse
Identification: A respondent was defined as being physically abused during childhood if the response was either sometimes, often, or very often to question 1 or if there was any response other than never to question 2.	Identification: A respondent would be defined as being physically abused during childhood if the response was any response other than a. (not a victim of violence/physical abuse) on question 1. Additionally, a respondent would be defined as physically abused if question 2. response d. was yes (domestic violence: physical/sexual abuse), but only when the same juvenile gave negative answers to a question of history of sexual abuse/rape.

Measure 3: Sexual Abuse

Each respondent was asked whether an adult, relative, family friend, or stranger who was at least 5 years older than the respondent had ever: 1. Touched or fondled the respondent's body in a sexual way; 2. Had the respondent touch his or her body in a sexual way; 3. Attempted to have any type of sexual intercourse (oral, anal, or vaginal) with the respondent; or 4. Actually had any type of sexual intercourse (oral, anal, or vaginal) with the respondent. Identification: Respondents were classified as sexually abused during childhood if they responded affirmatively to any of the four questions	1. Domain 9A Q5. History of sexual abuse/rape: (Includes suspected incidents of abuse if disclosed by youth, whether or not reported or substantiated, but excludes reports proven to be false): a. Not a victim of sexual abuse/rape b. Sexually abused/raped by family member c. Sexually abused/raped by someone outside of the family 2. Domain 7B Q12. Level of conflict between parents, between youth and parents, among siblings: a. Some conflict that is well managed b. Verbal intimidation, yelling, heated arguments c. Threats of physical abuse d. Domestic violence: physical/sexual abuse Identification: A respondent would be defined as being sexually abused during childhood if the response was any response other than a. (not a victim of sexual abuse/rape) on question 1. Additionally, a respondent would be defined as sexually abused if question 2 was answered with a yes to d. (domestic violence: physical/sexual abuse), but only when the same juvenile gave negative answers to a history of physical abuse.
Measure 4: Emotional Neglect	

Questions used to define emotional neglect were adapted from the Childhood Trauma Questionnaire (CTQ). Items were scored on a Likert scale ranging from 1 to 5. For emotional neglect, all items were reverse scored, then added. 1. There was someone in my family who helped me feel important or special 2. I felt loved 3. People in my family looked out for each other 4. People in my family felt close to each other 5. My family was a source of strength and support Identification: Scores of 15 or higher (moderate to extreme on the CTQ clinical scale) defined the respondents as having experienced emotional neglect.	1. Domain 7B Q7. Support network for family: Extended family and/or family friends who can provide additional support to the family: a. No support network b. Some support network c. Strong support network 2. Domain 7B Q8. Family willingness to help support youth: a. Consistently willing to support youth b. Inconsistently willing to support youth c. Little or no willingness to support youth d. Hostile, berating, and/or belittling to youth 3. Domain 7B Q11. Family members youth feels close to or has a good relationship with: a. Does not feel close to any family member b. Feels close to mother/female caretaker c. Feels close to father/male caretaker d. Feels close to male sibling e. Feels close to female sibling f. Feels close to extended family Identification: A respondent would be defined as being emotionally neglected if the response to question 1 was a. (no support network) or the response to question 2 was c. (little or no willingness to support youth) or d. (hostile, berating, and/or belittling to youth), or the response to question 3 was a. (does not feel close to any family member).

Measure 5: Physical Neglect

Questions used to define physical neglect were adapted from the CTQ. Items were scored on a Likert scale ranging from 1 to 5. For physical neglect, items 2 and 5 were reverse-scored, and all five scores were added. 1. I didn't have enough to eat 2. I knew there was someone there to take care of me and protect me 3. My parents were too drunk or too high to take care of me 4. I had to wear dirty clothes 5. There was someone to take me to the doctor if I needed it Identification: Scores of 10 or higher defined respondents as having experienced physical neglect.	1. Domain 9A Q6. History of being a victim of neglect*: a. Not a victim of neglect b. Victim of neglect Identification: A respondent would be defined as being physically neglected if the response to question 1 was b. (victim of neglect). *Neglect includes the negligent or dangerous act or omission that constitutes a clear and present danger to the child's health, welfare, or safety, such as: Failure to provide adequate food, shelter, clothing, emotional nurturing, or health care.
Measure 6: Family Violence	

Battered mother (Was your mother [or step-mother]): 1. Sometimes, often, or very often pushed, grabbed, slapped, or had something thrown at her? 2. Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? 3. Ever repeatedly hit over at least a few minutes? 4. Ever threatened with or hurt by a knife or gun?	1. Domain 7B Q12. Level of conflict between parents, between youth and parents, among siblings: a. Some conflict that is well managed b. Verbal intimidation, yelling, heated arguments c. Threats of physical abuse d. Domestic violence: physical/sexual abuse 2. Domain 9A Q4. History of witnessing violence: a. Has not witnessed violence b. Has witnessed violence at home c. Victim of violence/physical abuse in a foster/group home d. Has witnessed violence in a foster/group home e. Has witnessed violence in the community f. Family member killed as a result of violence
Identification: A respondent would be identified as having a history of household dysfunctions if any response to questions 1-4 was affirmative.	Identification: A respondent would be defined as having a history of household dysfunction if the response to question 1 were b. (verbal intimidation, yelling, heated arguments), c. (threats of physical abuse), or d. (domestic violence), or if the response to question 2 was positive for b. (has witnessed violence at home), or d. (has witnessed violence in a foster/group home).

Measure 7: Household Substance Abuse

1. As a child, did you ever: live with anyone who was a problem drinker or alcoholic? 2. As a child, did you ever: Live with anyone who used street drugs?	1. Domain 7B Q5. Problem history of parents who are currently involved with the household: a. No problem history of parents in household b. Parental alcohol problem history c. Parental drug problem history d. Parental physical health problem history e. Parental mental health problem history f. Parental employment problem history 2. Domain 7B Q6. Problem history of siblings who are currently involved with the household: a. No siblings currently in household b. No problem history of siblings in household c. Sibling alcohol problem history d. Sibling drug problem history e. Sibling physical health problem history f. Sibling mental health problem history g. Sibling employment problem history
Identification: A respondent would be defined as having a history of household substance abuse if a response to either question was affirmative.	Identification: A respondent would be defined as having a history of household substance abuse if responses b. (parental alcohol problem) or c. (parental drug problem) in question 1, or responses c. (sibling alcohol problem) or d. (sibling drug problem) in question 2 was identified.
Measure 8: Household Mental Illness	

1. Was a household member depressed or mentally ill? 2. Did a household member attempt suicide?	1. Domain 7B Q5. Problem history of parents who are currently involved with the household: a. No problem history of parents in household b. Parental alcohol problem history c. Parental drug problem history d. Parental mental health problem history e. Parental physical health problem history f. Parental employment problem history 2. Domain 7B Q6. Problem history of siblings who are currently involved with the household: a. No siblings currently in household b. No problem history of siblings in household c. Sibling alcohol problem history d. Sibling drug problem history e. Sibling mental health problem history f. Sibling physical health problem history g. Sibling employment problem history
Identification: A respondent would be defined as having a history of household mental illness if a response to either question was affirmative.	Identification: A respondent would be defined as having a history of household mental illness if response d. (parental mental health problem) in question 1, or response e. (sibling mental health problem) in question 2 was identified.

Measure 9: Parental Separation/Divorce

1. Were your parents ever separated or divorced? Identification: A respondent would be identified as having a history of parental separation/divorce if the question was answered affirmatively.	1. Domain 7B Q2. All persons with whom the youth is currently living: a. Living alone b. Transient (street) c. Biological mother d. Biological father e. Non-biological mother f. Non-biological father g. Older sibling(s) h. Younger sibling(s) i. Grandparent(s) j. Other relative(s) k. Long-term parental partner(s) l. Short-term parental partner(s) m. Youth's romantic partner n. Youth's child o. Foster/group home p. Youth's friends Identification: A respondent would be defined as having a history of parental separation/divorce if responses c. (biological mother) and d. (biological father) are not both selected.
Measure 10: Incarcerated Household Member	

1. Did a household member go to prison?	1. History of jail/imprisonment of persons who were ever involved in the household for at least 3 months: a. No jail/imprisonment history in family b. Mother/female caretaker c. Father/male caretaker d. Sibling drug problem history e. Older sibling f. Younger sibling g. Other member 2. Jail or prison of persons who are currently involved in the household: a. No jail/imprisonment history in family b. Mother/female caretaker c. Father/male caretaker d. Sibling drug problem history e. Older sibling f. Younger sibling
Identification: A respondent would be defined as having a history of an incarcerated household member if the question was answered affirmatively.	Identification: A respondent would be defined as having a history of an incarcerated household member if any response other than a. (no jail/imprisonment history in family) for question 1 or question 2 identified.

Note. PACT item alignment with ACE questions from previous studies. Table adapted from "The Prevalence of Adverse Childhood Experiences in the Lives of Juvenile Offenders," by M.T. Baglivio et al., 2014, OJJDP Journal of Juvenile Justice, 3, p. 1-23. Adapted with permission.