2020

The Longitudinal Relationship between Callous-Unemotional Traits and Exposure to Community Violence: Examining Primary and Secondary Psychopathy in Serious Adolescent Offenders

Elizabeth Sargent

LOYOLA UNIVERSITY CHICAGO

THE LONGITUDINAL RELATIONSHIP BETWEEN CALLOUS-UNEMOTIONAL TRAITS AND EXPOSURE TO COMMUNITY VIOLENCE: EXAMINING PRIMARY AND SECONDARY PSYCHOPATHY IN SERIOUS ADOLESCENT OFFENDERS

A THESIS SUBMITTED TO

THE FACULTY OF THE GRADUATE

SCHOOL

IN CANDIDACY FOR THE DEGREE OF

MASTER OF ARTS

PROGRAM IN CLINICAL PSYCHOLOGY

BY

ELIZABETH M. SARGENT

CHICAGO, IL

MAY, 2020

ACKNOWLEDGMENTS

I would first and foremost like to thank my research mentor, Dr. Noni Gaylord-Harden, for assisting me throughout this process and guiding me with patience and kindness. Her encouragement and support have helped me achieve more with this project than I would have thought possible. Additionally, I wish to thank my second reader, Dr. Jim Garbarino, for lending his expertise in the field to help me understand the theoretical underpinnings of my work and the individuals in the justice system affected by violence. I would like to thank other Loyola students and alumni, including Dr. Daniel Dickson and Catherine Dusing, for assisting me in learning structural equation modeling methods. I am also very appreciative of my fellow students in the PACCT Lab who provided their feedback and moral support over these past two years.

Finally, I am grateful for the opportunity to use secondary data collected by the Pathways to Desistance Project and to the many justice-involved youth who gave their time and information to create this resource. I hope I have made some positive use of the research team and participants' hard work.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Psychopathy is often represented by the affective component, callous-unemotional (CU) traits, which involves a lack of guilt and empathy. CU traits predict higher risk for adverse outcomes and violent behavior in youth. While some individuals are thought to have been born unable to feel empathy (primary psychopathy), others experience distress in response to trauma and emotionally desensitize to cope (secondary psychopathy). Prior research shows exposure to community violence (ECV) is associated with CU traits, but there remains a need to understand how these variables associate over time in serious adolescent offenders.

Information from male adolescent offenders was used to investigate 1) patterns of psychological distress indicative of primary and secondary pathways, 2) longitudinal associations between ECV and CU traits, and 3) associations with violent offending.

Results from a latent profile analysis showed groups of youth with low, medium, and high psychological distress. A multigroup cross lag panel model revealed differences in the associations between CU traits and ECV as a function of distress level. CU traits did not predict aggressive offending, but ECV negatively predicted aggressive offending for youth with higher distress levels.

Future studies on CU traits in youth should further explore what types of distress increase vulnerability. Clinically, connections between ECV and emotional desensitization should be utilized in trauma-informed therapies with adolescents involved in the justice system who are at high risk for trauma and distress.

CHAPTER ONE

INTRODUCTION

Psychopathy, a set of affective, interpersonal, antisocial, and behavioral traits (Hare, 2003; Hare & Neumann, 2009), has become a well-researched and predictive tool for justice-involved populations (Hare & Neumann, 2009). Although psychopathy has been researched more extensively in adult males, psychopathic traits are also associated with youth at heightened risk for further adverse outcomes such as aggression and delinquency (Marsee, Silverthorn, & Frick, 2005). Justice-involved youth exhibit higher levels of psychopathic traits than community samples (Castellana, Barros, Serafim, & Busatto Filho, 2014), and these traits predict further adverse outcomes related to criminal offending (Dembo et al., 2007; Vahl et al., 2014).

Youth psychopathic traits have been represented by four factors, of which the most commonly used is the affective dimension of callous-unemotional traits, which includes traits such as lack of remorse, shallow affect, lack of guilt and empathy, and callous use of others for personal gain (Hare & Neumann, 2009; Hare, 2003; Frick & White, 2008). In child and adolescent populations, callous-unemotional traits can serve as an approximation of psychopathy and they have been associated with a greater risk of offending, commission of serious or violent offenses (Frick & White, 2008), and resistance to mental health or behavioral interventions (Hawes & Dadds, 2005; Blair, Leibenluft, & Pine, 2014).

Past theory has predicted two variants of psychopathy: primary and secondary (Karpman, 1941), with primary psychopathy describing an innate inability to feel empathy, and secondary

psychopathy describing individuals who develop psychopathic traits in response to their environment (Karpman, 1941). Secondary psychopathy has also been described as "acquired callousness" through emotional numbing in response to trauma (Kerig & Becker, 2010). Measures of psychological distress can be used to distinguish between primary and secondary variants, with primary variants showing low levels of distress and secondary variants showing high levels of distress (Kimonis, Skeem, Cauffman & Dmitrieva, 2011; Tatar, Cauffman, Kimonis, & Skeem, 2012). Previous research has shown that the primary versus secondary variant distinction can be made with juvenile justice populations using callous-unemotional traits as a proxy for psychopathy (Docherty, Boxer, Rowell Huesmann, O'Brien, & Bushman, 2015).

Community violence exposure may be one such traumatic stressor that contributes to the development of emotional numbing and subsequent callous-unemotional traits. Youth exposed to community violence and those with increased callous-unemotional traits are at high risk for aggressive acts, further arrest, and serious or violent re-offending (Frick & White, 2008; McMahon et al., 2010; Pardini, Lochman, & Frick, 2003). When considering psychopathy in juvenile justice populations, secondary psychopathic variants may show higher rates of aggression (Kimonis et al., 2011) and re-offending (Vaughn, Edens, Howard, & Smith, 2009) than primary variants.

Few studies have examined how the associations between community violence exposure and callous-unemotional traits may reflect primary and secondary psychopathic variants or how their longitudinal relationships may contribute to future violent re-offending. The current study aims to replicate primary and secondary psychopathic variants in a sample of serious adolescent offenders using callous-unemotional traits and psychological distress indicators. Longitudinal associations between exposure to community violence and callous-unemotional traits will then

be assessed to examine causal predominance, possible reciprocal relationships between these two variables over time, and differences in the relationship between these variables across psychopathic variant classes. Lastly, the current study will examine how the longitudinal relationship between community violence exposure and callous-unemotional traits as well as psychopathic variant status may predict violent offending.

The subsequent sections of the current manuscript will review literature on the following topics: 1) psychopathy, 2) callous-unemotional traits as an affective proxy for psychopathy in youth, 3) distinguishing between primary and secondary variants of psychopathy, 4) exposure to community violence and callous-unemotional traits, and 5) associations among community violence, psychopathy, and violent offending.

CHAPTER TWO

LITERATURE REVIEW

Psychopathy

Psychopathy is a set of personality characteristics defined by affective, interpersonal, antisocial, and behavioral traits including lack of empathy and remorse, superficial charm, deceptiveness, impulsivity, and violations of social norms (Hare, 2003; Hare & Neumann, 2009). As a construct, psychopathy has become very useful in forensic work and criminal justice policy (Hare & Neumann, 2009). Research on the prevalence of psychopathy is most often conducted with adult men, for which community samples have shown a prevalence rate of around 1% (Coid, Yang, Ullrich, Roberts & Hare, 2009; Hare, 1996). In contrast, institutionalized adult male populations show a prevalence rate of 16% (Hare, 1996), and it is estimated that about 93% of adult males who meet criteria for psychopathy in the United States are in the justice system (Kiehl & Hoffman, 2011). Thus, institutionalized populations are at heightened risk for psychopathy, compared to the general population. Although less research has considered the prevalence of psychopathy in adolescents, some information suggests psychopathy is common in violent juvenile offenders, with one study finding that one in five male adolescents convicted of homicide met criteria for psychopathy (Lindberg et al., 2009). Another study with young adults ages 18 to 24 showed significantly higher rates of psychopathic traits in an offender vs. non-offender population (Castellana et al., 2014). Furthermore, juvenile delinquency is one of the factors that makes up Hare's (2003) Psychopathy Checklist-Revised (PCL-R), which is used to

determine the presence of psychopathy in adult populations. Although youth versions of the PCL-R have been developed (Forth, Kosson, & Hare, 2003; Andershed, Kerr, Stattin & Levander, 2002), there remain questions as to whether psychopathy can be measured adequately in adolescents, how stable psychopathic traits are in adolescent populations, and how normative adolescent development relates to psychopathic traits (Edens, Skeem, Cruise & Cauffman, 2001). Therefore, it is important to understand how psychopathic traits may manifest in adolescent populations and the trajectories of psychopathy over time in adolescent populations. For example, psychopathic traits such as impulsivity, proneness to boredom, and callousness may be developmentally normal for youth, and these traits are expected to decrease with age (Edens, et al., 2001). Similarly, antisocial behavior for adolescents is not always persistent, and many young people engaging in delinquency do not continue offending into adulthood (Moffitt, 1993).

When measuring psychopathic traits in incarcerated youth, there remains variability. One study using Psychopathy Checklist-Youth Version (PCL-YV) cutoff scores found most of the incarcerated or detained youth sample showed low psychopathic traits, some showed moderate levels, and only 9.4% exhibited high psychopathic traits (Campbell, Porter, and Santor, 2004). A latent class analysis examining psychopathic dimensions in incarcerated youth found distinct classes of high, moderate, and low psychopathic youth, with most youth (76%) falling within the moderate range and only about 8% falling within the high range (Dembo et al., 2007). This evidence indicates that not only can juvenile justice samples show varying levels of psychopathic traits, but that the distribution of psychopathic traits can vary in different samples.

While the application of psychopathic traits to adolescent populations should be conducted with caution so as not to label youth unnecessarily, research has also shown utility in

this area. There is existing evidence that psychopathic traits may be one factor that helps delineate which youth engaging in delinquency may be at heightened risk for further adverse outcomes. In community samples, psychopathic traits have been linked to higher aggression and delinquency (Marsee et al., 2005), and the clinical and forensic utility of measuring psychopathic traits is particularly relevant for the criminal justice system. As mentioned previously, justice-involved youth exhibit higher levels of psychopathic traits compared to community samples (Castellana et al., 2014). In juvenile justice samples, those with higher psychopathic traits tend to show several correlates that put them at risk for further problems such as greater drug use (Dembo et al., 2007) and substance abuse (Vahl et al., 2014), more criminal thinking, and a higher frequency of stressful life events (Dembo et al., 2007). Given that approximately 55% of juvenile offenders are rearrested, 33% are reconvicted or re-adjudicated, and 12% are reincarcerated (Snyder & Sickmund, 2006), additional research with justice-involved youth is warranted to fully understand psychopathy in high-risk adolescent populations.

Callous-Unemotional Traits as an Affective Proxy for Psychopathy in Youth

Psychopathy has been represented by four factors of clustered traits. For youth, these factors have been defined as interpersonal (e.g. impression management, grandiose sense of self-worth, lying, manipulation), affective (e.g. lack of remorse, shallow affect, callousness, failure to accept responsibility), behavioral (e.g. seeking stimulation, parasitic, lacking goals, impulsive, irresponsible), and antisocial (e.g. poor anger controls, early behavioral problems, criminal behavior, criminal versatility, violations of release) (Hare & Neumann, 2009). Of these four factors, the affective component is the most commonly measured and is conceptualized as callous-unemotional traits (Hare, 1993). Callous-unemotional traits include a lack of guilt and empathy, and callous use of others for personal gain (Frick & White, 2008). In child and

adolescent populations, previous research has indicated that callous-unemotional traits can be an important variable in the approximation of psychopathy. In a study of clinic-referred youth ages 6 to 13, callous-unemotional traits, compared to another dimension of psychopathy, were the best at separating children with more severe conduct problems, and researchers concluded that individuals with higher callous-unemotional traits most closely reflected what is conceptualized as psychopathy in adults (Christian, Frick, Hill, Tyler, & Frazer, 1997).

Callous-unemotional traits have shown important implications for juvenile justice populations as well. These traits are associated with early onset delinquency, greater stability of antisocial behavior, higher aggression (Frick & White, 2008), juvenile and adult arrests, and antisocial personality disorder (McMahon, Witkiewitz, & Kotler, 2010). It is unsurprising that callous-unemotional traits are a predictor of antisocial personality. After all, parts of the diagnostic criteria for antisocial personality disorder (e.g., lack of remorse, disregard for others) map directly onto the definition of callous-unemotional traits. However, callous-unemotional traits appear to be a robust predictor of greater likelihood of aggression. Justice-involved youth with high callous-unemotional traits show greater tendencies toward increased aggression compared to their juvenile justice peers. One study with adjudicated youth found those with increased callous-unemotional traits had positive expectations for the use of aggression to dominate others and gain rewards, while also showing less regard for punishment or consequences of aggression (Pardini et al., 2003).

Callous-unemotional traits also have implications for prevention and intervention as they have been associated with a greater risk of offending, committing more serious or violent offenses (Frick & White, 2008), and being more resistant to mental health or behavioral interventions (Hawes & Dadds, 2005; Blair, Leibenluft, & Pine, 2014). In a clinical study of

young boys referred for a conduct disorder treatment using parent training, a subset of boys with increased callous-unemotional traits showed greater overall conduct problems at the beginning of treatment as well as greater likelihood of having an oppositional defiant disorder (ODD) diagnosis at follow up six months post treatment (Hawes & Dadds, 2005). Within the same study, some boys did show changes in their levels of callous-unemotional traits over time, and others' levels of callous-unemotional traits remained more stable; greater stability in callous-unemotional traits was associated with poorer treatment outcomes, such as an increased chance of oppositional defiant disorder diagnosis (Hawes & Dadds, 2005). Juvenile justice youth high in psychopathic traits in general tend to show poor progress in treatment programs (Spain et al., 2004; O'Neill, Lidz, & Heilbrun, 2003). However, research suggests that reward-oriented, rather than punishment oriented, (Frick & Dickens, 2006) and high-intensity interventions (Caldwell, McCormick, Umstead & Van Rybroek, 2007) may show more promise in treating juvenile justice populations high in psychopathic features. As treatments for youth high in psychopathic traits are beginning to be considered, further information is needed on what factors may influence psychopathic traits over time. Further research on youth psychopathic traits may help refine interventions, and target those who would benefit most.

Distinguishing Between Primary and Secondary Variants of Psychopathy

Past theory has predicted that there are two types of, or paths to, psychopathy: primary and secondary (Karpman, 1941). Primary psychopathy describes individuals with an innate inability to feel empathy, while secondary psychopathy describes individuals whose psychopathic traits developed in response to environmental causes (Karpman, 1941). It has been proposed that secondary psychopathy can develop when one detaches from emotions as a way to cope with trauma (Porter, 1996). In more recent research, secondary psychopathy has also been

referred to as “acquired callousness,” describing youth exposed to trauma who become callous through emotional numbing (Kerig & Becker, 2010). Primary and secondary variants of psychopathy have shown significant differences such that secondary variants show increased institutional violence, less psychosocial maturity (Kimonis et al., 2011), greater histories of trauma, and more past PTSD symptoms (Tatar et al., 2012). For adolescent populations especially, distinguishing psychopathy variants may allow researchers to better understand the various trajectories of psychopathy, how psychopathic traits may persist or desist as an individual moves into adulthood, and ideally, how and when to intervene to prevent further adverse outcomes, such as re-offending, in each variant class. Further research in this area could ultimately contribute to interventions that prevent at-risk adolescent offenders from maturing into adults high in psychopathy.

Various measures of psychological distress can be used to distinguish between primary and secondary variants of psychopathy. Anxiety is one such measure of psychological distress that has consistently discriminated between the two variants. Anxiety may represent levels of “fearlessness” (Kimonis et al., 2011) that manifest differently in the two variants of psychopathy, such that primary psychopathic individuals show low levels of anxiety and secondary psychopathic individuals show high levels of anxiety (Kimonis et al., 2011; Tatar et al., 2012). For example, one study used cluster analysis to examine primary and secondary variants of psychopathy in a sample of male adolescent offenders (Kimonis et al., 2011). Psychological distress variables used to distinguish the variants were three subscales of the Revised Children’s Manifest Anxiety Scale (RCMAS). Findings demonstrated that the main distinction between primary and secondary variants of psychopathy was trait anxiety, with secondary variants showing significantly higher anxiety scores than primary variants (Kimonis et al., 2011). Other

studies with youth have shown similar findings, such that low psychological distress indicates a primary psychopathy pattern, and high psychological distress indicates a secondary psychopathy pattern (Docherty et al., 2015; Vaughn et al., 2009).

Callous-unemotional traits are in part a measure of lack of affect or lack of emotionality, making this dimension a fitting indicator of primary and secondary psychopathic variants. For example, a study with male and female adolescents from both a community sample (high schools) and a detained juvenile justice sample used model-based cluster analysis with callous-unemotional traits and anxiety as indicator variables (Docherty et al., 2015). Findings indicated two clusters that represent primary and secondary psychopathy. One was labeled a "primary/traditional psychopath" cluster that was high in callous-unemotional traits and low in anxiety, thus representing primary psychopathy. Another cluster high in callous-unemotional traits and high in anxiety was labeled the "secondary/distressed" class and represents secondary psychopathy. In addition, two other clusters were found, including a non-variant cluster with the lowest mean scores for callous-unemotional traits and moderate anxiety scores, and a "fearful" cluster with high callous-unemotional traits and relatively high anxiety scores (Docherty et al., 2015).

Another study using a state-wide sample of incarcerated youth developed clusters of primary and secondary psychopathic variates using multiple indicators of psychological distress, including depression, anxiety, phobic anxiety, somatization, interpersonal sensitivity, obsessive-compulsive traits, and paranoia (Vaughn et al., 2009). Secondary psychopathic variants were expected to show higher distress, as evidenced by higher scores on all of the indicators. Primary and secondary psychopathic typologies were replicated with a primary psychopathic variant showing significantly lower scores on measures of anxiety, phobic anxiety, depression,

interpersonal sensitivity, obsessive compulsive symptoms, paranoid ideation, and somatization, and a secondary cluster showing higher scores on these mental health distress variables (Vaughn et al., 2009). These results indicate that primary psychopathic variants show lower distress in several mental health areas.

Results showing differences between the two psychopathic variants on multiple psychological distress variables could prove especially useful for treatment approaches. Secondary psychopathic variants may be more amenable to treatments that target higher psychological distress, whereas primary psychopathic variants may necessitate alternative treatments that target personality functioning. Further research should continue to examine differences that distinguish primary and secondary variants for youth high in callous-unemotional traits in order to inform future treatment efforts.

Exposure to Community Violence and Callous-Unemotional Traits

As noted above, in the secondary psychopathic variant, callous-unemotional traits may be "acquired" in response to environmental experiences, and it has been proposed that this occurs through emotional numbing in response to exposure to traumatic stress. Traumatic stressors involve a threat, or the actual occurrence, of violent or accidental death, severe injury, or sexual violence through direct experience, witnessing, learning of events happening to friends or family, or repeated exposure to intense details of events (American Psychiatric Association, 2013). For children and adolescents exposed to traumatic stressors, detaching themselves from intense emotions following traumatic events may be an adaptive way to decrease distress (Kerig & Becker, 2010). However, this type of emotional numbing over time can lead an individual to become emotionally blunted and exhibit the antisocial behaviors seen in psychopathy (Kerig & Becker, 2010).

Exposure to violence is one such traumatic stressor that has shown associations to psychological trauma symptoms in adolescents (Singer, Anglin, Song, & Lunghofer, 1995). Exposure to violence is commonly reported as a threat to public health in America, and youth exposure to violence has become a major national concern. Recent findings from the National Survey of Children's Exposure to Violence (NatSCEV) indicated that 67.5% of youth in America were victimized or witnessed violence in the previous year (Finkelhor, Turner, Shattuck, & Hamby, 2015). Youth may experience violence exposure in various contexts, but prevalence rates for community violence exposure are higher than other types of violence exposure such as parental violence, particularly during adolescence (Zinzow et al., 2009).

Community violence is conceptualized as continual exposure to interpersonal violence in public spaces, which may include witnessing or being the victim of such acts as physical assault, robbery, assault with a weapon, shootings, and sexual assault (Overstreet, 2000; Peterson, 2018). Prevalence rates of youth ages 12 to 17 in the United States who have witnessed community violence have been estimated to be around 38% or over 9 million children (Zinzow et al., 2009). However, the prevalence rates for community violence exposure are markedly higher for youth in the juvenile justice system. A sample of juvenile detainees from Chicago revealed about 92% of those in the juvenile justice system had experienced at least one traumatic event, and 84% experienced multiple traumatic events (Abram et al., 2013). Although adolescent offenders are exposed to various forms of traumatic stress, the elevated rates of trauma exposure and PTSD among juvenile offenders are largely due to violence exposure (Martin, Sigda, & Kupersmidt, 1998). Approximately 75% of justice-involved males endorse witnessing community violence, whereas 59.3% of males endorse victimization (Abram et al., 2004). A study of female and male detained youth revealed that experiencing community violence (i.e., victimization) was the most

prevalent form of trauma exposure and witnessing community violence was the third most prevalent traumatic event (Kerig, Ward, Vanderzee, & Moeddel, 2009). Prevalence estimates of being threatened with a weapon (58%) (Abram et al. 2004), traumatic loss (48%) (Ford, Hartman, Hawke, & Chapman, 2008), and physical assault (35%) (Abram et al. 2004) are particularly high in detained youth compared to community samples. In a sample of detained male adolescents, the event endorsed at the highest frequency was witnessing community violence (65.2%), and of those youth who endorsed witnessing community violence, one-third identified it as the most bothersome event (Stimmel, Cruise, Ford, Weiss, & Gold, 2014). Within juvenile justice settings, community violence exposure can predict future violent offending (Baskin & Sommers, 2014) making it an especially important piece in interventions for juvenile justice youth.

Exposure to community violence and callous-unemotional traits have shown significant relationships in previous research. Much of this research has focused on moderation and mediation. For example, in a sample of detained adolescent boys, increased exposure to community violence fully mediated the relationship between callous-unemotional traits and violent delinquency (Howard, Kimonis, Muñoz, & Frick, 2012). Further, exposure to community violence partially mediated the relationship between callous-unemotional traits and drug delinquency (Howard, et al., 2012). Another study with the same sample of detained adolescent males found an interaction between callous-unemotional traits and exposure to community violence resulting in two groups of youth high in callous-unemotional traits: one group with high community violence exposure and low response to distressing stimuli, and one group with low community violence exposure and high responsiveness to distressing stimuli. Thus, one group exhibited an emotional deficit, and the other group showed a tendency to be hyper-aroused in

relation to distress (Kimonis, Frick, Muñoz, & Aucoin, 2008). Another study with children labeled as high-risk for conduct disorder found that greater levels of witnessed violence predicted higher levels of callous-unemotional traits, but violence victimization was not significantly associated with callous-unemotional traits (Oberth, Zheng, & McMahon, 2017). In the same study, higher levels of any kind of witnessed violence mediated the relationship between callous-unemotional traits and various types of delinquency (Oberth et al., 2017). A study on incarcerated boys found that those with high callous-unemotional traits-high anxiety (secondary variants) had significantly more negative life events and were more likely to experience negative events such as domestic violence and victimization in their communities compared to non-psychopathic youth and those with high callous-unemotional traits-low anxiety (primary variants) (Sharf, Kimonis, & Howard, 2014). Thus, current literature supports significant connections between exposure to community violence or adverse events and callous-unemotional traits as well as evidence of the primary and secondary variants of psychopathy based on callous-unemotional trait measures.

However, a major limitation of this literature is that few studies have assessed the connections between community violence exposure and callous-unemotional traits longitudinally in order to determine which factor may precede the other or whether associations can change over time. While callous-unemotional traits have been shown to be relatively stable from childhood to adolescence, significant numbers of youth show decreases in callous-unemotional traits over time (Frick & White, 2008). It has been proposed that these decreases are due to psychosocial factors in a child's environment, indicating that perhaps youth may be amenable to treatments that decrease callous-unemotional traits (Frick & White, 2008). There remains a need to better understand how adverse or traumatic experiences and callous-unemotional traits may

change and influence one another over time during adolescence (Bennett, 2013). Interestingly, a study of children from a community sample used longitudinal data and cross-lag panel modeling to assess the relationship between child-reported callous-unemotional traits and negative life events. Results showed a reciprocal relationship between controllable negative life events such as poor grades or running away, and callous-unemotional traits over time (Kimonis, Centifanti, Allen, & Frick, 2014). These findings provide important information about how stress and callous-unemotional traits may influence one another over time in a community-based sample, but there remains a need to focus more specifically on community violence exposure in this relationship.

Justice-involved youth tend to have especially extensive trauma histories (Abram et al., 2013) and, as a result, are more likely to experience psychological symptoms compared to their peers, with 65-70% having at least one diagnosable mental health disorder (Shufelt & Cocozza, 2006). It has also been proposed that for adolescent offenders, the traumatic nature of exposure to community violence could contribute to emotional numbing (Kerig & Becker, 2010; Kerig, Bennett, Thompson, & Becker, 2012) as a way of coping with intense emotions like sadness and fear, later leading to callous-unemotional traits. Callous-unemotional traits may develop among adolescent offenders as an adaptive mechanism to protect oneself against the intense and frequent threats of community violence. Overall, current research findings have inspired a need to examine longitudinal associations between callous-unemotional traits and exposure to community violence further.

Community Violence, Psychopathy, and Violent Offending

A major goal of the juvenile justice system is to prevent youth from reoffending. A population of considerable interest when considering reoffending is serious adolescent offenders.

Serious adolescent offenders are generally defined as those who commit felony offenses, which may include violent offenses such as assault, or non-violent crimes such as felony drug charges. Youth who commit violent offenses compared to those who do not are at heightened risk for reoffending and continuing to offend over time (Garrido & Morales, 2007). Therefore, it is important to consider whether youth are engaging in violent vs. non-violent offending when assessing their risk for continuing to engage in criminal behavior. Additionally, violence exposure is another factor that has been strongly associated with violent offending in juvenile justice populations, especially for serious adolescent offenders. In one study of detained adolescent males, witnessed violence mediated the association between callous-unemotional traits and violent offending (Howard et al., 2012). A previous study from the Pathways to Desistance dataset (Mulvey, 2004) on serious adolescent offenders found that high levels of exposure to violence at baseline, or increasing levels of exposure to violence over time, both predicted stable and high levels of violent offending, with chronic exposure predicting an especially stable trajectory of criminal behavior over time (Baskin & Sommers, 2014). In addition, there may be differences in violent offending over time based on the development of youths' callous-unemotionality and whether individuals high in callous-unemotional traits exhibit more of a primary or secondary variant of psychopathy.

Research is beginning to discover how primary and secondary psychopathy variants may differ in their offending behaviors. A study of juvenile offenders separated into primary and secondary psychopathic variants found that adolescents in the secondary psychopathy variant class were more likely to commit violent acts while incarcerated than youth in the primary psychopathic class, and the secondary psychopathic variants were also more likely to exhibit reactive aggression than the primary psychopathic variants (Kimonis et al., 2011). Another study

of juvenile offenders found that secondary variants when compared to primary variants exhibited higher rates of total delinquency, violent offending, and property offending (Vaughn et al., 2009). These findings indicate that perhaps secondary variants of psychopathy may be at greater risk for re-offending aggressively than primary variants.

Overall, exposure to violence seems to play a significant role in violent offending, while also being associated with callous-unemotionality. Further research on the associations of exposure to violence, callous-unemotional traits, and violent offending will prove useful in understanding how and when violent offending behaviors develop in response to the combination of these factors.

Longitudinal models can be used to help discern how serious adolescent offenders may experience changes in community violence exposure and callous-unemotional traits over time, and how these factors contribute to violent offending. As noted above, a limitation of prior research is the cross-sectional nature of many previous studies. Cross-sectional research rather than longitudinal provides little information on how associations may change over time and how variables may influence one another over time. Furthermore, when examining adverse events, violence exposure, and exposure to community violence, most prior research has tested these variables and callous-unemotional traits as moderators and/or mediators of one another (Oberth et al., 2017; Kimonis et al., 2008; Howard et al., 2012). While this provides a rich background on how callous-unemotional traits may relate to violence exposure, information about the direction of the relationship between callous-unemotional traits and violence exposure is lacking.

Longitudinal research may help further illuminate the associations between these variables. The direction of the relationship between exposure to community violence and callous-unemotional traits may have clinical relevance for primary and secondary psychopathy

because there is a theorized difference in the development of psychopathic traits between these two groups; one beginning with psychopathic traits and one resulting in psychopathic traits. Testing directional relationships between these variables may help better understand the role of exposure to community violence in the development and sustainment of callous-unemotional traits.

The Current Study

The current study examines callous-unemotional traits, exposure to community violence and aggressive offending in serious adolescent offenders to better understand the associations between these variables in the context of primary and secondary psychopathic pathways. This study aims to better understand 1) which variable, callous-unemotional traits or exposure to community violence, may precede the other in each variant group, 2) how the associations between variables can change, strengthen, or weaken over time, and 3) how exposure to violence and callous-unemotional traits each contribute to violent offending for serious adolescent offenders within each psychopathic variant group. Furthermore, exploring the reciprocal relationships between exposure to community violence and callous-unemotional traits longitudinally may contribute to a better understanding of the optimal timing of interventions in the juvenile justice system. Previous studies examining callous-unemotional traits in relation to violence have used samples within the community (Kimonis et al., 2014; Oberth et al., 2017) and within juvenile justice populations (Howard et al., 2012; Kimonis et al., 2008; Sharf et al., 2014). In comparison, the participants in the Pathways to Desistance study are unique to other samples of adolescents because the dataset only includes individuals with serious felony offenses. The current study sample of serious adolescent offenders have shown a high prevalence of exposure to community violence in past studies, with 34% of youth drawn from the Pathways to

Desistance study showing a high and stable pattern of exposure to community violence (Baskin & Sommers, 2015). It is of utmost importance to understand how justice-involved youth, especially serious adolescent offenders, may be affected emotionally by their experiences, and to what extent callous-unemotional traits develop over time with frequent community violence exposure. Information gathered can then inform interventions specifically designed for serious adolescent offenders exposed to violence. For justice-involved youth, trauma exposure tends to happen early in life and continue as youth age (Dierkhising et al., 2013), making early, effective, and trauma-informed interventions for juvenile justice youth crucial.

First, the current study attempts to distinguish youth who present with primary versus secondary variants of psychopathic traits using callous-unemotional traits and psychological distress variables. In conceptualizing and treating justice-involved youth, the direction of the association between exposure to community violence and callous-unemotional traits may be integral to treatment approach. While some youth may have innate tendencies toward callous-unemotional traits which lead them to seek out or to not avoid violence (primary variants), others may develop callous-unemotional traits in response to violence and emotional numbing (secondary variants). Treatment of youth may vary based on which variant is indicated and how strongly elements of violence exposure and callous-unemotional traits continue to influence one another as adolescents grow older. Therefore, it is essential that pathways to callous-unemotional traits are included in longitudinal studies such as in the current study.

Second, the current study examines the associations between exposure to community violence and callous-unemotional traits over time. Community violence exposure is highly prevalent in juvenile justice samples (Abram et al., 2004; Stimmel et al., 2014). Due to its prevalence and the adverse associations with continual exposure, exposure to community

violence is a particularly important type of violence exposure to understand. Examining these associations in the current study sample may reveal distinct patterns of callous-unemotional traits and exposure to community violence. Information gathered that is specific to this high-risk population may inform interventions more tailored to serious offenders rather than the general juvenile justice population.

Third, the current study examines aggressive re-offending as an outcome in relation to exposure to community violence and callous-unemotional traits over time. Serious adolescent offenders with increased exposure to community violence have exhibited high and stable rates of violent offending over time (Baskin & Sommers, 2014), and factors of community violence exposure, callous-unemotional traits, and secondary psychopathic variant patterns have shown associations with greater risk of aggression and re-offending (Frick & White, 2008; McMahon et al., 2010; Pardini et al., 2003; Kimonis et al., 2011; Vaughn et al., 2009). The current study aims to provide insight into how the longitudinal relationship between callous-unemotional traits and exposure to community violence may contribute to later violent offending in serious adolescent offenders.

Specific Aims and Hypotheses

Aim 1: Test the fit of a three-class model of psychopathy variants using callous-unemotional traits and psychological distress symptoms in this sample of serious adolescent offenders.

Hypothesis 1: Analyses were expected to reveal three classes of youth: 1) a primary psychopathic variant characterized by low distress and high callous-unemotional traits, 2) a secondary psychopathic variant characterized by high distress and high callous-

unemotional traits, and 3) a non-psychopathic class with lower callous-unemotional traits and varying levels of distress.

Aim 2: Examine longitudinal associations between exposure to community violence and callous-unemotional traits for primary and secondary psychopathic typologies to better understand which variable, exposure to violence or callous-unemotional traits, may precede the other in each class.

Hypothesis 2a: Youth in the primary psychopathic class were expected to show a model in which increased callous-unemotional traits predicts increased exposure to community violence.

Hypothesis 2b: Youth in the secondary psychopathic class were expected to show a model in which increased exposure to community violence predicts increased callous-unemotional traits.

There were no specific predictions for youth in the low callous-unemotional traits class. Additionally, there may be reciprocal pathways to varying degrees between variables.

Aim 3: Explore whether the associations between exposure to community violence and callous-unemotional traits over time contribute to later aggressive re-offending.

Hypothesis 3a: Exposure to violence and callous-unemotional traits were both expected to significantly predict greater aggressive re-offending.

Hypothesis 3b: Secondary variants were hypothesized to be more likely to have higher rates of self-reported aggressive re-offending compared to primary variants.

CHAPTER THREE

METHOD

Procedures

This study employed secondary data analysis of the Pathways to Desistance project (Mulvey, 2004), a large longitudinal, multi-site sample of serious adolescent offenders. The goals of the Pathways to Desistance study were to expand knowledge on how development, social context, interventions, and sanctions could influence desistance from offending. The project also aimed to show changes over time in psychological development, behavior, social context, maturity, experiences with sanctioning and interventions, and the transition into adulthood (Schubert et al., 2004). Data were collected between November 2000 and January 2003. Participants were recruited from the juvenile and adult justice systems in Maricopa County, Arizona, and Philadelphia, Pennsylvania based on a review of their court records. Individuals recruited had been charged with and adjudicated guilty or delinquent of a serious offense, predominantly felonies, prior to adulthood. Participants were 1,354 individuals who were 14-17 years old at the time of committing a serious offense. Serious offenses included all felonies except less serious property crime, any crimes that were considered for trial in the adult system, misdemeanor weapon offenses and sexual assault, and drug offenses. However, due to the high prevalence of felony drug offenses, the Pathways to Desistance project limited the sample to only 15% of males being enrolled based on a drug offense.

Informed consents and assents were obtained from participants and their parent(s)/guardian(s). Primarily self-report data were collected from participants at baseline, 6, 12, 18, 24, 30, 36, 48, 60, 72 and 84 months after baseline, and within 30 days of a release from a residential facility. Data were collected using computer assisted interviews which were conducted in the participants' homes, in public places like libraries, or in facilities if youth were detained at the time. Further information about Pathways to Desistance procedures can be found in Schubert and colleagues (2004).

The current study uses self-report information from participants on their demographics, mental health symptoms, psychopathic traits, exposure to violence, and offending. This study analyzed limited data and time points from Pathways to Desistance, choosing to focus on the 6-, 12-, 18-, 24-, and 30-month interviews encompassing the first 2.5 years participants were involved in the study. Early interview time points were chosen because the current study aims to find possible points of early intervention for youth becoming involved in more serious criminal activity. Analyzing data from the first 2.5 years in the study also serves the goal of ensuring adequate time to see possible changes in youth mental health symptoms, traits, and experiences as participants age.

Participants

Secondary data analyses for the current study included male participants from the Pathways to Desistance project who had data on the proposed measures at the first four follow up time points (6, 12, 18, and 24 months after recruitment). The beginning sample size for the proposed analyses was 1,170 participants. This study included only males because the number of females in the sample is much smaller. Furthermore, the female sample was recruited differently in that females could be included in the study regardless of the seriousness of their offenses,

while males were included for serious offenses only, such as felonies. Due to sample size and likely systematic differences in offending histories between male and female participants, males only were used in these analyses.

Based on previous research, this sample size provided sufficient power for testing the types of analyses used. For latent profile analysis (LPA), previous research suggests adequate power of 80% can be achieved at a standard $\alpha = .05$ when the sample size is slightly greater than 100 participants (Dziak, Lanza, & Tan, 2014). For structural equation models such as cross-lagged panel models, a sample size of a little under 450 participants has shown adequate for detecting both small and large effects (Wolf, Harrington, Clark, & Miller, 2013).

Measures

Demographic Information. Demographic information including age, gender, and race/ethnicity were used based on self-report information from participants and their recorded birth dates.

Exposure to Violence. The Exposure to Violence Inventory (ETV; Selner-O'Hagan, Kindlon, Buka, Raudenbush, & Earls, 1998) was used in the current study's analyses as a measure for exposure to community violence. This survey inquires about 18 different types of situations which include 6 items assessing whether the respondent was victimized (e.g. "In the past N months, have you been chased where you thought you might be seriously hurt?"), 7 items assessing whether the respondent witnessed violence (e.g. "In the past N months, have you seen anyone else get beaten up, mugged, or seriously threatened by another person?), and 4 items about experiences with death (e.g. "In the past N months, have you found a dead body?"). In the current study, the ETV total score will be used, with higher scores indicating endorsement of more frequent exposure to violence since the previous follow-up. This scale with the ETV total

score was found to have acceptable levels of internal consistency at the 6-month (Total α = .75), 12-month (Total α = .74), 18-month (Total α = .75), and 24-month (Total α = .75) interviews in the Pathways to Desistance dataset.

Callous-unemotional traits. Callous-unemotional traits were assessed using a self-report dimension of the Youth Psychopathic Traits Inventory (YPI, Andershed et al., 2002). The YPI includes 50 items scored on a 4-point Likert scale ranging from "Does not apply at all" to "Applies very well". In the current study, the YPI Callous-Unemotional Dimension computed scale was used as the measure for callous-unemotional traits. The Callous-Unemotional Dimension score is a sum of 15 items from the Callousness (5 items; e.g. "I think that crying is a sign of weakness, even if no one sees you") Unemotionality (5 items; e.g. "I usually feel calm when other people are scared") and Remorselessness (5 items; e.g. "To feel guilt and regret when you have done something wrong is a waste of time") subscales. A higher sum score indicates the presence of greater psychopathic traits relating to callous-unemotionality and the measure used has a potential total score range from 15 to 60. The Callous-Unemotional Dimension has shown acceptable internal consistency at the 6-month (α = .74), 12-month (α = .73), 18-month (α = .76), and 24-month (α = .77) interview time points.

Psychological distress. The Brief Symptom Inventory (BSI, Derogatis & Melisaratos, 1983) subscales, specifically the anxiety, hostility, depression and somatization subscales, were used as measures of psychological distress in the current study. These scales have shown adequate validity in being used for research. The BSI asks respondents to rate how much they have been bothered by various symptoms over the past week and self-report on a Likert scale of "0 = Not at all" to "4 = Extremely". The anxiety subscale asks about 6 items related to anxiety such as "Feeling tense or keyed up." This measure is calculated as a mean score, with higher

scores indicating increased anxiety symptoms. The anxiety subscale has shown acceptable internal consistency at the 6-month (α = .75), 12-month (α = .75), 18-month (α = .73), and 24-month (α = .77) interviews. The hostility subscale asks about 5 items related to hostility such as "Having urges to break or smash things". This measure is also calculated as a mean score, with higher scores indicating increased distress related to hostility. The hostility subscale has shown acceptable internal consistency at the 6-month (α = .76), 12-month (α = .78), 18-month (α = .75), and 24-month (α = .76) follow-ups. The depression subscale asks about 6 items related to depression such as "Feeling no interest in things". This measure is also calculated as a mean score, with higher scores indicating increased distress related to depression. The depression subscale has shown acceptable internal consistency at the 6-month (α = .79), 12-month (α = .82), 18-month (α = .79), and 24-month (α = .81) follow-ups. The somatization subscale asks about 7 items such as "Faintness or dizziness". This measure is also calculated as a mean score, with higher scores indicating increased somatization. The subscale has shown acceptable internal consistency at the 6-month (α = .79), 12-month (α = .83), 18-month (α = .79), and 24-month (α = .82) follow-ups.

Offending. The Self-Reported Offending questionnaire (SRO; Huizinga, Esbensen, & Weihar, 1991) was used to assess aggressive re-offending at Time 5 in relation to community violence exposure and callous-unemotional traits. The SRO is a set of 22 items that assess engagement in illegal activity and antisocial behaviors. Questions ask about the participant's involvement in various offenses (e.g. "In the past N months have you been in a fight?", "In the past N months have you carried a gun?", "In the past N months have you stolen a car?") since the last follow up time point. Then, participants were prompted to recall how frequently they were involved in each offense. The current study chose to utilize the Aggressive Offending Variability

Proportion score calculated by Pathways to Desistance project, as previous research has found this score to have higher internal consistency than the Frequency of Offending score (Baskin-Sommers, 2016; Oudekerk, Erbacher & Dickon, 2012).

CHAPTER FOUR

RESULTS

Descriptive Results

Descriptive analyses included plots of the data and evaluations of assumptions (i.e. skewness and kurtosis) in order to better understand the study variables and their limitations. Follow up data points used needed to be changed to measure callous-unemotional traits and exposure to community violence at 12-months, 18-months, 24-months and 30-months as cross-lag panel model analyses revealed that the 6-month and 18-month follow up data on callous-unemotional traits was too highly correlated with a correlation of $r = 1.0$. Study variables were plotted to determine evaluations of skewness and kurtosis. Previous literature suggests a cutoff of 3.29 for skewness and kurtosis Z-scores (Field, 2011). However, larger samples often contain skewed variables, but still do not deviate from normality enough to require transformations. In such cases, less conservative estimates should be utilized with larger samples (Tabachnik & Fidell, 2007). Due to the exposure to violence variable being highly skewed, transformations were made when used for ANOVA tests. Mplus analyses allow for corrections of skewed variables by applying maximum likelihood estimation with robust standard errors as has been done in previous research with exposure to violence data (Esposito, Bacchini, Eisenberg & Affuso, 2017). Therefore, no data transformations were made to variables for analyses conducted in Mplus. Descriptive statistics and correlations among all study variables were also examined. The relationships of age and race/ethnicity to the proposed variables were tested to determine if

age and ethnicity need to be controlled for in subsequent analyses. Age did not show consistent significant associations to callous-unemotional traits or exposure to community violence. However, exposure to community violence and age at Time 2 were significantly, positively correlated, and age was utilized as a covariate in subsequent analyses. Callous-unemotional traits, exposure to community violence, and aggressive offending showed significant correlations across all timepoints used. Callous-unemotional traits tended to have small positive correlations with exposure to community violence at each timepoint, as well as with the aggressive offending outcome. Exposure to community violence at each timepoint showed moderate, positive correlations with the aggressive offending outcome. Means, standard deviations, and correlations among study variables are presented in Table 1on the following page.

Table 1 – Correlations and Descriptive Statistics

	Time 1			Time 2			Time 3			Time 4			Time 5
	Age	CU	ECV	Age	CU	ECV	Age	CU	ECV	Age	CU	ECV	AgOf
Age (1)	--	--	--	--	--	--	--	--	--	--	--	--	--
CU (1)	.05	--	--	--	--	--	--	--	--	--	--	--	--
ECV (1)	.03	.21**	--	--	--	--	--	--	--	--	--	--	--
Age (2)	--	.06	.04	--	--	--	--	--	--	--	--	--	--
CU (2)	-.02	.57**	.16**	-.01	--	--	--	--	--	--	--	--	--
ECV (2)	.06	.15**	.41**	.07*	.19**	--	--	--	--	--	--	--	--
Age (3)	--	.06	.04	--	.00	.07*	--	--	--	--	--	--	--
CU (3)	.03	.48**	.15**	.02	.56**	.16**	.05	--	--	--	--	--	--
ECV (3)	.04	.17**	.31**	.05	.20**	.40**	.06	.23**	--	--	--	--	--
Age (4)	--	.06	.02	--	-.02	.07*	--	.03	.06	--	--	--	--
CU (4)	.04	.45**	.14**	.02	.49**	.13**	.05	.55**	.16**	.03	--	--	--
ECV (4)	-.01	.18**	.25**	.01	.09*	.37**	-.01	.09**	.34**	.01	.16**	--	--
AgOf (5)	-.07	.17**	.26**	-.06	.15**	.26**	-.05	.15**	.37**	-.06	.14**	.31**	--
Mean	17.06	33.47	1.54	17.52	33.05	1.34	18.02	33.36	1.12	18.48	32.55	1.09	.05
SD	1.16	6.29	1.89	1.13	6.50	1.81	1.14	6.55	1.75	1.15	6.48	1.65	.10

ANOVA tests were conducted to determine if there were significant differences in reported callous-unemotional traits or exposure to violence across racial groups at each of the four timepoints used. Results showed no significant differences in exposure to community violence (Time 1: $F[3, 842] = 1.85$, $p = .14$; Time 2: $F[3, 804] = 2.10$, $p = .10$; Time 3: $F[3, 787] = 1.27$, $p = .28$; Time 4: $F[3, 787] = 1.44$, $p = .23$) or callous-unemotional traits (Time 1: $F[3, 842] = 1.54$, $p = .20$; Time 2: $F[3, 804] = 1.67$, $p = .17$; Time 3: $F[3, 787] = 2.40$, $p = .07$; Time 4: $F[3, 784] = 0.71$, $p = .55$) across racial categories. Therefore, race/ethnicity was not used as covariate in the subsequent analyses.

Aim 1 Results

To test the fit of a three-class psychopathy variant model, a latent profile analysis (LPA) was conducted with the following indicator variables at the 12-month time point: callous-unemotional traits, anxiety, hostility, depression, and somatization. LPA is a measurement method which classifies individuals into classes based on their patterns of responding to a chosen set of variables. It is an iterative process which involves testing possible solutions with different numbers of participant classes using continuous data. In the current analyses, model fit was assessed using a combination of the Bootstrap Likelihood Ratio Test (McLachlan & Peel, 2000), Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (LMRT; Lo, Mendell & Rubin, 2001), and the Bayesian Information Criterion (BIC; Schwarz, 1978). The BLRT and LMRT compare the fit of a target model (e.g., a 3-class model) to that of alternative models specifying fewer classes (e.g., a 2-class model). BLRT and LMRT p-values < .05 would provide evidence that the target model explains variance more completely than another model specifying a different number of classes, and p-values > .05 would indicate the target model does not provide superior fit compared to other models. Smaller BIC values closer to 0 are also representative of better model

fit, although the BIC is not accompanied by a p-value that can allow for comparisons of competing models. Past research (Nylund, Asparouhov, & Muthén, 2007) recommends that the LMRT be used to establish an upper limit for the number of classes to be extracted in the sample, and the BLRT and BIC be used to determine the most appropriate model.

In the current study, LPAs were conducted that specify 1-, 2-, 3-, and 4-class models as possible solutions. Consistent with predictions, results of the latent profile analysis revealed that a 3-class model provided superior fit for the data when compared to a 1-, 2-, and 4-class model as evidenced by a statistically significant LMRT value and a BIC closer to 0 in comparison to the 2-class model (See Table 2). The 1-class model, while unable to provide specific p-values due to only measuring one class, had a higher BIC than all other classes, and therefore was not the best fit. The 4-class model failed to show statistical significance in the LMRT (See Table 2).

Table 2. Results of Latent Profile Analysis

	Bootstrap Likelihood Ratio Test (BLRT)	Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (LMRT)	Bayesian Information Criteria (BIC)
1-class	N/A	N/A	11649.20
2-class	$p < .001$	1469.807 ($p = .05$*)	10183.493
3-class	$p < .001$	598.12 ($p = .03$*)	9611.03
4-class	$p < .001$	210.031 ($p = .14$)	9436.247

The composition of the profiles for the 3-class model of psychological distress variables and callous-unemotional traits can be seen in Table 3.

Table 3. Three-class Model of Psychological Symptoms and Callous-unemotional Traits

	Low Distress Group N = 702 (83%)	Medium Distress Group N = 118 (14%)	High Distress Group N = 26 (3%)
Somatization	0.13	0.61	2.28
Depression	0.22	1.31	2.36
Anxiety	0.19	1.03	2.13
Hostility	0.42	1.39	2.19
CU traits	33.26	34.44	34.73

The majority of the sample (n = 702, 83% of sample) fell in a "Low Distress" class, with uniformly lower scores on the psychological distress variables of somatization (M = 0.13), depression (M = 0.22), anxiety (M = 0.19), hostility (M = 0.42), and moderate scores on callous-unemotional traits (M = 33.26). A "Medium Distress" class was the second largest (N = 118, 14% of sample). The Medium Distress class showed mid-range scores on indicators of psychological distress (somatization: M = 0.61, depression: M = 1.31, anxiety: M = 1.03, hostility: M = 1.39), and a moderate score on callous-unemotional traits: M = 34.44. Finally, a "High Distress" class only consisted of 26 participants (3% of sample). The High Distress class had the highest scores on indicators of psychological distress (somatization: M = 2.28, depression: M = 2.36, anxiety: M = 2.13, hostility: M = 2.19), and, similar to the other two classes, moderate scores on callous-unemotional traits: M = 34.73). As predicted, three classes emerged from the data. Also as predicted, two classes that can be considered primary (with relatively lower distress) and secondary (with relatively higher distress) emerged from the results. However, what was conceptualized as a third "non-psychopathic" class, with medium distress and very low callous-unemotional traits, did not emerge from the results. Inconsistent with predictions, callous-unemotional traits were similar across the three profiles. Each of the three classes presented with mid-range scores for callous-unemotional traits that were similar to the mean of the population as a whole, despite the differences in the psychological distress variables across classes.

Additionally, follow up analyses were performed to compare the three classes to see if there were any differences in demographic factors or violence exposure. A chi-square goodness-of-fit test revealed that there were no significant differences between race/ethnicity between the classes (X^2 [6, 846] = 7.55, p = .27). A one-way ANOVA test was performed comparing the

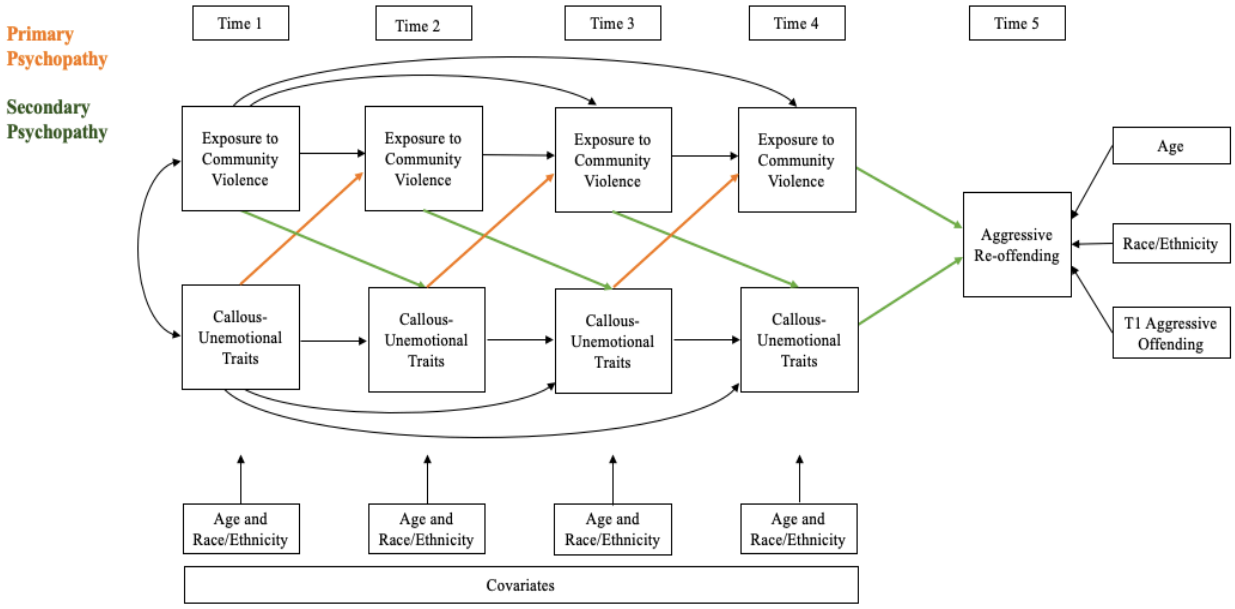
three classes to better understand potential differences. A one-way ANOVA test revealed there were no significant differences in age between the three classes at any of the measured timepoints (12-month: $F[2, 843] = 1.31$, $p = .27$; 18-month: $F[2, 806] = 1.03$, $p = .36$; 24-month: $F[2, 792] = 1.73$, $p = .18$; 30-month: $F[2, 788] = 1.37$, $p = .26$).

While the High Distress class did not show any significant differences in exposure to community violence compared to the other classes, the Medium Distress class did have higher scores on reported exposure to community violence compared to the Low Distress class. This difference between classes was seen only at 12-month ($F[2,843] = 21.38$, $p = .000$; Low: $M = 1.35$, $SD = 1.73$, Medium: $M = 2.50$, $SD = 2.22$) and 30-month ($F[2,787] = 4.98$, $p = .01$; Low: $M = 1.00$, $SD = 1.55$, Medium: $M = 1.48$, $SD = 2.02$) follow ups.

Aim 2 Results

A series of cross lagged panel models with callous-unemotional traits and exposure to violence variables were tested in order to examine the longitudinal associations between these variables. Cross-lagged panel models are a type of structural equation modeling used to describe reciprocal relationships or directional influences between variables longitudinally. Such models are "crossed" in that they estimate relationships between variables, and “lagged” in that they assess variable associations across time-points (Kearney, 2017). Overall, these models can be used to estimate directional influences between variables over time. The current study used a cross-lagged panel model to test whether callous-unemotional traits could predict exposure to violence from Time 1 to Time 2, Time 2 to Time 3, and Time 3 to Time 4, while simultaneously testing whether exposure to community violence predicts callous-unemotional traits across the same timepoints (See Figure 1).

Figure 1. Model of Longitudinal Associations between Exposure to Community Violence and Callous-Unemotional Traits, with Aggressive Re-Offending as an Outcome



Because the class with the highest distress (n = 26) had a sample size too small to be used in a structural equation model, and would be extremely underpowered to detect even large effects, the cross-lagged panel analyses presented below only included participants in the Low Distress (n = 702) and Medium Distress (n = 118) classes to examine whether the pathways between variables differ for primary (low distress) and secondary (medium distress) variants.

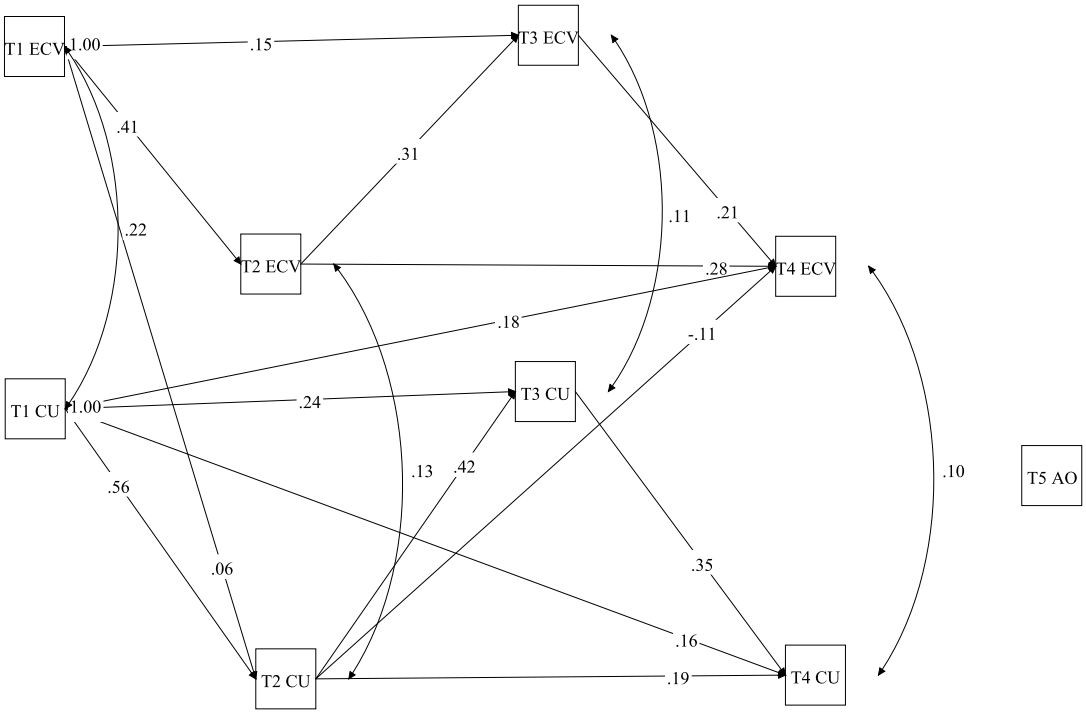
The current study used regression analyses within the cross-lagged panel models which allows for an assessment of stability in constructs over time. Specifically, autoregressive coefficients were used to determine the stability of the chosen variables over time. Autoregressive coefficients closer to zero indicate more variance and less stability in a construct, while larger coefficients show less variance over time and more stability from the previous timepoint (Kearney, 2017). Causal predominance was examined by comparing standardized coefficients of cross-lagged paths in the model. Standardized regression coefficients refer to how

many standard deviations a dependent variable is expected to change with each one standard deviation increase in an independent variable. The current study also assesses overall fit of the cross-lag panel model to the data. Acceptable model fit was evaluated by a comparative fit index (CFI) value greater than .95, Tucker-Lewis index (TLI) value greater than .90, root mean square error of approximation (RMSEA) value less than .08, and standardized root mean square residual (SRMR) less than .08 (Bentler, 1990; Hu & Bentler, 1999).

The analyses for the cross-lag panel analysis were conducted in several steps. First, a baseline cross-lag panel model was tested that examined the longitudinal associations between community violence exposure and callous unemotional traits and assessed model fit with the fit statistics mentioned above (CFI, TLI, RMSEA, SRMR). Second, the moderating effect of distress class membership on the cross-lag panel model was assessed by adding the distress class variable from the LPA (Low distress vs. Medium distress) as a moderating variable. If fit statistics indicate the model with the class variable (Low distress vs. Medium distress) provides an acceptable fit for the data, a chi-square difference test should then be used to determine whether the overall fit of baseline model and fit of the model with the distress class variable are significantly different from one another (overall baseline vs model with distress class variable). Finally, a multi-group cross-lag panel model will be used to test which specific pathways in the cross-lag model significantly differ across the low and medium distress classes.

First, a baseline cross-lagged model examining the relationships between callous-unemotional traits and community violence exposure over time was tested. The overall model was not a good fit for the data with none of the fit statistics being within acceptable model fit ranges (CFI = .79, TLI = .53, RMSEA = .13, SRMR = .10) (Bentler, 1990; Hu & Bentler, 1999). Results for the baseline model can be seen in Figure 2.

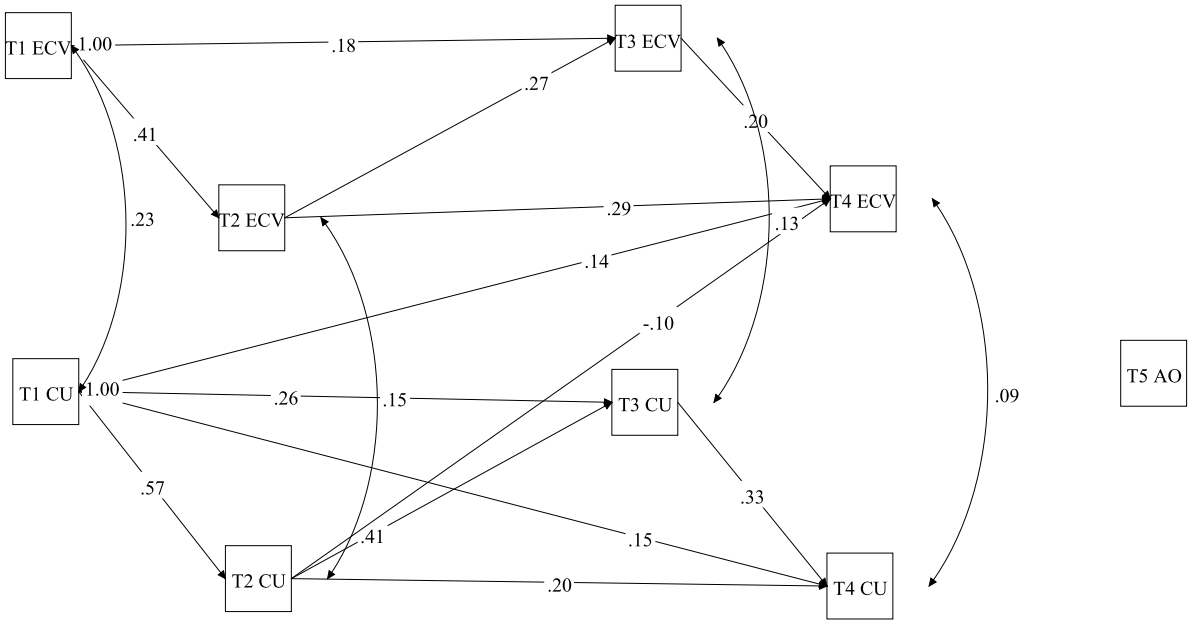
Figure 2. Cross-Lag Panel Baseline Model



Second, a cross-lag panel model with the distress class variable (low distress vs. medium distress) added as a moderator was tested. Adding the distress class variable provided output statistics for the overall model fit with the group distress moderator and standardized coefficients of paths for each class (Low distress [n = 702] and Medium distress [n = 118]). Results for each class can be seen in Figures 3 and 4 respectively. Overall, the cross-lag model with the distress class variable as a moderator resulted in fit statistics that were all within range for an acceptable model fit (CFI = 1.0, TLI = .99, RMSEA = .03, SRMR = .03). For the Low Distress class, exposure to violence did not predict future callous-unemotional traits in this model. However, increased callous-unemotional traits at 12 months predicted increased exposure to community violence at 30-months (B = .14, p = .01) and callous unemotional traits at 18-months predicted decreased exposure to community violence at 30-months (B = -.10, p = .03). Callous-

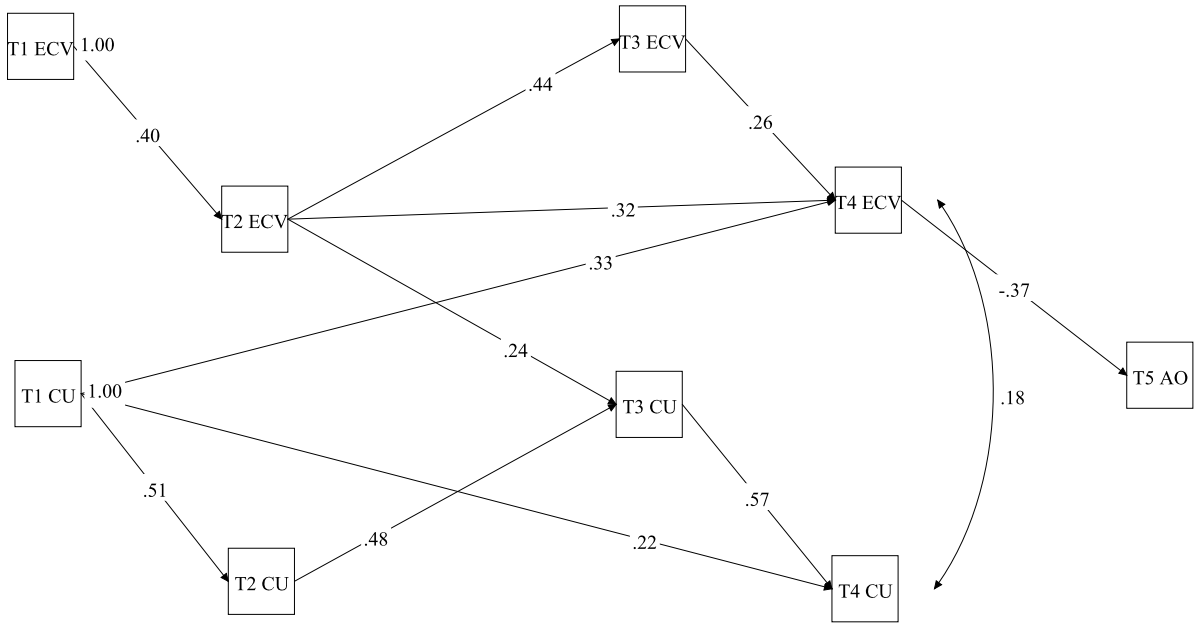
unemotional traits at 18-months also came very close to significantly predicting increased exposure to community violence at 24-months (B = .09, p = .050).

Figure 3. Multigroup Cross-Lag Panel Model - Low Distress Class



For the Medium Distress class, increased callous-unemotional traits at 12 months predicted increased exposure to community violence at 30-months (B = .33, p = .00) and increased exposure to violence at 18-months predicted increased callous-unemotional traits at 24 months (B = .24, p = .04). In this model, exposure to community violence and callous-unemotional traits positively predicted future levels of each respectively, but these variables were not consistently associated within timepoints (See Figure 4).

Figure 4. Multigroup Cross-Lag Panel Model – Medium Distress Class



Given that the cross-lag panel model with the moderator provided acceptable model fit to the data, the next step in analysis was to test whether the fit of the moderator model (model with the class variable) was significantly better than the fit of the baseline model, via a chi-square difference test. Specifically, a chi-square difference test examined the difference between a constrained and unconstrained cross lag model with the class variable. In the unconstrained model, all parameters were allowed to vary across the two classes, while in the constrained model, all path coefficients are fixed to be equal across the two classes. If the chi-square test were to reveal superior model fit in the unconstrained model, the cross-lagged associations between exposure to community violence and callous-unemotional traits would be considered to differ as a function of psychopathy variant status (Park et al., 2016; Guo et al., 2015). A test of invariance comparing the constrained and unconstrained models revealed that the difference between the freely estimated model ($\chi^2[42] = 46.84$ $p = .28$) and the model with loadings

constrained to be equal across classes ($\chi^2[98] = 127.71$) was statistically significant ($\Delta\chi^2[56] = 78.81$, $p = .02$). Specifically, the model fit was better with the addition of the distress class moderator variable, suggesting that the pathways in the cross-lag model differed significantly as a function of the Low vs. Medium Distress classes.

Finally, further analyses were conducted with each path in the multigroup model to identify the significant differences in the model. This was conducted using tests of invariance but focusing those tests on each path individually. Chi-square differences between the freely estimated baseline model and constrained models for each path of interest can be seen in Table 4. Three paths showed a significant difference in association across the distress classes. First, 12-month exposure to community violence predicting increased callous-unemotional traits at 30-months was significantly different across the classes ($\Delta\chi^2(1) = 5.03$, $p = 0.03$). This association was nonsignificant in both groups, but was positive in the Low Distress class ($B = .03$, $p = .44$) and negative in the Medium Distress class ($B = -.05$, $p = .46$). The association between exposure to community violence at 18-months and callous-unemotional traits at 24-months was also significantly different between classes ($\Delta\chi^2[1] = 5.59$, $p = .02$) for which the association in the Medium Distress class was significantly stronger ($B = .24$, $p = .04$) than in the Low Distress class ($B = .01$, $p = .90$). Lastly, the association between 12-month callous-unemotional traits predicting 30-month exposure to community violence was significantly different across classes ($\Delta\chi^2[1] = 5.03$, $p = .03$), with the Medium Distress class showing a stronger association ($B = .33$, $p = .00$) than the Low Distress class ($B = .14$, $p = .01$).

Table 4. Chi-square Differences of Individual Paths by Class – Comparison to Baseline Model

Model Tested	C^2	*df*	ΔC^2	Δdf	*p value*
Baseline model: No invariance constraints	46.84	42	--	--	--
All paths constrained	127.71	98	78.81	56	0.02*
Within Variable Paths					
T1 ECV to T2 ECV	54.272	43	1.28	1	0.26
T2 ECV to T3 ECV	55.501	43	1.76	1	0.18
T3 ECV to T4 ECV	54.132	43	1.16	1	0.28
T1 ECV to T3 ECV	55.68	43	2.35	1	0.13
T1 ECV to T4 ECV	52.848	43	0.13	1	0.72
T2 ECV to T4 ECV	53.546	43	0.81	1	0.37
T1 CU to T2 CU	53.731	43	0.76	1	0.38
T2 CU to T3 CU	53.44	43	0.68	1	0.41
T3 CU to T4 CU	58.288	43	3.24	1	0.07
T1 CU to T3 CU	54.128	43	1.15	1	0.28
T1 CU to T4 CU	53.56	43	0.65	1	0.42
T2 CU to T4 CU	55.486	43	2.80	1	0.09
Within Timepoint Paths					
T1 ECV & T1 CU	53.161	43	0.34	1	0.56
T2 ECV & T2 CU	55.392	43	2.38	1	0.12
T3 ECV & T3 CU	53.08	43	0.47	1	0.49
T4 ECV & T4 CU	54.325	43	1.36	1	0.24
Cross Lag Paths					
T1 ECV to T2 CU	46.88	43	0.02	1	0.88
T1 ECV to T3 CU	46.84	43	0.00	1	0.98
T1 ECV to T4 CU	52.91	43	5.03	1	0.03*
T2 ECV to T3 CU	59.58	43	5.59	1	0.02*
T2 ECV to T4 CU	56.22	43	3.25	1	0.07
T3 ECV to T4 CU	54.13	43	1.13	1	0.29
T1 CU to T2 ECV	47.22	43	0.49	1	0.48
T1 CU to T3 ECV	52.78	43	0.01	1	0.92
T1 CU to T4 ECV	59.35	43	5.03	1	0.03*
T2 CU to T3 ECV	53.73	43	0.82	1	0.37
T2 CU to T4 ECV	52.99	43	0.11	1	0.74
T3 CU to T4 ECV	47.23	43	0.27	1	0.6
T4 ECV to T5 Offending	50.19	43	2.01	1	0.16
T4 CU to T5 Offending	48.28	43	1.99	1	0.16

Aim 3 Results

For Aim 3, the cross-lagged panel model tested in Aim 2 was used to examine whether the associations between exposure to community violence and callous-unemotional traits over time predicted later aggressive re-offending. Aggressive re-offending at 36-months was assessed as an outcome within the cross-lagged panel model. The coefficients of the paths leading to aggressive re-offending as an outcome were tested for significance, while controlling for age. Twelve-month aggressive offending was also originally used as a control but was not significantly related to 36-month aggressive offending. In the Low Distress class, neither callous-unemotional traits (B = .09, p = .05) nor exposure to community violence (B = -.04, p = .53) predicted 36-month aggressive offending. In the Medium Distress class, callous-unemotional traits did not predict aggressive offending (B = -.05, p = .67), but exposure to community violence negatively predicted aggressive offending at 36-months (B = -.37, p = .03). The association of callous-unemotional traits at 30-months predicting 36-month aggressive offending was not significantly different across the two class ($\Delta\chi^2[1] = 2.01$, p = .16). Similarly, there was not a significant different across classes for 30-month exposure to community violence predicting 36-month aggressive offending ($\Delta\chi^2[1] = 2.01$, p = .16).

CHAPTER FIVE

DISCUSSION

The current study aimed to examine the relationship between callous-unemotional traits and exposure to community violence in the context of primary and secondary psychopathic typologies. The overarching goal was to better understand how the associations between exposure to community violence and callous-unemotional traits may differ for individuals with differing levels of violence exposure and emotional distress indicative of different psychopathic typologies. Lastly, the current study aimed to determine whether youth with predominantly primary versus secondary typologies may show different outcomes in relation to violent offending.

Preliminary Analyses

As stated above, race/ethnicity was not used as a covariate because there was not a statistically significant difference in exposure to community violence or callous-unemotional traits across racial groups. Considering the particularly high likelihood of youth of color in urban settings to be exposed to community violence (Voisin, 2007; Zimmerman & Messner, 2013; Rigg, McNeish, Schadrac, Gonzalez, & Tran, 2019), the lack of racial differences in violence exposure is unexpected. Findings reflect that youth who are considered serious adolescent offenders tend to have similar levels of exposure to community violence and callous-unemotional traits regardless of race. This finding supports the idea that racial population disparities in the justice system likely reflect differences in adjudication (Evangelist, Ryan,

Victor, Moore & Perron, 2017) and treatment referrals (Spinney et al., 2016) rather than differences in the factors in the current study that theoretically lead youth to serious offending.

Aim 1: Typology (or Profiles) of Psychopathy

The latent profile findings for this sample showed the expected number of classes, but inconsistent with hypothesis 1, did not find statistically significant differences between callous-unemotional traits across the three classes. The three resultant classes were labeled as Low Distress (low levels of psychological distress, moderate levels of callous-unemotional traits), Medium Distress (moderate levels of psychological distress, moderate levels of callous-unemotional traits), and High Distress (high levels of psychological distress, moderate levels of callous-unemotional traits). Therefore, the results did not fit the theory of primary versus secondary psychopathy as predicted. Given that the High Distress class had too few participants for further structural equation modeling, the Low Distress and Medium Distress classes were conceptualized as primary and secondary psychopathy, respectively.

Although the latent profile analysis found the expected number of three classes, it was unexpected that they all showed similar levels of callous-unemotional traits and no classes demonstrated low levels of callous-unemotional traits. The lack of a low callous-unemotional class could reflect the sample used and/or the setting in the current study. All youth in the current study are adolescents who have committed serious offenses in order to have involvement in the study. In the current sample, serious offenses included violent offenses such as assault, but also some non-violent crimes such as felony drug charges. The overall Pathways to Desistance sample also included some misdemeanor property offenses, sexual assault, and weapons offenses. While there is variability in the crimes committed by this sample, over 40% of youth enrolled at both sites had committed felony crimes against persons including murder, robbery,

aggravated assault, sex offenses or kidnapping at the time of enrollment (Loughran et al., 2015). Therefore, a fairly large portion of these youth may have already developed some level of emotional desensitization that may have increased the likelihood of commission of such felonies. This would correspond with previous research indicating that callous-unemotional traits may act as a mediator leading to an outcome of violent offending (Pardini, 2006).

However, it is important to note that analyses did not find a group that was particularly high in callous-unemotional traits either. This sample of serious adolescent offenders may not show as much variance in their callous-unemotional scores as expected for several reasons. First, the nature of the measure used for callous-unemotional traits affected how the data could be used and interpreted. Previous studies examining psychopathic variants in adults have included only participants that score above a certain cutoff on measures of psychopathy (Kimonis et al., 2011; Newman et al., 2005) or a certain level such as the top third of the sample scores (Bennett & Kerig, 2014) or a certain number of standard deviations above the mean (Vaughn et al., 2009). The Youth Psychopathic Traits Inventory (YPI) used in this study does not have a recommended "cut-off" score that would suggest clinically elevated levels of psychopathy as it was developed for research purposes as a more dimensional assessment of personality traits (Dolan & Rennie, 2006). Further, the current study attempted to include all participants and allow classes to be informed by latent profile analysis and was therefore not informed by cut-off values or arbitrarily chosen levels of callous unemotional traits. The use of a self-report measure with a clinical cutoff score may have better illuminated a distinct group of youth particularly high in callous-unemotional traits.

Another reason for the limitation in callous-unemotional trait variability in the current study could simply be that the callous-unemotional dimension, as measured in the current study,

does not show a great deal of variability in juvenile justice samples. Another study of justice-involved youth found two clusters of youth with high and low callous-unemotional traits (affective factor), but also used the interpersonal and lifestyle dimensions of psychopathy in their analyses. This previous study found mean callous-unemotional traits scores that were similar to those found in the current study (M = 39.90 in the "psychopathic-like" group of 21 participants, M = 32.89 in the "non-psychopathic-like" group of 94 participants) (Dolan & Rennie, 2006). In the current study, callous-unemotional scores for youth in all latent profile classes fell between these values (Low Distress M = 33.26, Medium Distress M = 34.44, High Distress M = 34.73). This suggests the current sample may have slightly higher callous-unemotional traits, but less variability between groups. Therefore, psychological distress measures alone may not be adequate in helping to differentiate between classes of youth in the current sample. Though it was not in line with the aims for the current study, adding other factors of psychopathy in future research, such as the interpersonal and lifestyle dimensions could better separate classes of youth.

The unexpected findings of the latent profile analysis showing similar levels of callous-unemotional traits across classes affected the resultant classes and subsequent analyses using those classes. Additionally, the very small percentage of participants in the High Distress class may reflect the context of the sample. Adolescent males in the juvenile justice system may be less likely to report psychological distress. A previous study comparing self-report psychological data of juvenile delinquents with psychological disorders found that, compared to parent reports and clinical and general population normative data, these youth tended to underreport their psychological symptoms (Breuk, Clauser, Stams, Slot, & Doreleijers, 2007). The context of this study may also contribute to some underreporting of psychological distress as youth in detention

settings may be in an environment that reinforces interests in avoiding vulnerability. A European review of adult prison populations suggests that individuals with mental health disorders are more likely to be victimized during stays in prison (Fazel, Hayes, Bartellas, Clerici, & Trestman, 2016). Depending on youth perceptions of their environment, youth may have minimized their own psychological distress to feel more secure in their current environment.

Aim 2: Longitudinal Associations between Community Violence Exposure and Callous-Unemotional Traits

For the first part of Aim 2, the cross-lag model was tested separately in the low distress class and the medium distress class to identify the significant paths for each class. The Aim 2 results examining associations between callous-unemotional traits and exposure to community violence over time were somewhat consistent with predictions. Overall, results indicated that exposure to community violence and callous-unemotional traits were associated over time, and each variable had the ability to predict future levels of the other.

For the Low Distress class, callous-unemotional traits at 12-months predicted exposure to community violence at 30-months, which is consistent with hypothesis 2a proposing that callous-unemotional traits would precede exposure to community violence in the primary psychopathic or Low Distress class. However, inconsistent with predictions, other paths with callous-unemotional traits predicting later exposure to community violence were non-significant, and the association between 18-month callous-unemotional traits and 30-month exposure to community violence was negative such that increased callous-unemotional traits predicted decreased exposure to community violence.

For the Medium Distress class, 18-month exposure to community violence predicted 24-month callous-unemotional traits, consistent with hypothesis 2b, which predicted youth in the

higher distress group would show associations more reflective of secondary psychopathy. However, inconsistent with hypothesis 2b, increased callous-unemotional traits at 12 months predicted increased exposure to community violence at 30-months.

Second, a test of invariance was performed to see which paths were significantly different across the distress classes. The invariance tests between the Low and Medium Distress classes were also partially consistent with predictions. Consistent with predictions, 18-month exposure to community violence predicted increased callous-unemotional traits at 24-months for the Medium Distress class, but not the Low Distress class. This finding fit with a secondary psychopathic typology in which trauma precedes emotional desensitization among individuals with higher distress. However, the other two associations that were significantly different across classes did not support hypotheses. Specifically, the path from 12-month exposure to community violence to 30-month callous-unemotional traits was non-significant in both classes. Hypotheses consistent with the primary and secondary psychopathy theory propose a positive association between these variables for the Medium Distress class. The other significant path difference was between 12-month callous-unemotional traits and 30-month exposure to community violence. Both classes showed significant positive associations, but the Medium Distress class showed a stronger association. Hypotheses suggested the Low Distress class would have stronger associations in which callous-unemotional traits would predict exposure to community violence.

Both the Low Distress and Medium Distress classes showed a significant pathway in which callous-unemotional traits (12-month) predicted later exposure to community violence (30-month), consistent with a primary psychopathy profile. Further, the Medium Distress class showed a stronger association in this pathway than the Low Distress class. This was the opposite of what was expected; previous research with justice-involved youth suggests individuals with

low distress represent a primary psychopathy variant (Tatar et al., 2012; Kimonis et al., 2011; Docherty et al., 2015; Vaughn et al., 2009), so it was predicted that callous-unemotional traits would precede exposure to community violence more strongly in the Low Distress class. Instead, this association held true in both classes and was even stronger in the presence of higher levels of distress (Medium Distress class).

It should also be noted that this association, in which callous-unemotional traits precedes exposure to community violence in both classes, was only significant for callous-unemotional traits assessed in the first wave of data and may reflect the importance of callous-unemotionality early in justice involvement as a unique risk factor for continual violence exposure years later. Prior research indicates that callous-unemotional traits are relatively stable in youth over time (Frick & White, 2008), and the early presence of callous-unemotional traits in children has been associated with a greater risk of development of later mental health disorders such as conduct disorder (Blair, Leibenluft, & Pine, 2014). It could be that youth with callous-unemotional traits have such traits for some time before the adverse outcomes associated with them, such as increased community violence exposure, become apparent. One potential explanation is that younger adolescents are more frequently in school or supervised more closely than older adolescents. Additionally, previous research suggests child maltreatment may contribute to callous-unemotional traits, and those children that develop such traits in response are at risk for further offending in adolescence (Dackis, Rogosch, & Cicchetti, 2015). Thus, the youth showing higher levels of callous-unemotional traits earlier may have developed such traits not only in response to community violence, but as a result of childhood adversity in the home. These may also be the youth who have greater reason to spend time outside the home as they grow older and come into contact with more community violence as a result. The hypo-arousal youth with

higher callous-unemotional traits experience (Dackis et al., 2015) may add to this cycle, becoming another potential reason they may not be as motivated to actively avoid violent areas in their community.

Another explanation could be that as youth spent more time away from the community and in justice settings, the association between callous-unemotional traits and exposure to community violence was dormant, then returned when they were released back into a community setting. Perhaps youth with callous-unemotional traits at 12-months tended to also be those who committed more serious offenses and received harsher punishments. Therefore, they did not show significant associations from 12-months to 18-months or 12-months to 24-months because they were not spending as much time in the community during their 18- or 24-month follow ups. However, callous-unemotional traits were still able to predict greater community violence exposure when they were released or in a less restrictive setting with more access to the community (30-months).

Findings can also relate to the decreasing trajectories of exposure to community violence over time that have been found for some groups of participants in this sample before (Baskin & Sommers, 2014). Based on the current study results, callous-unemotional traits could be an important variable in predicting which youth will show normative decreases in exposure to community violence as they mature, and which youth will continue to be exposed to community violence in the future. This is also consistent with prior research findings indicating youth high in callous-unemotional traits are at higher risk for further adverse life experiences (Tatar et al., 2012, Sharf et al., 2014).

Between group analyses also provided support for the difference between Medium Distress and Low Distress classes. Medium Distress participants showed higher scores on

reported exposure to community violence than the Low Distress participants in this sample, which also fits with previous theory on primary versus secondary psychopathy in which individuals whose adverse life experiences precede psychopathic traits tend to have higher level of those adverse experiences, including community violence exposure (Tatar et al., 2012, Sharf et al., 2014). This may be the case because, for secondary variants, the development of callous-unemotional traits requires high levels of chronic stress to occur. There are several theories that support the idea of emotional desensitization occurring in such a way. The idea of allostatic load, in which increased and chronic stress over time leads to changes in how one processes stress, has been associated with changes in emotional functioning including posttraumatic emotional numbing, decreases in empathy, aggression, and lack of remorse (Malta, 2012). More specifically, youth who become hyper-aroused in response to chronic stress may need a way to compensate so that their physiological systems are not constantly hyper-aroused, and emotionally numbing may be one way to compensate for hyperarousal. This idea is supported by past research. Most notably, research on post-traumatic stress symptoms suggests that hyperarousal is one of the best predictors of emotional numbing (Litz, 1997). Past research in juvenile justice populations has also suggested youth detach from emotions as an adaptive way to decrease distress after traumatic events (Kerig & Becker, 2010) and that the emotional numbing associated with post-traumatic stress can also predict callous-unemotional traits for some youth (Kerig et al., 2012). While seemingly adaptive in the short-term, this type of emotional numbing may be more frequently utilized by youth with more exposure to traumatic events. Thus, it would make sense that youth who develop callous-unemotional traits through emotional desensitization tend to have more adverse experiences. Conversely, for youth showing the opposite pattern in

which callous-unemotional traits precede violence exposure, it is theorized that they seek out such stimulation rather than needing a high level of exposure to violence for the traits to develop.

While the above findings fit psychopathy theory, the overall model did not show consistent path differences across the two classes compared, and showed some unexpected pathways such as one in which higher callous-unemotional traits at 18-months predicted lower 30-month exposure to violence in the Low Distress class. Such unexpected associations could be due to even further variabilities in psychological distress not detected by the LPA in the current study. Recent research has started to recognize that different types of psychological distress, for example different aspects of anxiety such as oversensitivity, social anxiety, or physiological anxiety, may differ with trajectories of callous-unemotional traits as well (Waller, Baskin-Sommers & Hyde, 2018).

Aim 3: Predicting Offending Behaviors

Aim 3 of this study assessed violent offending as an outcome of the cross-lag modeled associations between exposure to violence and callous-unemotional traits. Inconsistent with hypothesis 3a, the association between increased exposure to community violence or increased callous-unemotional traits and subsequent increased violent offending was not significant. Instead, increased 30-month exposure to community violence predicted *decreased* aggressive offending at 36 months. In a test of invariance for the paths from 30-month exposure to violence to 36-month aggressive offending, there was no significant difference between the Low and Medium distress classes, inconsistent with hypothesis 3b which predicted that the Medium Distress class would show stronger associations between these variables. Similarly, the path with callous-unemotional traits at 30-months predicting 36-month aggressive offending did not show a significant difference between Low and Medium distress classes, also inconsistent with

hypothesis 3b predictions that the Medium Distress class would show a stronger association between these variables.

The unexpected finding that increased community violence exposure predicted subsequent *decreased* aggressive offending could be related to time spent incarcerated. Perhaps individuals who were committing more violent offenses were also spending more time incarcerated during the recall period and therefore did not have the chance to be exposed to as much violence in the community. Another potential explanation is that many youths are aging out of criminal activity around the 30-to 36-month timepoints, but exposure to community violence in their neighborhoods remains high. Youth in the current sample were on average around 18.5 to 19 years old at these timepoints. The long-standing theory of adolescent-limited offenders (Moffitt, 1993) can also provide support for an explanation of desistance with age. Crime data analyses in the 1990's indicated that youth offending increases during adolescence, peaks around age 17, and thereafter sharply declines and decreases; as individuals age out of adolescence, most also age out of crime (Moffitt, 1993). Previous research with the Pathways to Desistance sample has also found that the majority of youth decrease in their offending behaviors with age and psychosocial maturity (Steinberg, Cauffman, & Monahan, 2015).

A final explanation could be that individuals who experience more psychological distress and exposure to community violence also tend to experience life events in later adolescence/early adulthood that lead them to decrease aggressive offending behaviors. Such experiences may include losing a loved one, finding a serious romantic partner, or having a child. In regard to losing a loved one, previous research indicates that gang-involved justice youth have higher exposure to community violence and are more likely to experience traumatic grief compared to other justice-involved youth (Dierkhising, Sanchez, & Gutierrez, 2019). Traumatic

grief is experienced when an individual loses a loved-one in a traumatic way (e.g., best friend being shot). Research shows that traumatic grief can be a "wake-up call" of sorts that motivates some individuals involved in criminal activity to take measures that decrease their offending behaviors (Dierkhising et al., 2019). Thus, the findings in the current study may reflect such individuals with high exposure to community violence experiencing life events that lead to lifestyle changes to decrease their aggressive offending.

Strengths and Limitations

Limitations of the current study should be noted. First, missing data on the Brief Symptom Inventory at the 12-month timepoint led to a loss of participants for the initial latent profile analysis, which then contributed to less power in subsequent analyses. Second, the vast differences in size of the profiles that resulted from the LPA contributed to some limitations in testing cross-lag panel models.

The current study measured violence exposure and emotional desensitization in the context of self-report surveys on these experiences but did not delve further into how individuals with seemingly primary versus secondary emotional desensitization patterns may interact with others outside of offending. Future research should attempt to understand other ways that emotional desensitization affects youth including how they interact with others. For example, the idea of the circle of caring posits that psychopaths don't have normal emotional attachments or others they look after and would sacrifice for, while sociopaths do have such a circle of caring within which they can have normal emotional attachments (Garbarino, 2018). Other research suggests that youth with high levels of callous-unemotional traits also tend to take on leadership roles in gangs and perpetuate more group crime (Thornton et al., 2015). Research on such

populations as the youth in the current study can be useful in understanding how youth with emotional desensitization specifically interact with, influence, and care for others.

Additionally, exposure to community violence was meant to measure witnessing and victimization while youth were not in detention, but youth certainly may have reported violence experienced while in detention as well. Thus, it would be difficult to tell whether certain violent experiences had a greater effect on psychological functioning and emotional desensitization than others. Although data on adverse experiences while incarcerated may be somewhat hard to come by, future research should also focus on youth's reports of abuse and exposure to violence during detention stays. Such information could help better understand the whole picture of the development of emotional desensitization for justice-involved youth. Lastly, the current study focused on self-report data from justice-involved youth, which introduces the possibility of shared method variance.

One of the major strengths of the current study is the longitudinal exploration of exposure to violence and callous-unemotional traits in this specific sample of serious, adolescent offenders. This study in particular is one of very few that has used person-centered analyses along with a longitudinal model. There is variability in how justice-involved youth move through the justice system and persist or desist in delinquent behavior, and thus a combination of person-centered and longitudinal analyses will likely be the most informative in identifying which youth may need additional intervention and when. Another strength of the current study is the use of a cross-lag panel model to understand the precedence of callous-unemotional traits and exposure to community violence. While previous studies have conducted similar analyses with overall psychopathy and exposure to violence, the current study focuses specifically on callous-unemotional traits, which can reveal more about emotional desensitization specifically. Further,

the use of classes differing in psychological distress to examine specific differences in pathways over time allows for a more in-depth analysis of the theory of primary vs. secondary psychopathy in juveniles.

Conclusions and Implications

Results support reciprocal and longitudinal associations between exposure to community violence and callous-unemotional traits over time and the idea that these connections differ depending on the psychological distress of the individual. Adolescent offenders with higher psychological distress are more likely to experience higher exposure to violence and more likely to have violence exposure that precedes increased callous-unemotional traits. However, all adolescent offenders in this sample were likely to have early callous-unemotional traits that preceded later exposure to community violence. In later adolescence, youth with higher psychological distress and increased exposure to violence decreased in their aggressive offending. Overall, results support associations between exposure to community violence, callous-unemotional traits, and offending, though the associates are complex and likely influenced by many factors in addition to psychological distress.

Future research should assess the role of violence exposure and emotional desensitization in similar detention samples over a longer period of time and/or with community samples as a comparison to this unique population of serious adolescent offenders. Current results support evidence of desistance for youth exposed to community violence as they grow older. Past research has some suggestions for why this might be (traumatic grief, maturity), but further definition of malleable factors is needed. What or how can juvenile justice workers or community supports provide to justice-involved youth to help them reach the point of decreasing offending, even in contexts of violence?

The current study results have implications for treatment and policy efforts in juvenile justice settings. The juvenile justice system has been returning to a focus on treating mental illness since research on prevalence rates of mental illness in these settings was published in the early 2000s (Grisso, 2007). However, enforcing the idea that all youth in justice settings need psychological treatment can put unrealistic pressures on detention settings, as well as stigmatize youth by making unsupported connections between mental illness and aggression (Grisso, 2007). The findings of this study and others like it can help improve the treatment process by understanding the important link between responses to trauma and delinquent or criminal behaviors. Newer terms, such as acquired callousness (Kerig et al., 2012) or developmental trauma (van der Kolk, 2005), should be further researched and utilized in case conceptualization for long-term care of juveniles in need of psychological services. In addition, it may be the case that not all youth who exhibit callous-unemotional traits as a response to trauma would fit a post-traumatic stress diagnosis; these differences should also be examined through research.

Second, while callous-unemotional traits have long been thought of as a precursor to psychopathy in youth, there have been few suggestions for how to treat these youth. Since the 1990s, screening for mental health symptomology in juvenile justice has clearly improved, but this may not translate to improvements in effective therapy service utilization (Grisso, 2007). Some treatment shortcomings may be due to a lack of understanding of the emotional desensitization of youth in these settings. Without proper training and understanding of emotional desensitization, detention setting staff tasked with caring for youth may take inappropriate approaches. One study found that correctional staff more frequently used harsh and punitive methods with youth who had increased histories of physical and sexual abuse, as these youth showed more problematic externalizing behaviors in a detention setting (Hodge & Yoder,

2017). Attempts to decrease emotional outbursts without a more complex understanding of trauma influences could unintentionally contribute to further emotional desensitization. Perhaps interventions that encourage the use of emotional expression and appropriate emotional outlets (e.g. arts, music) may be more appropriate for such youth who appear to be developing callous-unemotional traits in response to trauma. Dialectical Behavior Therapy (DBT), which involves elements of mindfulness, interpersonal effectiveness, distress tolerance, and emotion regulation, is one potential evidence-based treatment for justice-involved youth (Quinn & Shera, 2009). Some research has been conducted in this area with detained, adolescent males (e.g., Shelton, Kesten, Zhang, & Trestman, 2011), but has not been applied specifically in understanding callous-unemotional traits in relation to trauma.

Findings of this study also inform the when of optimal treatment for juvenile justice youth. The significant connections between Time 1 callous-unemotional traits and Time 4 exposure to violence seem to support early mental health treatment for youth. Results also support the idea that youth exposed to community violence decrease in their offending as they grow older. Attempts to foster malleable factors, such as psychosocial maturity (Steinberg et al., 2011), that are associated with decreases in offending, along with the consideration of early signs of emotional desensitization should be tested in interventions or used to inform treatment. For example, maturity level could be used to gauge when an adolescent is ready and able to effectively process emotions connected to trauma histories, and those with early callous-unemotional traits can be flagged as being in high need of treatment and/or community supports as they are at risk for further violence exposure. A final observation is that most detention settings are not equipped to provide long-term care for youth with ongoing violence exposure.

Justice-involved youth may benefit from short-term support through their detention stays, but also need sustained support and case management through collaborating agencies.

REFERENCE LIST

Abram, K. M., Teplin, L. A., Charles, D. R., Longworth, S. L., McClelland, G. M., & Dulcan, M. K. (2004). Posttraumatic stress disorder and trauma in youth in juvenile detention. *Archives of general psychiatry*, *61*(4), 403-10.

Abram, K., Teplin, L., King, D., Longworth, S., Emanuel, K., Romero, E., McClelland, G., Dulcan, M., Washburn, J., Welty, L., & Olson, N. (2013). PTSD, trauma, and comorbid psychiatric disorders in detained youth. *National Center for Mental Health and Juvenile Justice 15 OJJDP Juvenile Justice Bulletin*. Washington, D.C.: U.S. Department of Justice, Office of Juvenile Justice and Delinquency Prevention.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Andershed, H., Kerr, M., Stattin, H., & Levander, S. (2002). Psychopathic traits in non-referred youths: A new assessment tool. In E. Blauuw & L. Sheridan (Eds.), Psychopaths: Current International Perspectives (pp. 131-158). The Hague: Elsevier.

Baskin, D., & Sommers, I. (2014). Exposure to Community Violence and Trajectories of Violent Offending. *Youth Violence and Juvenile Justice, 12*(4), 367-385. doi:10.1177/1541204013506920

Baskin, D., & Sommers, I. (2015). Trajectories of Exposure to Community Violence and Mental Health Symptoms Among Serious Adolescent Offenders. *Criminal Justice and Behavior*, *42*(6), 587–609. doi: 10.1177/0093854814556882

Baskin-Sommers, A., & Baskin, R. (2016). Psychopathic Traits Mediate the Relationship Between Exposure to Violence and Violent Juvenile Offending. *Journal of Psychopathology and Behavioral Assessment, 38*(3), 341-349.

Bennett, D. C. (2013). Primary versus secondary callousness among juvenile justice-involved youth: Investigating deficits in emotion regulation. Master's thesis, Dept. of Psychology, University of Utah.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*(2), 238-246. doi: 10.1037/0033-2909.107.2.238

Blair R. J. R., Leibenluft E., Pine D. S. (2014). Conduct disorder and callous-unemotional traits in youth. *New England Journal of Medicine* 371: 2207–2216

Breuk, R., Clauser, C., Stams, G., Slot, N., & Doreleijers, T. (2007). The validity of questionnaire self-report of psychopathology and parent-child relationship quality in juvenile delinquents with psychiatric disorders. *Journal of Adolescence, 30*(5), 761-771.

Caldwell M. F., McCormick D. J., Umstead D., Van Rybroek G. J. (2007). Evidence of treatment progress and therapeutic outcomes among adolescents with psychopathic features. *Criminal Justice and Behavior*, 34(5), 573-587.

Campbell, M. A., Porter, S., & Santor, D. (2004). Psychopathic traits in adolescent offenders: an evaluation of criminal history, clinical, and psychosocial correlates. *Behav Sci Law, 22*(1), 23-47. doi:10.1002/bsl.572

Castellana, Barros, Serafim, & Busatto Filho. (2014). Psychopathic traits in young offenders vs. non-offenders in similar socioeconomic condition. *Revista Brasileira de Psiquiatria*, *36*(3), 241-244. https://dx.doi.org/10.1590/1516-4446-2013-1127

Christian, Frick, Hill, Tyler, & Frazer. (1997). Psychopathy and Conduct Problems in Children: II. Implications for Subtyping Children with Conduct Problems. *Journal of the American Academy of Child & Adolescent Psychiatry, 36*(2), 233-241.

Coid, J., Yang, M., Ullrich, S., Roberts, A., & Hare, R. D. (2009). Prevalence and correlates of psychopathic traits in the household population of Great Britain. *International Journal of Law and Psychiatry, 32*(2), 65-73. doi: 10.1016/j.ijlp.2009.01.002

Dackis, M. N., Rogosch, F. A., & Cicchetti, D. (2015). Child maltreatment, callous-unemotional traits, and defensive responding in high-risk children: An investigation of emotion-modulated startle response. *Development and psychopathology*, *27*(4 Pt 2), 1527–1545. doi:10.1017/S0954579415000929

Dembo, R., Jainchill, N., Turner, C., Fong, C., Farkas, S. and Childs, K. (2007), Levels of psychopathy and its correlates: a study of incarcerated youths in three states. *Behavioral Sciences & the Law*, 25: 717–738.

Derogatis, L. & Melisaratos, N. (1983). The Brief Symptom Inventory: An introductory report. *Psychological Medicine*, 13, 595-605.

Dierkhising, C., Sanchez, J., & Gutierrez, L. (2019). "It Changed My Life": Traumatic Loss, Behavioral Health, and Turning Points Among Gang-Involved and Justice-Involved Youth. *Journal of Interpersonal Violence,* 886260519847779.

Dierkhising, C. B., Ko, S. J., Woods-Jaeger, B., Briggs, E. C., Lee, R., & Pynoos, R. S. (2013). Trauma histories among justice-involved youth: findings from the National Child Traumatic Stress Network. *European journal of psychotraumatology*, *4*, 10.3402/ejpt.v4i0.20274. doi:10.3402/ejpt.v4i0.20274

Docherty, M., Boxer, P., Rowell Huesmann, L., O'Brien, M., and Bushman, B. J. (2015). Exploring Primary and Secondary Variants of Psychopathy in Adolescents in Detention and in the Community, *Journal of Clinical Child & Adolescent Psychology*, 45:5, 564-578.

Dziak, J. J., Lanza, S. T., & Tan, X. (2014). Effect Size, Statistical Power and Sample Size Requirements for the Bootstrap Likelihood Ratio Test in Latent Class Analysis. *Structural equation modeling: a multidisciplinary journal*, *21*(4), 534-552.

Edens, J. F., Skeem, J. L., Cruise, K. R., & Cauffman, E. (2001). Assessment of "juvenile psychopathy" and its association with violence: a critical review*. *Behavioral Sciences & the Law, 19*(1), 53-80. doi:10.1002/bsl.425

Evangelist, M., Ryan, J.P., Victor, B.G., Moore, A., Perron, B.E. (2017). Disparities at Adjudication in the Juvenile Justice System: An Examination of Race, Gender, and Age, *Social Work Research*, *41*(4), 199–212.

Fazel, S., Hayes, A. J., Bartellas, K., Clerici, M., & Trestman, R. (2016). Mental health of prisoners: prevalence, adverse outcomes, and interventions. *The lancet. Psychiatry*, *3*(9), 871–881. doi:10.1016/S2215-0366(16)30142-0

Field, A. (2011). *Discovering Statistics Using SPSS* (3rd ed.). Los Angeles, CA: Sage Publications.

Finkelhor, D., Turner, H.A., Shattuck, A., & Hamby, S.L. (2015). Prevalence of Childhood Exposure to Violence, Crime, and Abuse: Results from the National Survey of Children's Exposure to Violence. *JAMA Pediatrics, 169*(8), 746–754. doi:10.1001/jamapediatrics.2015.0676

Ford, J. D., Hartman, J. K., Hawke, J., & Chapman, J. F. (2008). Traumatic victimization, posttraumatic stress disorder, suicidal ideation, and substance abuse risk among juvenile justice-involved youth. *Journal of Child & Adolescent Trauma, 1*(1), 75-92. doi:10.1080/19361520801934456

Forth, A., Kosson, D., & Hare, R. (2003). The Hare Psychopathy Checklist: Youth Version, Technical Manual. Multi-Health Systems, Inc. New York.

Frick, P. J., & Dickens, C. (2006). Current perspectives on conduct disorder. *Current Psychiatry Reports, 8*(1), 59-72.

Frick, P. J. and White, S. F. (2008). Research Review: The importance of callous-unemotional traits for developmental models of aggressive and antisocial behavior. *Journal of Child Psychology and Psychiatry*, 49: 359–375.

Garbarino, J. (2018). *Miller's children: Why giving teenage killers a second chance matters for all of us*. University of California Press.

Garrido, V. & Morales, L.A. (2007). Serious (violent or chronic) juvenile offenders: A systematic review of treatment. *Criminology*, *28*, 369-404.

Guo, Y., Sun, S., Breit-Smith, A., Morrison, F., Connor, C., & Graham, S. (2015). Behavioral Engagement and Reading Achievement in Elementary-School-Age Children: A Longitudinal Cross-Lagged Analysis. *Journal of Educational Psychology, 107*(2), 332-347.

Hare, R. D. (1996). Psychopathy: A Clinical Construct Whose Time Has Come. *Criminal Justice and Behavior, 23*(1), 25-54. doi:10.1177/0093854896023001004

Hare, R. D. (2003). The Hare Psychopathy Checklist-Revised (PCL-R) manual (2nd ed.). Toronto, Ontario, Canada: Multi-Health Systems.

Hare, R. D., & Neumann, C. S. (2009). Psychopathy: Assessment and Forensic Implications. *The Canadian Journal of Psychiatry*, *54*(12), 791–802. https://doi.org/10.1177/070674370905401202

Hawes, D. J., & Dadds, M. R. (2005). The Treatment of Conduct Problems in Children with Callous-Unemotional Traits. *Journal of Consulting and Clinical Psychology*, 73(4), 737–741.

Hodge, A. I., & Yoder, J. R. (2017). The Relationship Between Abusive Experiences and Staff Controls in Juvenile Correctional Facilities: The Mediating Effects of Externalizing Behavior. *Criminal Justice and Behavior*, *44*(10), 1281 1299. doi.10.1177/0093854817727796

Howard, A. L., Kimonis, E. R., Muñoz, L. C., & Frick, P. J. (2012). Violence Exposure Mediates the Relation Between Callous-Unemotional Traits and Offending Patterns in Adolescents. *Journal of Abnormal Child Psychology*, 40(8), 1237–1247.

Hu, L.-t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1-55. doi: 10.1080/10705519909540118

Huizinga, D., Esbensen, F., & Weihar, A. (1991). Are there multiple paths to delinquency? *Journal of Criminal Law and Criminology*, 82, 83-118.

Karpman, B. (1941). On the need of separating psychopathy into two distinct clinical types: the symptomatic and the idiopathic. *Journal of Criminal Psychopathology, 3,* 112-137.

Kearney, M. W. (2017). Cross Lagged Panel Analysis. In M. R. Allen (Ed.), *The SAGE Encyclopedia of Communication Research Methods.* Thousand Oaks, CA: Sage

Kerig, P. K., & Becker, S. P. (2010). From internalizing to externalizing: Theoretical models of the processes linking PTSD to juvenile delinquency. In S. J. Egan (Ed.), *Posttraumatic stress disorder (PTSD): Causes, symptoms and treatment* (pp. 33-78). Hauppauge, NY: Nova Science Publishers.

Kerig, P. K., Bennett, D. C., Thompson, M., & Becker, S. P. (2012). "Nothing really matters": Emotional numbing as a link between trauma exposure and callousness in delinquent youth. *Journal of Traumatic Stress*, 25, 1–8.

Kerig, P. K., Ward, R. M., Vanderzee, K. L., Arnzen Moeddel, M. (2009). Posttraumatic stress as a mediator of the relationship between trauma and mental health problems among juvenile delinquents. *Journal of Youth and Adolescence*, 38(9), 1214-1225.

Kiehl, K. A., & Hoffman, M. B. (2011). The Criminal Psychopath: History, Neuroscience, Treatment, and Economics. *Jurimetrics*, *51*, 355–397.

Kimonis, E. R., Frick, P. J., Muñoz, L. C., & Aucoin, K. J. (2008). Callous-unemotional traits and the emotional processing of distress cues in detained boys: Testing the moderating role of aggression, exposure to community violence, and histories of abuse. *Development and Psychopathology*, 20 (02).

Kimonis, E. R., Centifanti, L. C. M., Allen, J. L., & Frick, P. J. (2014). Reciprocal Influences between Negative Life Events and Callous-Unemotional Traits. *Journal of Abnormal Child Psychology*, 42(8), 1287–1298.

Kimonis, E. R., Skeem, J. L., Cauffman, E., & Dmitrieva, J. (2011). Are secondary variants of juvenile psychopathy more reactively violent and less psychosocially mature than primary variants? *Law Hum Behav, 35*(5), 381-391. doi:10.1007/s10979-010-9243-3

Lindberg, N., Laajasalo, T., Holi, M., Putkonen, H., Weizmann-Henelius, G., & Häkkänen-Nyholm, H. (2009). Psychopathic traits and offender characteristics – a nationwide consecutive sample of homicidal male adolescents. *BMC Psychiatry*, 9(1), 18.

Litz, B., Schlenger, W., Weathers, F., Caddell, J., Fairbank, J., & Lavange, L. (1997). Predictors of emotional numbing in posttraumatic stress disorder. *Journal of Traumatic Stress, 10*(4), 607-618.

Lo, Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the number of components in a normal mixture. *Biometrika*, *88*(3), 767-778. doi:10.1093/biomet/88.3.767

Loughran, T. A., Brame, R., Fagan, J., Piquero, A. R., Mulvey, E. P., & Schubert, C. A. (2015). *Studying Deterrence Among High-Risk Adolescents*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

Malta, L. (2012). Allostasis: The Emperor of All (Trauma-Related) Maladies. *Clinical Psychology: Science and Practice, 19*(3), 241-259.

Marsee, M. A., Silverthorn, P., & Frick, P. J. (2005). The association of psychopathic traits with aggression and delinquency in non-referred boys and girls. *Behav Sci Law, 23*(6), 803-817. doi:10.1002/bsl.662

Martin, S. L., Sigda, K. B., & Kupersmidt, J. B. (1998). Family and Neighborhood Violence: Predictors of Depressive Symptomatology among Incarcerated Youth. *The Prison Journal*, *78*(4), 423–438. https://doi.org/10.1177/0032885598078004005

McLachlan, G., & Peel, D. (2000). Finite mixture models. New York, NY: Wiley.

McMahon, R.J., Witkiewitz, K., Kotler, J.S. (2010). Predictive validity of callous–unemotional traits measured in early adolescence with respect to multiple antisocial outcomes. *Journal of Abnormal Psychology*, Vol 119(4), 752-763.

Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: a developmental taxonomy. *Psychol Rev, 100*(4), 674-701.

Mulvey, E. P. (2004). Introduction: Pathways to Desistance Study. *Youth Violence and Juvenile Justice, 2*(3), 211-212.

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. Structural Equation Modeling, 14(4), 535-569. doi.10.1080/10705510701575396

Oberth, C., Zheng, Y., & McMahon, R. J. (2017). Violence Exposure Subtypes Differentially Mediate the Relation between Callous-Unemotional Traits and Adolescent Delinquency. *Journal of Abnormal Child Psychology*, 45(8), 1565–1575.

O'Neill, M.L., Lidz, V., & Heilbrun, K. (2003). Adolescents with psychopathic characteristics in a substance abusing cohort: Treatment process and outcomes. *Law and Human Behavior, 27*(3), 299-313.

Oudekerk, B., Erbacher, M., & Reppucci, N. (2012). A comparison of diversity, frequency, and severity self-reported offending scores among female offending youth. *Psychological Assessment, 24*(3), 738-50.

Overstreet, S. (2000). Exposure to Community Violence: Defining the Problem and Understanding the Consequences. *Journal of Child and Family Studies, 9*(1), 7-25. doi:10.1023/a:1009403530517

Pardini, Lochman, & Frick. (2003). Callous/Unemotional Traits and Social-Cognitive Processes in Adjudicated Youths. *Journal of the American Academy of Child & Adolescent Psychiatry,42*(3), 364-371.

Park, A., Kim, J., Zaso, M. J., Glatt, S. J., Sher, K. J., Scott-Sheldon, L. A., Eckert, T. L., Vanable, P. A., Carey, K. B., Ewart, C. K., … Carey, M. P. (2016). The interaction between the dopamine receptor D4 (DRD4) variable number tandem repeat polymorphism and perceived peer drinking norms in adolescent alcohol use and misuse. *Development and psychopathology*, *29*(1), 173-183.

Peterson, S. (2018, May 25). Community Violence. Retrieved from https://www.nctsn.org/what-is-child-trauma/trauma-types/community-violence

Porter, S. (1996). Without conscience or without active conscience: The etiology of psychopathy revisited. *Aggression and Violent Behavior, 1,* 179-189.

Quinn, A., & Shera, W. (2009). Evidence-based practice in group work with incarcerated youth. *International Journal of Law and Psychiatry, 32*(5), 288-293.

Rigg, K. K., McNeish, R., Schadrac, D., Gonzalez, A., & Tran, Q. (2019). Community needs of minority male youth living in inner-city Chicago. *Children and Youth Services Review, 98*, 284-289. doi:10.1016/j.childyouth.2019.01.011

Schubert, C.A., Mulvey, E.P., Steinberg, L., Cauffman, E., Losoya, S.H., Hecker, T., Chassin, L., Knight, G.P. (2004). Operational Lessons from the Pathways to Desistance Study. *Youth Violence and Juvenile Justice*, 2(3), 237-255.

Schwarz, G. (1978). Estimating the dimension of a model. *Annals of Statistics, 6*(2), 462-464. doi:10.1214/aos/1176344136

Selner-O'Hagan, M., Kindlon, D., Buka, S., Raudenbush, S., and Earls, F. (1998). Assessing exposure to violence in urban youth. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 39(2), 215-224

Sharf, A., Kimonis, E. R., & Howard, A. (2014). Negative Life Events and Posttraumatic Stress Disorder among Incarcerated Boys with Callous-Unemotional Traits. *Journal of Psychopathology and Behavioral Assessment*, 36(3), 401–414.

Shelton, D., Kesten, K., Zhang, W., & Trestman, R. (2011). Impact of a Dialectic Behavior Therapy-Corrections Modified (DBT-CM) upon behaviorally challenged incarcerated male adolescents. *Journal of Child and Adolescent Psychiatric Nursing : Official Publication of the Association of Child and Adolescent Psychiatric Nurses, Inc, 24*(2), 105-113.

Shufelt, J. & Cocozza, J. (2006). Youth with mental health disorders in the juvenile justice system: Results from a multi-state, multi-system prevalence study. (Research and Program Brief). Delmar, NY: National Center for Mental Health and Juvenile Justice. http://www.ncmhjj.com/wp-content/ uploads/2013/07/7.-PrevalenceRPB.pdf

Singer, M. I., Anglin, T., Song, L., & Lunghofer, L. (1995). Adolescents' exposure to violence and associated symptoms of psychological trauma. *JAMA*, 273(6), 477-482. doi:10.1001/jama.1995.03520300051036

Snyder, H. N., & Sickmund, M. (2006). Juvenile Offenders and Victims: 2006 National Report. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

Spain, S., Douglas, K., Poythress, N., Epstein, M., Skeem, J. L., & Petrila, J. (2004). The relationship between psychopathic features, violence and treatment outcome: The comparison of three youth measures of psychopathic features. *Behavioral Sciences & the Law, 22*(1), 85-102.

Spinney, E., Yeide, M., Feyerherm, W., Cohen, M., Stephenson, R., & Thomas, C. (2016) Racial disparities in referrals to mental health and substance abuse services from the juvenile justice system: a review of the literature. *Journal of Crime and Justice*, *39*(1), 153-173, doi: 10.1080/0735648X.2015.1133492

Steinberg, L., Cauffman, E., & Monahan, K. C. (2015). *Psychosocial Maturity and Desistance from Crime in a Sample of Serious Juvenile Offenders.* Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

Stimmel, M., Cruise, K., Ford, J., Weiss, R., & Gold, S. N. (2014). Trauma Exposure, Posttraumatic Stress Disorder Symptomatology, and Aggression in Male Juvenile Offenders. *Psychological Trauma: Theory, Research, Practice, and Policy, 6*(2), 184-191.

Tabachnick, B. G., & Fidell, L. S. (2007). Using Multivariate Statistics (5th ed.). Needham Heights, MA: Allyn & Bacon.

Tatar, J. R., Cauffman, E., Kimonis, E. R., & Skeem, J. L. (2012). Victimization History and Posttraumatic Stress: An Analysis of Psychopathy Variants in Male Juvenile Offenders. *Journal of Child & Adolescent Trauma, 5*(2), 102-113. doi:10.1080/19361521.2012.671794

Thornton, L. C., Frick, P. J., Shulman, E. P., Ray, J. V., Steinberg, L., & Cauffman, E. (2015). Callous-unemotional traits and adolescents' role in group crime. *Law and Human Behavior, 39*(4), 368-377. doi: 10.1037/lhb0000124

Vahl, P., Colins, O. F., Lodewijks, H. P. B., Markus, M. T., Doreleijers, T. A. H., & Vermeiren, R. R. J. M. (2014). Psychopathic-like traits in detained adolescents: clinical usefulness of self-report. *European Child & Adolescent Psychiatry, 23*(8), 691-699. doi:10.1007/s00787-013-0497-4

Van der Kolk, B.A. (2005) Developmental trauma disorder: toward a rational diagnosis for children with complex trauma histories. *Psychiatric Annals*, 35, 401–408.

Vaughn, M. G., Edens, J. F., Howard, M. O., Smith, S. T. (2009). An Investigation of Primary and Secondary Psychopathy in a Statewide Sample of Incarcerated Youth. *Youth Violence and Juvenile Justice*, *7*(3), 172-188.

Voisin, D. R. (2007). The effects of family and community violence exposure among youth: recommendations for practice and policy. *Journal of Social Work Education*, *43*(1), 51–66.

Waller, R., Baskin-Sommers, A., & Hyde, L. (2018). Examining Predictors of Callous Unemotional Traits Trajectories Across Adolescence Among High-Risk Males. *Journal of Clinical Child and Adolescent Psychology: The Official Journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53, 47*(3), 444-457.

Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample Size Requirements for Structural Equation Models: An Evaluation of Power, Bias, and Solution Propriety. *Educational and psychological measurement*, *76*(6), 913-934.

Zinzow, H. M., Ruggiero, K. J., Resnick, H., Hanson, R., Smith, D., Saunders, B., & Kilpatrick, D. (2009). Prevalence and mental health correlates of witnessed parental and community violence in a national sample of adolescents. Journal of Child Psychology and Psychiatry, 50, 441–450.

Zimmerman, G. M., & Messner, S. F. (2013). Individual, family background, and contextual explanations of racial and ethnic disparities in youths' exposure to violence. *American Journal of Public Health*, *103*(3), 435–442.

VITA

Ms. Sargent grew up in Northern Wisconsin and graduated from the University of Wisconsin-Madison in 2015 with a bachelor's degree in psychology and minor in criminal justice. She moved to Chicago shortly after and worked for Northwestern University's Center for Behavioral Intervention Technologies on studies that tested online and mobile treatment tools for depression and anxiety. Ms. Sargent joined Loyola University Chicago as a graduate student in the Clinical Psychology program in 2017. Her research interests focus on youth mental health, coping with traumatic events and stress, involvement in the juvenile justice system, and the implementation of evidence-based services for underserved children and families. Her current work focuses more specifically on the effects of trauma and violence exposure on justice-involved adolescents. This work will inform her future endeavors as a clinician and researcher attempting to develop and implement evidence-based services for justice-involved youth.