PERCEIVED CONTROL AND CHILDHOOD MALTREATEMENT PREDICT ADULT TRAIT ANXIETY AND TRAITS OF SECONDARY PSYCHOPATHY IN A COMMUNITY SAMPLE

A Thesis
by
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Abstract

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There is evidence that psychopathy can be divided into two higher order subtypes discriminated by anxiety. Specifically, low levels of anxiety are predictive of primary psychopathy and high levels of anxiety are predictive of secondary psychopathy. These subtypes are also parsed apart by intrapersonal and behavioral variations, with primary psychopathy having genetic roots and secondary psychopathy being largely influenced by the environment. Additionally, negative salient events in youth, such as trauma or maltreatment, serve as risk factors for psychopathology and psychopathy. Adding complexity to this relationship, perceived control during stress-inducing events can mitigate or aggravate psychological outcomes. We recruited 389 participants through Amazon's Mechanical Turk (M-Turk). Participants completed the Childhood Trauma Questionnaire (CTQ), the Psychopathic Personality Inventory-Short Form (PPI- SF), the Perceived Control Over Stressful Events Scale, the State Trait Anxiety Inventory (STAI), the Levenson Self-Report Scale for Psychopathy (LSRP), and the Brief Locus of Control Scale. The present study aimed to establish a relationship between trait anxiety and psychopathy

subtype; however, we were unable to replicate these findings. Further, we found that levels of childhood maltreatment and perceived control, significantly predicted adult secondary psychopathy and trait anxiety, while primary psychopathy was only predicted by perceived control. In a novel model, past perceived control provided an indirect path between maltreatment and secondary psychopathy. Results suggest perceived control as a vital predictive factor for psychopathy. They also indicate environmental factors for distinguishing psychopathy subtype and predicting secondary psychopathy.

Keywords: psychopathy, primary, secondary, perceived control, maltreatment, trait anxiety

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Dedication

I would like to dedicate this thesis to my loving and supportive parents, Alan and Kim DeLisle, without whom none of this would have been possible.

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Perceived Control and Childhood Maltreatment Predict Adult Trait Anxiety and Traits of Secondary Psychopathy in a Community Sample

Psychopathy has been examined in multiple contexts, yet it is still largely misunderstood. A significant body of research has been devoted to the relationship between psychopathy and anxiety as well as maladaptive adult personality and the experience of maltreatment in childhood. Several researchers' have hypothesized two distinct subtypes of psychopathy, which may be distinguished by anxiety (Dolan & Rennie, 2007; Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999; Karpman, 1948; Lykken, 1957). Systematic investigations have also found clear relationships between negative childhood events and attributes of psychopathy (Borja & Ostrosky, 2013; Schimmenti, Di Carlo, Passanisi, & Caretti, 2015). More recently, a construct has emerged as a possible transdiagnostic factor underlying psychopathology: perceived control. Perceived control, a subjective experience, has received little attention; however, it may help explain outcomes related to maltreatment events and psychopathology (Fraizer, Steward, & Mortensen, 2004; Mineka & Zinbarg, 2006). This study explored the potential relationships between subjective perceived control, childhood maltreatment, trait anxiety, and traits of secondary psychopathy.

Psychopathy Subtypes and Anxiety

The construct of psychopathy is dynamic and incorporates the complexities of human personality (Burns, Roberts, Egan, & Kane, 2015). No single factor can be implicated in the development of psychopathic traits, nor can it be concluded that psychopathy is a discrete disorder. Rather, psychopathy is better conceptualized across a continuum, with individuals experiencing varying levels of deviant and adaptive traits (Polaschek & Daly, 2013). Defining psychopathy is challenging and research often defines it based on meeting scale thresholds

(Polaschek & Daly, 2013); however, it has been more broadly defined as a mental disorder characterized by antisocial behaviors, a lack of empathy, and amorality, with some definitions also including stress resilience (Polaschek & Daly, 2013; Serafim, de Barros, Castellana, & Gorenstein, 2014). A host of researchers have also hypothesized two possible subtypes: primary and secondary. Individuals with traits predominantly from the primary subtype appear to display deficits in emotional intelligence and processing, have higher interpersonal-affective traits, and a lower number of behavioral transgressions (Karpman, 1948; Vassileva, Kosson, Abramowitz, & Conrod, 2005). Primary psychopathy is also characterized by shallow emotionality, low interpersonal warmth, and a general immunity to anxiety arousal (Lykken, 1957). In contrast, traits of secondary psychopathy are postulated to be more anxiety based. Some evidence exists that individuals with secondary psychopathy also demonstrate high levels of impulsivity and engage in more frequent antisocial behaviors (Vassileva et al., 2005).

Additional research utilizing model-based cluster analyses found that individuals with the primary subtype of psychopathy were more resistant to stress and demonstrated lower levels of reactions to stressful stimuli (Hicks, Markon, Patrick, Kreuger, & Newman, 2004). Moreover, people with the primary subtype scored lower on measures of anxiety and were notably less aggressive. Participants with secondary traits scored significantly higher on anxiety and engaged in more frequent aggressive behaviors. Their aggression also had an earlier onset in comparison to those higher in primary psychopathy. Further research demonstrated similar trends, concluding that individuals with primary psychopathic traits partook in more instrumental, or purposeful, aggression, while those with primarily secondary traits engaged in more reactive and hostile aggression (Falkenbach, Poythress, & Creevy, 2008).

While behavioral and interpersonal factors vary between subtypes, more consistently, psychologists have investigated psychopathy subtypes and differential associations with anxiety. Several research efforts have provided evidence for a clear two-factor model of psychopathy, wherein primary and secondary psychopathy are distinct constructs that have divergent relationships with anxiety (Karpman, 1948; Lykken, 1957; Vassileva et al., 2005). Moreover, studies conducted with forensic and clinical populations yield similar results (Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999; Sandvik, Hansen, Hystad, Johnsen, & Bartone, 2014; Schmitt & Newman, 1999). Using an offender sample, Schmitt and Newman (1999) examined relationships between Psychopathy Checklist- Revised (PCL-R) total scores and anxiety. Using correlational analyses, results indicated that PCL-R psychopathy scores were unrelated to anxiety and the researchers suggested that psychopathy had a more complex relationship with anxiety. They additionally speculated that not all individuals with psychopathic traits were void of anxiety symptoms (Schmitt & Newman, 1999).

Similarly, in a study conducted by Frick et al. (1999) a clinical sample of children were assessed for trait anxiety and fearlessness. These scores were then compared with their scores on measures for antisocial behaviors, conduct disorder, and childhood psychopathy. The researchers concluded that anxiety was positively correlated with increased conduct problems, and negatively correlated with diminished emotional affect. Thus, higher trait anxiety predicted more antisocial behavior, while lower anxiety predicted shallow emotional expression (Frick et al., 1999). This model maps well onto the findings of previous research, which indicates that people with characteristics of primary psychopathy are also more likely to demonstrate lower levels of anxiety and higher interpersonal deficits. In contrast, individuals with traits associated with secondary psychopathy present with higher levels of both anxiety and aggressive behaviors.

More recent studies (Dolan & Rennie, 2007; Skeem, Johansson, Sndershed, Kerr, & Louden, 2007) have yielded results that match previously established models of primary and secondary psychopathy. Dolan and Rennie (2007) found that in an adolescent male offender sample, trait anxiety was positively correlated with antisocial acts (secondary psychopathy) and negatively correlated with affective factors (primary psychopathy). Using an adult offender sample, Skeem et al.'s results indicated a stronger relationship between trait anxiety and secondary psychopathy, in comparison to primary psychopathy. The above mentioned research efforts have demonstrated consistent findings in the previous research regarding relationships between anxiety and psychopathy subtypes. Explicitly, results have reliably been replicated demonstrating trait anxiety being negatively associated with primary variants of psychopathy and positively associated with secondary psychopathy. Research investigations using non-clinical, community samples have typically demonstrated similar findings.

Levenson, Kiehl, and Fitzpatrick (1995) found evidence in favor of differential relationships between trait anxiety and psychopathy subtype in a sub-clinical college student sample (Levenson, Kiehl, & Fitzpatrick, 1995). A 2010 study also examined the relationship between anxiety and subtypes of psychopathy in a community sample, specifically looking at differences between males and females. In both males and females, levels of primary psychopathy predicted lower levels of anxiety and higher stress immunity, while levels of secondary psychopathy predicted higher levels of anxiety and lower stress immunity. Additionally, those with higher scores on the primary subtype demonstrated greater fearlessness and impulsivity, while these were largely absent from the secondary subtype profile (Lee & Salekin, 2010). An additional study (Falkenbach, Stern, & Creevy, 2014) using a community sample replicated the above findings. Specifically, primary psychopathy was associated with

lower levels of trait anxiety, while secondary psychopathy was predictive of higher trait anxiety levels.

While some empirical evidence demonstrates a differential relationship between subtypes of psychopathy and trait anxiety in community samples, a recent study suggests that this relationship is potentially more complex. In a recent study, a community sample was used to examine trait anxiety as a predictor and discriminating variable of primary and secondary subtypes of psychopathy (Burns, Roberts, Egan, & Kane, 2015). Finding suggested that trait anxiety was significantly predictive of both subtypes; however, trait anxiety explained 16% of the variance for secondary psychopathy but only 1.44% of the variance in predicting primary psychopathy. The results suggest a more complicated relationship between anxiety and psychopathy. While trait anxiety appeared to predict both subtypes, it was a stronger predictor of secondary psychopathy, yielding partial support for previously discussed research. The present study therefore examined associations between trait anxiety and psychopathy subtypes in a community sample with the intention of better understanding these relationships in non-clinical populations.

Psychopathy and Childhood Maltreatment

Primary and secondary subtypes also appear to differ based on etiological origin. Primary psychopathy has consistently demonstrated a strong genetic predisposition, suggesting biological vulnerabilities, while secondary psychopathy is founded in environmental risk factors (Dolan & Rennie, 2007; Lee & Salekin, 2010; Karpman, 1948; Yildrim & Derksen, 2015). More specifically, research investigating the development of adult maladaptive behavior has identified early traumatization as a global risk factor (Krischer & Sevecke, 2008). A study conducted with 194 violent male offenders found that traumatic and stressful events, physical abuse, emotional

abuse, and sexual abuse in youth led to elevated psychopathy (Borja & Ostrosky, 2013). In an additional study, the Childhood Trauma Questionnaire (CTQ) was administered to measure maltreatment in childhood. Using a male juvenile offender sample Krischer and Sevecke (2008) found that youth who experienced a previous trauma displayed increased psychopathic traits in comparison to youth with no trauma history. Further research with a juvenile sample displayed similar findings that childhood maltreatment, in the form of physical abuse, increased levels of both aggression and psychopathy (Kolla, Malcolm, Attard, Arenovich, Blackwood, & Hodgins, 2013). Moreover, individuals who experienced maltreatment in childhood endorsed heightened psychopathy compared to individuals who have not experienced maltreatment (Ometto, Approbato de Oliveira, Milioni, dos Santos, Scivoletto, Busatto, Nunes, & Cunha, 2016).

Comparable conclusions have been drawn between maltreatment in youth and the presentation of psychopathy in adult populations. In a sample of 233 adult males with sexual offense convictions, childhood maltreatment in any form (i.e., emotional, sexual, and physical abuse) was associated with higher psychopathy scores measured by the Psychopathy Checklist Revised (PCL-R) (Graham, Kimmonis, Wasserman, & Kline, 2012). Further research on the adult population evaluated psychopathy as a product of physical, emotional, or sexual abuse. Results suggested that childhood maltreatment, in any form, led to heightened traits of psychopathy. These researchers hypothesized that abuse in childhood creates a pattern of maladaptive responses to stimuli and situations, which can manifest as psychopathy in adulthood (Schimmenti, Di Carlo, Passanisi, & Caretti, 2015).

Aside from abuse, researchers have explored other forms of distress and maltreatment in childhood. Low levels of parental bonding, low parental protection, and children being separated from their parents at a young age were all positive predictors of psychopathy for both males and

females (Gao, Raine, Chan, Venables, & Mednick, 2010). Forouzan and Nicholls (2015) examined childhood experiences and psychopathy in a female offender sample. This sample constituted 82 adult women who were removed from their home during childhood. The results indicated a predictive relationship between higher scores of psychopathy and behavioral disturbances, exposure to maltreatment, and poor parental relationships in childhood. These psychological distinctions were evident even in their youngest measured group (0-5 years old) (Forouzan & Nicholls, 2015).

While childhood maltreatment and aversive events predict psychopathy, differential relationships have not been examined by psychopathy subtype. Given, research demonstrating different proposed etiologies for primary versus secondary psychopathy, it seems plausible that environmental variables, such as maltreatment experiences, would yield varied relationships based on subtype. Therefore, the present study examined maltreatment events as predictive variables to psychopathy subtype outcomes.

Perceived Control and Psychopathology

Perceived control is often conceptualized using a temporal model with three time points: past, present, and future. Past perceived control refers to an individual's beliefs regarding how much ability they had to change an outcome at the time they experienced a salient event. Present perceived control refers to the current level of control that an individual believes they possess to manage any present consequences of a prior salient event. Future control refers to an individual's beliefs regarding their ability to prevent a similar event from happening (Frazier, Steward, & Mortensen, 2004). The literature is mixed on the psychological effects resulting from various levels of perceived control across time; however, there is evidence that perceived control appears

to affect the relationship between salient negative events and psychopathology. Specifically, that higher perceived control is advantageous.

In research conducted by Mineka and Zinbarg (2006) past traumatic experiences were related to increased psychopathology and past perceived control was identified as influencing these psychological outcomes. Particularly, subjects endorsing heightened control during a maltreatment event reported decreased anxiety severity, post-traumatic stress, and obsessive-compulsive symptoms. Inversely, lower subjective control increased psychological distress (Mineka & Zinbarg, 2006). Additional research has demonstrated a clear relationship between low perceived control and heightened symptoms of anxiety and depression (Scott & Weems, 2010). A comprehensive meta-analysis found that perceived control, measured as a prognostic factor of multiple anxiety disorders, had a negatively predictive relationship with anxiety. Thus, heightened perceived control at the temporal moment of an aversive event (i.e., past perceived control) predicted less anxiety, leading the authors to hypothesize perceived control as a transdiagnostic influence on anxiety disorders (Gallagher, Bentley, & Barlow, 2014).

In a study conducted with children and adolescents who were exposed to a natural disaster, perceived control was examined from a transdiagnostic perspective. Here, a loss of control increased post-traumatic stress and anxiety symptoms for both male and female participants. However, these relationships were not apparent until the age of disaster exposure exceeded 12-years-old (Weems, Russell, Graham, Neill, & Banks, 2015). Similar findings were yielded in a study examining adolescent earthquake survivors and posttraumatic growth (PTG). Youth control beliefs were measured on two factors: primary and secondary control. Primary control is how much control an individual believes they have to manipulate their environment, which maps on to the constructs of past and future perceived control. Secondary control is how

much control an individual believes they have over their cognitions, affect, and behavior in reference to a given situation, much like present perceived control. PTG is a measure of the positive outcomes that occur after experiencing a trauma. Increased primary and secondary control were both significant predictors of PTG and moderated the relationship between worry about additional earthquake experiences and distress outcomes, suggesting that increased control accounted for better psychological outcomes (Ying, Lin, Wu, Chen, Greenberger, & An, 2014).

Perceived control is not singularly related to anxiety and stress-related disorders. Researchers have also found relationships between environmental perceived control and other psychological outcomes. Increased perceived control over an individual's childhood environment negatively predicted pathology in adulthood. Additionally, uncontrollability consistently elevates the risk for psychological distress and dysfunction in adulthood. Moreover, if psychopathology is already present at the time of a traumatic event, lower perceived control serves to heighten its severity (Mineka & Zinbarg, 2006).

Perceived Control and Psychopathy

The relationship found in the existing literature between perceived control and psychopathology demonstrates relative consensus that increasing control perceptions for trauma and maltreatment victims alleviates psychological distress. Based on this empirical evidence the current researcher questioned if this relationship could be extrapolated to model a predictive relationship between perceived control, at multiple temporal points, and traits of psychopathy. Presently, only one study has loosely examined this relationship (Sandvik, Hansen, Hystad, Johnsen, & Bartone, 2015). In that study, researchers measured control as a component of psychological hardiness, synonymous with resilience, as a possible mediating variable between psychopathy and state anxiety. First, the study measured anxiety and the two factors of the

Psychopathy Checklist Revised (PCL-R), finding two contrasting relationships in an offender sample. Factor I, primary psychopathy, was associated with lower anxiety scores, while Factor II, secondary psychopathy, was associated with higher anxiety scores, further supporting previous theory.

Second, resilience was measured using three factors: commitment, control, and challenge. Control was defined as having control over things that happen to an individual throughout their life. Together, these three constructs compose psychological hardiness (i.e., stress resilience). Control was not found to be a significant mediating variable between psychopathy and anxiety. While control did not play a significant role in the mediation relationship, it did significantly negatively correlate with anxiety, suggesting that as control increases, anxiety decreases. This further supports previous literature demonstrating an inverse relationship with control and psychopathology. Based on their results the authors suggest that components of psychological hardiness (i.e., control) may help explain relationships between psychopathy subtypes and anxiety.

The authors attributed their lack of statistical significance to methodological flaws and asserted that replication would likely yield stronger results. Their study utilized a small sample size and only measured male, incarcerated individuals. As a result, generalizability and statistical power may have been limited. Moreover, anxiety and psychopathy may have different relationships in clinical versus community samples, implying the importance of follow-up analyses with non-clinical populations. Finally, control was grouped into a larger variable of psychological hardiness, which did not assess the broader construct of control. Notably, this study also did not differentiate temporal points of perceived control, which may have impacted accurate findings. The present study thus intentionally delineated perceived control into its

temporal components and measured it as an independent construct. We also made additional changes to the structure of the mediation model to incorporate maltreatment and trait anxiety.

Present Study

The present study had three key aims. First, we aimed to provide additional evidence of relationships with trait anxiety and primary versus secondary psychopathy subtypes. Previous research demonstrates evidence of a relationship between anxiety and psychopathy, where levels of anxiety parse out two subtypes (Lee & Salekin, 2010; Lykken, 1957). Primary psychopathy appears to have a genetic component and is characterized by lower levels of anxiety. In contrast, the secondary subtype is more impacted by environmental factors and is uniquely defined by higher levels of anxiety (Dolan & Rennie, 2007; Lee & Salekin, 2010; Karpman, 1948; Yildirim & Derksen, 2015). An underwhelming amount of previous research using demographically representative community samples, coupled with mixed findings regarding anxiety's role in predicting primary and secondary subtypes of psychopathy in community samples initiated the current investigation. Therefore, this study intentionally deconstructed psychopathy into primary and secondary types to yield a more representative relationship to anxiety in non-clinical, non-offender participants.

Second, we aimed to empirically evaluate the predictive power of childhood maltreatment experiences on psychopathy subtypes. The literature reliably demonstrates trauma and maltreatment events as predictive factors of psychopathology and psychopathy; however, this research largely neglects distinguishing psychopathy by subtype (Krischer & Sevecke, 2008; Schimmenti, Di Carlo, Passanisi, & Caretti, 2015). Third, the current study aimed to understand past perceived controls as a predictor of psychopathy subtype and as a mediating variable, given that perceived control during a maltreatment event appears to impact the onset and severity of

psychopathology. In contrast, increased control is predictive of more positive psychological outcomes (Gallagher, Bentley, & Barlow, 2014; Mineka & Zinbarg, 2006).

These aims were all within the context of gaining additional insight into the relationships between these constructs within a community sample. We intentionally selected a community sample rather than use college students to gain a more representative and diverse sample. This also served to expand the community literature base, which is largely college student samples. Gaining a better understanding of the above-mentioned relationships could provide significant implications for treatment interventions, help clarify sub-clinical psychopathy subtypes, and provide novel information regarding the role of perceived control.

Hypotheses

First, we hypothesized that individuals with higher levels of primary psychopathy would endorse lower levels of anxiety (i.e., negative correlation), while individuals with higher levels of secondary psychopathy would endorser higher levels of anxiety (i.e., positive correlation). Second, individuals who experienced more maltreatment in childhood would endorse higher anxiety and higher secondary traits of psychopathy compared to individuals who experienced lower amounts childhood maltreatment. However, we hypothesized that individuals who experienced heightened maltreatment in childhood would not endorse higher primary traits of psychopathy compared to individuals who experienced less childhood maltreatment. Third, for participants who endorsed a history of maltreatment, it was hypothesized that individuals with low levels of perceived control at the time of childhood maltreatment (i.e., past perceived control) would endorse elevated levels of anxiety and elevated levels of secondary psychopathic traits but not primary psychopathic traits. Fourth, we proposed a novel and exploratory mediation model investigating if past perceived control mediated the relationship between childhood

maltreatment and traits of secondary psychopathy. We proposed this model given that maltreatment appears to be related to psychopathy, and more specifically secondary psychopathy due to evidence that this construct is related to environmental factors. Moreover, perceived control demonstrates predictive relationships with psychopathology, which lead us to investigate its power to mediate the above-mentioned relationship between maltreatment and secondary psychopathy. We also planned to run follow-up mediation analyses of present and future perceived control, but did not have any specific hypotheses due to a lack of empirical precedent.

Method

Participants

Using the most sensitive a priori power analysis for our intended inferential statistics, a sample size of 310 participants was necessary to detect effects if effects were present ($d = 0.2$, $\alpha = .05$, $\beta = .20$; Faul, Erfelder, Buchner, & Lang, 2009). Therefore, anticipating inevitable drop out and attention check failures, 389 participants were recruited to participate in a series of online surveys through Amazon Mechanical Turk (MTurk). Participants were each provided $1.50 compensation for completing the questionnaire. Participants were all over the age of 18 years, spoke English fluently, and passed a series of embedded validity items. Twenty-four participants were excluded for not completing large portions of the survey questions and 75 participants were eliminated for failing validity checks. A validity check failure was defined as any participant missing 3 or more of 9 total validity items. Therefore, 290 participants remained in this study for analysis (Figure 1).

Participants ranged in age from 18–72 years old. The average age was 36.69 years old. All participants were located within the United States. Regarding race, 10.3% of participants identified as African American (n = 30), 8.9% identified as Asian/Pacific Islander (n = 26),

76.6% identified as Caucasian (non-Hispanic) (n = 223), 7.2% identified as Latino or Hispanic (n = 21), 1.0% identified as Native American (n = 3), and 0.3% identified as other (n = 1). Within this sample, 43% indicated their sex as male (n = 125) and 56.7% identified as female (n = 165), with 1 participant not responding.

Regarding highest level of education, .7% indicated having some high school (n = 2), 13.1% reported earning a high school diploma or a GED (n = 38), 34.4% indicated attending some community college or earning an Associate's degree (n = 100), 8.9% reported having some four-year college education (n = 26), 32% indicated earning a Bachelor's degree (n = 93), and 11% indicated earning a Master's or advanced degree (n = 372. The mode indicated that the most frequently reported education level was some community college or an Associate's degree.

From our sample, 18.6% indicated being involved in some type of criminal behavior (n = 54), 11.7% have been charged with committing a crime (n = 34), and 7.9% have been convicted of a crime (n = 23). The majority of the criminal behavior indicated in our sample was drug and alcohol related charges and shoplifting or theft. Only one participant indicated a violent crime charge, for assault.

Procedures

Participants completed an online questionnaire composed of four different scales that measured the psychological constructs of interest. These measures included the Perceived Control Over Stressful Events Scale, the Psychopathic Personality Inventory-Short Form (PPI-SF), the Childhood Trauma Questionnaire (CTQ), the State Trait Anxiety Inventory (STAI). In addition, we included the Levenson Self-Report Scale for Psychopathy (LSRP) and the Brief Locus of Control Scale; however, this data was not analyzed for the present study. Of note, the CTQ and PPI-SF both have embedded validity items, which were used to screen out participants

not appropriately attending to the survey. It took approximately 30 minutes for each participant to complete all six-survey scales. Participants were also asked demographic information, such as their age, race, sex, and history of criminal behavior. Only participants who endorsed experiencing a childhood maltreatment event were provided the Perceived Control Over Stressful Events Scale (n = 282).

Materials

Perceived Control Over Stressful Events Scale. The Perceived Control Over Stressful Events Scale was developed to assess past, present, and future cognitions regarding an individual's subjective feelings of control during a traumatic experience in childhood (e.g., "I could have done something to prevent this event from happening," "When I am upset about the event, I can find a way to feel better," "There are things I can do to reduce the risk that a similar event will happen again"). The scale is a three-factor model composed of 17 self-report items with an alpha reliability value at or above .79. Furthermore, the test-retest reliability for each of the three subscales ranged from .48-.80. The scale measures past control over a stressful life event (5 items), control over the current impact that the traumatic event has on an individual (8 items), and the control that an individual feels over the reoccurrence of a similar event (4 items) on a 4-point Likert scale (1 = strongly disagree, 2 = disagree somewhat, 3 = agree somewhat, 4 = strongly agree) (Frazier, Keenan, Anders, Perera, Shallcross, & Hintz, 2011). The present study administered all 17 scale items and yielded a Cronbach's Alpha value of .77 for this sample, which is consistent with previous findings. The alpha values for the subscales were as follows: past perceived control = .53, present perceived control = .52, and future perceived control = .28.

Psychopathy Personality Inventory-Short Form (PPI- SF). The full Psychopathy Personality Inventory (PPI) is a 187-item self-report scale designed to measure traits of

psychopathic personality in adults using eight subscales (Machiavellian Egocentricity, Social Potency, Coldheartedness, Carefree Nonplanfulness, Fearlessness, Blame Externalization, Impulsive Nonconformity, and Stress Immunity). Evidence supports these subscales loading onto two higher order factors: PPI-I, primary psychopathy, and PPI-II, secondary psychopathy (Benning, Patrick, Hicks, Blonigen, & Kruegar, 2003; Lilienfeld & Andrews, 1996; Sellbom & Verona, 2007). Moreover, the PPI demonstrates strong reliability in both the forensic and community samples (α = .89 - .93). The Psychopathic Personality Inventory-Short Form was developed as an abbreviated version of the original scale using the items that loaded the highest on each of the original eight PPI subscales (Kastner, Sellbom, & Lilienfeld, 2012; Tonnaer, Cima, Sijtsma, Uzieblo, & Lilienfeld, 2013).

The PPI-SF consists of 100 self-report items that are rated on a 4-point Likert scale from (1 = false, 2 = mostly false, 3 = mostly true, 4 = true). The PPI-SF has demonstrated similar psychometric properties to the original PPI, with evidence for validity supporting use with both the forensic and community population. Example items include “I am good at flattering important people when it is useful to do so” and “I usually enjoy seeing someone I don’t like get into trouble” (Tonnaer et al., 2013). The PPI-SF also contains 6 embedded validity items such as “my opinions are always completely reasonable” that assess for infrequent responses and participants that are not appropriately attending to the item’s content. For the current study, we eliminated participants who failed 2 or more of these items.

All 100 items were administered to participants in the present study, including the 6-item imbedded validity scale. Our sample yielded an alpha value for the full scale of .90, with a value of .71 for the primary psychopathy factor and a .87 for the secondary psychopathy factor. Based on previous research, the primary psychopathy factor was constructed by summing the values of

the Stress Immunity, Social Potency, and Fearlessness subscales, totaling 36 items. The secondary psychopathy factor was calculated by finding the summation of the Impulsive Nonconformity, Blame Externalization, Machiavellian Egocentricity, and Carefree Nonplanfulness subscales, totaling 49 items. Coldheartedness is an independent subscale.

Childhood Trauma Questionnaire (CTQ). The Childhood Trauma Questionnaire is a 28-item retrospective self-report measure, designed with five-factors: emotional neglect, emotional abuse, physical neglect, physical abuse, and sexual abuse. The scales items total to produce a global maltreatment score. Within each subscale, there are 5 items, leaving 3 items to assess for minimization of negative experiences (Scher, Stein, Asmundson, McCreary, & Forde, 2001). Example items include “When I was growing up, people in my family hit me so hard that it left me with bruises or marks” and “When I was growing up, I rarely got the love or attention that I needed” (Bernstein, Fink, Handelsman, & Foote, 1994).

The CTQ has also been reliably used on both clinical and community samples. Tesr-retest reliability was determined to be .79 on the first trial and .86 on the follow up trial, four months later (Bernstein, Fink, Handelsman, & Foote, 1994). The Childhood Trauma Questionnaire was ultimately selected for this study due to its reliability in community samples. In a study conducted by Scher et al. (2001), the CTQ was administered to community sample. They yielded an overall Cronbach's alpha value of .91 for the entire measure. When broken into subscales they found that physical neglect has the lowest alpha value of .58, then a .68 for physical abuse, .83 on the emotional abuse subscale, followed by a .85 on the emotional neglect scale, and finally a .94 on sexual abuse. This trend followed those found on clinical samples, and the authors concluded the efficacy of the CTQ for use in community samples (Scher et. al, 2001). The CTQ also contains 3 embedded validity items such as “I had the perfect childhood” that assess for

infrequent responses and participants that are not appropriately attending to the item's content. For the current study, we eliminated participants who failed 1 or more of these items.

For the present study, all 28 items of the CTQ were administered to participants, including the 3-item validity scale. The scale was then summed for each participant to glean an overall maltreatment score that compiled all subtypes of maltreatment events. Our sample yielded a CTQ Cronbach's Alpha value of .81. This alpha value is within the range determined by previous studies.

State-Trait Anxiety Inventory (STAI). The State-Trait Anxiety Invent. Each subscale on the STAI contains 20 items, making the overall measure 40 self-report items. Example items include "I am presently worrying over possible misfortunes" and "Some unimportant thought runs through my mind and bothers me." Respondents are asked to endorse an answer that best represents their experiences on a 4-point Likert scale from 'not at all' to 'very much so' (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Higher scores indicate higher levels of anxiety. The STAI has been evaluated as a valid and reliable measure. (Gros, Antony, Simms, & McCabe, 2007).

Test-retest reliability coefficients over a 2-month timespan for the STAI ranged from 0.65 to 0.75, with lower coefficients for the state subscale, as expected. (Spielberger et al., 1983). Importantly, internal consistency is high and ranges from .86 to .95, depending on the sample (Julian, 2011). Additional studies have documented the coefficients for the subscales of the STAI, noting internal consistency alpha values between .90 and .92 for the state scale and .88 to .92 for the trait scale (Spielberger, Vagg, & Jacobs, 1984). The STAI was developed using existing measures of anxiety and demonstrates strong content validity. Regarding construct

validity, the STAI frequently struggles to discriminate depression from anxiety; however, this is commonplace and consistent with the clinical presentation of these two disorders (Julian, 2011).

I administered all 40 items within the STAI scale; however, only trait scale items were used for the current analyses. Our sample yielded a Cronbach's Alpha value of .81 for the full measure, .71 for the state anxiety subscale, and .71 for the trait anxiety subscale. Our alpha value was slightly higher than previous research findings for the overall measure and slightly lower for both the state and trait subscales.

Results

Descriptive Analyses

The means and standard deviations were calculated for all scales and subscales of the questionnaire measures. See Table 1 for these values in comparison to mean and standard deviation values from previous research. The CTQ responses (n = 282) in the present sample ranged from a 25, indicating no maltreatment events, to a 110, suggesting severe maltreatment. Using the Kolmogorov-Smirnov (KS) test of normality, the assumption of normality was violated, $D(282) = 0.13$, $p < .001$; however, skewness = .75 (SE = .15) and kurtosis = -.30 (SE = .29) were not concerning. There were four outliers that scored above three standard deviations from the mean and indicated high levels of maltreatment. These participants were kept in the sample. Additionally, we expected our scales to have a slight positive skew since the data was collected using a community sample.

The Perceived Control Over Stressful Events Scale, past subscale (n = 233) ranged from 1.00 to 3.40 for this sample. A 1 would indicate low levels of perceived control, while a score of 3.40 would suggest higher levels of control perceptions. The KS test of normality indicated that the assumption of normality was violated, $D(233) = 0.16$, $p < .001$; however, skewness = .16 (SE

= .16) and kurtosis = -.882 (SE = .32) were not concerning. The present subscale (n = 230) ranged from 1.50 to 3.38 for this sample. A 1.50 would indicate low levels of perceived control, while a score of 3.38 would suggest higher levels of control perceptions. The KS test of normality indicated that the assumption of normality was violated, $D(230) = 0.10$, $p < .001$; however, skewness = -.07 (SE = .16) and kurtosis = .23 (SE = .32) were not concerning. Lastly, the future subscale (n = 230) ranged from 1.50 to 3.50 for this sample. A score of 1.50 would indicate low levels of perceived control, while a score of 3.50 would suggest moderate to higher levels of control perceptions. The KS test of normality indicated that the assumption of normality was violated, $D(230) = 0.18$, $p < .001$; however, skewness = -.72 (SE = .16) and kurtosis = .044 (SE = .32) were not concerning. There was one outlier on the present perceived control scale; however, this participant was not eliminated from the dataset.

The PPI-SF, primary scale (n = 273) scores ranged from 39, suggesting low primary psychopathy to 132, indicating elevated primary psychopathy. The KS test of normality indicated that the assumption of normality was upheld, $D(273) = 0.05$, $p = .200$ and skewness = .15 (SE = .15) and kurtosis = .004 (SE = .29) were not concerning. The PPI-SF secondary scale (n = 262) scores ranged from 53, suggesting lower secondary psychopathy to 144, indicating elevated secondary psychopathy. The KS test of normality indicated that the assumption of normality was upheld, $D(262) = 0.04$, $p = .200$ and skewness = -.15 (SE = .15) and kurtosis = -.57 (SE = .30) were not concerning. There were no outliers on either of the factor scales.

Participant scores on the trait anxiety scale of the STAI (n = 273) ranged from 19 to 75. Lower scores are indicative of lower anxiety levels, while higher score indicate more significant anxiety. The KS test of normality indicated that the assumption of normality was violated, $D(273) = 0.07$, $p = .004$; however, skewness = .29 (SE = .15) and kurtosis = -.30 (SE = .29)

were not concerning. There was one outlier on this scale that scored above three standard deviations from the mean and indicated very high levels of anxiety. This participant was kept in the sample.

Results of Research Hypotheses

For the present study, it was hypothesized that individuals higher on primary psychopathy would endorse lower levels of anxiety and individuals higher on secondary psychopathy would endorser higher levels of anxiety. Two simple linear regressions were calculated to predict trait anxiety based on primary and secondary psychopathy. Our hypotheses were partially supported by the significant finding that secondary psychopathy positively predicted trait anxiety $\beta = .34$, $t(245) = 5.63$, $p < .001$, explaining a significant portion of the variance in trait anxiety scores, $R^2 = .11$, $F(1, 246) = 31.75$, $p < .001$; however, primary psychopathy also positively predicted trait anxiety, $\beta = .38$, $t(253) = 6.51$, $p < .001$, explaining a significant amount of the variance, $R^2 = .14$, $F(1, 254) = 42.37$, $p < .001$. Moreover, primary and secondary psychopathy were positively correlated, $r = .32$, $p < .001$ and when analyzed as simultaneous predictors of trait anxiety, primary and secondary psychopathy independently predicted trait anxiety, $\beta = .58$, $t(233) = 11.09$, $p < .001$, $\beta = .57$, $t(233) = 11.00$, $p < .001$, respectively. Furthermore, they explained 44% of the variance in trait anxiety, $R^2 = .44$, $F(2, 234) = 91.64$, $p < .001$, which provides additional evidence that secondary traits are not uniquely positively related to anxiety.

We additionally hypothesized that individuals who experienced more maltreatment in childhood would endorse higher anxiety and higher secondary psychopathy scores, but not primary psychopathy scores, than individuals who experienced less childhood maltreatment. Here, the results distinguished psychopathy subtype scores by this environmental factor (i.e.,

childhood maltreatment) and supported our hypotheses. Three simple linear regressions revealed that childhood maltreatment was a significant predictor of secondary psychopathy scores, β = .35, $t(251) = 5.92$, $p < .001$, explaining a significant amount of the variance, $R^2 = .12$, $F(1, 252) = 35.06$, $p < .001$. This relationship was not found for primary psychopathy scores, $\beta = .03$, $t(263) = .43$, $p = .670$; however, maltreatment also positively predicted higher levels of trait anxiety scores, $\beta = .37$, $t(261) = 6.50$, $p < .001$, $R^2 = .14$, $F(1, 262) = 42.18$, $p < .001$.

Importantly, participants were only administered the Perceived Control Over Stressful Events Scale if they endorsed one or more maltreatment experiences. Participants who met the criteria (n = 282) were given the Perceived Control Over Stressful Events Scale and asked to directly recall the previously endorsed event(s) while answering those items. Additionally, maltreatment was measured continuously and only those who endorsed maltreatment above the recommended guidelines were included in this analysis (n = 213). To meet this threshold participants' scores on one the CTQ subscales must be elevated (Emotional Abuse > 9, Physical Abuse > 8, Sexual Abuse > 6, Emotional Neglect > 10, or Physical Neglect > 8).

Regarding past perceived control, the present study hypothesized that individuals with low levels of perceived control at the time of childhood maltreatment would endorse elevated levels of anxiety and elevated levels of secondary psychopathy, but not primary psychopathy. Simple linear regression models indicated that perceived control at the time of a maltreatment event (i.e., past perceived control) significantly predicted secondary psychopathy, $\beta = .24$, $t(207) = 3.51$, $p = .001$, predicting a significant amount of the variance, $R^2 = .06$, $F(1, 208) = 12.30$, $p = .001$. Past perceived control also positively predicted scores on primary psychopathy, $\beta = .22$, $t(217) = 3.37$, $p = .001$, $R^2 = .05$, $F(1, 218) = 11.34$, $p = .001$. Lastly, past perceived control was

not predictive of trait anxiety, β = -.12, $t(214) = 1.72$, $p = .086$. Here our hypotheses were not supported because, while significant, the relationship was not in the expected direction.

Finally, we conducted an exploratory mediation analysis using PROCESS (Hayes, 2013) to investigate past perceived control as a possible mediating variable between childhood maltreatment and secondary psychopathy. The model revealed that past perceived control did not mediate the relationship between maltreatment in childhood and traits of secondary psychopathy in adulthood, $F(2, 202) = 20.97$, $p < .001$, $R^2 = .17$ (Figure 2). While the model was significant, the direct effect between maltreatment and secondary psychopathy scores, $b = .21$, 95% CI [.124, .298], $SE = .044$, $p < .001$, actually become larger after perceived control was entered into the model, $b = .24$, 95% CI [.15, .32], $SE = .043$, $p < .001$. However, the hypothesis was partially supported because the indirect effect of child maltreatment through perceived control was also significant, $b = -.03$, 95% CI [-.06, -.004]. Finally, the effects from maltreatment to past perceived control, $b = -.003$ 95% CI [-.006, -.0002], $SE = .002$, $p = .033$, and past perceived control to secondary psychopathy scores, $b = 8.44$, 95% CI [4. 43, 12.45], $p < .001$, were also significant.

While hypotheses were not generated, follow up mediation analyses on temporal points of perceived control were conducted. A simple regression revealed a direct effect between maltreatment and secondary psychopathy, $b = .19$ 95% CI [.11, .28], $SE = .045$, $p < .001$, and maltreatment and present perceived control, $b = -.003$ 95% CI [-.004, -.001], $SE = .001$, $p = .003$. The mediation model indicated that present perceived control did not significantly mediate the relationship between maltreatment and secondary psychopathy, $F(2, 199) = 10.41$, $p < .001$, $R^2 = .09$ (Figure 3). For future perceived control, direct effects were not found between maltreatment

and future perceived control, which indicated that this is not an appropriate mediation model, see (Figure 4).

Discussion

Summary of Findings

This study had three overarching aims. First, to further assess the differentiation of primary and secondary psychopathy based on trait anxiety in a subclinical sample. Second, to replicate previous evidence that maltreatment is predictive of psychopathy and to explore its differential relationships with psychopathy subtype. Additionally, we wanted to contribute more data to community sample literature that examines relationships between psychopathy subtypes and trait anxiety, given evidence of mixed findings. Third, we intended to assess past perceived control as a predictor of psychopathy subtypes and to explore its merits as a mediator between maltreatment and secondary psychopathy. Using the framework of these aims, we developed five a priori hypotheses and conducted one exploratory analysis with two additional follow-up analyses. For the present study, we were also particularly interested in using a community sample to better understand sub-clinical traits of psychopathy.

Primary psychopathy is a construct characterized by low interpersonal warmth, low anxiety, and high stress tolerance. It is also thought to have a genetic predisposition. In contrast, secondary psychopathy demonstrates evidence of high emotionality and high levels of anxiety, and to have an onset that is more influenced by environmental factors (Dolan & Rennie, 2007; Falkenbach, Poythress, & Creevy, 2008; Hicks et al., 2004; Karpman, 1948; Lee & Salekin, 2010; Vassileva, Kosson, Abramowitz, & Conrod, 2005; Yildrim & Derksen, 2015). Our analysis of psychopathy subtype and trait levels of anxiety did not yield the expected differences, which does not support our proposed hypotheses and might suggest that these relationships are

not straightforward, particularly in community samples.

Regarding childhood maltreatment, the present study treated this variable continuously and determined a global maltreatment score for each participant by summing their total score on the Childhood Trauma Questionnaire. Therefore, maltreatment events were not differentiated by type for purposes of this study. Within our sample, we found that childhood maltreatment was significantly predictive of secondary psychopathy and trait anxiety, but not primary psychopathy. This finding supported our hypotheses and is consistent with previous literature suggesting that secondary psychopathy is strongly related to environmental factors (Dolan & Rennie, 2007; Lee & Salekin, 2010; Karpman, 1948; Yildrim & Derksen, 2015). While this finding is not novel, coupled with the lack of evidence to support anxiety as a distinguishing characteristic, environmental influence becomes more salient.

Lastly, our analyses indicated past perceived control as a significant predictor of both primary and secondary psychopathic traits, but not of trait anxiety. These findings did not support our hypotheses given that the predictive relationships between past perceived control and both psychopathy subtypes was positive. While the direction was not as expected, these significant findings suggests that perceived control is a noteworthy and possible transdiagnostic factor of global psychopathy. Due to the significant relationships found between maltreatment and anxiety and perceived control and psychopathy we conducted an exploratory mediation model. Here, our data indicated that while past perceived control was not a true partial mediator between maltreatment and secondary psychopathy, the paths between maltreatment and past perceived control and past perceived control and secondary psychopathy remained significant. This suggests that the maltreatment experiences exert both direct and indirect effects (through past perceived control) on secondary psychopathy. This model was not analyzed for primary

psychopathy given the insignificant predictive power of maltreatment. Follow up analyses were conducted for perceived control based on different temporal points; however, neither present nor future perceived control were significant mediators between maltreatment and secondary psychopathy.

Psychopathy Subtype and Anxiety

In the present data set, subclinical traits of primary and secondary psychopathy were equally predictive of trait anxiety, and thus, our hypothesis was not supported. Specifically, both psychopathy subtypes predicted heightened trait anxiety. Moreover, primary and secondary psychopathy were positively correlated with each other, indicating shared variance, and when analyzed as simultaneous predictors of trait anxiety, they independently predicted trait anxiety and explained a significant amount of the variance in these scores. This provided additional evidence that secondary traits are not distinctively related to heightened anxiety in the context of the current community sample. Our findings may also suggest that psychopathy is best conceptualized dimensionally, with emotionality or emotion regulation abilities along the continuum axis (Polaschek & Daly, 2013).

These results suggest that anxiety is not a unique variable that assists in deconstructing psychopathy into subtypes on a two-factor model. Historically, the literature has suggested that the two-factor model of psychopathy discriminates subtypes based on trait anxiety (Karpman, 1948; Lykken, 1957). This trend appears consistent in forensic and clinical samples: however, some recent research in community samples has yielded inconsistent results (Burns, Roberts, Egan, & Kane, 2015; Dolan & Rennie, 2007). The current study adds additionally contradicting information, suggesting that the two-factor model, based on trait anxiety, might not be the most appropriate way to conceptualize sub-clinical psychopathy.

Moreover, while the PPI demonstrated sound psychometric properties pertaining to reliability and validity, some studies have questioned its ability to distinguish psychopathy subtypes on two higher order factors based on anxiety (Patrick, Edens, Poythress, Lilienfeld, & Benning, 2006). This could also call into question the traditional conceptualization of psychopathy as a two-factor model; however, the literature again provides conflicting evidence. Confirmatory factor analysis investigations have yielded evidence in favor of the two-factor model (Salekin, Chen, Lester, Sellbom, & Macdougall, 2014), yet three and four factor models have also been hypothesized and supported (Miller, Lamkin, Maples-Keller, & Lynam, 2016; Zwets, Hornsveld, Neumann, Muris, & van Marie, 2015). Based on the data from the current study, a multifactor model should be examined for superiority over the two-factor model. Perhaps, relationships between anxiety and psychopathy are more complex than the two-factor model allows, as evidenced by the lack of support for our hypothesized relationships.

The equivocal nature of the relationship between anxiety and psychopathy subtypes and questions regarding the loading of the PPI onto factors based on anxiety might also imply that anxiety is not the distinguishing feature of psychopathy subtype and instead directs attention to the salience of environmental factors. This is particularly plausible for secondary psychopathy as evidence already suggests ties to environmental influences (Yildrim & Derksen, 2015). This lends support to the notion that anxiety, while largely focused on in the literature, might be overshadowing underlying environmental influences that better explain psychopathy and might better differentiate subtypes. This could be particularly true in community samples, and warrants additional study. Of note, state anxiety ratings were also collected but not analyzed for the purposes of this study. This data will be considered in future analyses.

Maltreatment and Psychopathy

The present study found a significant relationship between childhood maltreatment and the outcomes of anxiety and secondary psychopathic traits. Maltreatment was not a significant predictor of primary psychopathic traits, which supports our hypotheses. This finding implies that some of the variance between the constructs of primary and secondary psychopathy can be explained by the presence of a maltreatment experience. This suggests that traits associated with the secondary subtype are more vulnerable to materialize following a maltreatment event than traits of primary psychopathy. This finding also supports the previous literature base, which suggests psychopathy is largely a byproduct of aversive environmental experiences (Borja & Ostrosky, 2013; Schimmenti, Di Carlo, Passanisi, & Caretti, 2015). The present study, however, demonstrated a differential finding based on subtype and supports evidence that secondary psychopathy is a consequence of environmental influence.

Mechanisms underlying the relationship between maltreatment and traits of secondary psychopathy suggest poor emotional parental bonding and emotional dysregulation as possible explanations (Borja & Ostrosky, 2013; Burns, Roberts, Egan, & Kane, 2015; Gao, Raine, Chan, Venables, & Mednick, 2010). In addition, evidence exists that early experiences of maltreatment promote deficits in cognitive and affective functioning (Bak, Krabbendam, Janssen, de Graaf, Vollebergh, & van Os, 2005), which could manifest as decreased behavioral management and emotional regulation abilities, characteristic of secondary psychopathy. Moreover, given the evidence that secondary psychopathy is characterized by heightened levels of aggression (Falkenbach, Poythress, & Creevy, 2008; Vidal, Skeem, & Camp, 2009), maltreatment may increase secondary psychopathic traits through modeled behaviors of aggression (i.e., social learning theory of aggression) (Bandura, 1978; Heyman & Smith Slep, 2002; Lansford, Miller-

Johnson, Dodge, Bates, & Pettit, 2007).

Understanding why maltreatment appears less salient as a predictor of primary psychopathy is complex and has received little attention. In a previously mentioned study conducted by Burns, Roberts, Egan, and Kane (2015) investigating differential relationships between trait anxiety and psychopathy subtypes, cognitive reappraisal was also examined. Here, a significant predictive relationship was only determined between reappraisal and primary psychopathy (Burns, Roberts, Egan, & Kane, 2015). This may suggest that individuals with traits of primary psychopathy possess a greater ability to alter their cognitive schemas, explaining why maltreatment experiences are less impactful on their psychological outcomes. In contrast, individuals with secondary psychopathy may lack the cognitive resources to reappraise their experience and, thus, maltreatment events are more impactful on outcomes.

Prior research provides some evidence for the belief that individuals higher in primary psychopathic traits have more developed self-management abilities and emotional stability, while individuals higher in secondary psychopathic traits are more labile (Hicks et al., 2004). Moreover, Vidal, Skeem, and Camp (2009) found that high anxious psychopaths (i.e., secondary psychopathy) performed significant lower than low anxious psychopaths (i.e., primary psychopathy) on tasks of emotional intelligence, emotional management, and thought management. The authors suggest that their findings are consistent with the notion that individuals high in primary psychopathy display more adaptive behaviors and increased outcomes of success in comparison to high secondary psychopathy individuals (Vidal et al., 2009). Follow up research in this domain should focus on cognitive distortions and their differential relationships between primary and secondary subtypes. Additional efforts should also

be dedicated to maltreatment and other environmental factors given its differential relationship with psychopathy subtypes.

Perceived Control and Psychopathy

Past perceived control was found to be a significant predictor of both primary and secondary psychopathy, yet not trait anxiety. Our insignificant findings regarding trait anxiety do not match previous empirical investigations; however, the predictive relationships found between past perceived control and both psychopathy subtypes suggests the vitality of perceived control. Interestingly, the direction of these relationships did not match previous empirical findings. Perceived control, the subjective experience of an individual's level of influence over a given situation, appears to be a prominent factor in predicting both subtypes of sub-clinical psychopathy, suggesting an influence of cognitive states and environmental factors over psychopathy and stable anxiety. While we did not have a specific hypothesis regarding past perceived control as a mediator between maltreatment and secondary psychopathy, past perceived control exhibited indirect effects on this relationship. This model indicated that maltreatment predicts secondary psychopathy both directly, and indirectly, with higher levels of perceived control predicting higher scores of secondary psychopathy.

While the hypothesis proposed by the current study was not supported, given that higher levels of past perceived control were predictive of higher psychopathy scores, perceived control did significantly predict both psychopathy subtypes. This provides additional evidence for perceived control as a transdiagnostic variable common to outcomes of poor psychological functioning; however, our results suggest a different mechanism. Overwhelmingly, prior studies indicate high levels of perceived control as predictive of better psychological outcomes, yet this was not the case for psychopathy. Our results suggested that high control beliefs at the time of

maltreatment predicted higher psychopathy scores on both subtypes. This indicates that the traditional model and conceptualization of underlying mechanism used for general psychopathology do not fit the construct of psychopathy.

Commonly, perceived control is evidenced as a mitigating variable to psychopathology. Specifically, this model is thought to operate through a cognitive process. For example, when control perceptions are augmented, children demonstrate increased emotional regulation and decreased anxiety (Allen et al., 2016). These results provide further support for the validity of perceived control as an impactful variable between childhood experiences and decreased self-regulatory abilities (i.e., deviant behavior). Additionally, research on post-traumatic growth (PTG) has indicated the benefits of perceptions of control for changing schemas associated with aversive experiences by altering long-term beliefs and behaviors (Ying, Lin, Wu, Chen, Greenberger, & An, 2014). This could imply that perceived control can alter the encoding of maltreatment event memories and mitigate the development of psychopathological traits. This further suggests that perceived control has the capability to modify the effects of aversive events by shifting negative trauma experiences into opportunities for psychological development and growth.

While this specific pattern was not supported by the current study, perceived control does appear to be altering cognitive processes in the opposite direction, predicting heightened psychopathy. This suggests the complexity of control beliefs and its differential relationships with psychopathology outcomes. Averill (1973) provided evidence that control perceptions are highly complex and have several components: behavioral (i.e., ability to act directly on the environment), cognitive (i.e., an individual's interpretation of an event), and decisional (i.e., having the ability to make a different choice in a situation). Specifically, he argued that an

individual's appraisal of an event, or the cognitive component of control, is predictive of psychological outcomes. Essentially, the author indicated that control perceptions, even when high, can yield increased stress depending on an individual's interpretation (Averill, 1973). For example, a situation may be deemed controllable (i.e., high perceived control); however, provoke negative affect and emotion due to appraisals of guilt and shame for not acting appropriately to prevent of stop the event. Moreover, appraisals of this nature leading to negative affect and heightened emotional responding may increase antisocial behavior presentation.

This is supported by an investigation of perceived control's predictive ability on various outcomes (Scott & Weems, 2010). Specifically, low perceived control was predictive of anxiety and depression, while high perceived control was predictive of aggression. Therefore, the authors proposed that internalizing and externalizing presentations respond differently to control beliefs. Individuals with externalizing behaviors have also been shown to have less conceptual knowledge of locus of control. Therefore, these individuals struggle to identify whether an event originated internally or externally (Jackson, Frick, & Dravage-Bush, 2000). This may suggest that individuals high on psychopathy are unable to identify control beliefs due to an inability to recognize the locus of control (internal versus external). It may also suggest that an inability to identify locus of control leads to heightened perceptions of unpredictability, which then increases externalizing behavior or psychopathy. The authors suggest that this uncertainty may initiate more externalizing behavior as a product of not knowing what controls their environment and therefore testing the limits. This model received additional support from the current study and may help explain why perceived control did not have a similar relationship with psychopathy as with other psychopathologies (i.e., internalizing versus externalizing presentations).

Given our findings, follow-up analyses were conducted to determine the significance of

present and future perceived control as a mediating variable between maltreatment and secondary psychopathy to better understand temporal relationships. Present perceived control, defined as an individual's belief about their level of control surrounding their current feelings towards the past maltreatment experience, was not found to be a significant mediator. Future perceived control, defined as an individual's belief about their level to control a future similar maltreatment event, did not mediate the relationship, given the lack of direct effects between maltreatment in childhood and future perceived control. Previous investigation indicates mixed results based on temporal points of perceived control yield (Frazier, Keenan, Anders, Perera, Shallcross, & Hintz, 2011; Frazier, Steward, & Mortensen, 2004). Most consistently, high levels of present perceived control significantly predicted general psychological adjustment. Past and future perceived control findings are largely variable.

Limitations

This study provides novel information and was methodologically strong, yet limitations were present. First, self-report measures rely on accurate and truthful responding. While several of the scales used within this study to measure the constructs of interest contained embedded validity scales, biases are likely. Participants may have responded to the survey items in a socially desirable manner or could have indicated exaggerated responses. Additionally, self-report measures are subject to inconsistent or inaccurate reporting of internal experiences and events. Second, several of the measures required retrospective reporting. Retrospective reporting relies on the accurate recall of events, some of which may have occurred multiple years prior. Moreover, encoding of these events may be distorted or incorrect causing inaccurate reporting. Third, the alpha values for the subscales (i.e., past, present, and future) of the Perceived Control of Stressful Events Scale in the current sample were somewhat below acceptable research ranges.

Notable, these scales are short, which may limit alpha values; however, the results of this study should be considered in the context of lower coefficient alphas. Lastly, this study contained an exploratory mediation analysis. Given the novel nature of this model, there is no previous research backing the exploratory analysis conducted.

Future Directions and Conclusions

It would be beneficial for future research to expand upon the present study in a multitude of ways. First, given the mixed relationship found within the literature between anxiety and psychopathy, additional empirical focus is needed to gain increased conceptual clarity. Understanding this relationship could have significant treatment implications and is, therefore, valuable. Second, given that environmental factors serve as potential targets for intervention, and already display promising predictive power, research efforts should be allocated to discovering additional environmental variables that serve to mitigate or aggravate psychopathic dispositions. The ecological components of maltreatment, such as frequency, duration, and severity should continue to be explored for differential relationships with psychopathic traits.

Research should also be dedicated to the continued exploration of perceived control. Given the salience of this variable in the present study as a predictive construct of psychopathy, primary and secondary and the unique direction of the relationship, additional attention is warranted. Research should focus on replicating these results in additional community samples, expanding into offender samples, and understanding differential relationships between perceived control and internalizing versus externalizing psychopathologies. Empirical attention should also be allocated to possible programs of intervention that serve to address the psychological effects of perceived control levels.

Finally, given the predictive role of environmental variables and perceived control on

secondary psychopathic traits, treatment modalities should be reassessed. Historically, psychopathy has been considered stable and untreatable, yet with the differentiation of the secondary subtype by environmental influence and subjective perceived control this conceptualization has the potential to change. Psychopathology is often treated clinically by targeting cognitive schemas and distortions that contribute to maladaptive thinking patterns and non-functional behavioral responses. Additionally, therapeutic interventions often target environmental experiences. Specifically, if a trauma or maltreatment event has occurred, interventions often involve processing that experience. Given that maltreatment predicted secondary psychopathic traits and perceived control was also a path that predicted this relationship, treatment may be most effective if it targets the cognitive underpinnings associated with perceived control. Further empirical exploration is required to determine the efficacy of this treatment modality for secondary psychopathy.

While this study did not yield differential relationships between psychopathy subtypes and trait anxiety, it provided additional evidence for the negative psychological outcomes of maltreatment experiences in childhood and provided a differential relationship given a significant relationship between childhood maltreatment and secondary psychopathy, exclusively. Furthermore, this study demonstrated the significant relationship between high levels of perceived control and psychopathy, while also providing a novel model suggesting the salience of perceived control and psychopathic trait outcomes.

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Table 1

Measure Means and Standard Deviations

	Present Study			Previous Study
Measure	N	M (SD)	M 95% CI	M (SD)
Childhood Trauma Questionnaire (CTQ)	282	49.88 (19.93)	[47.55, 52.22]	33.21 (8.08)[a]
Perceived Control Over Stressful Events				
Past	225	2.17 (.58)	[9.29, 10.19]	2.05 (.87)[b]
Present	224	2.54 (.32)	[24.05, 25.29]	2.84 (.48)[b]
Future	228	2.81 (.41)	[12.61, 13.16]	2.45 (.81)[b]
Psychopathic Personality Inventory- Short Form (PPI-SF)				
Primary	273	81.18 (16.97)	[79.15, 83.19]	109 (19.84)[c]
Secondary	262	102.12 (18.79)	[99.83, 104.40]	135.16 (21.01)[c]
State Trait Anxiety Inventory (STAI)				
Trait	273	40.11 (11.32)	[38.76,41.46]	41.43 (11.06)[d]

Note. This table presents the sample size, mean, standard deviation, and 95% mean confidence interval for the scales administered to the participants of the current study. For comparison, means and standard deviation values from previous empirical investigations have been included Balsamo, Romanelli, Innamorati, Ciccarese, Carlucci, & Saggino, 2013[d]. Dias, Sales, Hessen, Kleber, 2015[a]. Fraizer, Keenan, Anders, Perera, Shallcross, & Hintz, 2011[b]. Uzieblo, Verschuere, Van den Bussche, & Crombez, 2010[c].

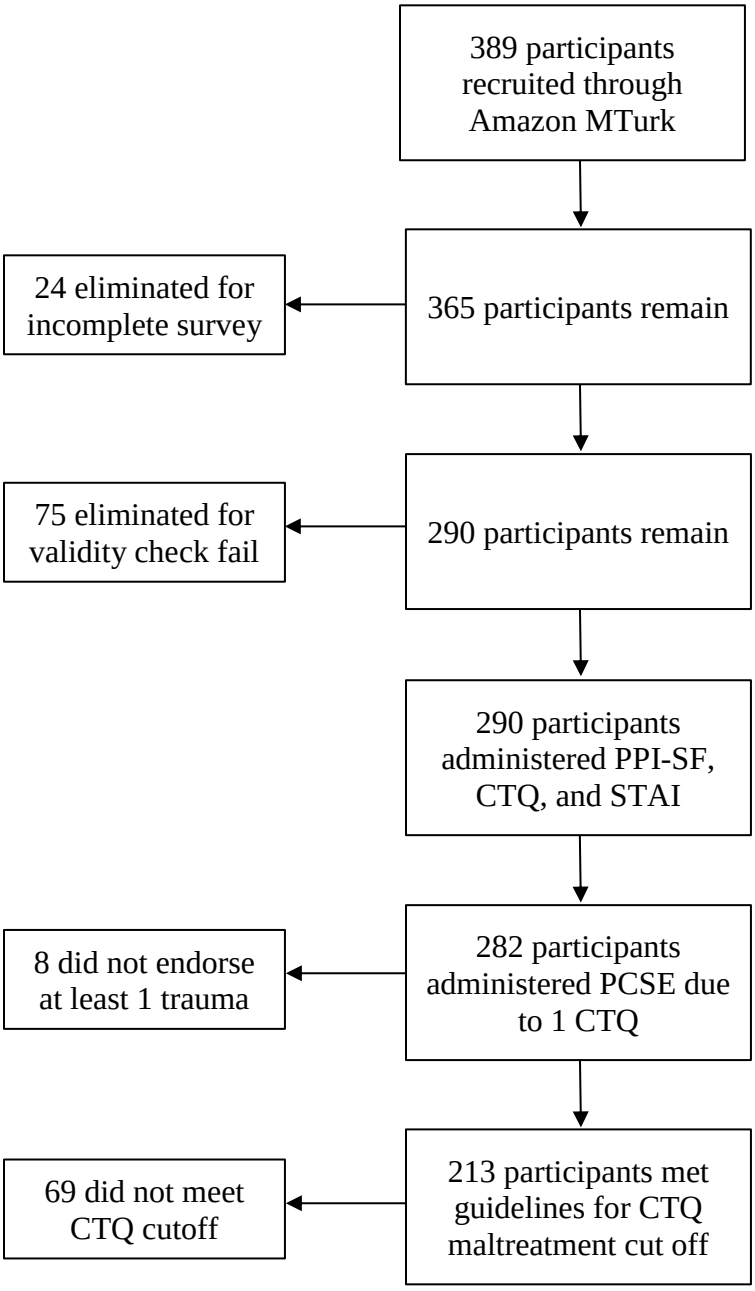

Figure 1. This figure demonstrates the process of recruiting and eliminating participants. As indicated by the above figure, 389 participants were recruited through Amazon MTurk. Following, 24 were eliminated due to response patterns that neglected to respond to significant portions of the survey. An additional 75 participants were eliminated due to failing our validity checks. Next, 8 participants were not administered the Perceived Control Over Stressful Events scale (PCSE) since they had not endorsed at least one maltreatment event. Finally, 69 participants were not included in maltreatment analyses since they did not meet the recommended guidelines on the Childhood Trauma Questionnaire (CTQ).

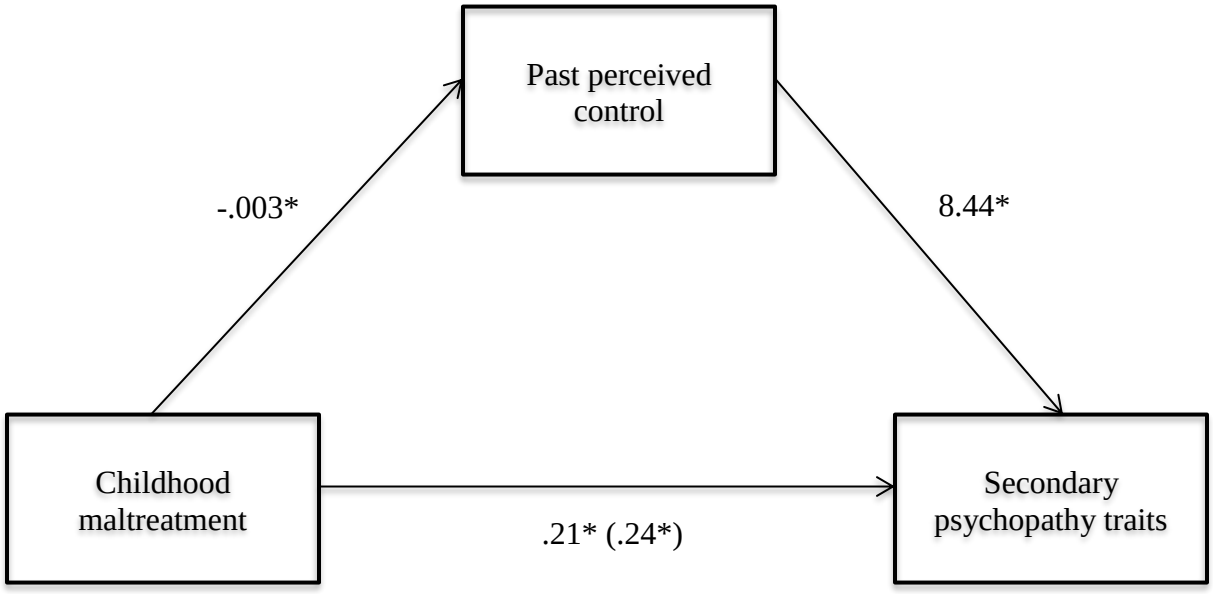

Figure 2. This figure demonstrates the unstandardized regression coefficients for the relationship between childhood maltreatment experiences and secondary psychopathy traits as mediated by past perceived control. The regression coefficient between childhood maltreatment and secondary psychopathy traits, controlling for past perceived control is in parentheses. This model indicates that childhood maltreatment has both direct and indirect effects on secondary psychopathic traits.
*$p < .05$

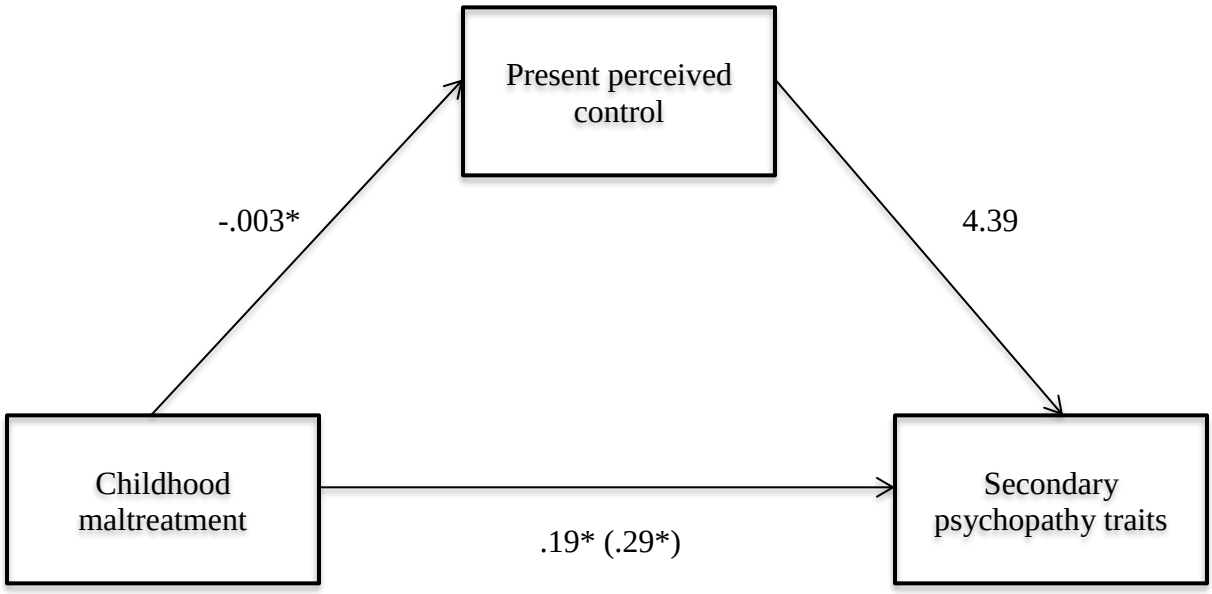

Figure 3. This figure demonstrates the regression coefficients for the relationship between childhood maltreatment experiences and secondary psychopathy traits as mediated by present perceived control. The regression coefficient between childhood maltreatment and secondary psychopathy traits, controlling for present perceived control is in parentheses. This model indicates no mediation.
*$p < .05$

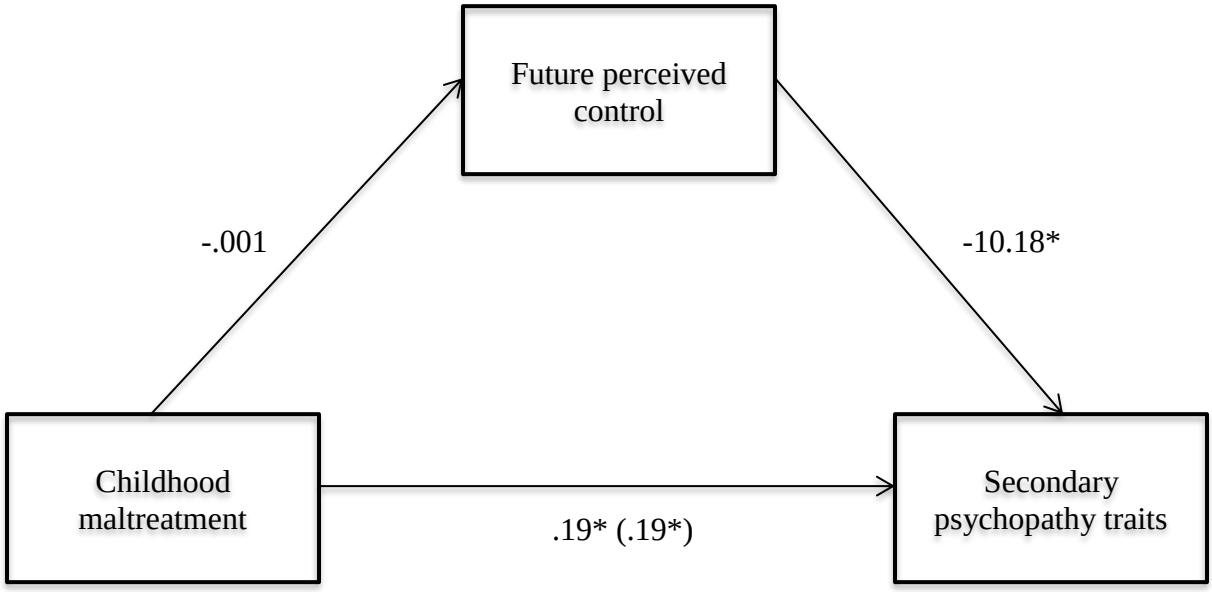

Figure 4. This figure demonstrates the regression coefficients for the relationship between childhood maltreatment experiences and secondary psychopathy traits as mediated by future perceived control. The regression coefficient between childhood maltreatment and secondary psychopathy traits, controlling for future perceived control is in parentheses. This model indicates no mediation.
*$p < .05$

Appendix A

Information to Consider about this Research

Childhood Experiences and Adult Personality
Principal Investigator: Alexa DeLisle
Department: Psychology
Contact Information: delislea1@appstate.edu
Faculty Advisor: Dr. Twila Wingrove

You are invited to participate in a research study about individual childhood experiences and how they influence later adult personality.

If you agree to be part of the research study, you will be asked to complete an online survey.

There are no direct benefits of this research to you as a participant; however, your participation will benefit the greater understanding of relationships between childhood and adulthood.

While there are no foreseeable risks associated with this study, participants may experience some discomfort when responding to personal and intimate questions. All survey responses will be collected through an encrypted platform to prevent eavesdropping. No identifying information will be collected to link your identity to your responses, except your MTurk ID, which will be kept separately from other information you provide.

Please be aware that any work performed on Amazon MTurk can potentially be linked to information about you on your Amazon public profile page, depending on the settings you have for your Amazon profile. We will not be accessing any personally identifiable information about you that you may have put on your Amazon public profile page. We will store your MTurk worker ID separately from the other information you provide to us.

You will be compensated with $1.50 for your full participation in this study. Compensation will only be awarded if you complete the entire survey in an honest manner.

Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. You may choose not to answer any survey question or discontinue the survey for any reason and at any time.

If you have questions about this research study, you may contact Alexa DeLisle (PI) at delislea1@appstate.edu or Dr. Twila Wingrove (Faculty Advisor) at wingrovta@appstate.edu.

If you have questions about this research project, you can call Dr. Twila Wingrove at (828)-262-2272 x440 or the Appalachian Institutional Review Board Administrator at 828-262-2692, through email at irb@appstate.edu or at Appalachian State University, Office of Research Protections, IRB Administrator, Boone, NC 28608.

Additionally, if you are experiencing any psychological distress you may contact the Crisis Help Line at 800-233-4357.

This research project has been approved on September 8, 2016 by the Institutional Review Board (IRB) at Appalachian State University. This approval will expire on September 7, 2017 unless the IRB renews the approval of this research.

By continuing to the research procedures, I acknowledge that I am at least 18 years old, have read the above information, and agree to participate.

Vita

Alexa DeLisle was born in 1991, in Albany, New York to Kim and Alan DeLisle. In June 2009, she graduated from C. E. Jordan High School in Durham, North Carolina. In December 2013, she acquired her honors Bachelor of Arts in psychology and political science from the University of North Carolina at Chapel Hill. In August 2015, Alexa began study toward a Master of Arts in clinical psychology, where she earned her degree in August 2017. Alexa has presented her research at multiple national conferences and will be attending the University of North Texas in August 2017 to pursue a doctoral degree in clinical psychology where she plans to continue researching various topics regarding psychopathy and related constructs.