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Examining the Association Between Childhood Exposure to Substance-Abusive Environments and Factor Two Psychopathic Traits

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Examining the Association Between Childhood Exposure to Substance-Abusive Environments
and Factor Two Psychopathic Traits

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Abstract

Psychopathy is a multidimensional construct consisting of aberrant personality characteristics that are categorized as either affective and interpersonal (F1) or antisocial and deviant traits (F2). While the differentiation between F1 and F2 psychopathic traits has been studied, limited research examines the etiologies of the factors. Existing theory hypothesizes that the development of F1 traits is influenced by biological factors, whereas F2 traits arise from environmental influences. F2 traits are theorized to develop as a defensive behavior when individuals are constantly exposed to unhealthy environments or persistent traumatic experiences. One example of an unhealthy environment is exposure to a substance-abusing environment during childhood. Children within such environments are also more at risk for experiencing various forms of abuse and neglect, such as maltreatment, physical and sexual abuse, and overall inconsistent parenting (Salekan & Lynam, 2011). This neglect and abuse may act as a mediator between substance-abuse exposure and F2 traits. Therefore, individuals who experience these types of neglect and abuse have higher F2 psychopathic traits.

The current study explored the association between exposure to substance-abusing environments and severity of psychopathic traits, as operationalized by the PPI-R, within a college sample. Results indicated a significant and positive correlation between exposure to substance-abusive environments during childhood, F2 traits, and experiences of childhood abuse or neglect. As hypothesized, experiences of childhood abuse and neglect did act as a mediator between childhood substance-abusive environments and F2 traits.

Keywords: psychopathy, substance-use, factor-two traits, childhood abuse

Literature Review

The study of psychopathy has grown recently among researchers and psychology professionals due to its dimensionality and applicability to both clinical and nonclinical populations. The construct, commonly conceptualized through a binary factorization, contains characteristics that are linked to criminal behavior and psychopathology (Skeem, Pothyress, Edens, Lilienfeld, & Cale, 2003). Due to the potential societal effects of the disorder, it is important to examine its risk factors in hopes of decreasing psychopathy's prevalence.

Psychopathy

One of the most prominent figures to influence the understanding of psychopathy is Hervey Cleckley, who documented 15 case prototypes of psychopaths within his book, *The Mask of Sanity* (1941). Cleckley's clinical description of a psychopath consisted of 16 features (Cleckley, 1941). He believed that the maladaptive features of psychopathy, such as poor judgement or lack of remorse and shame, were masked by a presentation of superficial charm and normalcy. As the study of psychopathy expanded over time, other professionals developed their own understandings of the construct. For instance, differences in psychopathy are often highlighted through two dimensions (i.e. factors), commonly referred to as Factor 1 (F1) and Factor 2 (F2) (Benning, Patrick, Hicks, Blonigen, & Krueger, 2003; Hare, 2003). Factor 1 traits entail interpersonal and affective traits, including shallow affect, superficial charm, and callousness (Casey, Rogers, Burns, & Yiend, 2013; Blackburn, 2007). These traits are associated with both emotional deficiencies (Yildirim & Derkson, 2015) and with positive life outcomes and success (Balash & Falkenbach, 2018; Falkenbach, Balash, Tsoukalas, Stern, & Lilienfeld, 2018). Factor 2 traits defined by antisocial acts, impulsivity, and deviant behavior and are more

closely connected to antisocial personality disorder (Blackburn, 2007; Casey et al., 2013). These traits are often linked to risk-taking behavior, substance-abuse issues, impulsivity (Yildirim & Derkson, 2015), hostile attributions (Law & Falkenbach, 2018) and aggression (Falkenbach, 2004).

Tools to measure psychopathy in individuals are selected with respect to the population being examined. The Psychopathy Checklist-Revised (PCL-R; Hare, 2003) is the most widely used tool used for criminal populations and coincides with the two-factor conceptualization of psychopathy. For noncriminal populations, The Psychopathic Personality Inventory-Revised (PPI-R; Lilienfeld & Widows, 2005) is the most commonly used. This self-report instrument includes eight different subscales and three high-order domains. These domains are Fearless Dominance (FD), Self-Centered Impulsivity (SCI), and Coldheartedness (Lilienfeld & Widows, 2005). When compared to two-factor conceptualization, the PPI-R's FD domain is related to F1 traits while the SCI domain reflects F2 traits.

Etiology and Risk Factors of F1 Traits

Once coined as “idiopathic psychopathy,” the affective and interpersonal characteristics found in F1 were theorized to be heritable and instinctual, occurring outside of the individual's conscious (Karpman, 1941). Over time, research has consistently found that F1 traits are influenced by genetic factors and have heritable underpinnings (40%-60% heritability; Blonigen, Hicks, Krueger, Patrick, & Iacono, 2005; Hunt, Bornoalova, & Patrick, 2015). For example, Blonigen and colleagues (2005) investigated same-sex twin pairs in part of a longitudinal study in aims of identifying genetic factors that may contribute to psychopathy. The results of the study indicate a significant genetic influence on F1 traits, as operationalized using the

Multidimensional Personality Questionnaire (MPQ). Genetic influence, however, varies depending on age. For instance, a previous study found strong genetic influence for psychopathic traits in children (70%-80%) while adults show moderate genetic influence (40%-60%; Hunt et al., 2015). Research continues to support a heritability basis for F1 psychopathic traits.

Etiology and Risk Factors of F2 Traits

When discussing F2 psychopathic traits, Karpman (1941) referred to these characteristics as “symptomatic psychopathy.” He suggested that these antisocial, reactive, and high-anxiety behaviors emerged from negative environmental influences and consequently led to unhealthy conscience formation (Karpman, 1941). Similarly, Porter (1996) posited that individuals who present with high F2 behavioral traits developed those dissociative behavioral characteristics, such as impulsivity and reactive anxiety as a survival mechanism in response to traumatic experiences. However, continued research comparing genetic and environmental influences on F2 psychopathic traits have yielded inconsistent findings. Wang and peers (2013) examined genetic and environmental influence on F2 psychopathic traits, such as antisocial behavior, within twin pairs and found that environmental influence increased with age in females but decreased with age for males. Niv and colleagues (2013) similarly found inconsistent results regarding environmental influence on antisocial behaviors within adolescents, with approximately 59% environmental influence. Researchers have provided a neurological reasoning for how exposure to negative environments during childhood can influence the development of F2 traits. When examining specific behaviors of F2 traits of psychopathy, such as reactive aggression and impulsivity, there has been support that these behaviors are associated with experiences of physical and sexual abuse and exposure to violence (Blair, Peschardt,

Budhani, Mitchell, & Pine, 2006). It has been suggested that these environmental situations activate or stimulate neural regions associated with responsiveness to threat, which can increase the likelihood of responding with impulsive or aggressive behavior (Blair et al., 2006). Although this may occur throughout the lifetime for individuals, if these responses to maladaptive environments occur during early life periods, the responses can last throughout the lifetime (Blair et al., 2006). A longitudinal study that examined psychopathy and delinquent behavior is the Cambridge Study (Farrington, 2003), which focused on the development of psychopathy in children and adolescents. The project's results indicated that negative environmental factors such as physical neglect, poor supervision, and poor housing were predictive of F2 traits of psychopathy (Farrington, Ullrich, & Salekin, 2010). While these findings provide varying results regarding environmental influence for F2 trait development, more research must be conducted to further understand its etiology and risk factors.

Unhealthy Childhood Environments

As suggested by Karpman (1941), F2 psychopathic traits evolve in response to negative environmental influences. These negative influences can include those that hinder healthy behavioral development or cause trauma within individuals, such as childhood abuse/trauma or low socioeconomic status (Yildirim & Derkson, 2005). Individuals, consequently, can develop F2 traits as a response to these environments (Salekin & Lynam, 2011). For instance, previous research has shown that poor parental supervision and physical neglect can act as potential risk factors for F2 trait development (Farrington, 1995). As research on the development of F2 psychopathic traits continues to grow, an increasing amount of studies support that childhood abuse and neglect serve as risk factors for these behaviors. Weiler and Widom (1996) found that both males and females who experience childhood abuse have significantly higher PCL-R scores

compared to those who did not experience forms of abuse within childhood. Similarly, it has been found that a large percentage of (87-89%; Verona, Hicks, & Patrick, 2005) incarcerated females with F2 characteristics, as measured by the PCL-R and MPQ, reported either sexual or physical abuse during childhood. More particularly, forms of physical abuse and neglect are associated with antisocial characteristics of psychopathy (Krstic, Knight, & Robertson, 2016). Moving forward, research must continue examining and identifying various forms of childhood abuse and neglect that act as significant risk factors for developing F2 psychopathic traits.

Substance-Abuse Environments

Salekin and Lynam (2011) have supported that an unhealthy environment can include substance-abusing environments in which children or individuals are constantly surrounded by substance-abusing guardians or parents. The adverse effects of exposure to a substance-abusive environment as a child are related to psychopathy, as negative parenting and abuse can influence the presence of psychopathic traits (Krstic et al., 2016; Bowen, Jarrett, Stahl, Forrester, & Valmaggia, 2018; Salekin & Lynam, 2011). Children in these environments often experience maltreatment, poor parental supervision, physical and sexual abuse, and overall inconsistent parenting (Lewis, Holmes, Watkins, & Mathers, 2015). These stressful childhood experiences may ultimately lead to unhealthy behavior development (Lewis et al., 2015), as constant maltreatment can lead to emotional disturbance (SED; Akin, Brook, & Lloyd, 2015). Bowen and peers (2018) found that unfavorable childhood events and exposure to stress during childhood, such as those experienced within substance-abusive environments, have been connected to impairments in executive control relating to maladaptive behavior and poor cognitive flexibility. These impairments can be displayed through acts of impulsivity and antisocial behaviors (Bowen et al., 2018; Nikulina & Widom, 2014). Further research suggests that F2 psychopathic

characteristics emerge as a coping mechanism against the adverse childhood events experienced within substance-abusive environments (Krstic et al., 2016).

Study Overview

While the association between substance-abusive environments and the development of F2 traits (Krstic et al., 2016), and the association between abuse and neglect history and F2 traits (Verona et al., 2005) have been investigated in previous literature, no research has looked into the mediating effects of abuse and neglect on the association between substance-abusive environments and the development of F2 traits. Clarifying the relationship between growing up in a substance-abusing environment, subsequent abuse, and the development of F2 psychopathic traits can provide further knowledge about the etiology of psychopathic characteristics. By better understanding its etiology, professionals can begin creating valid and reliable intervention approaches to reduce the development of psychopathic traits that may lead to maladaptive or criminal behaviors.

The aim of the current study is to investigate whether forms of abuse and neglect mediate a relationship between substance-abusive environments and the development of F2 psychopathic traits within a college sample. Using the Childhood Abuse and Trauma Scale (CAT; Sanders & Becker-Lausen, 1996), a history of sexual abuse (CAT SA), punishment/physical abuse (CAT P), and neglect/negative (CAT NEG) home atmosphere was assessed. To determine whether the participants grew-up within a substance-abusive environment, the Children of Alcoholics Screening Test (CAST; Jones, 1983) was administered. Psychopathic traits were measured using PPI-R total, F1, and F1 scores.

Based on the existing literature, it was hypothesized that CAT scores would be positively correlated total PPI-R and F2 traits. Next, it was hypothesized that total PPI-R scores and F2

traits would be positively correlated with CAST scores. When investigating the relationship between abuse and trauma and substance-abusive environment, it was hypothesized that participants who have higher CAST scores would have higher CAT scores as well as higher scores in each CAT subscale. Assuming all variables are correlated, it was hypothesized that abuse or neglect would act as a mediating factor in the relationship between substance-abusive environments and F2 psychopathic traits.

Methods

Design

This study was part of a collective investigation that observed the impact of early environment factors on personality development and success. In particular, the current study was an exploratory quantitative design examining the association between exposure to substance-abusive environments, abuse or neglect during childhood, and the development of psychopathic traits. The study examined if childhood abuse or neglect act as a mediator between exposure to substance-abusing environments and development of psychopathic traits. The survey and assessments were designed on a web-based survey platform, Qualtrics, and were administered through a university's SONA system.

Participants

The sample consisted of a total of 315 (234 [74%] female and 81 [25%] male) undergraduate students from a large public university in the Northeast. Individuals were required to be 18 years or older to participate in the study. Within the participants, 136 (44%) identified as Hispanic or Latino, 70 (23%) Caucasian, 41 (13%) Black/African-American, 33 (11%)

Asian/Pacific Islander, and 29 (9%) identified as Other/Biracial. The age of participants ranged from 18-40 years old ($M = 20$, $SD = 3.9$). Approximately 166 (53%) students were first-year undergraduate students, 69 (22%) second-year undergraduate students, 46 (15%) third-year undergraduate students, and 33 (11%) fourth-year undergraduate students.

Procedure

The study was approved by and conducted in accordance with the policies of the City University of New York's Institutional Review Board. The study was administered online through Qualtrics and took approximately one hour to complete. Only students enrolled in the College's undergraduate psychology research program were given access to this online platform. Prior to participating, students were required to electronically sign their names on an online consent form (see Appendix A). After consenting to participate in the study, students were led to a screener to ensure he or she met the age requirement of 18 years or older. Students who did not meet this criterion were immediately ineligible to continue. Those eligible to continue were directed to a total of eight assessments. The order of assessments was presented at random; the presentation and completion of measures were different across participants. Once completed, participants were provided with a debriefing form and contact information for the primary investigator, other researchers, and faculty advisor (Appendix B).

Participants were awarded course credit upon completion of the survey. Data and responses were stored electronically on the Qualtrics website and allowed investigators to properly score and view completed assessments. The electronically signed consent forms and assessment responses are password-protected and only accessible by the principal investigator, faculty advisor, and co-investigators of the study.

Measures

Demographics

A demographic form was used to collect information on gender, age, grade-level, identified race/ethnicity, parental marriage status (married, divorced, separated), primary caregiver while growing up, and current living situation (alone, with parents, with one parent-which one?, with others-who?). Participants were also asked about exposure to substance-using environments as a child such as, “Have you or your guardians/parents ever been diagnosed with a substance-abuse disorder?” and “Have you or your guardians/parents ever been diagnosed with a mental-health disorder?” These questions were open-ended to gather additional information about the participants’ overall lifestyle and childhood.

Child Abuse and Trauma Scale (CAT; Sanders & Becker-Lausen, 1996)

The Child Abuse Trauma Scale (CAT) is 38-item questionnaire created to assess psychological maltreatment within the participants’ childhood by investigating sexual abuse (CAT SA), punishment/physical abuse (CAT P), and neglect/negative home atmosphere (CAT NEG). Participants respond to statements on a Likert scale of 0-4, with 0 representing “never” and 4 representing “always.” Example statements on this measure include “Did your parents ridicule you?” and “Were there traumatic or upsetting sexual experiences when you were a child or teenager that you couldn’t speak to adults about?” Fourteen questions within the questionnaire represent negative home atmosphere/neglect, six questions for punishment/physical abuse, and six questions for sexual abuse. With some items reverse scored, higher scores represent higher severity of abuse or neglect. Previous studies demonstrated good test-retest reliability ($r = 0.98$) and internal consistency (Cronbach’s $\alpha = .90$). Within the test’s subscales, internal consistency was $\alpha = 0.86$ for the negative home atmosphere/neglect scale, $\alpha = 0.76$ for the sexual abuse

scale, and $\alpha = 0.63$ for the punishment/physical abuse scale (Sanders & Becker-Lausen, 1996). The current sample presented high reliability for total scores ($\alpha=0.95$) and CAT NEG ($\alpha=0.91$), good reliability for CAT SA ($\alpha=0.85$), and poor reliability for CAT P ($\alpha=0.38$).

Children of Alcoholics Screening Test (CAST; Jones, 1983)

The Children of Alcoholics Screening Test consists of 30-self-report “yes” or “no” questions that gathered the participants’ experience living with alcoholic parents or guardians. For this study, participants were instructed to answer questions based on substance/alcohol use among parents/guardians. Questions included, “Have you ever thought either of your parents have had a drinking [or substance-using] problem?” and “Did you ever wish either of your parents would stop drinking [or using substances]?” Scoring of this assessment was based on the number of questions answered with “yes.” Scores of 0-1 “yeses” indicated that guardians or parents are most likely not alcoholics/substance-abusing, 2-5 indicated the participant has had problems due to at least one alcohol/substance-abusing parents and is possibly a child of alcoholic/substance-abuser, and 6+ indicated he or she is most-likely a child of an alcoholic/substance-abuser. Previous studies demonstrated test-retest reliability using Cohen’s Kappa (0.83) and a strong internal consistency ($\alpha = 0.95$; Charland & Côté, 1998). Internal consistency for the current study is $\alpha = 0.95$.

Psychopathic Personality Inventory-Revised (PPI-R; Lilienfeld & Widows, 2005)

The PPI-R is a self-report psychopathy measure made up of 154 items. Items on the PPI-R fall within eight subscales, including Machiavellian Egocentricism, Impulse Nonconformity, Blame Externalization, Carefree Nonplanfulness, Social Influence, Fearlessness, Social Influence, Stress Immunity, and Coldheartedness. Participants were instructed to rate the accuracy of provided statements on a Likert-scale of 1-4, with “1” indicating “true” and “4”

indicating “false.” Scores on these eight subscales are categorized into F1 and F2 traits. Social Influence, Stress Immunity, and Fearlessness are considered F1 traits, while Machiavellian Egocentricism, Impulse Nonconformity, Blame Externalization, and Carefree Nonplanfulness are F2 traits. The Coldheartedness scale does not categorize as either F1 or F2 traits. Previous studies demonstrated good internal consistency ($\alpha = 0.87$) and test-retest reliability ($r = 0.89$). The current sample presented high reliability for PPI-R ($\alpha = 0.90$), PPI-R F1 ($\alpha = 0.89$), and good reliability for PPI-R F2 ($\alpha = 0.82$).

Results

Preliminary Analysis

The means, standard deviations, and range of scores are reported in Table 1. The sample mean of total PPI-R scores within the study’s sample population ($M = 286.29$) was higher than previous studies using a community/college sample ($M = 276.75$; Lilienfeld & Widows, 2005). However, the standard deviation of this study’s sample ($SD = 34.23$) was slightly higher than other study’s ($SD = 31.14$; Lilienfeld & Widows, 2005). The F1 mean scores within the sample population ($M = 110.51$) was similar to those in previous studies ($M = 111.31$; Lilienfeld & Widows, 2005), but had a lower standard deviation than previous studies ($SD = 19.19$ compared to $SD = 25.08$; Lilienfeld & Widows, 2005). Factor 2 traits of psychopathy within this sample population had lower mean scores ($M = 124.00$) than previous studies ($M = 136.87$; Lilienfeld & Widows, 2005), as well as a lower standard deviation ($SD = 23.83$ compared to $SD = 29.96$; Lilienfeld & Widows, 2005).

The sample’s mean total CAT scores and standard deviation within this study ($M = .87$, $SD = .57$) were higher than a previous study using an undergraduate population ($M = .75$, $SD =$

.42; Sanders & Becker-Lausen, 1996). The sexual abuse subscale of this study, similarly, had much higher mean scores and standard deviation ($M = .25$, $SD = .55$) than another study ($M = .08$, $SD = .28$; Sanders & Becker-Lausen, 1996). When examining the physical abuse/punishment subscale, the current study ($M = 1.55$, $SD = .61$) had similar mean and standard deviation to the previous study ($M = 1.20$, $SD = .54$; Sanders & Becker-Lauson, 1996). Lastly, the negative home environment subscale of this study had a lower mean ($M = .76$) than the previous study ($M = .85$; Sanders & Becker-Lausen, 1996), but a higher standard deviation ($SD = .73$ compared to $SD = .54$; Sanders & Becker-Lausen, 1996).

This study's mean score on the CAST was slightly higher ($M = 3.18$) compared to a previous study using a college sample ($M = 2.7$; Charland & Cote, 1998). Similarly, the current study presented similar standard deviation ($SD = 5.72$) compared to the previous study ($SD = 5.72$, Charland & Cote, 1998).

Research on all variables of interest indicates diversity across cultures (e.g., Issa, Falkenbach, Trupp, Campregher, & Lap, 2017), gender (Falkenbach, Barese, Balash, Reinhard, & Hughs, 2015; Falkenbach, Reinhard, & Larson, 2017), and race (Gatner, Blanchard, Douglas, Lilienfeld, & Edens, 2018). Table 2 provides descriptive statistics of the current study's gender, ethnicity, and study measures scores. Significant differences were noted on gender; men scored higher than women on PPI-R Total and PPI-R F1 scores while females scored higher than males on CAT NEG scores. There were also significant differences across race, and ethnicity for CAT scores and subscales. Specifically, Black/African American participants were significantly higher than White/Caucasians on overall CAT scores. When comparing mean differences for CAT SA scores, Black/African American participants scored significantly higher than White/Caucasian, Hispanic or Latino, Asian/Pacific Islander, and Biracial/Other participants.

Both Black/African American and Hispanic or Latino participants also had significantly higher CAT P mean differences than White/Caucasian participants.

Correlations

Table 3 represents two-tailed Pearson's correlations between CAT scores, CAST scores, and PPI-R scores.

Hypothesis 1: Participants who have experienced more forms of abuse or neglect (CAT) will have higher total PPI-R and PPI-R F2 traits (Table 3).

The PPI-R total score was significantly correlated with total CAT scores ($r = .20, p = .00$). Significant correlations were also found between PPI-R total scores and CAT SA ($r = .20, p = .00$), CAT P ($r = .19, p = .00$), and CAT NEG ($r = .15, p = .01$). PPI-R F2 was significantly correlated with overall experiences of abuse or neglect during childhood, as measured by the CAT ($r = .20, p = .00$). When observing CAT subscales, CAT SA ($r = .28, p = .00$), CAT P ($r = .25, p = .00$) and CAT NEG ($r = .30, p = .00$) subscales were all significantly correlated with PPI-R F2. There was no significant correlation between F1 of the PPI-R and any CAT score.

Hypothesis 2: Participants who have grown up with substance-abusive environments and guardianship (CAST) will have higher total PPI-R and PPI-R F2 traits (Table 3).

Significant correlations were found between CAST scores and F2 of PPI-R ($r = .17, p = .00$), indicating an association between exposure to substance-abusive guardians during childhood and F2 psychopathy traits. However, no significant correlations were found between CAST scores and total PPI-R and PPI-R F1 scores.

Hypothesis 3: Participants who have grown up in substance-abusive environments and guardianship (CAST) will experience more abuse or neglect during childhood (CAT) (Table 3).

A significant correlation was found between CAST scores and total CAT scores ($r = .36$, $p = .00$). These results indicate an association between growing up in substance-abusive environments and guardianship and experiences of abuse or neglect. Additionally, CAT SA ($r = .12$, $p = .03$), CAT P ($r = .12$, $p = .03$), and CAT NEG ($r = .42$, $p = .00$) were all significantly correlated with CAST scores.

Hypothesis 4: Abuse or neglect during childhood (CAT) mediates the relationship between substance-abusive environments (CAST) and PPI-R F2 traits.

Given the significant correlations noted above, a linear regression analysis was used to establish the effects of CAST on CAT as well as CAT on F2 traits of PPI-R. The analysis demonstrated a significant effect of CAST on PPI-R F2 ($\beta = .17$, $p = .00$), and total CAT was similarly a predictor of PPI-R F2 ($\beta = .33$, $p = .00$). A Sobel test was conducted and found partial mediation in the model ($p = 0.89$). When examining CAT subscales, CAT NEG ($\beta = .30$, $p = .00$), CAT SA ($\beta = .28$, $p = .00$), and CAT P ($\beta = .25$, $p = .00$) demonstrated as a predictor of PPI-R F2. Results are demonstrated in Table 4.

Discussion

Previous studies have investigated examples of environmental risk factors for developing antisocial and deviant behavioral psychopathic traits, but have yielded inconsistent findings. This study aimed to explore a particular environment, a substance-abusive childhood, and how this environment imposes forms of abuse or neglect on children that can lead to the development of

the behavioral and lifestyle psychopathic traits. Prior research supports that the abuse and neglect experienced in substance-abusive environments can impact the development of psychopathic traits (Krstic et al., 2016). By examining different forms of abuse or trauma that may be experienced in substance-abusive environments, such as physical abuse, sexual abuse, and neglectful home environments, and the association with psychopathic traits, researchers can learn more about environmental risk factors for psychopathy. Following this, psychology professionals can develop preventative methods to combat the development of psychopathic traits for children exposed to substance-abusive environments. For example, professionals can therapeutically target the detrimental effects of abuse or neglect and hopefully reduce the likelihood of an individual developing psychopathic traits.

Experiences of Abuse or Neglect and Psychopathy

As hypothesized, experiencing forms of abuse or neglect during childhood was significantly correlated to total overall psychopathy as well as the antisocial and behavioral traits of psychopathy. These results are similar to those of previous studies that found individuals who experience forms of abuse or neglect, such as physical neglect, have higher PCL-R scores compared to those who have fewer or no experiences of abuse or neglect (Farrington, 1995; Weiler & Widom, 1996). The results of this study indicated the strongest relationship between experiences of sexual abuse and psychopathy, indicating that this form of abuse during childhood is more strongly associated with overall psychopathy compared to physical abuse and neglect. This result is similar to the study conducted by Verona and peers (2005) which found that sexual abuse is a predictor of PCL-R scores in a female incarcerated population. However, when observing the relationship between abuse or neglect and the antisocial and deviant lifestyle traits

of psychopathy, a negative home atmosphere had the strongest correlation compared to sexual abuse and physical abuse/punishment. Overall, however, total scores of childhood trauma and abuse and specific forms of trauma and abuse, indicative of different forms of abuse, all had significant correlations to overall psychopathy as well as the lifestyle and behavioral traits of psychopathy. Each of these significant correlations suggest that experiences of physical abuse, sexual abuse, or neglectful home environments may be predictive of psychopathic traits. More specifically, these experiences are predictive of antisocial and deviant psychopathic traits rather than affective/interpersonal psychopathic traits.

Experience of Substance-Abusive Environment/Guardianship and Psychopathy

Results of this study also indicated a significant relationship between childhood experiences of a substance-abusive environment/guardianship and the antisocial and deviant traits of psychopathy; participants who have higher experiences of substance-abusive environments or guardianship tended to have more antisocial and deviant traits of psychopathy. While causation was not studied, as Krstic and peers (2016) found within their study, the experiences within substance-abusive environments may cause F2 psychopathic traits to develop as a defensive behavior to the unhealthy atmosphere. These defensive behaviors may present as antisocial behaviors similar to those measured by F2 in psychopathy assessments, rather than interpersonal or affective deficits similar to F1 psychopathy. The findings from this study can continue to support theories that suggest behavioral and lifestyle traits of psychopathy can be influenced by environmental factors.

Experiences of Substance-Abusive Environment/Guardianship and Abuse or Neglect

The current study found support for the hypothesis that individuals who grew up within a substance-abusing environment or with substance-abusive guardians also would have more experiences of abuse or neglect. A significant relationship was found between exposure to substance-abusive environments or guardianship and total experiences of abuse or trauma as well as sexual abuse, physical abuse/punishment, and negative home atmosphere. This finding suggests that growing up within this negative environment may be associated with experiencing more abuse or neglect during childhood. These results are similar to those found by Lewis and peers (2015), which stated that children who grow up with substance-abusive guardians may experience more physical abuse, sexual abuse, maltreatment, and poor parental supervision. Although each form of abuse or neglect that was measured was significantly related to experiences of a substance-abusive environment, negative home atmosphere had the strongest relationship compared to sexual abuse and physical abuse. This negative home atmosphere can oftentimes encompass experiences of emotional neglect, feeling unwanted or unsupported during childhood, and feelings of abandonment. The results suggest that these experiences may be the most commonly experienced form of abuse or neglect within substance-abusive environments.

Abuse/Neglect Mediating the Relationship Between Substance-Abusive Environments and Psychopathy

As hypothesized, a linear regression analysis supported that experiences of abuse and neglect partially mediated the relationship between substance-abusive environments and the antisocial and deviant traits of psychopathy. While there was a relationship between growing up within a substance-abusive environment and the antisocial and deviant traits of psychopathy, that relationship appears to be at least partially due to the abuse or neglect experienced within that

environment. The current study demonstrated that not only does overall abuse or neglect mediate the relationship, but specifically physical abuse/punishment, sexual abuse, and neglect/negative home environment partially mediated the relationship between substance-abusive environments and behavioral and lifestyle traits of psychopathy. This result supports previous literature that found experiences of maltreatment, physical abuse, and sexual abuse within substance-abusive environments can lead to maladaptive behavior development (Lewis et al., 2015), impulsivity, and antisocial behavior (Bowen et al., 2018).

Implications

The current study's results provide support that behavioral and lifestyle traits of psychopathy are associated with the experience of negative environmental experiences. With this knowledge, psychological professionals can work towards developing preventative measures for children who live within substance-abusive environments. This is all in hopes of inhibiting the development of behavioral and lifestyle traits of psychopathy and other maladaptive behaviors. Preventative measures can include implementing therapeutic interventions or behavioral therapy for these children. In addition to providing therapy for children within these environments, professionals can also work towards providing psychoeducation and therapy for the substance-abusive guardians. For example, the Mothers and Toddlers Program (MTP) provided a 20-week therapy intervention session for substance-abusive mothers aimed to improve sensitivity to cues and maternal behavior as well as reduce substance abuse (Suchman, DeCoste, Castiglioni, Legow, & Mayes, 2008). Following the five-month intervention, significant improvements in maternal behaviors with children, and caregiving, were observed (Suchman et al., 2008). These

results display the efficacy of therapeutic intervention and psychoeducation among substance-abusing families for both guardians and children within these environments.

Limitations and Future Research

The current study has limitations that may need to be taken into consideration in the interpretation of the results. For example, a limitation includes the sample population of a university's undergraduate students. Additionally, this sample may not reflect strong external validity, as it encompasses primarily a female, Hispanic or Latino population (44%) below the age of 20. The analysis of variance (ANOVA) ran displayed a significant difference of means between ethnicity groups in overall experiences of childhood trauma, experiences of sexual abuse, and experiences of physical abuse/punishment during childhood. A Tukey test indicated significant mean differences between Black/African-American and White/Caucasian participants ($p=.01$) in overall experiences of childhood trauma. Significant mean differences were also found between Black/African-American and White/Caucasian ($p=.00$), Hispanic or Latino ($p=.00$), Asian/Pacific-islander ($p=.00$), and Biracial/Other ($p=.03$) within experiences of sexual abuse. When observing mean differences of experiences of physical abuse/punishment, significant differences were found between Black/African-Americans and White/Caucasians ($p=.03$) as well as Hispanic or Latino and White/Caucasians ($p=.04$). This may suggest that the association between particular forms of abuse or neglect and psychopathy may differ significantly between ethnicities. Further research must be conducted to examine how these group differences affected the study's results. Additionally, a large percentage of the sample population was female (74%). Analysis of independent t-tests indicate significant differences between genders in total scores of psychopathy, the interpersonal/affective traits of psychopathy, as well as neglectful home

environments. Future research should consider gender differences as well as ethnic differences in analysis. The population may also have minimized their traits when answering questions on the PPI-R which can influence the presence of psychopathy within the results. Another limitation includes this study's internal validity on the CAT P subscale ($\alpha=0.38$), which can influence the findings of reported experiences of physical abuse/punishment. While a partial mediation was found within the variables, the order of the mediation is undeterminable within the study. For instance, while the development of psychopathic traits is correlated with both exposure to substance-abusive environments and experiences of abuse or trauma, it is unsure which variable was first experienced.

More research must be conducted examining different risk factors involved in the development of not only the interpersonal and behavioral traits of psychopathy, but also features of coldheartedness. Identifying biological and hereditary influences versus environmental and social influences must be further tested when investigating the different etiologies of interpersonal traits and behavioral traits. Additionally, professionals can examine how the domain of coldheartedness either separate or conjoin the two factors of psychopathy. Future research can focus on different populations or age groups. For example, future research can use adolescents currently in substance-abusing environments (e.g. foster care children, social services, etc.) and examine the presence of psychopathic traits during childhood. This can assist in identifying if substance-abusing environments influence the development of F2 psychopathic traits immediately during childhood or later in life.

Another possible study can observe the differences in abuse, neglect, and psychopathic traits, between the use of different drugs. For instance, comparing the severity of abuse, neglect, and psychopathic traits in individuals within alcohol-abusing homes versus opioid-abusing

homes, or cocaine-abusing homes versus cannabis-abusing homes. Research within this area can observe which drug exposure during childhood leads to higher degrees of abuse and neglect and ultimately higher presence of F2 traits within the individual. Further research should continue digging deeper into different types of environments that may lead to F2 psychopathic traits to eventually develop effective treatments to minimize psychopathic behaviors.

Conclusions

The current study used correlations to observe the association between a substance-abusive environment, forms of abuse or neglect, and psychopathic traits in participants. Results of the study supported the hypothesis that participants that experienced more abuse or neglect during childhood will have more psychopathic traits, particularly those reflecting the behavioral and lifestyle choices of psychopaths. Additionally, the correlation analysis supported the hypothesis that individuals with more exposure to substance-abusive environments or guardians will have more psychopathic traits, specifically antisocial traits of psychopathy. Next, the hypothesis that individuals with higher exposure to substance-abusive environments or guardianship will have more experiences of abuse or trauma was also supported. Lastly, mediation analysis also supported the hypothesis that experiences of abuse or trauma mediated the relationship between growing up in a substance-abusive environment and the development of antisocial and deviant traits of psychopathy.

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Tables and Appendix

Table 1

Descriptive Statistics of Psychopathy, Childhood Trauma/Abuse, and Childhood Exposure to Substance-Abuse

	<i>R</i>	<i>M</i>	<i>SD</i>
Psychopathy			
Total	185.00-369.00	286.29	34.23
F1	67.00-155.00	110.51	19.19
F2	88.00-212.00	144.21	23.83
Childhood Trauma/Abuse			
Total	5.00-103.00	.87	.57
Sexual Abuse	.00-18.00	.25	.55
Physical Abuse/Punishment	.00-20.00	1.55	.61
Negative Home Atmosphere	.00-42.00	.76	.73
Childhood Exposure to Substance Abuse			
Total	.00-25.00	3.18	5.72

PSYCHOPATHY AND SUBSTANCE-ABUSE

Table 2

Descriptive Statistics and ANOVA of Gender, Ethnicity, and Measures

	Male <i>M (SD)</i>	Female <i>(M, SD)</i>	T <i>(p-value)</i>	Hispanic/ Latino <i>M (SD)</i>	Caucasian <i>M (SD)</i>	Black/African American <i>M (SD)</i>	Asian/Pacific Islander <i>M (SD)</i>	Other/ Biracial <i>M (SD)</i>	Ethnicity ANOVA <i>(F-value)</i>
Psychopathy									
PPI-R	296.66 (31.40)	282.76 (34.50)	3.16 (.00)**	283.14 (33.50)	282.27 (38.11)	283.27 (38.52)	288.45 (24.93)	304.43 (13.22)	1.60
F1	115.75 (16.63)	108.72 (16.70)	2.84 (.01)**	109.31 (19.77)	111.52 (20.77)	109.42 (17.49)	108.89 (17.18)	110.51 (19.19)	1.08
F2	145.62 (23.48)	143.73 (23.99)	.61 (.542)	142.90 (23.71)	139.13 (25.14)	150.46 (26.49)	147.20 (15.90)	154.03 (23.11)	1.85
Childhood Trauma/Abuse									
CAT Total	.79 (.54)	.89 (.59)	-1.41 (.93)	.86 (.53)	.71 (.50)	1.11 (.69)	.84 (.53)	.91 (.73)	2.87*
CAT SA	.15 (.49)	.28 (.56)	-1.81 (.071)	.25 (.52)	.07 (.22)	.65 (.90)	.14 (.34)	.25 (.55)	6.64**
CAT P	1.56 (.56)	1.5 (.63)	.09 (.93)	1.6 (.54)	1.4 (.67)	1.73 (.59)	1.5 (.58)	1.5 (.61)	2.95**
CAT NEG	.62 (.68)	.80 (.74)	-1.99 (.05)*	.74 (.68)	.60 (.69)	.97 (.86)	.75 (.68)	.76 (.73)	2.04
Childhood Exp. to Sub. Abuse									
CAST Total	2.18 (4.96)	3.52 (3.93)	-1.81 (.07)	2.70 (5.21)	3.79 (6.51)	2.76 (4.64)	3.24 (6.03)	4.50 (7.45)	.81

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

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Table 3

Correlations of Childhood Abuse/Trauma, Childhood Exposure to Substance-Abuse, and Psychopathy

	PPI-R Total	F1	F2	CAST
CAT				
Total Child Abuse/Trauma	.20**	-.04	.33**	.36**
Sexual Abuse	.20**	.00	.28**	.12*
Physical Abuse/Punishment	.19**	.02	.25**	.12*
Negative Home Atmosphere	.15**	-.07	.30**	.42**
Childhood Exp. to Sub. Abuse				
CAST Total	.10	-.01	.17**	

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

Table 4

Linear Regression Analysis of Measures on Behavioral/Lifestyle Traits of Psychopathy

	β	SE	Sig.
Childhood Trauma/Abuse			
Total	.33	2.22	.00**
Sexual Abuse	.28	.40	.00**
Physical Abuse/Punishment	.25	.36	.00**
Negative Home Environment	.30	.13	.00**
Childhood Exp. to Sub. Abuse			
CAST Total	.17	.23	.00**

Note. ** $p < .01$

Appendix A

CITY UNIVERSITY OF NEW YORK

John Jay College of Criminal Justice
Department of Psychology

CONSENT TO PARTICIPATE IN A RESEARCH PROJECT

Project Title: Investigating the Impact of Early Environmental Factors on Personality Development and Success

Principal Investigator: Nascha Streng
Graduate Student

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524 West 59th Street
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Phone: (646) 510-0576

Co-Investigators: Esther Kim, Cordelia Chou

Faculty Advisor: Dr. Diana Falkenbach
Professor
John Jay College of Criminal Justice
524 West 59th Street 10.65.07 NB
New York, NY 10019
Phone: (646) 557-4429

Introduction/Purpose: You are invited to participate in a research study as John Jay students and are between the ages of 18-65. The study is conducted under the direction of Nascha Streng, Esther Kim, Cordelia Chou, Dr. Diana Falkenbach, and John Jay College of Criminal Justice. The purpose of this research study is to examine different factors and their relationship to personality traits.

Procedures: If you agree to be in this study, we will ask you to complete a total of 9 questionnaires and/or surveys. The time commitment is expected to be approximately 2 hours.

Possible Discomforts and Risks: The foreseeable risks of participation in this study are minimal. These include possible eye strain from the computer screen, as well as possible breach of confidentiality. Possible discomfort may arise from answering questions about your childhood and environment. In order to minimize the risk of any potential discomfort, participants may choose to skip any question or survey that they do not wish to answer. Furthermore, in the chance of discomfort, the debriefing form will provide resources with which the participant can seek counseling or support.

Benefits: No direct benefits are anticipated for research participants, although some participants may enjoy taking a moment and self-evaluating themselves.

Voluntary Participation: Your participation in this study is voluntary, and you may decide not to participate without prejudice, penalty, or loss of benefits to which you are otherwise entitled.

Compensation: Participants will receive 4 REP course credits for completing this study. Alternatives to this is to participate in different research projects or completing alternative assignments on REP.

Confidentiality: The collected data will be accessible to the principal investigator, Nascha Streng, co-investigators Esther Kim and Cordelia Chou, and faculty advisor Dr. Diana Falkenbach. You will be asked to enter your name in order to receive REP credit, but your name will never be connected to survey responses at any time. The research team, authorized CUNY staff, and government agencies that oversee this type of research may have access to research data and records in order to monitor the research. Research records provided to authorized, non-CUNY individuals will not contain identifiable information about you. Publications and/or presentations that result from this study will not identify you by name.

Contact Questions/Persons: If you have any questions about the research now or in the future, you should contact the Principal Investigator, Nascha Streng at nascha.streng@jjay.cuny.edu, or the co-investigators, Cordelia Chou at cordelia.chou@jjay.cuny.edu and Esther Kim at esther.kim@jjay.cuny.edu. If you have any questions about your rights as a research participant or if you would like to talk to someone other than the researchers, you can contact CUNY Research Compliance Administrator at 646-664-8918. If you experience any changes in mood after participation in this study, please contact the John Jay Counseling Center at 212-237-8111.

If consenting to participate within this study, please write name below.

Participant name: _____

Appendix B

Debriefing Form

Childhood Experiences and Personality

Primary Researcher: Nascha Streng, B.A.

Thank you for your participation in this study. The purpose of this study was to explore the effect of early environmental factors, such as substance abuse, interpersonal behaviors, and family influences on adults.

Previous literature has indicated that early environmental factors during childhood and early adolescence can play a role in future outcomes in an individual's life. Research on factors such as early academic performance, peer relationships, family relationships, and environmental factors has indicated the existence of varying trajectories regarding later academic, social, and occupational success in an individual's life. Previous literature has also indicated that early environmental factors play a role in the development of certain personality characteristics in individuals that may contribute to prosocial attributes. There is less research, however, exploring the relationships between the development of personality and individual outcomes.

We are interested in observing how these early environmental factors play a role in developing particular personality characteristics, and if so, how they may contribute to success in adulthood. Success, in this study, is operationalized as academic and occupational achievement and social aptitude. We are exploring the interaction between environmental factors, personality characteristics, and success and investigating etiological factors contributing to various trajectories.

Questions and assessments within this study were aimed to avoid any distress. However, if you experienced any psychological or physical discomfort from the questions asked or from the length of the study, we encourage you to call your primary care physician or contact the John Jay Counseling Department at (212) 237-8111. In the case that you are requiring immediate psychological attention or have thoughts of harming yourself, please call the Crisis Call Center at (800) 273-8355 or text "GO" to 741741 to contact the text line.

Confidentiality: Collected data will be accessible to the primary researcher, Nascha Streng, co-investigators, Cordelia Chou and Esther Kim, the faculty advisor, Dr. Diana Falkenbach, and the Institutional Review Board members. No identifiable or personal information was collected beyond the purposes of obtaining informed consent and awarding REP credits; all survey and questionnaire responses are anonymous and have no identifiable information linking the participant to the responses.

If you have questions or concerns regarding your participation, please contact the primary researcher at nascha.streng@jjay.cuny.edu. If you have any questions about your rights as a research participant or if you would like to talk to someone other than the researchers, you can contact CUNY Research Compliance Administrator at 646-664-8918.

Thank you for your participation.