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The Tipping Point in Psychopathy: Role of Psychopathic Traits in Trauma Exposure

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Abstract

Though psychopathy has been associated with a socially deviant lifestyle, the idea of "successful" psychopathy has gained increased attention. Previous research has explored whether psychopathic traits play a role in trauma exposure/ PTSD, using clinical and forensic populations. Results from these studies suggest that Factor 1 traits may protect from trauma exposure (Factor 1 Theory) while Factor 2 traits may worsen the impact of trauma through exacerbated exposure to traumatic events. The objective of this study was to explore the relationship between each of Factor 1 traits and Factor 2 traits with trauma exposure and PTSD. In a sample of 86 emergency responders and 104 community members, Factor 1 did not show a significant association with trauma exposure (community or emergency responder samples) but showed a negative and significant association with PTSD (community and emergency responders samples); Factor 2 showed a significant positive association with trauma exposure (community sample) and PTSD (community and emergency responders samples). Factor 1 had a significant moderation effect on the relationship between trauma exposure and PTSD (community sample) suggesting a protective effect. Factor 2 did not have a significant moderating effect in any of the samples. This study used a population that has not been studied before (emergency responders) in the context of psychopathy and trauma. By furthering research on this topic, appropriate intervention methods can be developed to assist such sub-groups that are faced with high trauma exposure on a daily basis. (238 words)

Keywords: psychopathy; trauma; PTSD; TriPM; emergency responders; life events checklist, PTSD checklist

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Introduction

Psychopathy is a multi-faceted construct characterized by distinctive interpersonal traits, such as shallow emotions, lack of empathy and remorse, deceptiveness, glibness and grandiosity, typically in the context of persistent antisocial behavior marked by deficient impulse control (Venables, Hall, & Patrick, 2014). Cleckley (1941) defined psychopathy as a personality disorder characterized by cognitive, behavioral, affective, and interpersonal deficits, including traits such as superficial charm, glibness, lack of anxiety and empathy. Karpman (1941) was the first to propose a distinction between primary and secondary psychopathy. He theorized that though the two were behaviorally similar, they differed in their motivational structure, in that primary psychopathy was a heritable deficit characterized by callousness, fear insensitivity, and lack of empathy, while secondary psychopathy was shaped by a combination of heritable as well as environmental causes (Karpman, 1941). Subsequent research has found similar results supporting Karpman's (1941) theorization wherein primary psychopathy is found to comprise of a constitutional deficit, leading to callous and manipulative behavior and a lack of anxiety, while secondary psychopathy is theorized to develop from environmental factors such as parental abuse or rejection, resulting in impulsivity, aggression, and emotional reactivity (Falkenbach, 2004; Poythress & Skeem, 2006).

With the increasing importance of the construct of psychopathy in the criminal justice and clinical contexts, Hare (2003) developed the Psychopathy Checklist-Revised (PCL-R), a dominant instrument used to conduct a clinical and forensic assessment of psychopathy based on data collected from incarcerated samples. Factor analysis of the PCL-R revealed four facets of psychopathy – the Interpersonal facet (includes traits such as grandiosity, arrogance, callousness,

manipulativeness), Affective facet (includes traits such as short-temperedness, lack of guilt or anxiety), Lifestyle facet (includes traits such as irresponsibility, impulsivity, need for stimulation), and the Antisocial facet (includes traits such as poor behavioral controls, criminal versatility, early behavioral problems; Hare, 2003). The Interpersonal and Affective facets together form Factor 1 of the PCL-R while the Lifestyle and Antisocial facets form Factor 2 of the PCL-R (Hare, 2003).

Alternatives to the PCL-R have been developed to better assess psychopathy outside of clinical and forensic settings. These include measures such as the Psychopathic Personality Inventory-Revised (PPI-R; Lilienfeld and Widows 2005) and the Triarchic Psychopathy Measure (TriPM; Patrick, 2010). Benning and colleagues (2003) found that the PPI-R, which is composed of eight subscales, combined into three factors of Fearless Dominance (PPI-R FD; i.e., a combination of subscales of fearlessness, social influence, and stress immunity), Self-Centered Impulsivity (PPI-R SCI; composed of Machiavellian egocentricity, carefree nonplanfulness, blame externalization, and rebellious nonconformity subscales), and Coldheartedness (PPI-R CH; i.e., a subscale including traits such as lack of emotions, guilt, empathy, and attachment to others).

The TriPM was developed with the intent to organize and clarify constructs related to psychopathy (Evans & Tully, 2016) and synthesize various theoretical approaches (Hicks & Drislane, 2018). The TriPM demonstrates three scales of Boldness (TriPM Boldness), Disinhibition (TriPM Disinhibition), and Meanness (TriPM Meanness; Patrick, 2010). TriPM Boldness entails a capacity to remain calm under pressure and recover quickly from stressors, high social efficacy, and a tolerance for unfamiliarity and danger; TriPM Disinhibition reflects traits such as poor planfulness, impaired affect regulation, and deficient behavioral restraint;

TriPM Meanness consists of traits such as deficient empathy, disdain and lack of close attachments with others, rebelliousness, excitement seeking, exploitativeness, and empowerment through cruelty (Patrick, 2010). Since the current study used the TriPM to assess psychopathy, it is useful to discuss the validity of this measure compared to other established psychopathy instruments laid out above. Further, given the various instruments that have been developed to assess psychopathy, related traits have been classified into subtypes, factors, and subscales. A brief overview and comparison of key classifications has been provided below to facilitate a contextual understanding of findings from prior studies.

Convergent Validity of Psychopathy Measures

Factor 1 of the PCL-R incorporates Interpersonal and Affective facets that include traits most closely associated with primary psychopathy (Hicks, et al., 2012); as a result, primary psychopathy is typically found to manifest in the form of high scores on Factor 1 of the PCL-R (Poythress & Skeem, 2006). On the other hand, Factor 2 of the PCL-R includes the Lifestyle and Antisocial facets which capture traits such as impulsivity, negative emotionality, reactive aggression that are associated with secondary psychopathy (Hicks, et al., 2012); accordingly, secondary psychopathy has been found to be associated with elevated scores on Factor 2 of the PCL-R (Poythress & Skeem, 2006). In drawing parallels between PCL-R and PPI-R factors, Benning and colleagues (2003) found that PPI-R FD correlated with Factor 1 of the PCL-R and PPI-R SCI correlated with Factor 2. Hicks and Drislane (2018) had similar findings and suggested that PPI-R FD and PPI-R SCI are markedly similar to Factor 1 and Factor 2 of the PCL-R, respectively, and in fact, PPI-R FD closely resembled the Interpersonal facet of Factor 1. Hall and colleagues (2014) postulated that PPI-R CH scale appeared to be most similar to the Affective facet of Factor 1 of the PCL-R.

In comparing the TriPM scales to PCL-R factors, TriPM Boldness scale was significantly associated with Interpersonal facet of Factor 1, TriPM Disinhibition scale was associated with the Lifestyle facet of Factor 2 (Venables et al., 2014), and TriPM Meanness correlated with the Interpersonal facet (of Factor 1) as well as Factor 2 (i.e., both, Lifestyle and Antisocial facets) of the PCL-R. Sellbom and Philips (2013), and Stanley, Wygant, and Sellbom (2013) found a correlation between TriPM Meanness and Affective facet (of Factor 1) and the Antisocial facet (of Factor 2) of the PCL-R. Patrick (2010) suggested that all three scales of the TriPM can be associated with the Antisocial facet as the TriPM scales contribute in separate ways to the said facet (i.e., reflecting early behavior problems, aggressiveness, juvenile delinquency, criminal versatility, and propensity to re-offend).

Though the associations between the TriPM scales and the PCL-R are not distinct, associations between the TriPM and PPI-R have been more promising. TriPM Boldness relates very strongly to PPI-R FD (Anderson, Sellbom, Wygant, Salekin, Krueger, 2014; Patrick & Drislane, 2015; Sellbom & Philips, 2013). TriPM Meanness is strongly associated with both, PPI-R CH (Patrick & Drislane, 2015) and PPI-R SCI (Sellbom & Philips, 2013; Stanley et al., 2013). While Yildirim and Derksen (2015) noticed an ambiguous relationship between TriPM Disinhibition and PPI-R SCI, Patrick and Drislane (2015) found a strong relationship in this regard. Please refer to

Table 1 below for an overview of associations between factors/scales of the abovementioned psychopathy measures.

Table **1**
Psychopathy measures and the associations between their scales/ factors

Measure	Associated with
PCL-R: Factor 1	PPI-R FD
Interpersonal	TriPM Boldness and TriPM Meanness
Affective	PPI-R CH, TriPM Meanness
PCL-R: Factor 2	PPI-R SCI
Lifestyle	TriPM Disinhibition and TriPM Meanness
Antisocial	TriPM Boldness, TriPM Disinhibition and TriPM Meanness
PPI-R FD	TriPM Boldness
PPI-R SCI	TriPM Disinhibition; TriPM Meanness
PPI-R CH	TriPM Meanness

Adaptive/ Successful psychopathy

Historically, research has primarily focused on psychopathy in incarcerated male offenders. While such research has provided useful findings, it is problematic since it may not generalize to psychopathy as manifested in community members, whether in criminal or noncriminal forms (Benning, Venables, & Hall, 2018). Cleckley (1976) theorized that psychopathy does not necessarily entail severe criminal deviance and psychopathic traits could, in fact, be found in nearly every occupation and levels of society. As Hare (1993) posited, incarcerated psychopaths may signify only a tip of a very large iceberg. This idea has gained increased attention among researchers who are attempting to answer the question: what are the potential benefits (if any) of psychopathic personality traits? Researchers have begun to consider the possibility that certain psychopathic traits may actually buffer against maladaptive behavior and in some situations, these traits may even promote successful behavior (Hall and Benning, 2006, Lilienfeld, Watts, & Smith, 2015; Steinert, Lishner, Vitacco, & Hong, 2017).

This seeming paradox of "successful psychopathy" was coined to capture the core psychopathic personality traits, without the chronic involvement in serious antisocial behavior (Hall & Benning, 2006). Provisional evidence suggests that (compared to unsuccessful psychopathy) successful psychopathy is characterized by high boldness and low disinhibition; in other words, distinctive traits of successful psychopathy may be protective factors that buffer psychopathic individuals against antisocial outcomes (Lilienfeld, Watts, & Smith, 2015). For instance, PPI-R FD has been significantly associated with historian ratings of overall presidential performance, leadership, communicative ability, and willingness to take risks (Lilienfeld et al., 2012). PPI-R FD has also been associated with leadership positions in organizations and high risk occupations (Lilienfeld et al., 2012). In the workplace, traits such as boldness have been conjectured to be adaptive in business settings, predisposing to leadership success (Lilienfeld et al., 2012; Patrick, Fowles, Krueger, 2009). Given that these adaptive psychopathic personality traits manifest in noncriminal populations, it is imperative to study the possible benefits of such traits in these populations, including traits that may act as protective factors and shield from adverse outcomes.

Psychopathy in Heroic Populations

Lykken (1995) believed that heroes and psychopaths were "twigs on the same genetic branch" (p.118), sharing a predisposition toward fearlessness that can be used to create either socially adaptive or maladaptive outlets (Smith, Lilienfeld, Coffey, & Dabbs, 2013). For instance, individuals who exhibit psychopathic traits, such as fearlessness, stress immunity, and sensation seeking, may be predisposed to heroic actions and may be inclined towards high-emergency situations that have scope for such actions (Lykken, 1995). Supporting this argument, Smith and colleagues (2013) observed a positive association between Factor 1 traits and heroic

behavior and altruism towards strangers, suggesting that a predisposition towards fearlessness

may incline an individual to take risks and perform heroic acts. Falkenbach, Balash and

colleagues (2018) found that individuals in the potentially "heroic" occupation of police recruits

scored higher on Factor 1 traits as compared to incarcerated individuals. Falkenbach, Glackin,

and Mckinley (2018) found similar results in a sample of police officers where three distinct

subtypes emerged: those who had low psychopathy scores, those with higher PPI-R FD scores

(who had potential beneficial psychopathic traits such as low anxiety, stress immunity,

extraverted dominance) and those with higher PPI-R SCI scores (those who had more

maladaptive psychopathic traits such as blame externalization, aggressive behavior, high

impulsivity). Based on a military sample, Drislane and colleagues (2014) observed that Factor 1

traits were correlated with very low rates of internalizing psychopathology, which is consistent

with Cleckley's conceptualization of psychopathy, that is, a "masked" disturbance whereby

severe behavioral pathology is concealed.

Emergency Responders

These outcomes suggest that "heroic" populations may have high scores on Factor 1 of the

PCL-R/ PPI-R FD indicating that heroic professions, such as those involving emergency or first

responders, may exhibit adaptive/successful traits of psychopathy. At the same time, such

professions are unique, that is, though they involve heroism, they also involve constant, high

exposure to trauma. Lewis-Schroeder and colleagues (2018) observe that emergency responders

are repeatedly exposed to potentially traumatic events while on the job; for instance, law

enforcement officials, firefighters, ambulance personnel are exposed to death, serious injury, and

violence at significantly higher rates compared to most civilian professions. In fact, emergency

responders are at an elevated risk of developing Posttraumatic Stress Disorder (PTSD;

Armstrong, Shakespeare-Finch, & Shochet, 2014; Matusko, Kemp, Paterson, & Bryant, 2013).

Past week to six-month prevalence rates of PTSD in the general population ranges from 1-5%,

whereas those in disaster workers range from 2–17%, 15–22% in ambulance attendants, and

between 17–32% in firefighters (Laposa, & Alden, 2003). These results suggest that though

emergency responders may be "heroic", they may also be at an increased risk of developing

PTSD compared to the general population (Laposa, & Alden, 2003).

Relationship between Psychopathy and Trauma

The American Psychiatric Association (APA) considers an event to be a traumatic

stressor if it causes or threatens to cause death, sexual violence, or serious injury, to an

individual, a close family member, or friend (APA, 2013). A possible consequence of such a

traumatic stressor is PTSD which typically manifests in the form of emotional distress and

occurs when reactions to traumatic events subsist for prolonged durations. PTSD is recognized as

a disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) issued by the

APA and involves exhibition of specific patterns and behaviors, including negative alterations in

cognition and mood symptoms, avoidance symptoms, or intrusion symptoms (APA, 2013).

Research has attempted to evaluate whether psychopathic traits (particularly, adaptive or

successful traits) play any role in trauma experienced by adults. It is theorized that Factor 1 traits

of psychopathy (i.e., Factor 1 of the PCL-R, PPI-R FD, TriPM Boldness) reflect an emotional

deficit, marked by a lack of fear and anxiety, which may inhibit experiencing serious and deeply

moving emotional states (Cleckley, 1976; Willemsen, De Ganck, & Verhaeghe, 2012). This

fundamental emotional deficit may prevent from the development of PTSD; individuals with

such psychopathic traits may be less likely to develop conditioned fear and be able to avoid

unpleasant stimuli such that the impact of trauma exposure on them would be less significant as

compared to individuals who are lower on Factor 1 traits (Willemsen et al., 2012). As a result, Factor 1 traits of psychopathy may act as a protective shield, preventing the impact of trauma ("Factor 1 Theory"; Pham, 2012; Willemsen et al., 2012; see 'Traumatic Events' and 'PTSD'). On the other hand, Factor 2 traits of psychopathy (i.e., Factor 2 of the PCL-R, PPI-R SCI and TriPM Disinhibition), which have been associated with a lifestyle involving high impulsivity and risky behavior, may lead to a risky lifestyle which could result in higher incidence of traumatic experiences in adulthood and the resultant psychopathology in the form of PTSD ("Factor 2 Theory"; Blonigen, Sullivan, Hicks, Patrick, & Lejuez, 2012; Willemsen et al., 2012; see 'Traumatic Events' and 'PTSD').

Traumatic Events

Research exploring the relationship between psychopathy and trauma has primarily focused on manifestation of psychopathy as a result of childhood trauma exposure (such as emotional or physical abuse; Campbell, Porter, Skeem, & Petrila, 2004; Schimmenti, Di Carlo, Passanisi, & Caretti, 2015). The interaction between trauma in adulthood and psychopathic traits remains largely unexplored. The few studies that have tested this relationship have found support only for Factor 2 Theory. Blonigen and colleagues (2012) recruited a sample of incarcerated females and assessed trauma exposure based on 16 potentially traumatic events (such as natural disasters, fire or explosion, accidents, sexual assault, physical violence) that were either directly experienced or witnessed by the participant. Psychopathy was assessed using the PCL-R. Results suggested that Factor 2 of the PCL-R was associated with higher incidence of traumatic events, but Factor 1 was not; the Lifestyle facet of the PCL-R was found to be a specific risk factor for exposure to potentially traumatic events (Blonigen et al., 2012). Tatar, Cauffman, Kimonis, and Skeem (2012) used a sample of incarcerated (male) youth and found that participants with

secondary psychopathy reported higher incidence of trauma as compared to those with primary

psychopathy. Research thus far has not sufficiently explored the relationship between

psychopathy and exposure to traumatic events in adulthood.

PTSD

With regards to PTSD, previous research has found a unique similarity in the behaviors

associated with psychopathy and PTSD wherein both have been associated with greater offense

rates, violence, and re-offending (Buchholz et al., 2017; Goff, Rose, Rose & Purves, 2007; Hare

& Neumann, 2008). However, as Sellbom (2015) observed, these two constructs are rather

distinct and there appears to be a more complex relationship between them than their surface

similarity. While psychopathy is associated with lower threat-sensitivity and poor fear

conditioning, PTSD is associated with heightened threat-sensitivity (Blair and Mitchell, 2009;

Cleckley, 1976; Willemsen et al., 2012; Woodfield et al., 2016). These differences have led some

researchers to contend that psychopathy and PTSD should not co-occur (Sellbom, 2015;

Willemsen et al., 2012). Blair and Mitchell (2009) note that PTSD, in some functional respects,

represents the inverse of psychopathy since the latter is marked by a deficiency in emotional

responsiveness. Willemsen and colleagues (2012) pose that PTSD and psychopathy are inversely

related because high-psychopathic individuals are less likely to interpret traumatic events as

horrifying or threatening. Moeller and Hell (2003) found that participants with high psychopathy

reported exposure to threatening situations but did not develop the corresponding psychological

symptoms of PTSD as compared to those who scored low on psychopathy. Yet others claim that

both disorders are likely to co-occur since they tend to be associated with substantial histories of

increased exposure to trauma (Frick, Lilienfeld, Ellis, Looney & Silverthorn, 1999; Lilienfeld &

Penna, 2001). These differing views are likely to be the result of having considered the overall

construct of psychopathy, instead of comparing the factor-level relationship between

psychopathy and PTSD. In other words, as stated in the psychopathy and trauma theories above,

Factor 1 of psychopathy is likely to be negatively associated with PTSD, whereas Factor 2 is

likely to have a positive association with PTSD.

In testing the factor-level associations between psychopathy and PTSD, Blonigen and

colleagues (2012) used a sample of incarcerated females and found that despite trauma exposure,

Factor 1 and PTSD were not significantly associated but Factor 2 and PTSD were, especially the

Antisocial facet of Factor 2 of the PCL-R. Tatar and colleagues (2012) used a sample of

incarcerated male youth and observed that youth with secondary psychopathy reported higher

PTSD symptoms as compared to those with primary psychopathy. These studies provided

support for Factor 2 Theory. Using a sample of incarcerated males, Woodfield, Dhingra,

Boduszek, and Debowska (2016) did not find a significant relationship between primary

psychopathy and PTSD symptom; their findings revealed that low levels of secondary

psychopathy were positively associated with PTSD but as these levels increased, secondary

psychopathy became negatively associated with PTSD symptoms. This unexpected, non-linear

relationship between PTSD and secondary psychopathy was attributed to potential

desensitization to trauma exposure and an ability to adjust to stressful situations as a

consequence of habituation to potential traumatic events (Woodfield et al., 2016).

Willemsen and colleagues (2012) used a sample of incarcerated males and found support

for Factor 1 Theory, in that, Factor 1 was negatively associated with PTSD. Despite exposure to

a number of traumatic events (such as violent or sexual offences, accidents, being victims of

aggression, witnessing the death or wounding of someone, and serious illness or sudden death of

relative), the Affective facet of Factor 1 of the PCL-R, in particular, was found to moderate the

effect of trauma exposure on PTSD. This finding was attributed to affective traits being

characterized by low fear conditionality (Willemsen et al., 2012). Willemsen and colleagues

(2012) did not find any significant positive association between Factor 2 and PTSD. Pham

(2012) tested a sample of male patients in a high-security psychiatric hospital and found Factor 1

to be negatively related to PTSD; similar to the study conducted by Willemsen and colleagues

(2012), the Affective facet proved to be a specific and negative predictor of PTSD. Pham (2012)

proposed that the Affective facet may be a core component of psychopathy that protects from

exposure to traumatic events because individuals with affective traits would be less likely to

dissociate, avoid, and re-experience trauma.

Sellbom (2015) tested a sample of university students using the Psychopathic Personality

Inventory (PPI; Lilienfeld & Andrews, 1996); this study was the first of its kind to use the PPI

and test community members. Interestingly, Sellbom (2015) found support for, Factor 1 Theory

and Factor 2 Theory; Factor 1 was negatively associated with PTSD and Factor 2 was positively

associated with PTSD (Sellbom, 2015). Anestis, Harrop, Green, and Anestis (2017) used a

sample of national combat veterans and found results consistent with those observed by

Willemsen and colleagues (2012), Pham (2012), and Sellbom (2015), in support of Factor 1

Theory. However, Anestis and colleagues (2017) also found a non-linear relationship between

the Antisocial facet and PTSD, that is, PTSD symptoms decreased as levels of the Antisocial

facet (of Factor 2 of the PCL-R) increased, which is in line with results found by Woodfield and

colleagues (2016). Please see Table 2 below for an overview of the literature detailed above.

Most studies so far have tested the relationship between psychopathy and trauma in

clinical, forensic or military samples. Sects of population that may encounter high levels of

trauma in their professional lives, such as emergency responders, have, so far, not been

considered. Accordingly, this study seeks to extend the existing research to emergency

responders to test whether psychopathic traits play a role in trauma exposure with the objective

of testing support for Factor 1 Theory and Factor 2 Theory. Further, this study also seeks to

recruit a sample of community members to draw comparisons between high trauma exposure

(emergency responders) and low trauma exposure (community members).

Table 2
Overview of literature on relationship between psychopathy and trauma/PTSD

Study	Sample	Psychopathy measure used	Trauma / PTSD	Results: Factor 1 Theory	Results: Factor 2 Theory
Blonigen et al., 2012	Incarcerated females	PCL-R (Hare, 2003)	Trauma	Not associated with trauma exposure	Associated with higher incidence of trauma (Lifestyle facet was a specific risk factor)
			PTSD	No significant association	Significant association (especially Antisocial facet)
Tatar et al., 2012	Incarcerated male youth	Youth Psychopathic Traits Inventory (Andershed, Kerr, Stattin, & Levander, 2002)	Trauma	Secondary psychopathy associated with higher incidence of trauma compared to primary	
			PTSD	Secondary psychopathy associated with higher PTSD symptoms compared to primary	
Woodfield et al., 2016	Incarcerated male	Self-report psychopathy scale-short Form (Paulhus, Neumann, & Hare, 2009)	PTSD	No significant relationship	Non-linear relationship: positive association at low levels, negative association at high levels
Willemsen et al., 2012	Incarcerated males	PCL-R (Hare, 2003)	PTSD	Negative association (Affective facet was a moderator)	No significant positive association
Pham (2012)	Psychiatric hospital male patients	PCL (Hare, 2003)	PTSD	Negative association (Affective facet specific and negative predictor of PTSD)	(*not tested*)
Sellbom (2015)	University students	PPI (Lilienfeld & Andrews, 1996)	PTSD	Negative association	Positive association
Anestis et al., 2017	National combat veterans	Levenson Self-Report Psychopathy Scales (Levenson et al., 1995)	PTSD	Negative association	Non-linear relationship: positive association at low levels, negative association at high levels (especially Antisocial facet)

Current Study

This study recruited a sample of emergency responders (i.e., firefighters, police officers,

doctors and nurses working in emergency rooms, emergency medical technicians, ambulance

drivers, and paramedics) to test the relationship between psychopathy and trauma and PTSD. A

sample of community members was also recruited to evaluate how this sample varied from the sample of emergency responders. The primary aim was to explore the potential benefits of psychopathy as a protective factor from the risk for developing psychopathology, specifically, PTSD (i.e., Factor 1 Theory), and to consider the risk factors of psychopathy in relation to trauma exposure and development of PTSD (i.e., Factor 2 Theory), using the Triarchic Psychopathy measure or the TriPM (Patrick, 2010)[1]. The TriPM was used since it is designed to be assess psychopathy in community sampled. It was hypothesized that:

Hypothesis 1: **Comparing Samples:** Consistent with prior studies suggesting that heroic populations are likely score high on Factor 1 traits as well as research on trauma exposure rates and related symptomatology, it was expected that **(1a)** the average scores on TriPM Boldness would be higher for emergency responders compared to community members; **(1b)** the average incidence of trauma (based on the LEC) and PTSD symptoms (based on the PTSD Checklist) reported would be higher in emergency responders compared to community members; (**1c**) *Exploratory analyses*: Differences between the two samples in average scores on the TriPM Total, TriPM Disinhibition and TRIPM Meanness were explored.

Hypothesis 2: Factor 1 Theory: Based on Factor 1 Theory, and the Factor 1 association with PPI-R FD and the Interpersonal facet of the PCL-R, this study evaluated TriPM Boldness as a protective factor against psychopathology resulting from trauma exposure and expected that TriPM Boldness would: **(2a)** be negatively correlated with PTSD; **(2b)** moderate the relationship between trauma exposure and PTSD; (**2c**) *Exploratory analyses*: Since the relationship between Factor 1 and trauma exposure is unclear in the literature, relationship between TriPM Boldness

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[1] The study initially was designed to use the PPI-R (Lilienfeld and Widows 2005). However, procuring a license to use the PPI-R on a public platform, such as the MechanicalTurk, was not permitted. Since the sampling methodology could not be changed, the TriPM was used instead of the PPI-R. This proved beneficial since the TriPM has not been used so far in studies of this kind.

and trauma exposure across the two samples of community members and emergency responders were also explored.

Hypothesis 3: Factor 2 Theory: Since TriPM Disinhibition has been associated with PPI-R SCI and the Lifestyle facet of the PCL-R, it can be most associated with Factor 2. Accordingly, this study tested Factor 2 Theory and hypothesized that TriPM Disinhibition would be: **(3a)** positively correlated with trauma exposure; **(3b)** positively correlated with PTSD; **(3c)** *Exploratory analyses*: Since prior research also indicates a non-linear relationship between Factor 2 and trauma exposure, this study explored whether TriPM Disinhibition has a moderation effect on the relationship between trauma exposure and PTSD in the overall sample as well as both samples separately.

Hypothesis 4: TriPM Meanness: *Exploratory analyses:* The TriPM Meanness scale has been associated with Factor 1 and Factor 2 of the PCL-R, and demonstrates the most overlap with PPI-R CH. Due to its ambiguous association with the PCL-R factors and because the scale has not been tested in prior studies, this study explored the relationship between TriPM Meanness and trauma exposure/ PTSD in the overall sample as well as both samples separately.

Method

Design and Procedures

Participants were recruited using MechanicalTurk via an anonymous, online, self-report survey. Participants below 18 years of age were not permitted to participate in the survey. This exclusion criterion was added to ensure that participants would be capable of giving informed consent. If the participants were not excluded by the exclusion criterion, they were allowed to take part in the survey. Separate but similar surveys were launched on MechanicalTurk to allow separate recruitment of community members (i.e., those participants who were not emergency responders) and emergency responders (i.e., firefighter, police officer, doctor or nurse working in

the emergency room, emergency medical technician, ambulance driver, paramedics). The only

difference between the two surveys was a screener that was included for emergency responders

whereby potential participants were asked if they were, at the time of taking the survey, working

as a paid emergency responder. If they answered "no", they were not permitted to participate in

the survey as emergency responders and were redirected to the end of the survey. They had the

option to partake in the survey as community members. If they answered "yes", they were

permitted to take the survey as emergency responders. Employment related questions were asked

in both surveys to get information on the nature of participants' work. If they responded "yes" to

the screening section (indicating that they were in fact, emergency responders) but were not

emergency responders based on the employment related questions, their responses were moved

to the 'community members' sample and they were excluded from the 'emergency responders'

sample. Similarly, if any community members took the survey as emergency responders, their

responses were moved to the 'emergency responder' sample. In any event, if participants

responded to the survey more than once, their first response was considered, and any subsequent

participation was disregarded. However, since the survey was anonymous, online, and self-

report, the veracity of the participants' responses was impossible to ascertain.

Consent from participants was obtained online prior to administering the survey (see

Appendix A). Administration of the self-report measures took approximately 45 minutes to

complete and upon completion, participants were given $3 as compensation and debriefed (see

Appendix B). Data was stored at the designated research lab at John Jay College of Criminal

Justice in accordance with the Institutional Review Board protocols.

Participants

Total number of participants in the study were 193 of which 107 (55.4%) were

community members and 86 (44.6%) were emergency responders. Three participants from the

community members sample were removed for not providing their age or for being outliers (ages

of 19 and 72 years). After removing them, the total number of participants in the study were 190

of which 104 (54.74%) were community members and 86 (45.26%) were emergency responders.

Details of their occupations have been set out in **Error! Reference source not found.**.

Ages of participants ranged from 23 to 67, with an overall average of 36.37 years

(SD=8.88, median=34 years). For emergency responders (n=86), participant ages ranged from 24

to 59 years, with an average age of 35.42 years (SD=7.81, median=34 years). For community

members (n=104), ages of the participants ranged from 23 to 67, with an average of 37.16 years

(SD=9.64, median=35 years). Independent t-tests were run to test for any significant differences

between the average ages of the two samples and results were not significant (t(188)=-1.35, p=

.09, ns). A breakdown of gender and race has been set out in Table 4. Chi-square analyses were

used to test for any differences between the two samples in terms of gender and race; there were

no significant differences (gender χ^2=.20, ns; race χ^2=6.11, ns).

For the emergency responder sample, comparisons were also made for time served as an

emergency responder versus scores on TriPM Boldness and found the following: 18 emergency

responders served 1-12 months on the job and had Boldness scores from 17 to 51; 12 emergency

responders served 13-24 months on the job and had Boldness scores from 24 to 55; 18

emergency responders served 25-36 months on the job and had Boldness scores from 26 to 51; 7

emergency responders served 37-48 months on the job and had Boldness scores from 30 to 45;

10 emergency responders served 49-60 months on the job and had Boldness scores from 24 to

57; 12 emergency responders served 61-120 months on the job and had Boldness scores from 29

to 50; 9 emergency responders served 121-360 months on the job and had Boldness scores from

23 to 48.

Table 3

Participants' occupations

Broad Occupation	N	%
Community Members		
Administrative (accountants, administrative assistants, clerks, auditors, brokers, computer technicians, consultants, customer service associates, crowd-sourcers, debt collectors, human resources personnel)	30	15.8
Professional (attorneys, derivative traders, directors of facilities, engineers, financial planning analysts, flight engineers, healthcare personnel, landscapers, marketing personnel)	24	12.6
Sales	13	6.8
Education	10	5.3
IT	8	4.2
Online worker	4	2.1
Creative (artists, writers, proofreaders)	4	2.1
Freelancer	3	1.6
Therapist	3	1.6
Retired/disabled	1	.5
Unemployed	1	.5
Chemist	1	.5
Developer	1	.5
Missing	1	.5
Total community members	104	54.74
Emergency Responders		
Nurse	27	14.2
EMT	20	10.5
Fire fighter	12	6.3
Paramedic	9	4.7
Ambulance driver	8	4.2
Doctor	4	2.1
Medical Technician	4	2.1
Police Officer	2	1.1
Total emergency responders	86	45.26
Total	**190**	**100.0**

Table 4
Participants' gender and race breakdown

	Emergency responders		Community members		Total	
	N	%	N	%	N	%
Gender						
Male	51	59.3	65	62.5	**116**	**61.1**
Female	35	40.7	39	37.5	**74**	**38.9**
Total	**86**	**100**	**104**	**100**	**190**	**100**
Race						
White	48	55.8	73	70.2	**121**	**63.7**
Asian	27	31.4	24	23.1	**51**	**26.8**
Black/African-American	3	3.5	4	3.8	**7**	**3.7**
Other/ Mixed Race*	8	9.3	3	2.9	**11**	**5.8**
Total	**86**	**100**	**104**	**100**	**190**	**100**

*includes Native Hawaiian or Pacific Islander, American Indian or Alaskan Native, and any other race.

Materials

Triarchic Psychopathy Measure (TriPM; Patrick, 2010). The TriPM is a 58-item self-report measure that is designed to assess psychopathic traits in an individual. It incorporates the triarchic model which is aimed at integrating various historic conceptualizations of psychopathy with empirical findings in order to use the instrument with adults and youth. Participants are instructed to rate how accurate a statement is of their personality on a four-point Likert scale, being "true", "somewhat true", "somewhat false", and "false". The TriPM is composed of 3 scales— TriPM Boldness (19 items), TriPM Disinhibition (20 items), and TriPM Meanness (19 items) with a highest possible score of 174. TriPM Boldness reflects the nexus of high dominance, low anxiousness, and venturesomeness; TriPM Disinhibition is aimed at capturing tendencies of an individual towards traits such as impulsiveness, irresponsibility, oppositionality, and anger/hostility; TriPM Meanness reflects tendencies toward callousness, cruelty, predatory

aggression, and excitement seeking (Patrick, 2010). Based on studies conducted by Sellbom and

Philips (2013) and Stanley and colleagues (2013), Cronbach's alphas for all three scales ranged

from .77 - .89 (TriPM Boldness), .84-.89 (TriPM Disinhibition), and .88-.90 (TriPM Meanness).

For this study, Cronbach's alpha for the overall sample was .88 for TriPM Boldness, .94 for

TriPM Disinhibition, and .92 for TriPM Meanness.

   Life Events Checklist for DSM-5 (LEC; Weathers et al., 2013). The LEC is a self-report

measure designed to screen potentially traumatic events and is based on the DSM-5. It assesses

exposure to 16 events known to potentially result in PTSD or distress. For each potentially

traumatic event, participants are instructed to indicate whether the traumatic event: (a) happened

to them personally; (b) they witnessed the event happen to someone else; (c) they learned about

the event happening to a close family member or close friend; (d) they were exposed to the event

as part of their job (for example, paramedic, police, military, or other first responder); (e) they

are not sure if the description fits; or (f) it does not apply to them. For instance, for an item such

as "Natural disaster (for example, flood, hurricane, tornado, earthquake)", a response of

"Happened to me; Witnessed it; Learned about it; Part of my job; Not sure; Doesn't apply" is

required to be indicated. Since the LEC does not involve scoring of items, the number of

traumatic experiences reported by a participant and the kind of exposure was taken into account.

Accordingly, if a participant was exposed to a traumatic event listed, responses from (a) to (d)

were coded as presence of a traumatic event (since these involved direct or indirect exposure)

whereas (e) and (f) were coded as absence of a traumatic event (since there was no actual

exposure to the traumatic event). If a participant reported multiple ways in which they were

exposed to a traumatic event, it was coded as a separate category (under 'g') and was counted as

presence of a traumatic event. Exposure to the number of traumatic events for each participant was calculated based on such presence and absence.

The original Life-Events Checklist was developed in line with DSM-IV (Original LEC). It demonstrated adequate psychometric properties as a stand-alone assessment of traumatic exposure, particularly when evaluating consistency of events that actually happened to a respondent. The Original LEC also demonstrated convergent validity with measures assessing varying levels of exposure to potentially traumatic events and psychopathology known to relate to traumatic exposure. However, the Original LEC did not establish that the respondent had experienced an event with sufficient severity to meet DSM-IV criteria for a traumatic exposure. (Changes between the Original LEC and the LEC-5 include modification of Item 15 from "Sudden, unexpected death of someone close to you" to "Sudden accidental death" and addition of a response category of "Part of my job".

According to Gray and colleagues (2004), the test-retest reliability was stable over a period of 7 days. With respect to its reliability as a measure of direct trauma exposure, only one item failed to achieve a kappa of .40, and all other item kappas were above .50 (p < .001 for all kappa coefficients). Kappa coefficients for seven of the LEC items were above .60. The mean kappa for all items was .61, and the retest correlation was r = .82, p < .001. A few items failed to meet conventional standards for adequate reliability. The modest reliability coefficients of some of these items were attributed to low base rates of the events in this checklist. For the current sample, Cronbach's alpha was .90.

PTSD Checklist for DSM-5 (PTSDC; Weathers et al., 2013). The PTSDC is a 20-item (or symptoms) self-report measure that is designed to assist in making a provisional diagnosis of PTSD by assessing the 20 DSM-5 symptoms of PTSD. While the interpretation of the PTSDC is

required to be conducted by a clinician, for the purpose of this study, the PTSDC was used only

to assess the self-reported severity of the PTSD symptoms based on the PTSDC. No diagnoses of

PTSD were made on the basis of responses to the said checklist. Participants were instructed to

indicate their response to a very stressful experience that may have occurred in the month

preceding administration of the PTSDC. For each symptom, participants indicated their response

measured on a 5-point Likert scale: 0 = Not at all; 1 = A little bit; 2 = Moderately; 3 = Quite a

bit; and 4 = Extremely. A total symptom severity score (range 0-80) was obtained by summing

the scores for each of the 20 items. Blevins, Weathers, Davis, Witte, and Domino (2015)

conducted two studies with trauma-exposed college students to examine the psychometric

properties of the PTSDC. The first study by Blevins and colleagues (2015) exhibited strong

internal consistency (α = .94), test-retest reliability (r = .82), and convergent (rs = .74 to .85) and

discriminant (rs = .31 to .60) validity. In the second study by Blevins and colleagues (2015), the

PTSDC scores demonstrated similarly strong reliability and validity, indicating that the PTSDC

was a psychometrically sound measure of PTSD symptoms. For the current sample, Cronbach's

alpha was .97.

Results

Descriptive statistics were run, and preliminary analyses were performed for the sample

of emergency responders and community members to assess the distribution of psychopathy

scores based on the TriPM, number of traumatic events reported based on the LEC, and PTSDC

scores. Per participant scores for psychopathy were calculated based on the TriPM; the number

of traumatic events reported per participant was calculated using the LEC; per participant PTSD

scores were calculated based on the PTSDC. Independent t-tests (for sample comparisons),

Pearson's correlations and partial correlations (to test the nature of relationship between

variables), as well as moderated regression analyses (to test for any moderation effect) were run

as a part of our analyses. All regressions were run using Process (version 3.4, Hayes, 2018).

Analyses were also run to test for effect sizes (Cohen's d) and comparing correlations for any

significant differences (Fisher's z) to avoid Type I errors.

Analysis of Hypothesis 1: Comparing Samples

It was expected that emergency responders (n=86) would have a higher average score

compared to community members (n=104) on TriPM Boldness. Independent t-tests were

significant; emergency responders had higher mean scores than community members, as shown

in Table 5**Error! Reference source not found.**. Independent t-tests did not reveal significant

differences in average scores for TriPM total, TriPM Disinhibition or TriPM Meanness. It was

also hypothesized that compared to community members, emergency responders would, on

average, have higher incidence of trauma exposure based on the LEC. As shown in Table 5,

emergency responders had higher average scores on the LEC than community members and the

independent t-test revealed significant results. Average PTSD scores across the two samples

were also compared but results were not significant.

Table 5
Comparison of TriPM, LEC, PTSDC Scores

	Overall			Emergency Responders			Community Members			Independent T-test
	$\bar{X}$	SD	Range	$\bar{X}$	SD	Range	$\bar{X}$	SD	Range	
TriPM Total	64.05	22.85	14-118	66.45	18.94	35-118	62.06	25.56	14-117	$t(185.88) = 1.36, p = .18, d = .20$
TriPM Boldness	31.73	10.42	2-57	35.78	8.14	17-57	28.38	10.93	2-53	$t(186.06) = 5.34, p < .05, F = 4.15, p < .05; d = .77$
TriPM Disinhibition	17.11	12.92	0-53	16.14	12.45	0-53	17.90	13.30	0-48	$t(188) = -.94, p=.35, d = .14$
TriPM Meanness	15.21	11.08	1-42	14.53	10.57	1-38	15.78	11.51	1-42	$t(188) = -.76, p=.45, d = .11$
LEC	9.45	5.20	0-17	10.95	4.39	1-17	8.21	5.50	0-17	$t(187.78) = 3.82, p < .05 F = 8.98, p < .05; d = .55$
PTSDC	24.35	19.20	0-71	24.66	18.98	0-71	24.09	19.46	0-69	$t(188) = .21, p = .84, d = .03$

Analysis of Hypothesis 2: Factor 1 Theory

   It was hypothesized that TriPM Boldness would be negatively correlated with PTSD and would act as a protective factor against trauma exposure and development of PTSD symptomatology. Pearson's correlation was run for the combined sample (of emergency responders and community members) using scores on TriPM and the PTSDC. The results, set out in

Table 6, revealed that in the overall sample, TriPM Boldness was in fact, significantly and negatively correlated to PTSD scores (r=-.30, p<.01). Each of the two samples were also compared for such a relationship; correlations between TriPM Boldness and PTSDC were negative and significant in emergency responders sample (r=-.45, p<.01) as well as the community sample (r=-.26, p<.01). Fisher's Z test was run to compare PTSDC correlations for the two samples but found no significance (z=-1.48, p = .07).

As set out in Table 6, correlations between the TriPM scales were also significant. In the overall sample, TriPM Boldness was negatively and significantly correlated with TriPM Disinhibition (r=-.28, p<.01) and TriPM Meanness (r=-.15, p<.05). TriPM Disinhibition and TriPM Meanness were positively and significantly correlated in the overall sample (r=.81, p<.01). In the emergency responders sample, TriPM Boldness was negatively and significantly correlated with TriPM Disinhibition (r=-.58, p<.01) and TriPM Meanness (r=-.45, p<.01) and TriPM Disinhibition and TriPM Meanness were positively and significantly correlated (r=.84, p<.01). In the community members sample, TriPM Boldness was negatively but not significantly correlated with TriPM Disinhibition (r =-.10, p = .31) and was positively but not significantly correlated with TriPM Meanness (r =.01, p = .71) whereas TriPM Disinhibition and TriPM Meanness were positively and significant correlated (r=.79, p<.01). Given the significant overlap between scores on the TriPM subscales of Boldness, Meanness and Disinhibition in the total and emergency responder samples, partial correlations were considered to remove any overlap of the TriPM Meanness and Disinhibition subscales from the associations with TriPM Boldness in those samples. Results revealed that TriPM Boldness and PTSDC were negatively and significantly correlated in the overall sample (r =-.18, p<.05) and community members (r=-.25, p<.05) but were no longer significant in emergency responders (r =-.17, p = .11).

The relationship between TriPM Boldness and trauma exposure in the overall sample as well as each of the samples separately was also explored. In line with prior studies, the correlations between TriPM Boldness and LEC scores were not significant for emergency responders (r=.18, $p = .11$) or community members (r=.01, $p = .97$) but were significant and positive for the overall sample (r=.15, $p<.05$). When partial correlations were considered, TriPM Boldness maintained a positive and significant correlation with LEC in the overall sample (r=.25, $p<.01$), and in the emergency responders sample, the correlation was positive and significant (r=.24, $p<.05$). Correlations reported in

Table 6 also revealed that LEC and PTSD scores were significantly and positively correlated in the overall sample ($r=.42$, $p<.01$) and each of the samples separately (emergency responders $r=.29$, $p<.01$; community members ($r=.53$, $p<.01$).

Table 6
Correlations

	Measure	TriPM Total	TriPM Boldness	TriPM Disinhibition	TriPM Meanness	LEC	PTSDC
Overall	**TriPM Total**	1	.23**	.83**	.88**	.32**	.41**
	Boldness	.23**	1	-.28**	-.15*	.15* (.25**)	-.30** (-.18*)
	Disinhibition	.83**	-.28**	1	.81**	.27** (.24**)	.57** (.33**)
	Meanness	.88**	-.15*	.81**	1	.20** (-.06)	.46** (.02)
	LEC	.32**	.15*	.27**	.20**	1	.42**
	PTSDC	.41**	-.30**	.57**	.46**	.42**	1
Emergency Responders	**TriPM Total**	1	-.20	.88**	.92**	.08	.46**
	Boldness	-.20	1	-.58**	-.45**	.18 (.24*)	-.45** (-.17)
	Disinhibition	.88**	-.58**	1	.84**	.03 (.19)	.58** (.28**)
	Meanness	.92**	-.45**	.84**	1	-.02 (-.11)	.48** (.003)
	LEC	.08	.18	.03	-.02	1	.29**
	PTSDC	.46**	-.45**	.58**	.48**	.29**	1
Community Members	**TriPM Total**	1	.39**	.84**	.88*	.41**	.39**
	Boldness	.39**	1	-.10	.04	.01 (.06)	-.26** (-.25*)
	Disinhibition	.84**	-.10	1	.79**	.46** (.31**)	.57** (.36**)
	Meanness	.88**	.04	.79**	1	.37** (-.01)	.44** (.03)
	LEC	.41**	.01	.46**	.37**	1	.53**
	PTSDC	.39**	-.26**	.57**	.44**	.53**	1

**. Correlation is significant at the 0.01 level
*. Correlation is significant at the 0.05 level

NOTE. Partial correlations controlling for the other TRIPM subscales are noted in parentheses

Regression analysis was run on the overall sample to test whether TriPM Boldness moderated the relationship between trauma exposure and PTSD symptoms. Moderated regressions were run using Process (version 3.4, Hayes, 2018) wherein LEC was used as the predictor variable, PTSDC as the outcome variable, and TriPM Boldness as a moderator. Results indicated a significant moderation effect by TriPM Boldness on the relationship between LEC and PTSDC at low, mean and high levels of the said scale (at low levels *b*=2.55, 95% CI [1.93,

3.16], $t=8.17$, $p<.01$; at mean values of TriPM Boldness $b=1.78$, 95% CI [1.37, 2.20], $t=8.49$, $p<.01$; at high levels of TriPM Boldness $b=1.02$, 95% CI [0.54, 1.51], $t=4.14$, $p<.01$; See Table 7 and

Figure *1* below). Figure 1 shows that as Boldness traits increased, the moderation effect became significant.

Moderated regression analyses were also run separately for each sample. For emergency responders, TriPM Boldness did not have a significant moderation effect. (See Table 8 and Figure 2 below.) Figure 2 shows that as Boldness traits increased, the moderation effect by Boldness on the relationship between LEC and PTSD became non-significant. For community members, results were similar to those found in the overall sample; at low, mean and high levels of TriPM Boldness, there was a significant positive moderation effect on the relationship between LEC and PTSDC as shown in Figure 3 (low levels of TriPM Boldness b=2.59, 95% CI [1.75, 3.43], t=6.11, p<.05; mean levels of TriPM Boldness b=1.90, 95% CI [1.34, 2.46], t=6.69, p<.05; high levels of TriPM Boldness b=1.21, 95% CI [0.36, 2.07], t=2.81, p<.05). As TriPM Boldness levels increased, the relationship became non-significant (See Table 9 and

Figure *3* below).

Table 7
Linear model of predictors of PTSD for overall sample

	b	SE	t	p
Constant	24.84 [22.62, 27.07]	1.13	22.05	.0001
TriPM Boldness (centered)	-.76 [-.97, -.55]	.11	-7.23	.0001
Trauma exposure/LEC score (centered)	1.78 [1.37, 2.20]	.21	8.49	.0001
TriPM Boldness x Trauma exposure (centered)	-.07 [-.11, -.04]	.02	-4.08	.0001

Note. R^2 = .35, p <.01

Figure 1
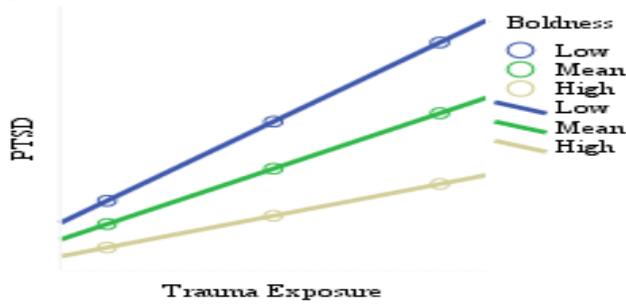
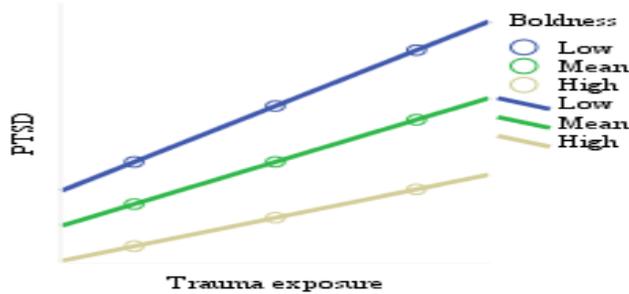Simple slopes equation of regression of PTSD on three levels of Boldness

Table 8

Linear model of predictors of PTSD for emergency responders

	b	SE	t	p
Constant	25.07 [21.70, 28.43]	1.69	14.82	.0001
TriPM Boldness (centered)	-1.17 [-1.52, -.82]	.18	-6.69	.0001
Trauma exposure/LEC score (centered)	1.64 [0.94, 2.35]	.35	4.64	.0001
TriPM Boldness x Trauma exposure (centered)	-.07 [-.14, .01]	.04	-1.67	.10

Note. $R^2 = .36$, $p < .01$

Figure 2

Simple slopes equation of regression of PTSD on three levels of Boldness
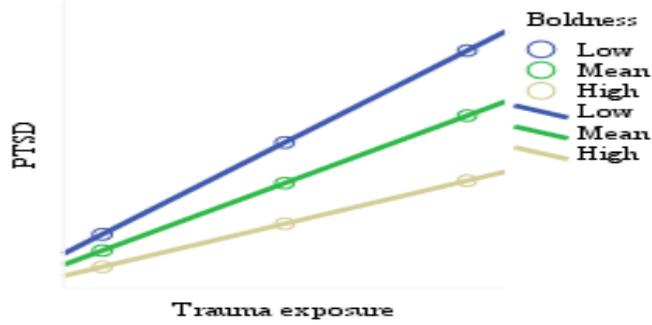
Table 9

Linear model of predictors of PTSD for community members

	b	SE	t	p
Constant	23.96 [21.00, 26.92]	1.49	16.05	.0001
TriPM Boldness (centered)	-.58 [-.89, -.27]	.16	-3.74	.0001
Trauma exposure/LEC score (centered)	1.90 [1.34, 2.46]	.28	6.69	.0001
TriPM Boldness x Trauma exposure (centered)	-.06 [-.12, -.00]	.03	-2.15	.03

Note. $R^2 = .37$, $p < .01$

Figure 3

Simple slopes equation of regression of PTSD on three levels of Boldness

Analysis of Hypothesis 3: Factor 2 Theory

It was hypothesized that TriPM Disinhibition would be positively correlated with trauma

exposure and PTSD. To test this, correlations between TriPM Disinhibition, LEC, and PTSDC

were run using the overall sample as well as each sample separately. Given the overlap in the

TriPM scales noted above, partial correlations were also considered. Results, as set out in

Table 6, revealed that for the overall sample, TriPM Disinhibition was significantly

positively correlated with LEC scores ($r=.27$, $p<.01$) as well as PTSDC ($r=.57$, $p<.01$) and

remained significant (and positive) when partial correlations were considered. For emergency

responders, TriPM Disinhibition and LEC did not have a significant correlation ($r=.03$, $p = .78$)

but TriPM Disinhibition and PTSDC did ($r=.58$, $p<.01$). In the community members sample, the

relationship was significant and positive for TriPM Disinhibition with LEC ($r=.46$, $p<.01$) and

PTSDC ($r=.57$, $p<.01$). These relationships all remained the same when partial correlations were

considered.

Regression analysis were run on the overall sample as well as each sample separately to

explore whether TriPM Disinhibition moderated the relationship between trauma exposure and

PTSD symptoms. Moderated regressions were run using Process (version 3.4, Hayes, 2018)

wherein LEC was used as the predictor variable, PTSDC as the outcome variable, and TriPM

Disinhibition as a moderator variable, for the overall sample as well as each of the two samples

separately. Results indicated that TriPM Disinhibition did not have a significant moderation

effect on the relationship between LEC and PTSDC for the overall sample (see Table 10 and

Figure 4 below), emergency responder sample (see Table 11 and 5 below) or community

members sample (see Table 12 and Figure 6 below). Figures 4, 5, and 6 demonstrate that at low,

moderate, or high levels of Disinhibition, there was no moderation effect on the relationship

between LEC and PTSDC.

Table 10
Linear model of predictors of PTSD for overall sample

	B	SE	t	p
Constant	23.95 [21.58, 26.33]	1.20	19.89	.0001
TriPM Disinhibition (centered)	.70 [.50, .91]	.10	6.72	.0001
Trauma exposure/LEC score (centered)	1.05 [.61, 1.50]	.23	4.65	.0001
TriPM Disinhibition x Trauma exposure (centered)	.02 [-.01, .05]	.02	1.07	.28

Note. $R^2 = .41$, $p < .01$

Figure 4
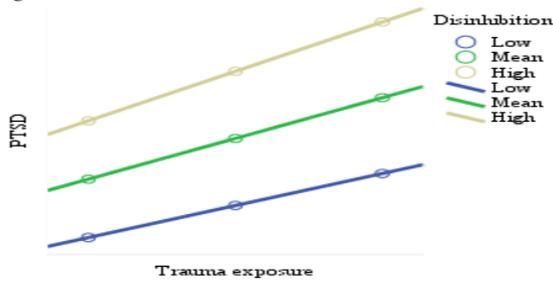
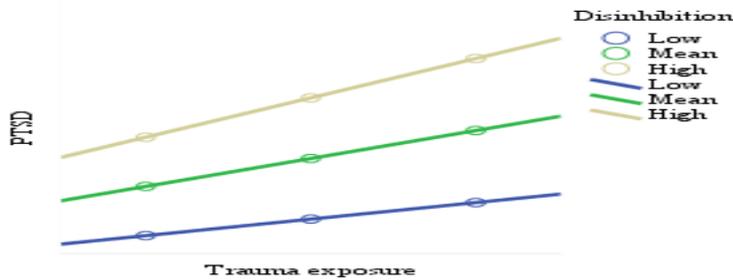Simple slopes equation of regression of PTSD on three levels of Disinhibition

Table 11
Linear model of predictors of PTSD for emergency responders

	B	SE	t	p
Constant	24.60 [21.39, 27.81]	1.61	15.26	.0001
TriPM Disinhibition (centered)	.86 [.56, 1.16]	.15	5.70	.0001
Trauma exposure/LEC score (centered)	1.13 [.42, 1.83]	.36	3.17	.0001
TriPM Disinhibition x Trauma exposure (centered)	.04 [-.02, .10]	.03	1.20	.24

Note. $R^2 = .42$, $p < .01$

Figure 5

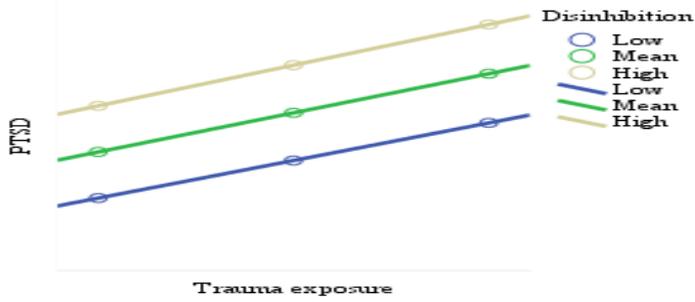Simple slopes equation of regression of PTSD on three levels of Disinhibition

Table 12
Linear model of predictors of PTSD for community members

	B	SE	t	p
Constant	23.83 [20.10, 27.55]	1.88	12.69	.0001
TriPM Disinhibition (centered)	.60 [.31, .88]	.14	4.20	.0001
Trauma exposure/LEC score (centered)	1.18 [.41, 1.94]	.39	3.04	.0001
TriPM Disinhibition x Trauma exposure (centered)	.00 [-.04, .05]	.02	.15	.88

Note. $R^2 = .41$, $p < .01$

Figure 6

Simple slopes equation of regression of PTSD on three levels of Disinhibition

Analysis of Hypothesis 4: TriPM Meanness

The relationship between TriPM Meanness and trauma and PTSD was explored through

correlations. Pearson's correlation was run for the combined sample using scores on the TriPM

Meanness the LEC and the PTSDC, followed by partial correlations to control for the overlap in

the TriPM scales. The results, set out in

Table 6, revealed that in the overall sample, TriPM Meanness was significantly positively correlated to LEC (r=.20, p<.01) and PTSDC (r=.46, p<.01). These correlations were not significant when partial correlations were considered. Correlations between TriPM Meanness and LEC for the emergency responders sample was negative but not significant (r=-.02, p = .84) but positive and significant for PTSDC (r=.48, p<.01). The correlation between TriPM Meanness and PTSDC was no longer significant when partial correlations were considered. In the community members sample, correlations between TriPM Meanness and LEC and PTSDC were positive and significant (r=.37, p<.01 and r=.44, p<.01, respectively), however both these correlations were no longer significant when partial correlations were considered.

Discussion

The current study aimed to explore the relationship between psychopathy and trauma exposure/ PTSD by testing Factor 1 Theory and Factor 2 Theory in a sample of emergency responders and community members. Studies that have tested the relationship between psychopathy and trauma/PTSD have found differing results for Factor 1 Theory and Factor 2 Theory (Anestis et al., 2017; Blonigen et al., 2012; Pham, 2012; Sellbom, 2015; Tatar et al., 2012; Willemsen et al., 2012; Woodfield et al., 2016). Since these studies primarily focused on clinical, forensic, and military samples, it was unclear how this relationship manifests in other populations that are also exposed to high levels of trauma. The present study expanded upon previous research by testing a population that had high trauma exposure, that is, emergency responders as well as comparing this sample to community members. To the best of our knowledge, this study is the first of its kind to test a sample of emergency responders to explore the relation between psychopathy and trauma exposure/PTSD, using the TriPM.

Consistent with observations made by Lewis-Schroeder and colleagues (2018), emergency responders reported higher incidence of trauma exposure compared to community members. However, when PTSD symptoms were considered, despite previous research to the contrary (Armstrong et al., 2014; Laposa & Alden, 2003; Matusko et al., 2013), there was no difference in reports by emergency responders as compared to community members. Though these inconsistent results may be due to a small sample size, they suggest that even with higher exposure to trauma (compared to community members), emergency responders do not necessarily develop the resultant psychopathological conditions such as PTSD. It is likely that emergency responders may be more resilient as compared to the general population or may not necessarily feel the impact (as manifested as PTSD) of their traumatic experiences in the same way. Crowe, Glass, Lancaster, Raines, and Waggy (2017) tested for any potential differences in the way first responders and community members defined and viewed resilience and found that while both groups emphasized the importance of using internal and external coping strategies in order to be resilient, there were some distinctions in how the two groups perceived resiliency. First responders believed that positive coping mechanisms, such as humor and positive thinking, were important when dealing with occupational stressors; they suggested that given their profession, dealing with stressors was something that they must learn to do (Crowe, Glass, Lancaster, Raines, & Waggy, 2017). Interestingly, while first responders in their study emphasized the importance of having a positive and supportive non-work environment, they believed that remaining emotionless in the face of trauma was an effective way of dealing with work experiences (Crowe et al., 2017). This suggests that though emergency responders may be exposed to high levels of trauma, they may view such exposure as a part of their occupation and find ways to deal with it and avoid the risk of developing PTSD.

In terms of psychopathy, first responders had reported more Boldness compared to community members but not more overall psychopathy, Meanness or Disinhibition. Boldness has been defined as a nexus of venturesomeness, high dominance, high social efficacy, and low anxiousness; it also entails a capacity to remain calm under pressure and recover quickly from stressors, as well as a tolerance for unfamiliarity and danger (Patrick, 2010). The above finding along with the definition of the construct of Boldness, is in line with prior studies that indicate that individuals who exhibit psychopathic traits (especially Factor 1 traits) may be inclined towards high-emergency situations that have scope for heroic actions (Drislane et al., 2014; Falkenbach et al., 2018; Falkenbach, Glackin et al., 2018; Lykken, 1995; Smith et al., 2013), suggesting a predisposition towards fearlessness, risk-taking and performing heroic acts[2].

The current study tested Factor 1 Theory in the context of trauma exposure and PTSD. Factor 1 traits of psychopathy have been theorized to cause a fundamental emotional deficit that may protect from the development of PTSD; as a result, Factor 1 traits of psychopathy may act as a protective shield, preventing the impact of trauma (Pham, 2012; Willemsen et al., 2012). In testing Factor 1 Theory, our results indicated a positive significant (partial) correlation between Boldness and trauma exposure in the overall sample and sample of emergency responders. However, this relationship was not significant in the community sample. With regards to the relationship between Boldness and PTSD, a negative relationship was observed across samples, but this relationship was not significant in emergency responders when the effects of Meanness

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[2] The emergency responders sample in the current study had average scores on Boldness when compared to other studies that used the TriPM. Weidacker, O'Farrell, Gray, Johnston & Snowden (2017) found average Boldness scores of 47.1 and 49.3 for 68 offenders and 81 community members, respectively, while, Ljubin-Golub & Sokic (2016) found mean Boldness scores as low as 2.82 for 180 men and 2.58 for 216 women. Similarly, Poy, Segarra, Esteller, Lopez, & Molto (2014) in comparing average Boldness scores for 96 men and 253 women observed mean scores of 31.57 for the men and 27 for women.

and Disinhibition were considered. Overall, these results suggest that Boldness is positively, or not related to trauma exposure and negatively, or not related to PTSD.

These results provided limited support for Factor 1 Theory. Boldness had a significant moderation effect on the relationship between trauma exposure and PTSD for the overall sample and community members but not for emergency responders. These findings indicate that at high levels of Boldness, this factor is protecting against the development of PTSD as a result of trauma exposure. The moderation effect by Boldness was evident in a community members sample that has varying levels of Boldness and trauma exposure but in the emergency responders sample, already elevated traits of Boldness may protect against PTSD which may explain why no such protective relationship was found in that sample. In other words, since the emergency responder sample reported higher levels of Boldness and trauma exposure (as compared to the community sample), it is likely that a moderation effect by Boldness was not evident in this sample due to lack of variability in the levels of Boldness traits as well as trauma exposure. Though the lack of results for the emergency responders sample could be due to the small sample size, it ties in with our findings when comparing the two samples on Boldness traits and PTSD; while there was a significant difference in Boldness traits in the two samples, there was no such significant difference on PTSD symptoms, supporting the finding that high levels of Boldness protect against development of PTSD and act as a protective shield.

The relationship between Meanness, trauma exposure and PTSD was also explored since Meanness has been associated with Factor 1 traits as well as Factor 2 traits in the literature (Hall et al., 2014; Sellbom and Philips, 2013; Stanley et al., 2013). According to Patrick (2010), Meanness entails deficient empathy, disdain and lack of close attachments with others, rebelliousness, excitement seeking, exploitative, and empowerment through cruelty. While

Meanness was expected to have a similar effect as Boldness, no relationship was found between

Meanness and trauma exposure and PTSD for the overall sample or either of the samples

separately when the other psychopathic traits are controlled for. While these results suggest that

Meanness may not play the same role as Boldness, they could also be attributed to the instrument

that was used in this study to measure psychopathy. The TriPM was designed to measure three

different phenotypic constructs of Boldness, Disinhibition, and Meanness (Patrick et al., 2009),

which may not fall squarely within the construct of Factor 1 and Factor 2 (see Table 1). As

Patrick (2010) observed, the Triarchic scales of Boldness, Disinhibition, and Meanness were

developed specifically to measure these constructs as distinct components of psychopathy.

Having said that, there is also a significant overlap among the Triarchic scales themselves,

specifically between Disinhibition and Meanness (Evans & Tully, 2016) which may explain

some of these results.

The current study also tested Factor 2 Theory in the context of trauma exposure and

PTSD. Factor 2 traits have been associated with a lifestyle involving high impulsivity and risky

behavior which may lead to a risky lifestyle, resulting in higher incidence of traumatic

experiences and the resultant psychopathology in the form of PTSD (Blonigen et al., 2012;

Willemsen et al., 2012). Disinhibition, which most closely associated with Factor 2, reflects traits

such as poor planfulness, impaired affect regulation, and deficient behavioral restraint (Patrick,

2010). For the overall sample and the sample of community members, trauma exposure and

PTSD were positively and significantly related to Disinhibition. Disinhibition was positively and

significantly correlated with PTSD in the overall as well as the each of the samples separately,

supporting Factor 2 Theory in accordance with studies conducted by Blonigen and colleagues

(2012), Sellbom (2015), and Tatar and colleagues (2012). Interestingly, Disinhibition was not

related to trauma exposure in the sample of emergency responders which ties in with the idea of "successful" or adaptive psychopathy which is associated with high Boldness and low Disinhibition traits (Lilienfeld at al., 2015). Further, Disinhibition did not (significantly) moderate the relationship between trauma exposure and PTSD for any of the samples.

Conclusions

These findings provide some support for Factor 1 Theory and Factor 2 Theory, particularly in the community sample. In support for Factor 1 Theory, the fundamental emotional deficits associated with Factor 1 are believed to prevent the development of PTSD; individuals who are higher on such psychopathic traits may be less likely to develop conditioned fear and may be able to avoid unpleasant stimuli such that the impact of trauma exposure on them would be less significant as compared to individuals who are lower on Factor 1 traits (Willemsen et al., 2012). As a results of Factor 1 theory, traits of psychopathy may act as a protective shield, preventing the impact of trauma (Pham, 2012; Willemsen et al., 2012). Factor 1 theory is supported in the emergency responder sample as evident by the Pearson's correlation results (for PTSD) but not as a moderator between trauma exposure and PTSD. Further, Factor 1 Theory is supported in the community sample since Boldness did seem to serve as a protective factor between trauma exposure and PTSD.

On the other hand, Factor 2 traits of psychopathy have been associated with a lifestyle involving high impulsivity and risky behavior, is believed to lead to a risky lifestyle which could result in higher incidence of traumatic experiences and the resultant psychopathology in the form of PTSD (Blonigen et al., 2012; Willemsen et al., 2012). In support for Factor 2 theory in the current study, Factor 2 showed a positive and significant association with trauma exposure and PTSD in the community sample but did not have a significant moderating effect between trauma

and PTSD. Perhaps, mediation analyses can help determine the extent to which the association between Disinhibition and PTSD is due to the increase in trauma exposure, further validating the Factor 2 theory.

The theoretical associations between psychopathy, trauma exposure and PTSD are less clear in emergency responders. Boldness was not a protective factor in that relationship for emergency responders. The emergency responders in this sample reported elevated traits of Boldness and rates of trauma exposure but similar levels of PTSD as community samples, providing support for successful or adaptive psychopathy whereby Factor 1 traits/ Boldness is correlated with very low rates of internalizing psychopathology (Drislane et al., 2014). Factor 2 traits are associated with a risky lifestyle which could result in higher incidence of traumatic experiences and the resultant PTSD. However, while Disinhibition was associated with higher PTSD incidence in emergency responders, there was no relationship between Disinhibition and trauma exposure. While Boldness appeared to be associated with reduced levels of PSTD, when all psychopathic traits are considered together, no specific conglomerate of traits seem to be associated with reduced PTSD. Overall, these results suggest that emergency responders may be more resilient compared to community members (Crowe et al., 2017) and may not necessarily feel the impact of traumatic events as much as the general population. Prior research suggests that emergency responders believe that positive coping mechanisms are important in coping with occupational stressors and understand that they must learn to do cope with stressors given their profession (Crowe et al., 2017). Though emergency responders may be exposed to high levels of trauma, they may view such exposure as a part of their occupation and find positive ways to deal with it and avoid the risk of developing PTSD.

Limitations and Future Research

A key limitation of this study is that self-report measures were used. It is likely that participants were inclined to exhibit themselves in a more socially acceptable and positive way. Research indicates that social desirability and the degree of privacy and anonymity are inversely related (Ben-Ze'ev, 2003). This may have impacted their responses to the survey. With respect to the measures used, the LEC-5 has been revised based on the introduction of the DSM-5. However, its psychometric properties, though expected to be similar to the previous LEC, have not been tested. Further, since the LEC-5 and PTSDC are self-report measures, it is likely that participants may have over or under reported their exposure to traumatic events and symptoms thereof. As a result, if interviews were conducted by clinicians to determine exposure to trauma and its resulting symptoms, it is possible that the results may be different. Additionally, the TriPM which was used in this study to measure psychopathy has some limitations. It is argued that the constructs of boldness/fearless dominance cannot be the main component of psychopathy and that disinhibition is not unique to psychopathy (Skeem, Polascheck, Patrick, Lilienfeld, 2011). TriPM scales have also demonstrated weak to moderate correlations with scores on the PCL-R (Evans & Tully, 2016) based on which Factor 1 Theory and Factor 2 Theory were formulated. There also seems to be some overlap in the associations between the PCL-R facets and the TriPM scales (see Table 1). An overlap has also been observed between the Triarchic scales, especially Meanness and Disinhibition as they both relate to the PPI-R impulsive Antisocial scale, though further exploration is needed (Evans & Tully, 2016). Further, the study used MechanicalTurk whereby participants may have misreported information. Though the findings of the study were largely in line with the theories set forth above, veracity of the participants' responses was impossible to ascertain. Additionally, MechanicalTurk allows access

only to registered participants to take the survey, restricting the sample. A larger sample size may provide clearer results and in terms of the relationship between psychopathy and trauma/PTSD.

Future studies should aim to use a large sample of non-clinical samples to test support for Factor 1 Theory and Factor 2 Theory and also explore resiliency in emergency responders, that is, whether they view exposure to traumatic events as a part of their occupation and find positive ways to deal with it, avoiding the risk of developing PTSD. Further, despite the limitations of the measures used in this study, future studies should aim to use these measures, especially the TriPM to check for reliability of results. Future research should also emphasize on interviewing participants to collect data on trauma exposure and PTSD symptoms, possibly exploring other trauma-related psychopathology such as acute stress disorders and adjustment disorders.

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Appendix A

Informed Consent Form

THE CITY UNIVERSITY OF NEW YORK

John Jay College of Criminal Justice

Psychology Department

Internet Based Informed Consent Script

Title of Research Study: Relationship between personality traits, trauma and PTSD

Principal Investigator: Sneha Gupta, Bachelors of Law (student)

Dr. Diana Falkenbach, Ph.D. (advisor)

_____

You are invited to participate in a research study that is being conducted under the direction of Sneha Gupta, Dr. Diana Falkenbach, and John Jay College of Criminal Justice (College).

You are being asked to participate in this research study because you are above 18 years or age and are able to read English. The purpose of this research study is to examine the relationship between personality traits in relationship to trauma / posttraumatic stress disorder. If you agree to participate, we will ask you to complete the survey online which should take about 45 – 60 minutes and contains questions certain demographic questions (such as age, employment, number of years served in the profession etc.), personality traits, and trauma exposure.

At the time of taking the survey and answering questions related to trauma, you may relive a traumatic event that you have experienced which may give rise to some negative emotions such as anxiety, sadness. The survey asks sensitive questions and you may be concerned about a

breach of confidentiality; more information about how your data will be stored is provided

below. You have the option to refuse to provide an answer for any questions you do not wish to

answer and can discontinue the study at any time.

Upon completion of the survey you will receive compensation of $3 for your time and

efforts. If you decide not to complete the survey, you will not receive compensation.

We will make our best efforts to maintain confidentiality of any information that is

collected during this research study, and that can identify you. We will disclose this information

only with your permission or as required by law.

We will protect your confidentiality by not asking you to provide any identifying

information in the survey. We will store your survey responses using a code list, which will link

your responses to the email address you provided, but this code list will only be accessible to the

research team. The data we collect, and the code list will be stored in password-protected files on

a laboratory computer.

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.

You may not benefit directly from participating in this research, but the results may

provide answers with respect to the role of personality traits in responding to trauma and may

help to develop intervention programs for emergency responders.

Your participation in this research is voluntary. If you have any questions, you can contact

Sneha Gupta at sneha.gupta@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 or HRPP@cuny.edu.

      If you agree to participate and are over the age of 18 and can read English, please click

here to proceed.

Appendix B

THE CITY UNIVERSITY OF NEW YORK

John Jay College of Criminal Justice

Psychology Department

Debriefing Form

This study will help us to understand the relationship between personality traits and trauma exposure.

While none of the questions were intended to cause distress, if for any reason, you experience prolonged discomfort as a result of this study, we encourage you to call your primary care physician or another mental health provider. In the event that you are feeling unsafe or are having thoughts about harming yourself or others, call the Crisis Call Center (800) 273-8255, or text "GO" to 741741 to reach the Crisis Text Line. If you have additional questions about this study, contact Sneha Gupta (sneha.gupta@jjay.cuny.edu).

Thank you for your participation.