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The effects of psychopathic traits on fear of pain, anxiety, and stress

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ABSTRACT

The relationship between psychopathy and internalizing behaviours, such as fear of pain, anxiety, and stress, is highly debated due to conflicting results found across a wide array of studies. We hypothesized a negative relationship between higher display of Fearless Dominance and fear of pain, anxiety, and stress as well as a positive relationship between higher display of Impulsive Antisociality and the aforementioned variables. Using community participants ($N = 529$), we found weak to moderate negative correlations between Fearless Dominance and all measures of fear of pain, anxiety, and stress in both genders.

While a correlation between Impulsive Antisociality and pain catastrophization was only observed in males, weak to moderate positive relationships were found when correlated with measures of anxiety and stress in both genders. Overall, these results highlight the importance of taking psychopathy subtypes and genders into account when conducting statistical analyses for psychopathy-related research. The implications of these findings are discussed.

1. Introduction

Psychopathy is a disorder defined by a display of excessive antisocial traits combined with partial or total lack of empathy, callousness, aggression, manipulative behaviour and a parasitic lifestyle (Berg et al., 2013). Although psychopathy has been considered categorical for many decades, recent evidence suggests that this disorder should be regarded as being on a continuum ranging from a low to high display of psychopathic traits (Berg et al., 2013; Lilienfeld & Andrews, 1996).

A diagnosis of psychopathy can only be established with the Psychopathy Checklist-Revised (PCL-R; Hare, 2003). Individuals are assessed on two components of psychopathy. Factor 1 is associated with emotional and interpersonal personality traits, such as lack of empathy, emotional callousness, remorselessness, and Machiavellianism. Factor 2 is associated with the social deviance of psychopathy, which is characterized by criminal behaviour, impulsivity, anxiety, and neuroticism. While the PCL-R mainly focuses on maladaptive behaviours and personality traits, other instruments such as the Psychopathic Personality Inventory (PPI) give more consideration to the adaptive features of psychopathy (Lilienfeld & Andrews, 1996). The PPI does not diagnose psychopathy, but rather assesses the strength of psychopathic personality traits among eight components. These are categorized into two facets: Fearless Dominance (PPI-I) and Impulsive Antisociality (PPI-II). PPI-I focuses on adaptive components such as social potency, fearlessness, stress and anxiety immunity, and interpersonal boldness. Alternatively, PPI-II focuses on maladaptive components, such as meanness, egoism, blame externalization, and impulsivity. While past studies have found strong correlations between the PCL-R Factor 2 and PPI-II, only weak to non-existent correlations between the PCL-R Factor 1 and PPI-I have been reported (Hughes, Stout, & Dolan, 2013).

Psychopathy has also been linked to other characteristics, such as pain tolerance, which has received significant attention due to associated controversial results. Hare (Hare, 1965, 1966, 1968; Hare & Thorvaldson, 1970) performed several experiments on psychopathic inmates to analyse their response to pain. By using an electrical shocking device, Hare concluded that psychopaths are not conditioned by the fear of pain, are not threatened by pain, report an overall lower level of pain than non-psychopaths, and are willing to receive a higher amount of pain when incentives are used. Despite these findings, a later investigation done by Fedora and Reddon (1993) produced differing results. In this study, the authors found increased pain tolerance among inmates in comparison to the general population, but not between psychopaths and non-psychopaths in the inmate population. The authors explain that these results might be due to differential learning in inmates, where the forensic population must endure harsher treatment than the general population. However, although these findings were of borderline statistical significance, a subsequent study revealed that individuals from the community displaying high levels of psychopathic traits tend to endure higher levels of pain through electric stimulation and pressure (Miller, Rausher, Hyatt, Maples, & Zeichner, 2014). Considering the inconsistency of the findings resulting from experimental pain, and the lack of

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information on other types of pain, such as medical pain (i.e. pain resulting from a disease), the relationship between psychopathic traits or psychopathy and pain tolerance remains unclear.

Further studies have been performed to test the relationship between pain sensitivity, anxiety and psychopathy. One of these studies compared young delinquents diagnosed with high anxiety to a group of inmates with high levels of psychopathic traits (Schalling & Levander, 1964). Participants received moderate amounts of electrical pain. Results concluded that anxiety-prone delinquents were much more sensitive to pain than psychopathic inmates. A different study on anxiety and psychopathic subtypes concluded that non-neurotic psychopaths had a better tolerance for anxiety than non-psychopathic individuals, while neurotic psychopaths had a lower tolerance for anxiety than the same controls (Lykken, 1957). These findings are inconsistent with subsequent research, where weak (Hare, 1991) to non-existent (Hare, 1972) correlations were found between psychopathy and anxiety. Additionally, a more recent study found a marginal positive correlation between PCL-R Factor 2 psychopathy and anxiety, but no correlation between PCL-R Factor 1 psychopathy and anxiety (Hale, Goldstein, Abramowitz, Calamari, & Kosson, 2004). Once again, the inconsistency among these results makes it difficult to establish a definite relationship between psychopathic traits and anxiety.

Apart from anxiety, stress has also been investigated with regard to its association with psychopathy. Correlational studies using criminal offenders concluded that individuals with higher PCL-R Factor 1 psychopathy had a lower stress reaction and a decreased risk of post-traumatic stress disorder than individuals with high PCL-R Factor 2 psychopathy (Hicks, Markon, Patrick, Krueger, & Newman, 2004; Willemsen, De Ganck, & Verhaeghe, 2011). Similar results were found in a non-institutionalized sample, where a correlation between lower perceived stress and higher PPI-I psychopathic traits was established. The reverse was found for individuals with higher PPI-II scores, as there was a positive correlation between high PPI-II and perceived stress (Smith, Edens, & Vaughn, 2011). The findings obtained from the aforementioned studies suggest potential causes for discrepancies among results concerning psychopathy, pain, and anxiety.

Many potential covariates could affect the aforementioned results, such as gender and intelligence. Previous studies reported that males generally score higher than females on psychopathic traits tests (Lee & Salekin, 2010), and that females are generally more sensitive to pain, while also displaying higher levels of stress and anxiety (Dambrun, 2007; Jones & Zachariae, 2002). While the influence of gender on psychopathy and anxiety has been confirmed in multiple studies, the results regarding the role of intelligence in psychopathy vary considerably. Weak to moderate negative correlations were found between intelligence and psychopathy as assessed by the Psychopathy Checklist:Screening Version (PCL:SV) ($r = -0.18$ to -0.38) (Neumann & Hare, 2008). However, no correlation was found between intelligence and the PPI (Wall, Sellbom, & Goodwin, 2013). It is therefore possible that reducing the variability of intelligence within the population studied will improve the reliability of the data when examining psychopathic traits and associated characteristics.

At the moment, the relationship between the expression of psychopathic traits and tolerance levels to pain, anxiety, and stress is unclear due to the various studies supporting different conclusions. If we consider psychopathy as being on a continuum, it is possible to assess the relationship between the expression of psychopathic traits and various variables such as fear of pain, anxiety, and stress through correlations. The purpose of this study is therefore to examine the strength of the relationship between psychopathic traits and the fear of pain, anxiety, and stress in a community sample. We hypothesize that PPI-I will display a negative correlation with measurements of fear of pain, anxiety, and stress. We also hypothesize that PPI-II will display a positive correlation with the aforementioned measurements. Due to potential gender differences, males and females were analysed independently. These results may provide further support regarding the importance of investigating psychopathic traits by factors, due to the conflicting results obtained when investigating psychopathic traits as a unitary construct.

2. Method

2.1. Participants

This study was approved by the Ethical Committee of Psychology of Maastricht University. Ethical consent was obtained from all participants prior beginning the study. Six hundred and thirty participants were recruited from the community via social media and websites dedicated to the recruitment of participants for psychological studies. In order to attempt to control intelligence as a covariate, subjects were required to have obtained post-high school education and be between 18 and 40 years old. We accounted for potentially unreliable data by calculating the Variable Response Inconsistency (VRIN). This analysis, which is comprised of the sum of the 10 pairs of items from the PPI-SF with the highest correlations between them (Lilienfeld & Widows, 2005; Tellegen, 1982), identified 22 outliers with a VRIN ≥ 8. Examination of Stem-and-Leaf plots in every scales and subscales identified an additional 28 outliers. Of these 580 participants, 51 were removed due to incomplete questionnaires, leaving a total of 529 participants (58% males, $N = 308$, and 42% females, $N = 221$). The mean age was 23.95 years ($SD = 4.83$), with a range of 18 to 40 years. Most participants were college graduates (33.3%), followed by those currently receiving college education (29.1%), having a Master level education (16.6%), and individuals with other types of education (13.6%). Most participants were located in Europe (60.5%), followed by North America (14.2%), Asia/Middle East (13.4%), Africa (4.7%), Central/South America (4.4%), and in Oceania (1.7%).

2.2. Measures

2.2.1. Psychopathic personality inventory-short form (PPI-SF; Lilienfeld & Widows, 2005)

The PPI-SF is a self-report assessment consisting of 56 items rated on a 4-point Likert scale (1 = *false*, 2 = *mostly false*, 3 = *mostly true*, 4 = *true*), giving a total score and eight subscale scores. The PPI-SF consists of seven items from each of the eight scales of the PPI which have high correlations with their relative subscales, which consists of Machiavellian Egocentricity, Social Potency, Fearlessness, Coldheartedness, Impulsive Nonconformity, Blame Externalization, Carefree Nonplanfulness and Stress Immunity. Seven of the 8 subscales are classified into two factors. PPI-I consists of Social Potency, Fearlessness, and Stress Immunity. PPI-II includes Machiavellian Egocentricity, Impulsive Nonconformity, Blame Externalization, and Carefree Nonplanfulness. The Coldheartedness scale does not load onto either PPI-I or PPI-II. Previous studies using the PPI-SF established its internal consistency to be between $\alpha = 0.70$ to 0.94 (Cale & Lilienfeld, 2006).

2.2.2. Fear of pain questionnaire–III (FPQ–III; Mcneil & Rainwater, 1998)

The FPQ–III is a 30-item self-report questionnaire assessing an individual's fear of pain. The items, which are descriptions of painful situations, are answered on a 5-point Likert scale (1 = *Not at all* to 5 = *Extreme*). These items are divided among 3 subscales, Minor Pain, Severe Pain and Medical Pain. The scores for each subscale range from 10 to 50, and thus the total score ranges from 30 to 150. The internal consistency for each subscale is satisfactory: Minor Pain ($\alpha = 0.86$), Severe Pain ($\alpha = 0.88$) and Medical Pain ($\alpha = 0.88$) (Roelofs, Peters, Deutz, Spijker, & Vlaeyen, 2005). Construct validation of the questionnaire was done by correlating the FPQ to visual analogue scale (VAS) assessing fear during three experimental painful stimuli (electrical stimulation, thermal pain, and ischemic pain). FPQ total score, alongside its 3 subscales, were moderately to strongly correlated to all 3 painful stimuli ($r = 0.27$ to 0.53) (Roelofs et al., 2005). Additionally, the FPQ ($r = -0.28$ to -0.33), alongside the severe ($r = -0.28$) and the