



Offenders with antisocial personality disorder show attentional bias for violence-related stimuli



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ABSTRACT

Offenders with antisocial personality disorder (ASPD) may be characterized by a lack in emotional functioning that manifests in irritability and a lack of remorse. The proposed link between ASPD and negative emotionality led to the question of emotional processing anomalies in ASPD. Furthermore, the effect of childhood maltreatment/abuse on emotional processing was tested in the present study. Violent and sexual offenders with ASPD ($n=35$), without ASPD ($n=34$), and healthy non-criminal controls ($n=24$) were compared in an Emotional Stroop Task (EST) using neutral, negative, and violence-related words. Secondary analyses focused on the effect of psychopathic traits and childhood maltreatment. Offenders with ASPD showed a stronger attentional bias to violence-related and negative words as compared to controls. Comparable results were obtained when grouping offenders to high, medium, and low psychopathic subgroups. Offenders with childhood maltreatment specifically showed stronger violence-related attentional bias than non-maltreated offenders. The data suggest that enhanced attention to violence-related stimuli in adult criminal offenders is associated with adverse developmental experiences and delinquency but to a lesser extent with antisocial or psychopathic traits.

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1. Introduction

Individuals with antisocial personality disorder (ASPD) exhibit a stable tendency towards antisocial behavior and are characterized by increased irritability, impulsiveness, deception, and a failure to conform to social norms (American Psychiatric Association, 1994; Wittchen et al., 1997). Psychopathy is a construct related to ASPD, and there is an ongoing debate on the relationship between the two constructs. While the diagnosis of ASPD is mainly based on behavior, the diagnosis of psychopathy according to the Psychopathy Checklist (Hare, 2003) also includes interpersonal and affective facets of personality (Ogloff, 2006). In particular, psychopathy has been related to a general lack of empathy and remorse, decreased emotional responding, and increased proneness to antisocial and criminal behaviors (Leistico et al., 2008). Thus, some researchers have argued that psychopathy and ASPD are distinct disorders with a different pathogenesis (Cooke et al., 2004), while others regard psychopathy as a severe form of ASPD (Coid and Ullrich, 2010). However, both ASPD and psychopathy are often diagnosed in forensic samples, with ASPD being diagnosed in up to 50–80% of prison

inmates, while only about 10% meet criteria for psychopathy (Hare, 2003).

It has been proposed that negative emotionality, i.e. a disposition to experience negative affective states together with attenuated inhibition of the expression of negative affect might be crucial factors for the development of ASPD (Krueger, 1999). In addition, there is also evidence that the personality facets of psychopathy are negatively associated with negative emotionality (Hicks and Patrick, 2006). However, to date, there are only few studies on the association of ASPD and psychopathy in criminal offenders with altered emotion processing in lexical decision tasks. In one study, offenders with both, ASPD and psychopathy were less sensitive for affective stimuli in a lexical decision task. In contrast, antisocial individuals without psychopathy and delinquent controls showed emotional facilitation (Kosson et al., 2006). Affective processing in psychopaths has also been studied using lexical decision tasks (Intrator et al., 1997; Kiehl et al., 1999; Williamson et al., 1991). One of these studies reported reduced acceleration of reaction times to affective words in psychopaths and reduced amplitudes of late event-related brain potentials associated with the processing of affective words (Williamson et al., 1991)—a result that was confirmed by subsequent observations (Kiehl et al., 1999). Interestingly, a recent study showed differential modulation of processing of negative emotion words in offenders with psychopaths versus offenders

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with ASPD: psychopaths showed blunted responding to negative emotion words, while offenders with ASPD showed enhanced processing of negative words and showed decreased behavioral inhibition (Verona et al., 2012).

Biased attention towards specific stimuli can be investigated with the Emotional Stroop Task (EST). In this task the processing of the affective meaning of a word interferes with the process of naming the color of ink in which the word is printed. Enhanced interference (increased reaction times in color naming) and thus increased executive attention for a specific word category is supposed to reflect the individual strength of the concepts and representations associated with these stimuli. Accordingly, most of the studies in clinical samples so far have shown that patients exhibit enhanced attention for stimuli related to their clinical condition (for a review: Williams et al., 1996). Enhanced salience and attentional bias for specific stimuli is thus regarded as a significant factor in the pathogenesis or maintenance of mental disorders (Mineka and Sutton, 1992; Williams et al., 1996). Recent studies used the EST to investigate biased attention for emotional stimuli in personality disorders (Arntz et al., 2000; Portella et al., 2011; Wingenfeld et al., 2009). Studies using this paradigm in a forensic context reported mixed results. In one study, violent offenders exhibited a significant attentional bias for violence-related words compared to non-criminal controls (Smith and Waterman, 2003). Similarly, in another study violent offenders and violent sexual offenders showed enhanced attention to violence-related stimuli, which was not found in non-violent sexual offenders (Smith and Waterman, 2004). However, these findings were not replicated in a study comparing pedophiles, rapists, violent and non-violent offenders, and controls from the general population: there were no group differences in attention for violence-related words (Price and Hanson, 2007).

It has been put forward, that in particular offenders with psychopathy and antisocial tendencies show reduced amygdala-dependent emotional arousal to affective stimuli and thus show reduced attentional bias for affective stimuli (Blair and Mitchell, 2009). Accordingly, Mitchell et al. reported reduced attentional distraction in psychopaths compared to non-psychopaths by affective pictures (Mitchell et al., 2006). It is still an open question whether ASPD and psychopathic traits are associated with attentional biases towards affective stimuli in general or are restricted to negative or even more specifically to violence-related stimuli. In the present study, we thus included violence-related words as stimuli to further investigate the specificity of the previously reported attentional bias to negative stimuli reported in criminal offenders. In particular, the present study investigated attentional biases for violence-related and unspecific negative stimuli in violent offenders with ASPD and offenders without ASPD. Based on the literature reviewed above, we hypothesized that offenders with ASPD would show increased emotional distraction by violence-related stimuli in the EST compared to offenders without ASPD. In contrast, psychopathy was expected to be negatively associated with emotional responding and thus a reduced attentional bias towards negative and violence-related stimuli in the EST was expected.

A significant number of sexual and violent offenders report having been abused sexually or physically maltreated as a child (Coxe and Holmes, 2001; McCormack et al., 2002; McMackin et al., 2002)—for a meta-analysis see Jespersen et al. (2009). In non-forensic populations, specific attentional bias for intimacy-related and abuse-related stimuli has been reported repeatedly in adult survivors of sexual abuse and childhood maltreatment (Blake and Weinberger, 2006; Coleman et al., 2008; Field et al., 2001). A recent meta-analysis suggests that the trauma itself rather than a subsequent posttraumatic stress disorder predicts attentional biases towards trauma-related stimuli and that this

effect is significantly pronounced in assaultive traumas (Cisler et al., 2011). Thus, in terms of an exploratory analysis, we investigated whether childhood maltreatment might modulate the proposed attentional bias for violence-related words in criminal offenders. In particular, we hypothesized that childhood maltreatment would be associated with increased attention in violence-related stimuli.

2. Methods

2.1. Participants

We recruited 90 male inmates from a German prison and a forensic-psychiatric hospital. Of this initial sample, 21 offenders were excluded because they fulfilled one or more of the following exclusion criteria: lifetime diagnosis of schizophrenia, attention deficit/hyperactivity disorder, bipolar affective disorder, major depression, dysthymia, neurological disorder, chromosomal anomaly, color-blindness, dyslexia, age over 70, or an IQ below 70. In addition to the remaining 69 offenders, 24 healthy male controls without any previous conviction were recruited from the general population via announcement on the university campus. None of the controls fulfilled any of the exclusion criteria. The age of the participants ranged from 23 to 68 years ($M=50.26$, $S.D.=11.64$). All participants were German native speakers.

The study protocol was approved by the institutional review board of the University of Rostock and was carried out in accordance with the Declaration of Helsinki. Before giving their written consent, all participants were informed about the study in detail. All participants received compensation for participating after completion of the study.

2.2. Demographic and clinical assessment

Data concerning socio-demographic information and the criminal history of the offenders were obtained with a standardized questionnaire and a clinical interview. The Sexual Violence Risk-20 assessment (SVR-20; Boer et al., 1997)—which was based on record review and the clinical interview—was used to identify victims of childhood sexual abuse, physical maltreatment or neglect.

All participants underwent the German version of the SCID-I and II (Wittchen et al., 1997). Of the offenders, 35 fulfilled criteria for antisocial personality disorder (ASPD group), whereas 34 did not meet DSM-IV criteria (no-ASPD group) as indicated by the SCID-II interview. None of the controls fulfilled diagnosis for any axis-I or axis-II disorder. Moreover, the Global Assessment of Functioning (GAF) score from the DSM-IV was included. A reduced version of a test of general intelligence (Hamburg-Wechsler Intelligence Test for Adults-Revised; Tewes, 1991) comprising four subtests served to estimate total as well as verbal IQ.

The psychopathy checklist-revised (PCL-R) (Hare, 2003) consists of 20 items that assess the severity of psychopathic traits based on a review of case files and a semi-structured clinical interview. In addition to the total score, the PCL-R provides subtotal on two scales: Factor 1 comprises affective and interpersonal personality traits and Factor 2 relates to socially deviant behavior styles. The PCL-R was applied by a trained clinical psychologist (K.V.) using both file review and interview information. Based on these ratings, offenders were allocated to subgroups of high (PCL-R score ≥ 25 ; $n=11$), medium (PCL-R score 16–24; $n=35$) and low (PCL-R score 0–15; $n=23$) psychopathic traits (Cooke and Michie, 1999; Pham et al., 2003).

2.3. Emotional Stroop Task (EST)

An emotional version of the Stroop Task (for a review, see Williams et al., 1996) was used that contained violence-related, negative, and neutral words matched on word length (see Appendix). At the beginning of each trial, a white fixation cross appeared for 800 ms in the center of the black screen of a standard laptop computer. Then, the participant was shown the target word written in red, yellow, blue or green in the upper half of the screen. After 1000 ms, a color word printed in white was presented additionally in the lower half of the screen. The participants were asked to decide as quickly as possible whether the ink color of the target stimulus corresponded with the color word by pressing one of two buttons. Half of the trials were congruent (i.e., ink color and color word were the same), half were incongruent. If the participant needed more than 2000 ms to respond, the two stimuli disappeared and the trial was counted as an error. In order to measure carry-over-effects (Frings et al., 2010; McKenna and Sharma, 2004), buffer trials (rows of 'X') were added as target stimuli to each word category. In total, there were 120 trials (72 words and 48 buffer trials).

Before averaging reaction times (RTs), outliers were removed by excluding RTs < 300 and > 1500 ms. Bias scores were calculated by subtracting the mean reaction time (RT) toward neutral words from the mean RT of each of the emotional word categories. Thus, positive values represent an enhanced emotional

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