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## Self-reported attentional control differentiates the major factors of psychopathy

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### ABSTRACT

The dual-deficit model identifies unique correlates of the two major factors associated with psychopathy (Patrick, 2007). Factor 1 is associated with deficits in amygdala-mediated emotion, while Factor 2 is related to deficits in higher-order cognitive processes. Research suggests that attention to environmental and contextual cues is critical for emotion and cognition (Ochsner & Gross, 2005). Therefore, and by extension, attention may also be important to deficits in both Factor 1 and Factor 2. The present study utilizes a sample of male prisoners in order to examine the relationship between self-reported attentional control (Derryberry & Reed, 2002) and the major factors of psychopathy, as assessed by three different methods. Across all three measures, Factor 1 is associated with superior attentional control, whereas Factor 2 is related to inferior attentional control. Furthermore, results provide support for the external validity of three commonly used methods for assessing psychopathy. We propose that anomalous attentional control may contribute to both major symptom clusters associated with psychopathy.

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### 1. Introduction

Psychopathy is a disorder that is associated with unconstrained “antisocial impulses” (Lykken, 2006, p. 7), but is distinguished from other antisocial syndromes by an interpersonal style that includes glibness, superficial charm, and shallow affect (Cleckley, 1976). When studying the psychological processes that contribute to psychopathy, some investigators advocate parsing psychopathy into these two components so that the unique correlates of these dimensions or factors of psychopathy may be identified (Patrick, 2007).

Such dual-deficit models are predicated on the two-factor model of Hare’s Psychopathy Checklist-Revised (PCL-R; Hare, Harpur, & Hakstian, 1990).<sup>1</sup> Here, Factor 1 reflects the interpersonal (charm, grandiosity, and deceitfulness/conning) and affective (lack of remorse, empathy, and emotional depth) features of psychopathy. Alternatively, Factor 2 describes the impulsive and chronic antisocial tendencies associated with psychopathy. According to the dual-deficit model, Factor 1 and Factor 2 are etiologically distinct.

It is suggested that the interpersonal and affective symptoms of psychopathy (i.e., PCL-R Factor 1) correspond to an amygdala-related deficit in emotion processing (Kiehl, Smith, Hare, et al.,

2001; Patrick, 2007). For Patrick (2007), for instance, Factor 1 is associated with a weak defensive system that reduces behavioral and physiological reactions to threat cues directly. Consistent with this view, PCL-R Factor 1 is negatively correlated with startle potentiation during affectively negative as opposed to neutral pictures; and, negatively correlated with trait anxiety (Patrick, 2007; cf. Schmitt & Newman, 1999).

The impulsive and antisocial symptoms of psychopathy (i.e., PCL-R Factor 2), however, have been attributed to a deficit in executive control that undermines inhibition of behavior (Patrick, 1994). For Patrick (2007), the impulsive and antisocial behaviors associated with Factor 2 reflect a deficit in higher-order processes that interferes with one’s focus on threat cues, precludes activation of the defensive system, undermines inhibition of approach behavior, and indirectly results in weak defensive system functioning. In support of this model, Patrick and colleagues cite laboratory studies on externalizing disorders and the effects of alcohol which appear to provide evidence of weak cognitive control (Curtin & Fairchild, 2003, see also Patrick, 1994). Additionally, in contrast to Factor 1, Factor 2 is positively associated with trait anxiety (Patrick, 2007). Thus, the dual-deficit model suggests distinct etiologies and divergent external correlates for Factor 1 and Factor 2; with Factor 1 symptoms attributed to an emotion deficit and Factor 2 symptoms attributed to deficient higher-order cognitive processes, such as cognitive control.

A critical part of successful cognitive control is attention to the environment and use of contextual cues (Ochsner & Gross, 2005). This suggests that when examining cognitive control, it is essential to understand other cognitive processes, like attention, that may

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<sup>1</sup> Factor analytic studies of the PCL-R have also provided evidence for 3-factor and 4-factor models (e.g. Hall, Benning, & Patrick, 2004; Williams, Paulhus, & Hare, 2007, respectively). However, most of the available data regarding the discriminant and external validity of the PCL-R pertains to the factors of the original two-factor model.

contribute to or interact with the functioning of this higher-order cognitive process. More specifically, attentional control, a process that is related to the ability to focus and shift attention may be understood as a crucial component of cognitive control (Weissman, Mangun, & Woldorff, 2002). Furthermore, since, Factor 2 is associated with cognitive deficits whereas Factor 1 is not, the Factors should be associated differentially with attentional control. Specifically, the information processing deficits associated with Factor 2 are likely to engender problems with attentional control. Conversely, the dual-deficit model makes no clear prediction about attentional control for Factor 1, as the core problem involves an emotion deficit.

In this study, we use the attention control scale (ACS, Derryberry & Reed, 2002) to evaluate the quality of attention processing associated with Factors 1 and 2, respectively. The ACS is a 20-item self-report questionnaire that taps an individual's ability to focus and shift attention. Based on existing research, we predict that (1) Factor 2 of psychopathy will be associated with inferior attentional control and (2) Factor 1 will be uncorrelated with attentional control. Additionally, we will evaluate the consistency of the finding across three widely used measures of psychopathy: the Psychopathy Checklist-Revised (Hare, 2003), the Psychopathic Personality Inventory-Short (Lilienfeld & Andrews, 1996) and the Multidimensional Personality Questionnaire-Brief (Patrick, Curtin, & Tellegen, 2002). Although all three methods have been used to study Factor 1 and Factor 2 traits, it remains to be seen whether these alternative measures correspond to the same psychobiological processes (see Neumann, Malterer, & Newman, 2008). Finally, because Factor 1 and Factor 2 are differentially associated with trait anxiety and trait anxiety is correlated with attention control (Derryberry & Reed, 2002), we explore the potential confounding effects of anxiety.

## 2. Method

### 2.1. Subjects

Participants were male offenders from a maximum security prison in Southern Wisconsin. The number of respondents varied depending on which psychopathy measure was used. For the Psychopathy Checklist-Revised there were 551 participants, for the Psychopathic Personality Inventory-Short Form there were 473 participants, and for the Multidimensional Personality Questionnaire-Brief there were 769 participants. Participants were excluded if they met any of several conditions. First, participants who were 46 or older were eliminated because the expression of psychopathy has been found to change with advancing age (Hare et al., 1990). Second, in order to ensure that participants had the intellectual aptitude to complete self-report measures and laboratory tasks, we excluded those with scores below 70 on an estimated IQ questionnaire. Third, we disqualified individuals with clinical diagnoses of schizophrenia, bipolar disorder, or psychosis NOS, or who were currently using psychotropic medications because such features have been considered as incompatible with a diagnosis of psychopathy (Cleckley, 1976; Hart & Hare, 1989). Given these exclusion criteria, the sample is not a random prison sample.

### 2.2. Measures

#### 2.2.1. Attention control scale (ACS; Derryberry & Reed, 2002)

The ACS is a 20-item self-report questionnaire that measures the ability to focus (e.g., "When concentrating, I can focus my attention so that I become unaware of what's going on in the room around me") and shift (e.g., "I can quickly switch from one task to another") attention when necessary. Participants rated each item

on a 4-item Likert scale (1 = almost never to 4 = always). Evidence for the reliability and validity of the ACS may be found in Derryberry and Reed (2002).

#### 2.2.2. Psychopathy Checklist-Revised (PCL-R; Hare, 2003)

All participants were assessed using file information and a semi-structured interview that lasted approximately 60 min. The PCL-R contains 20-items that are rated 0, 1, or 2 according to the degree to which a characteristic is present: significantly (2), moderately (1), or not at all (0). Early work with the PCL-R revealed a replicable two-factor structure (Hare et al., 1990) with Factor 1 items assessing interpersonal-affective characteristics (e.g., glib, callous) and Factor 2 items relating to impulsive-antisocial behavior (e.g., irresponsible, criminality). The reliability and validity of the PCL-R is well established (see Hare, 2003; Hare et al., 1990).

#### 2.2.3. Psychopathic Personality Inventory-Short Form (PPI-S; Lilienfeld & Andrews, 1996)

The PPI-S is a 56-item self-report questionnaire that includes eight subscales which independently assess Factor 1 and Factor 2. Social Potency, Coldheartedness, Fearlessness, Impulsive Nonconformity, and Stress Immunity comprise Factor 1, whereas Machiavellian Egocentricity, Blame Externalization, and Carefree Nonplanfulness items comprise Factor 2. The PPI shows good convergent validity with other self-report measures of psychopathy (Lilienfeld & Andrews, 1996).

#### 2.2.4. Multidimensional Personality Questionnaire-Brief (MPQ-B; Patrick et al., 2002)

The MPQ-B is a 155 item self-report questionnaire that consists of 11 primary trait scales. The Fearless Dominance (FD) and Impulsive Antisociality (IA) dimensions of psychopathy are calculated as linear combinations of specific standardized (i.e., z-scored) MPQ-B primary trait scales. Specifically, Fearless Dominance is calculated as  $(0.34 * z\text{Social Potency}) + (-0.42 * z\text{Stress Reaction}) + (-0.21 * z\text{Harm Avoidance})$ . Impulsive Antisociality is calculated as  $(0.16 * z\text{Aggression}) + (0.31 * z\text{Alienation}) + (-0.13 * z\text{Traditionalism}) + (-0.29 * z\text{Control}) + (-0.15 * z\text{Social Closeness})$  (Benning, Patrick, Hicks, Blonigen, & Krueger, 2003). Prior research suggests that in prisoners, Fearless Dominance is selectively related to Factor 1 and Impulsive Antisociality is preferentially associated with Factor 2 of the PCL-R. The MPQ-B has shown good internal consistency and validity (see Patrick et al., 2002).

## 3. Results

### 3.1. Descriptive statistics and correlations

Table 1 reports the means and standard deviations of scores for the two PCL-R, PPI-S, and MPQ-B Factors and the ACS as well as the correlations among the measures.<sup>2</sup> The bivariate correlations reveal positive and significant correlations for all Factor 1 scales with ACS scores. Additionally, across all measures, Factor 2 scales are negative and significantly correlated with ACS scores.

### 3.2. Regressions

We used multiple regression analyses to examine how well Factor 1 and Factor 2 predict attentional control while controlling for the effects of the alternative Factor from the same instrument. The unique variance of PCL-R Factor 1, PPI Factor 1, and FD were found

<sup>2</sup> Preliminary analyses indicated that the effects of the Factors on ACS scores were comparable across race. Adding race as a factor in the regression made no difference. Therefore, a decision was made to collapse across race.

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