



Examining the triarchic model of psychopathy using revised Reinforcement Sensitivity Theory [☆]



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ABSTRACT

Available research suggests the neurobiological systems reflected in Reinforcement Sensitivity Theory (RST) are important in etiological conceptualizations of psychopathy, however few studies have utilized the revised RST model (r-RST). Moreover, very little research has examined the associations between r-RST systems and the triarchic psychopathic constructs of boldness, meanness, and disinhibition. Using a recently developed measure of r-RST (Jackson Five; Jackson, 2009), the present study examined the triarchic conceptualization of psychopathy in relation to r-RST in a sample of 301 adult participants. Results suggest that the triarchic construct of boldness is characterized by increased r-BAS activity and deficits in r-FFFS activity; meanness is associated with increased r-BIS and r-Fight activity, and diminished r-BAS, r-Flight, and r-Freeze activity; and, disinhibition is characterized by increased r-BAS, r-Fight, and r-Freeze, with deficits in r-Flight. These results add to our understanding of how the triarchic constructs relate to r-FFFS and r-BAS, however they raise several questions concerning the construct validity of r-BIS as measured by the Jackson Five.

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1. Introduction

Reinforcement Sensitivity Theory (RST) is a neurobiological account of the primary motivational systems proposed to underlie personality (Gray, 1970). Originally articulated by Gray, RST emphasized three major motivational systems underlying emotion, and variation in these systems were proposed to explain individual differences in personality and psychopathology. The Fight–Flight System (FFS) was hypothesized as sensitive to unconditioned aversive stimuli, the Behavioral Approach System (BAS) reflected sensitivities to conditioned appetitive stimuli associated with reward, and the Behavioral Inhibition System (BIS) was hypothesized to be sensitive to conditioned aversive stimuli which served as signals of punishment or termination of reward (Gray, 1982). The combined effects of punishment (BIS and FFS) and

reward (BAS) sensitivity are considered causally related to phenotypic expressions of extraversion and neuroticism (Corr, DeYoung, & McNaughton, 2013).

RST underwent a major revision in 2000 (r-RST; Gray & McNaughton, 2000), in which alterations were made to the hypothesized stimuli that provide input into the three systems. Under r-RST, r-BAS is now hypothesized to respond to all appetitive stimuli (conditioned and unconditioned), and is mainly related to extraversion (Smillie, Pickering, & Jackson, 2006). The freeze response was incorporated into FFS, and the Fight–Flight–Freeze System (r-FFFS) is now hypothesized to mediate responses to both unconditioned and conditioned aversive stimuli and the experience of fear. Finally, r-BIS is now considered a regulatory mechanism for goal conflicts rather than solely mediating reactions to conditioned aversive stimuli (Gray & McNaughton, 2000). Specifically, r-BIS activation includes risk assessment and goal conflict resolution in the context of both BAS and FFS activation, and is subjectively experienced as worry and anxious apprehension. One can see that changes to r-RST largely related to the distinction between conditioned and unconditioned stimuli, as this division was no longer considered relevant. Additionally, substantial research has demonstrated a distinction between the emotions of fear and anxiety (see Barlow, 2002), and the revised theory clearly reflects these advancements (Corr, 2008).

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1.1. Psychopathy and RST

Psychopathy is a personality disorder reflecting characteristics of behavioral deviancy, as well as deficits in emotional and interpersonal functioning (Cleckley, 1941). It is a construct that has been subject to widespread investigation of potential etiological mechanisms, perhaps more so than any other personality pathology. Accumulating evidence suggests that psychopathy is heterogeneous in nature (Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003), therefore attempts to refine our etiological understanding of this disorder must account for its phenotypic variation.

Karpman (1941) was among the first to theorize there may be distinct groupings of individuals with psychopathy, emphasizing a two subtype model. In his description of primary psychopathy, emotional and interpersonal deficits were considered core features. Secondary psychopathy, although behaviorally indistinguishable from primary psychopathy, was thought to be the result of impulsivity and emotional intolerance. The majority of research examining psychopathy within a RST framework has focused on the primary/secondary subtypes. Lykken (1995) suggested that the innately fearless temperament of primary psychopathy is reflective of a weak BIS, whereas secondary psychopathy may instead result from an overactive BAS. Supporting this hypothesis, in a sample of incarcerated inmates, Newman, MacCoun, Vaughn, and Sadeh (2005) found primary psychopathy to be characterized by a hypoactive BIS and normal BAS, while secondary psychopathy exhibited a hyperactive BAS and BIS. In a noninstitutionalized sample, Ross et al. (2007) found a hypoactive BIS to be associated with primary psychopathy, however a hyperactive BAS was associated with both primary and secondary variants. Consistent with this, a recent review on this topic reported a weak BIS appeared uniquely related to primary psychopathy, while an overactive BAS was associated with both primary and secondary subtypes (Bijttebier, Beck, Claes, & Vandereycken, 2009).

Although RST was revised in 2000, the vast majority of studies on psychopathy have used the original RST framework. Carver and White's (1994) BIS/BAS Scales, based on the original RST, is the most commonly used self-report measure of sensitivities to reinforcement. The BIS/BAS Scales are comprised of four subscales, one corresponding to BIS, and three BAS scales (reward sensitivity, drive, and fun-seeking). However, r-RST no longer views fear sensitivity to be a function of the BIS. As such, the validity of this measure has been called into question as it conflates fear and anxiety under one BIS subscale (Poythress et al., 2008). In an attempt to address this discrepancy, Heym, Ferguson, and Lawrence (2008) demonstrated that the BIS scale is best represented as two factors composed of BIS-anxiety and BIS-fear, and that splitting the scale may be effective in gauging r-RST. Using this methodology, Hughes, Moore, Morris, and Corr (2012) demonstrated that BIS-anxiety was negatively associated with both primary and secondary psychopathic characteristics; BIS-fear was negatively correlated with only primary psychopathy; BAS-reward sensitivity and drive were positively related to primary psychopathy; and BAS-fun seeking was positively correlated with secondary psychopathy but negatively correlated with primary characteristics. In a follow-up study, BIS-anxiety and BIS-fear were negatively related to primary psychopathy, but positively related to secondary psychopathy (Broerman, Ross, & Corr, 2014). Overall, while the method of splitting the BIS/BAS Scales is an important first step at examining the relationship between psychopathy and r-RST, this measure was not created to assess the revised constructs and replication using psychometrically valid measures of r-RST is necessary.

Recently, the Jackson Five Scales were developed to assess the relevant constructs of r-RST with separate subscales for r-BIS, r-Fight, r-Flight, r-Fear, and r-BAS (Jackson, 2009). In order to clearly differentiate r-BIS from r-FFFS by avoiding constructs related to

fear, Jackson sought to operationalize r-BIS as social conflicts including defensive approach, social comparison, and effort failure (White & Depue, 1999). During its preliminary validation (Jackson, 2009), the Jackson Five was compared to a short form of the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996). In this study, r-BAS was positively associated with both the Fearless Dominance and Self-Centered Impulsivity factors of the PPI; r-BIS was negatively associated with Fearless Dominance and unrelated to Self-Centered Impulsivity; and, r-FFFS was negatively associated with Fearless Dominance but positively associated with Self-Centered Impulsivity. Since then however, there has been question about the breadth of content of the Jackson Five r-BIS scale, with suggestions that it appears to tap into the construct of social competitiveness, rather than BIS (Smederevac, Mitrović, Čolović, & Nikolašević, 2014). As such, additional research examining the construct validity of the Jackson Five Scales is warranted.

1.2. The triarchic conceptualization of psychopathy and r-RST

Patrick and colleagues have recently proposed a triarchic conceptualization of psychopathy, in which the constructs of boldness, meanness, and disinhibition are suggested to underlie its presentation (Patrick, Fowles, & Krueger, 2009), and variation in these constructs may explain differences in presentation. Boldness refers to characteristics of calm and poise in stressful situations, a high degree of uncertainty tolerance, and a socially dominant interpersonal style. Meanness describes deficiencies in empathy, a lack of close attachments, and a behavioral style that is exploitative and sensation-seeking. Finally, disinhibition reflects an externalizing style which includes impulse control problems, a lack of planfulness, difficulties with emotion regulation, and limited behavioral controls (i.e., the intersection of impulsivity and negative affect). The primary and secondary variants of psychopathy can therefore be thought to map on to the triarchic constructs, with primary psychopathy being preferentially characterized by boldness and low negative affect, secondary psychopathy characterized by disinhibition, and increased meanness common to both (see Drislane et al., 2014). Recent research examining the triarchic constructs in relation to o-RST in a mixed sample of incarcerated inmates and undergraduate students found o-BIS to be negatively associated with boldness and meanness, and o-BAS to be positively associated with boldness and disinhibition (Sellbom & Phillips, 2013).

Several hypotheses can be made based on a theoretical understanding of the triarchic constructs and prior empirical research on RST and primary/secondary psychopathy. The present study therefore seeks to examine the triarchic conceptualization of psychopathy in relation to the constructs of r-RST, as measured by the Jackson Five. As boldness is considered to reflect the social dominance and emotional resilience (Patrick et al., 2009) characteristics of primary psychopathy, we hypothesized this factor would be positively associated with r-BAS, and negatively associated with r-FFFS and r-BIS. Given that Lykken's low-fear hypothesis of psychopathy may be better understood under r-RST as weak FFFS, rather than weak BIS (Poythress et al., 2008), we expected that boldness would exhibit a stronger association with overall r-FFFS as compared to BIS. Next, because impulsivity and negative emotionality underlies disinhibition (Patrick et al., 2009) and is prototypic of secondary psychopathy, we hypothesized this factor would be positively related to r-BAS, r-FFFS, and r-BIS. Finally, as meanness refers to a lack of empathy, an exploitative and cruel interpersonal style, and excitement seeking (Patrick et al., 2009), we expected this factor to be positively associated with r-BAS and negatively associated with r-BIS. While we further hypothesized an overall negative relationship with r-FFFS, we did expect

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