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The relationship between psychopathy and impulsivity: A multi-impulsivity measurement approach

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ABSTRACT

Psychopathy is a serious personality disorder of which impulsivity is a key component. However, impulsivity is a multidimensional construct, with multiple approaches to measurement, and different measures may be differentially implicated in psychopathy. This study investigated the relationship between psychopathy as assessed by the Psychopathic Personality Inventory-Revised (PPI-R; Lilienfeld & Widows, 2005), a personality measure of impulsivity (Barratt Impulsiveness Scale-11), and four behavioural measures of impulsivity (GoStop Impulsivity Paradigm, Two Choice Impulsivity Paradigm, Delay Discounting Task, Iowa Gambling Task). A nonclinical sample ($N = 80$) was recruited from the local community to advance understanding of psychopathy in non-incarcerated samples. The results indicated that the personality measure of impulsivity was strongly correlated with the PPI-R, while the behavioural measures were either not correlated or only weakly correlated with the PPI-R. The results are discussed in terms of the multifaceted nature of impulsivity and the need for the further development of behavioural measures of impulsivity, given their importance in clinical assessment and intervention.

1. Introduction

Psychopathy is a personality disorder characterised by a constellation of behavioural, affective and interpersonal traits (Cleckley, 1976; Hare, 1991). It has been described as one of the most important constructs in clinical and forensic psychology (e.g., Snowden & Gray, 2011). The majority of research on psychopathy has been conducted in incarcerated or institutionalised samples. Nevertheless, it has been suggested that there are also "successful" individuals with psychopathy who possess the core personality features of psychopathy yet manage to avoid criminality and function well in the community (Benning, Patrick, Hicks, Blonigen, & Krueger, 2003; Cleckley, 1976). One of the main factors hindering research in the area of subclinical/community psychopathy has been the lack of valid tools for examining psychopathy in the general population (Benning et al., 2003).

The most widely used and validated measure of psychopathy is the Psychopathy Checklist-Revised (PCL-R; Hare, 1991). However, the PCL-R was specifically designed for use in offender populations and requires extensive time and collateral information to complete, which is often not available in community settings. These issues have led to the development of self-report measures of psychopathy that are specifically designed for use in community samples. The Psychopathic Personality Inventory-Revised [PPI-R; Lilienfeld & Widows, 2005] is one of the most prominent of these instruments and was used in this study. The PPI-R provides an overall global psychopathy score and also scores on subscales of Fearless Dominance, Self-Centred Impulsivity, and Coldheartedness (see Copestake, Gray, & Snowden, 2011 for information on the relationship of these scales to the PCL-R). Previous work has suggested the importance of examination of the impulsivity at this factor level (e.g., Hart & Dempster, 1997; Sellbom & Verona, 2007; Snowden & Gray, 2011).

Research on impulsivity has emphasised the complexity of the construct. Impulsivity has been variously defined, and definitions include an insensitivity to delayed rewards, the inability to delay gratification, and an inability to inhibit behaviour when inhibition is necessary (e.g., Ainslie, 1975; Cherek, Moeller, Dougherty, & Rhoades, 1997; Gerbing, Ahadi, & Patton, 1987; Schachar & Logan, 1990). Recent research has emphasised the multidimensional nature of impulsivity and has suggested that there are "varieties of impulsivity" (Evenden, 1999; p. 348). Impulsivity measures are often based on vastly different methodological and theoretical approaches and multiple measures are rarely administered in single investigations in order to reflect the multidimensional nature of

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impulsivity (Dougherty, Mathias, Marsh, & Jagar, 2005; Lane, Cherek, Rhoades, Pietras, & Tcheremissine, 2003; Reynolds, Ortengren, Richards, & DeWit, 2006). As such it is unclear whether the different measures relate to each other, and whether they reflect similar kinds of impairment in disorders in which impulsivity is implicated.

Prominent impulsivity measurement approaches include personality measures (i.e. self-report/psychometric measures) and laboratory behavioural measures. Self-report measures are cheap and easy to administer yet they are limited by the honesty, recall accuracy and insight from the respondents (Dougherty et al., 2005). This may be particularly problematic in a psychopathic sample (Lilienfeld & Fowler, 2006). Behavioural measures are important in the assessment of clinical disorders such as psychopathy given their more objective and state dependent quality, yet more research is required to better understand and validate these measures in a range of populations (Dougherty et al., 2003a, 2005).

1.1. The present study

The aim of the present study was to examine what aspects of impulsivity are related to psychopathy. Impulsivity was measured using a well-established self-report questionnaire (the Barratt Impulsiveness Scale [BIS-11; Patton, Stanford, & Barratt, 1995] and four behavioural measures that aim to measure different conceptualisations of impulsivity, (the GoStop Impulsivity Paradigm [GoStop; Dougherty, Mathias, & Marsh, 2003c], the Two Choice Impulsivity Paradigm [TCIP; Dougherty, Marsh, & Mathias, 2003b], Delay Discounting Task [DD; Bickel, Odum, & Madden, 1999] and Iowa Gambling Task [IGT; Bechara, Damasio, Damasio, & Anderson, 1994]). We measured psychopathy using the PPI-R.

2. Method

2.1. Participants

Participants were 80 adults recruited from the local community (Cardiff, Wales). Participants were known to the author, the other experimenters, or recruited through word of mouth. Participants were paid £10 for their participation. Participant details are presented in Table 1. Ethical approval was obtained from Cardiff School of Psychology Ethical Committee.

2.2. Measures

2.2.1. Personality measures

The Psychopathic Personality Inventory-Revised (PPI-R; Lilienfeld & Widows, 2005) is a self-report questionnaire that contains 154 items for the assessment of global psychopathy and component facets. Each question is answered on a four-point scale (False, Mostly False, Mostly True, True). The PPI-R has been considered to constitute at least two factors (Benning et al., 2003; Lilienfeld & Widows, 2005); PPI:I (Fearless Dominance)-high scores are thought to reflect a lack of anxiety and a high level of interpersonal dominance; PPI:II (Self-Centred Impulsivity)-high scores are thought to reflect a brazen use of others and a reckless impulsivity. Benning et al. (2003) also encourage the interpretation of scores on the Coldheartedness scale (which does not load onto the other factors) as a separate factor. High scores on this represent a lack of emotions and empathy.

The Barratt Impulsiveness Scale-11 (BIS-11; Patton et al., 1995) is a self-report personality questionnaire containing 30 items for the measurement of impulsivity. Each item is answered on a four point scale (Rarely/Never, Occasionally, Often, Almost Always/Always). Items are scored from 1 to 4. The BIS-11 contains three subscales; Motor (which reflects acting without thinking e.g. 'I act on impulse'), Nonplanning (lacking in future plans e.g. 'I plan for job-security') and Attention (poor concentration and distractibility e.g. 'I don't pay attention'). The BIS-11 has good internal consistency (Cronbach's $\alpha = 0.83$) and test–retest reliability (Spearman's Rho = 0.83; Stanford et al., 2009).

2.2.2. Behavioural measures

The *GoStop Impulsivity Paradigm* (GoStop; Dougherty et al., 2003c) is a response inhibition paradigm developed to assess the capacity to inhibit/withhold an already initiated response. Five digit numbers were presented on the screen for 500 ms followed by a 1500 ms inter-stimulus interval consisting of a blank screen. The paradigm consisted of three trial types; nostop, stop and novel trials. The nostop trial consisted of a go signal, a number identical to the previous number presented in black. A stop trial constituted a stimulus that matched the previously presented number, but changed from black to red at a specified interval after go signal onset. A novel trial consisted of a non-matching randomly generated number (e.g., 48953...36214). Participants were required to respond, by clicking the left mouse button, to identically matching numbers while they were still on the screen (i.e. on nostop trials), but not respond to a number that turned red (i.e. on a stop trial) or to a non- matching number (i.e. a novel trial). The variable of interest was the percent inhibition/the proportion of inhibited responses of the total number of stop trials.

The Two Choice Impulsivity Paradigm (TCIP; Dougherty et al., 2003b) is a discrete-choice paradigm, for assessing tolerance for delayed rewards. Based on the delay of reward/gratification model of impulsivity it examines the individual's preference for a smaller reward delivered after a short delay compared to a larger reward delivered after a longer delay. On each trial the participants were required to choose between two shapes (a circle that delivered 5 points after 5 s or a square that delivered 15 points obtainable after a 15 s delay). The total number of smaller-sooner reward choices made out of the 50 trials in the session was measured.

The Delay Discounting Task (DD; Bickel et al., 1999) is a procedure for assessing the subjective value of hypothetical rewards. Participants were required to choose between smaller amounts that could be obtained immediately and £1000 that could be obtained after a specified delay (1 week, 2 weeks, 1 month, 6 months, 1 year, 5 years and 25 years). For instance, on the first trial, the choice is between £1000 delivered now and £1000 delivered in one week from today. Most people clearly pick the right now option. The experimenter then proceeds to reduce the right now amount at intervals from £1000 down to £1 asking whether they would prefer the right now option or the £1000 delivered in one week. When the participant switches to the delayed option the experimenter stops the procedure and record the last right now option chosen prior to the switch.

This procedure is repeated for each of the delays and in reverse sequence (right now amount begins at £1 and ascends to £1000). The indifference points (the points of subjective equality) when the participants switch from choosing one option (e.g., larger, delayed reward) to another option (e.g., smaller, immediate reward), are obtained in both the descending and ascending procedure and averaged. These averaged indifference points are obtained at each

Table 1
Participant demographics.

Age (mean, SD years)	21.16 (2.42)
Sex (male/female)	30/50
Student (yes/no)	68/12
Smoke (yes/no)	13/67
Wechsler Test of Adult Reading IQ (mean, SD)	109.16 (5.77)