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Introduction and validation of Psychopathic Personality Traits Scale (PPTS) in a

large prison sample

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Abstract

Purpose: The aim of this study was to create and validate a brief self-report scale of psychopathic personality traits for research purposes which would grasp the essence of a psychopathic personality, regardless of respondents' age, gender, cultural background, and criminal history.

Methods: The Psychopathic Personality Traits Scale (PPTS), The Measure of Criminal Social Identity, Self-Esteem Measure for Criminals, The Child Sexual Abuse Myth Scale, Attitudes Towards Male Sexual Dating Violence, and Lie Scale were administered to 1,794 prisoners systematically sampled from 10 maximum- and medium-security prisons. Dimensionality and construct validity of the PPTS was investigated using traditional CFA techniques, along with confirmatory bifactor analysis and multitrait-multimethod modelling (MTMM). Seven alternative models of the PPTS were specified and tested using Mplus with WLSMV estimation.

Results: MTMM model of PPTS offered the best representation of the data. The results suggest that the PPTS consists of four subscales (affective responsiveness, cognitive responsiveness, interpersonal manipulation, and egocentricity) while controlling for two method factors (knowledge/skills and attitudes/beliefs). Good composite reliability and differential predictive validity was observed.

Conclusion: This brief measure of psychopathic traits uncontaminated with behavioural items can be used in the same way among participants with and without criminal history.

Keywords: Psychopathy, Psychopathic Personality Traits Scale (PPTS), Prison population, Multitrait-multimethod analysis

Introduction and validation of Psychopathic Personality Traits Scale (PPTS) in a large prison sample

The concept of psychopathy has been difficult to operationalize and research in the area of psychopathy assessment is compromised by the absence of an established definition of the disorder (O'Kane, Fawcett, & Blackburn, 1996; Skeem Polaschek, Patrick, & Lilienfeld, 2011). The first comprehensive conceptualization of psychopathy was proposed by Cleckley (1941). Cleckley suggested the prototypical psychopath to be characterized by the following 16 traits: (1) superficial charm; (2) absence of delusions; (3) absence of "nervousness"; (4) unreliability; (5) untruthfulness; (6) lack of remorse and shame; (7) antisocial behaviour; (8) poor judgement and failure to learn by experience; (9) pathological egocentricity; (10) poverty in affective reactions; (11) loss of insight; (12) unresponsiveness in interpersonal relations; (13) fantastic and uninviting behaviour; (14) suicide rarely carried out; (15) impersonal sex life; (16) failure to follow any life plan.[1]

Further, Cleckleyan depiction of psychopathy has served as the foundation for designing the Psychopathy Checklist (PCL; Hare, 1980) and its updated version, the Psychopathy Checklist – Revised (PCL-R; Hare, 1991, 2003) – often referred to as the "gold standard" for measuring psychopathy in clinical and forensic settings. The PCL-R is a 20-item clinician-administered measure, scored on the basis of interview and collateral clinical history information. All items are rated on a 3-point scale (0 = *does not apply*, 1 = *applies to a certain extent*, 2 = *definitely applies*), with scores ranging from 0 to 40. The PCL-R is most

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[1] It is important to note that as early as the 1920s, Karpman (1929, 1930, 1950) organized several meetings on psychopathy where a listing of prototypical traits was enumerated. These included 1) normal intellectual function but abnormal behavior, 2) mendacity, 3) lack of insight about effect of one's behavior on others, 4) behavior resistant to change, 5) punishment ineffective in changing behavior, 6) no psychosis, 7) failure in emotional domains, 8) inability to feel empathy or love, 9) guiltlessness, 10) presence of these conditions since childhood, 11) delinquency often beginning at an early age, 12) aberrant and promiscuous sexual behavior, and 13) use of drugs and alcohol to excess.

often conceptualized to be represented by a two- (affective/interpersonal and lifestyle/antisocial) (Harpur, Hakstian, & Hare, 1988; Harpur, Hare, & Hakstian, 1989) or a four-factor (affective, interpersonal, lifestyle, and antisocial) model (e.g., Léon-Mayer, Folino, Neumann, & Hare, 2015; Mokros *et al.*, 2011; Neumann, Hare, & Johansson, 2013; Neumann, Hare, & Pardini, 2014).

Hare and colleagues also created a self-report analogue of the PCL-R, the Self-Report Psychopathy Scale (SRP; Hare, 1985), to be used among non-clinical samples. The latest form of the inventory, the SRP-III (sometimes referred to as SRP-IV; Paulhus, Neumann, & Hare, in press), is composed of 64 items scored on a five-point Likert scale (ranging from 1 = *strongly disagree* to 5 = *strongly agree*). The SRP-III also exists in an abbreviated, 29-item version, the Self-Report Psychopathy Scale – Short Form (SRP-SF; Paulhus *et al.*, in press). Both of these self-report inventories are often presented as best captured by the same four-factor model solution identified as the best model fit for the PCL-R (e.g., Declercq, Carter, & Neumann, 2015; Freeman & Samson, 2012; Gordts, Uzieblo, Neumann, Van den Bussche, & Rossi, in press; León-Mayer *et al.*, 2015; Neal & Sellbom, 2012; Neumann *et al.*, 2014; Neumann, Schmitt, Carter, Embley, & Hare, 2012; Seibert, Miller, Few, Zeichner, & Lynam, 2011).

Psychopathy as indexed using the PCL-R and its progeny was reported to predict violent recidivism (see Dhingra & Boduszek, 2013 for a review; Hart, Kropp, & Hare, 1988; McCuish, Corrado, Hart, & DeLisi, 2015; Serin, 1996; Serin & Amos, 1995; Serin, Peters, & Barbaree, 1990) and sexual reoffending (Furr, 1993; Olver & Wong, 2015; Quinsey, Rice, & Harris, 1995; Rice, Harris, & Quinsey, 1990). However, in light of the scales' numerous items pertaining to criminal/antisocial behaviour and the suggestion that future behaviour is best predicted by past behaviour (Sutton, 1994), this is not surprising. Indeed, the formulation of psychopathy as grasped by the PCL(-R) and its derivatives, is weighted heavily towards

indicators of behavioural expressions of the disorder, such as deviancy and maladjustment (Edens, Skeem, Cruise, & Cauffman, 2001; Patrick, 2007; Patrick, Hicks, Nichol, & Krueger, 2007; Rogers, 1995), which can have a profound influence on the scales' predictive utility for criminal behaviour.[2] Even though the PCL(-R) factor 1 (affective/interpersonal) corresponds with Cleckley's original conceptualization of psychopathic personality, factor 2 (lifestyle/antisocial) more closely resembles the measures of criminal behaviour and Antisocial Personality Disorder (APD) (Harpur *et al*., 1989). Notably, prior research revealed that only factor 1 items work equivalently well across race and gender (e.g., Bolt, Hare, Vitale, & Newman, 2004; Cooke, Kosson, & Michie, 2001); poor generalizability of factor 2 was reported for substance-dependent patients (McDermott *et al*., 2000). Further, antisocial traits were found to diminish over time (Blonigen, Hicks, Krueger, Patrick, & Iacono, 2006; Gill & Crino, 2012), suggesting that the generalizability of factor 2 may be also affected by the age of respondents. A recent empirical investigation by Debowska, Boduszek, Dhingra, and DeLisi (under review) into the validity and factor structure of the SRP-SF among forensic and non-forensic samples demonstrated factorial variance of the measure for those two different populations. The inspection of factor loadings suggested that these results were heavily influenced by the scores on antisocial behaviour factor items. It appears, therefore, that items referring to criminal/antisocial tendencies should not be included in psychopathy measures. The above findings provide important empirical evidence that affective/interpersonal items lie closer to the core of psychopathy.

Consequently, consistent with the original conceptualization of psychopathy proposed by Cleckley (1941), the essence of the disorder seems to be captured by affective deficits and

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[2] For instance, the exclusion of factor 4 of the PCL-R (items that relate to antisocial behavior including poor behavior controls, early behavior problems, juvenile delinquency, revocation of conditional release, and criminal versatility) reduces the predictive validity of the measure (Cooke & Michie, 2001; Cooke, Michie, & Hart, 2006; Kennealy, Skeem, Walters, & Camp, 2010; Walters 2004).

interpersonal unresponsiveness. The proneness to contravene social and legal norms, on the other hand, appears to be a possible behavioural outcome of a psychopathic personality (Boduszek & Debowska, 2016; Skeem & Cooke, 2010a, b). A growing body of evidence suggests that psychopathic personalities can thrive in both criminal and non-criminal contexts. For example, the prevalence of psychopathic traits was demonstrated to be higher in a corporate sample than that found in community samples (Babiak, Neumann, & Hare, 2010). Increased psychopathy scores were reported for business students, compared with psychology students (Hassall, Boduszek, & Dhingra, 2015). Interestingly, heightened psychopathy scores in U.S. presidents were correlated with a better-rated presidential performance (Lilienfeld *et al*., 2012). As such, if criminal/antisocial tendencies are just one possible manifestation of psychopathy, other non-criminal/antisocial behaviours in which psychopaths may partake should also be accounted for. A simplified solution, however, would be to exclude behavioural items from psychopathy measures altogether (Boduszek & Debowska, 2016).

Indeed, a clean personality measure of psychopathy uncontaminated with behavioural items would enable researchers to extend the construct to all populations regardless of criminal history (Johansson, Andershed, Kerr, & Levander, 2002). Nevertheless, there appears to be a lack of a measure of psychopathy which would focus exclusively on psychopathic traits, as opposed to behavioural expressions of the disorder, and which could be used in the same way with both forensic and non-forensic samples. For example, the Levenson Primary and Secondary Psychopathy Scale (LPSP; Levenson, Kiehl, & Fitzpatrick, 1995) consists of two dimensions. These are primary psychopathy, reflecting the PCL(-R) factor 1, and secondary psychopathy, aligning with the PCL(-R) factor 2. Contrary to these theoretical assumptions, Brinkley, Schmitt, Smith and Newman (2001) found the LPSP secondary psychopathy facet to be similarly correlated with both PCL-R facets. Another self-report instrument, the Psychopathic Personality Inventory-Revised (PPI-R; Lilienfeld &

Widows, 2005), contains items referring to antisocial behaviour and aggressiveness. Additionally, the inventory consists of 154 items which may limit its usefulness with some populations, such as prisoners, who tend to exhibit a short attention span.

Further, revisiting Cleckley's (1941) original conceptualization of psychopathy, it appears that some traits included in the clinical profile have not received enough consideration from researchers in the field of psychopathy measurement. For instance, Cleckley argued that "the psychopath is always distinguished by egocentricity" which is pathological and cannot be compared with the one witnessed is non-psychopathic individuals (p. 346). This self-centeredness is closely linked with incapacity for love, other than self-love. Although items referring to egocentricity have been included in some established psychopathy measures (e.g., the PCL-R and PPI-R), they do not form a separate dimension. As such, the predictive utility of self-centeredness over the remaining traits cannot be established. Given the great importance attached to egocentricity in Cleckley's description, however, such a possibility should be empirically investigated.

It may also be that psychopaths' egocentricity and reduced affectivity influence their ability to recognize other individuals' emotional states. Prominent conceptual models implicate structural and functional deficits in limbic brain systems particularly the amygdala (Blair, 2001; Debowska, Boduszek, Hyland, Goodson, 2014; Kiehl, 2006) as the neurological cause of the affective deficits in psychopathy. Prior research on empathic processing suggested that psychopathy is associated with overall recognition deficits (Dolan & Fullam, 2006; Hastings, Tangney, & Stuewig, 2008), as well as deficits in recognizing fear (Blair, Colledge, Murray, & Mitchell, 2001), sadness, and happiness (Dolan & Fullam, 2006; Hastings *et al.*, 2008). In another study, incarcerated offenders with increased psychopathic traits showed deficiency in inferring emotional states (Shamay-Tsoory, Harari, Aharon-Peretz, & Levkovitz, 2010). Finally, Brook and Kosson (2013) reported impaired cognitive

empathy and difficulty understanding "the full spectrum of emotions displayed by people" (p. 162) among psychopaths. This is congruent with Cleckley's (1941) suggestion that psychopathic individuals demonstrate general unresponsiveness and poverty in affect in interpersonal relations.

The current study

Despite a growing body of research into psychopathic personalities, there is a lack of an agreed definition of the disorder (Arrigo & Shipley, 2001; O'Kane *et al*., 1996). Although Cleckley's (1941) conceptualization of psychopathy received the most widespread acceptance among researchers and clinicians, some of the traits listed in his clinical profile, such as pathological egocentricity, are largely missing from the existing psychopathy assessment tools. Further, some researchers have recently suggested that criminal/antisocial tendencies are the consequence of psychopathic traits, rather than an integral part of the disorder, and individuals with increased psychopathic traits may be successful in both criminal and non-criminal endeavours (e.g., Boduszek & Debowska, 2016; Boduszek, Dhingra, Hyland, & Debowska, 2015; Cooke & Michie, 2001; Skeem & Cooke, 2010a, b). Thus, given the broad spectrum of activities in which psychopaths may engage, the inclusion of behavioural items in psychopathy scales appears counterproductive. Instead, there is a need for a clean personality measure of psychopathy with predictive utility for criminal/antisocial behaviour, which could be used among both forensic and non-forensic populations (Boduszek & Debowska, 2016; Johansson *et al*., 2002). Accordingly, in line with Skeem and Cooke's (2010b, p. 455) assertion, new generation of research which "distinguishes between personality deviation and social deviance" is warranted. Here, we aim to address the above issues by creating and validating a brief self-report scale of psychopathic personality traits for research purposes. Our goal is to design a measure which would grasp the essence of a psychopathic personality (i.e., affective responsiveness, cognitive

responsiveness, interpersonal manipulation, and egocentricity), regardless of respondents' age, gender, cultural background, and criminal history.

Methods

Sampling Procedure

According to the 2015 consensus, the total prison population in the Republic of Poland consists of $N = 76,145$ inmates. There are 215 correctional units, including main prisons, remand prisons, and detention centres (the focus of this project was only on males from main maximum- and medium-security prisons). In order to minimize sampling bias and maximize the generalizability of findings, systematic sampling procedure was applied in the current study. First, we randomly selected 10 prisons (five maximum-security and five medium-security) for participation. Access to those prisons was granted by regional prison wardens. Printed self-reported anonymous surveys were delivered by authors to all selected prisons and systematically distributed among inmates (stratification was based on prison blocks and level of recidivism). Data collection occurred in inmates' living units and was monitored by one prison personnel on each block/wing. The prison personnel explained the nature and purpose of the study and provided a summary of the informed consent. Prior to data collection, appropriate training for prison personnel was delivered by authors. Given inmates' standing as a vulnerable population and the potential that they may feel compelled to participate, it was made clear both in the consent form and verbally (by the prison personnel) that participation was voluntary. In addition, inmates were informed verbally that they should not participate in the study if they could not read, but that they did not have to inform data collectors of the specific reason for not participating in the study. Inmates consenting to participate were told that all information they provided in this study was anonymous. Participants were instructed to place completed surveys in envelopes and return

them to a data collector or place them in a correspondence box which was available on each prison block. In maximum security units, the prison personnel collected the surveys from each participant upon completion. Completed surveys were collected from all participating prisons by the research team and posted to the home university in the United Kingdom.

Sample

We approached $N = 2,500$ inmates in total and $N = 1,794$ returned completed surveys (response rate = 71.76%). Due to the significant missing data, $N = 1,261$ of inmates were included in the current analysis (age range from 18 to 76, $M = 34.90$, $SD = 9.98$, $Mdn = 34$, and Mode = 35). Seven hundred and three ($N = 703$; 55.7%) participants were from maximum and 558 (44.3%) from medium security prisons. In terms of the type of crime committed, 749 were incarcerated for theft, 522 for burglary, 246 for drug related offences, 488 for assault, 35 for sex offences, 61 domestic violence, 208 for financial crimes, and 117 for murder (please note that some participants indicated having committed more than one crime). Four hundred and thirty-three ($N = 433$) participants were in prison for the first time, 309 for the second time, 225 for the third time, 113 for the fourth time, and 146 respondents were in prison five times or more (range from 1 to 17 times, $M = 2.56$, $SD = 1.90$, $Mdn = 2$, Mode = 1). Six hundred and sixty-seven ($N = 667$) of inmates indicated being a parent. The sample consisted of 332 inmates having primary education only, 202 with junior high education, 175 with high school education, 441 with vocational qualifications, 65 with a technical college degree, and 37 with a university degree. Five hundred and ninety-three ($N = 593$) prisoners reported being single, 432 in a relationship, 190 divorced/separated, and 28 widowed. Eight hundred and seventy-three ($N = 873$) were raised by both parents, 232 by mother only, 36 by father only, 51 by relatives, 26 by foster parents, and 57 were raised in a child care home. Total time spent in prisons for the whole sample ranged from 1 to 468

months (*M* = 71.45, *SD* = 71.46, *Mdn* = 48, Mode = 48) and the current incarceration from 1

to 288 months (*M* = 31.19, *SD* = 39.05, *Mdn* = 16, Mode = 12).

Measures

     Psychopathic Personality Traits Scale (PPTS; Boduszek, Debowska, Dhingra, &

DeLisi) is a self-reported 20-item measure designed to assess psychopathic traits in forensic

and non-forensic populations. The scale was developed to measure four factors labelled

affective responsiveness (Factor 1), cognitive responsiveness (Factor 2), interpersonal

manipulation (Factor 3), and egocentricity (Factor 4) (for specific items see Table 3). Each

subscale consists of five items measured using *agree* (1) and *disagree* (0) format (i.e., a trait

is either present or absent). Scores range from 0 to 20, with higher scores indicating elevated

levels of psychopathic personality traits. The affective responsiveness subscale is made up of

items concerning characteristics of low empathy and emotional shallowness. Cognitive

responsiveness subscale measures the ability to understand others' emotional states, mentally

represent another person's emotional processes, and engage with others' emotionally at a

cognitive level. The interpersonal manipulation subscale measures characteristics such as

superficial charm, grandiosity, and deceitfulness. Finally, egocentricity subscale assesses an

individual's tendency to focus on one's own interests, beliefs, and attitudes. All scale items

are measured through knowledge/skills and attitudes/beliefs, rather than behaviours. Items 2,

6, 10, 13, 14, and 17 are reverse-scored.

     The Measure of Criminal Social Identity (MCSI; Boduszek, Adamson, Shevlin, &

Hyland, 2012) consists of eight items and is based on Cameron's (2004) Three-dimensional

Strength of Group Identification Scale. Each item is scored on a 5-point Likert scale (1=

strongly disagree to 5 = *strongly agree).* Scores range from 8 to 40, with higher scores

indicating higher levels of criminal social identity. The scale is composed of three subscales:

cognitive centrality (three items) subscale measures the psychological salience of a criminal's group identity, in-group affect (two items) subscale measures a criminal's felt attitude toward other in-group criminals, and in-group ties (three items) subscale measures the level of personal bonding with other criminals. In the present sample, Cronbach's alpha for entire scale was .82.

Self-Esteem Measure for Criminals (SEM-C; Debowska & Boduszek, 2016) is an 8-item self-report instrument measuring self-esteem among incarcerated adult populations. The measure consists of two subscales: prison-specific self-esteem (4 items), looking at self-esteem in a specific context, and general self-esteem (4 items), inquiring into self-esteem in a context-free manner. Responses are indexed on a 4-point Likert scale (1 = *never*, 4 = *always*). Scores for the total scale range from 8 to 32, with higher scores indicating increased levels of self-esteem (Cronbach's alpha = .82).

The Child Sexual Abuse Myth Scale (CSAMS; Collings, 1997) is a 15-item self-report instrument measuring child sexual abuse myth acceptance. It is composed of three subscales: blame diffusion subscale (six items) assesses the belief that persons other than the offender are to blame for the abuse; the denial of abusiveness subscale (five items) pertains to the beliefs that serve to minimize the abusive nature of child sexual abuse; and restrictive abuse stereotypes subscale (five items) inquires into the beliefs that serve to deny the reality of abuse or to deny the negative consequences of abuse. In the current study, responses were indexed on a 4-item Likert scale (1 = *disagree* to 4 = *agree*). Scores range from 15 to 60, with higher scores indicating a greater acceptance of abuse-related myths and stereotypes (Cronbach's alpha = .83).

Attitudes Towards Male Sexual Dating Violence (AMDV-Sex; Price, Byers, & the Dating Violence Research Team, 1999) is one of three instruments, labelled the Attitudes

Towards Dating Violence Scales, inquiring into the acceptance of physical (Attitudes Towards Male Physical Dating Violence; AMDV-Phys), psychological (Attitudes Towards Male Psychological Dating Violence; AMDV-Psyc), and sexual (AMDV-Sex) violence perpetrated by males in dating relationships. The AMDV-Sex is a 12-item scale assessing the extent to which respondents subscribe to views supportive of sexual violence against women in dating relationships. In the current study, all items were scored on a 4-point Likert scale (1 = *disagree*, 4 = *agree*). Possible scores ranged from 12 to 48, with higher scores indicating greater acceptance of sexual violence towards women in dating relationships (Cronbach's alpha = .77).

Lie scale (Francis, Brown, & Philipchalk, 1992) is a 6-item subscale of the Eysenck Personality Questionnaire Revised-Abbreviated (EPQR-A) devised to control for social desirability bias. It is scored on a Yes (1) / No (0) format (Cronbach's alpha = .71).

All questionnaires used in the current study were translated to Polish by a professional translator. To ensure that the meaning of the original inventories has been retained, the Polish versions were translated back to English. Both original translations and back-translations were then shown to three experts in translation who suggested minor changes.

Scale development

In developing the PPTS, we relied on Cleckley's (1941) original conceptualization of psychopathy, as well as most recent research findings in the area of psychopathic personalities. Based on our perusal of the relevant literature, four dimensions of psychopathy were extracted, namely affective responsiveness, cognitive responsiveness, interpersonal manipulation, and egocentricity. Item generation for the PPTS relied on theoretical notion and discussions with a panel of experts (three criminal/forensic psychologists and one research methodologist). Further, in light of recent empirical evidence that psychopaths are

likely to engage in a range of criminal/antisocial and non-criminal/antisocial activities (e.g., Boduszek & Debowska, 2016; Boduszek *et al*., 2015; Cooke & Michie, 2001; DeLisi, 2009; McCuish *et al*., 2015; McCuish, Corrado, Lussier, & Hart, 2014; Skeem & Cooke, 2010a, b), items were cast to reflect knowledge/skills and attitudes/beliefs rather than behaviour. Initially, we assembled 60 items indexed on a 6-point Likert scale (1 = *strongly disagree*, 6 = *strongly agree*). Given that the aim was to construct a brief self-report scale for research purposes, the initial item pool was reduced to 20 (five for each dimension) after two rounds of consultations with the panel. At this stage, content validity of the proposed scale was assessed. The proposed scale was initially administered to 64 male inmates from one maximum security prison for cognitive testing. Fifty-two ($N = 52$) participants returned fully completed surveys and 16 agreed to provide feedback on item comprehension and response format. All issues reported by inmates were incorporated in the final version of the PPTS, including dichotomous response format and composition of some of the scale items. Most of the prisoners suggested that a 6-point Likert scale was "too difficult for simple questions". Indeed, based on our analysis, prisoners tended to score scale items as either *disagree* or *agree*. One possible explanation for this is that items referring to knowledge/skills and attitudes/beliefs can be easily scored as either present or absent. It appears that a wider range of responses is necessary for items inquiring into behaviours.

Analytical Procedure

A recent critical review of psychopathy measurement by Boduszek and Debowska (in 2016) revealed that factor analytic literature is compromised by a number of methodological limitations. In an attempt to systemize research in the area, the following recommendations were made for future investigations: (1) confirmatory techniques should be used to test competing models derived on the basis of previous research and theory and bi-factor conceptualization should be used as a comparison model; (2) when the best model fit is

multidimensional in nature, a differential predictive validity or alternative test must be performed to verify whether the recognized factors correlate differently with external criteria; (3) when assessing the construct validity and dimensionality using the confirmatory factor analysis (CFA), the absolute minimum requirement is that the following fit indices (if available) are provided in order to make direct comparisons between the competing models: the comparative fit index (CFI; Bentler, 1990), the Tucker-Lewis index (TLI; Tucker & Lewis, 1973), the root-mean-square error of approximation (RMSEA; Steiger & Lind, 1980), and/or the standardized root-mean-square residual (SRMR; Bentler, 1995); (4) studies should be conducted using unpublished data sets of appropriate size; (5) parcelling procedure should not be utilized with short scales; (6) composite reliability should be reported instead of internal consistency (Cronbach's alpha) in a latent variable modelling context.

In line with the above recommendations, the dimensionality and construct validity of the PPTS was investigated through the application of traditional CFA techniques, along with confirmatory bifactor analysis (see Reise, Moore, & Haviland, 2010) and multitrait-multimethod modelling (MTMM, also known as correlated traits/correlated methods models, e.g., see Boduszek & Dhingra, 2015). Seven alternative models of the PPTS latent structure were specified and tested using Mplus version 6.12 (Muthén & Muthén, 1998-2010) with WLSMV estimation.

Model 1 is a one-factor solution where all PPTS items load on a single latent factor of psychopathy. Model 2 is a correlated three-factor solution where items 1, 2, 5, 6, 9, 10, 13, 14, 17, and 18 are loaded on affective/cognitive responsiveness factor; items 3, 7, 11, 15, and 19 load on interpersonal manipulation factor; and items 4, 8, 12, 16, and 20 load on egocentricity factor. Model 3 is a bifactor conceptualization with one general factor of psychopathy and three subordinate factors described in Model 2. Model 4 is an MTMM model including two correlated method factors: a factor operationalized by items reflecting

knowledge/skills and a factor operationalized by items reflecting attitudes/beliefs, independent of which factor described in Model 2 the items belong to. Model 5 is a correlated four-factor solution where items 1, 5, 9, 13, and 17 load on affective responsiveness factor, items 2, 6, 10, 14, and 18 load on cognitive responsiveness factor, items 3, 7, 11, 15, and 19 load on interpersonal manipulation factor, items 4, 8, 12, 16, and 20 load on egocentricity factor. Model 6 is a bifactor conceptualization with one general factor of psychopathy and four subordinate factors described in Model 5. Model 7 is an MTMM model including two correlated method factors: a factor operationalized by items reflecting knowledge/skills (M1) and factor operationalized by items reflecting attitudes/beliefs (M2), independent of which factor described in Model 5 the items belong to (see Figure 1).

The overall fit of each model and the relative fit between models were assessed using a range of goodness-of-fit statistics: the $\chi 2$ statistic, the CFI and TLI. For CFI and TLI, values above 0.95 indicate good model fit (Bentler, 1990; Hu & Bentler, 1999). In addition, the RMSEA with 90% confidence interval is presented. Ideally, this index should be less than 0.05 to suggest good fit (Bentler, 1990; Hu & Bentler, 1999). Furthermore, the Weighted Root Mean Square Residual (WRMR) was used to evaluate the alternative models, with the smallest value indicating the best-fitting model.

Differential predictive validity was assessed through the use of multiple regression (for continuous outcome variables) and binary logistic regression (for a dichotomous outcome variable). Additionally, in contrast to previous research on validation of psychopathy construct which has typically assessed the internal consistency of items (Cronbach's α), the present study evaluated the internal reliability of the PPTS using composite reliability (for procedure see Raykov, 1997; for application in psychopathy research see Boduszek *et al*., 2015). Values greater than .60 are generally considered acceptable (Diamantopoulos & Siguaw, 2000).
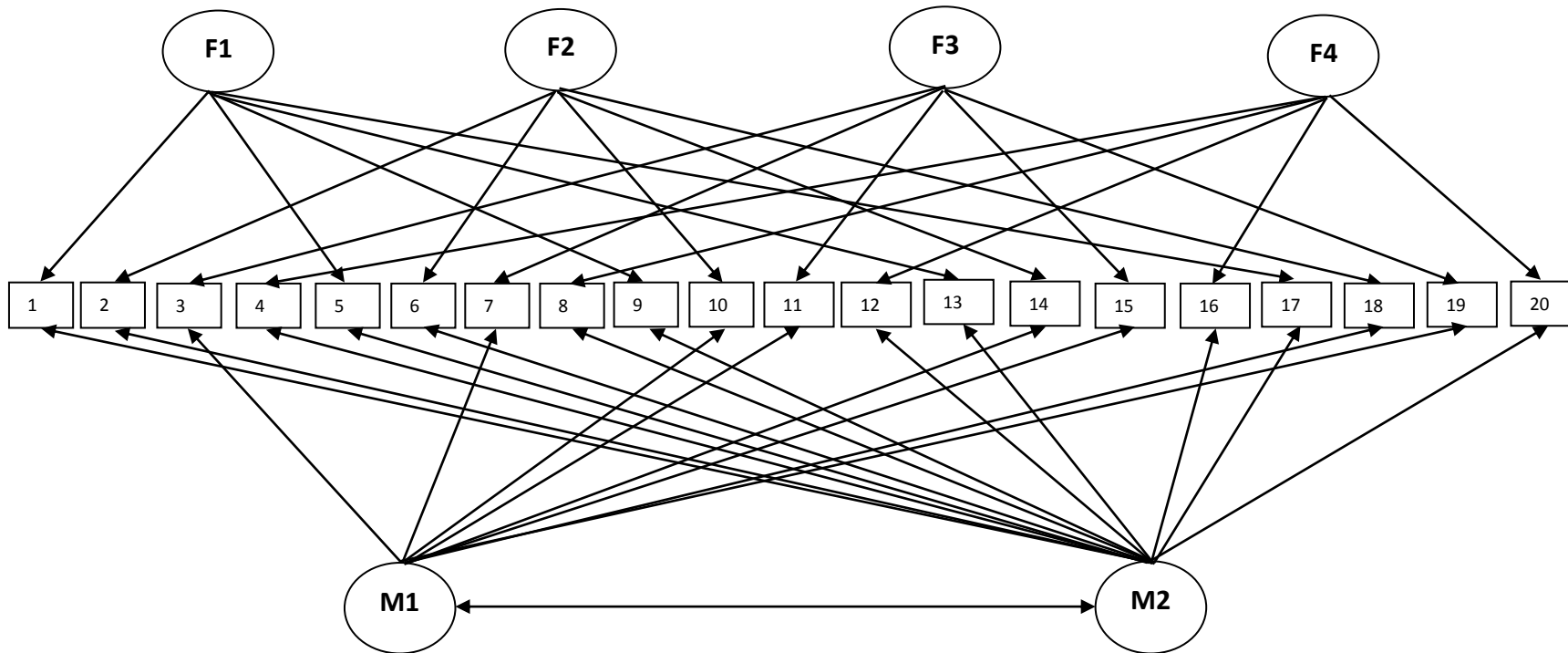
Figure 1. *MTMM model of the PPTS. F1 = affective responsiveness, F2 = cognitive responsiveness, F3 = interpersonal manipulation, F4 = egocentricity, M1 = knowledge/skills, and M2 = attitudes/beliefs.*

Results

Descriptive statistics for four PPTS factors, CSAMS, AMDV-Sex, criminal social identity, and self-esteem are presented in Table 1.

Table 1.

Descriptive Statistics for PPTS Factors, CSAMS, AMDV-Sex, Criminal Social Identity, and Self-esteem

Variables	*M*	*SD*	*Mdn*	Min	Max
Affective responsiveness	1.18	1.36	1	0	5
Cognitive responsiveness	1.54	1.34	1	0	5
Interpersonal manipulation	1.92	1.61	2	0	5
Egocentricity	1.86	1.35	2	0	5
CSAMS	29.74	8.91	29	15	60
AMDV-Sex	19.58	6.14	18	12	48
Criminal Social Identity	21.41	6.49	22	8	38
Self-esteem	27.12	3.79	28	10	32

Note. CSAMS = Child Sexual Abuse Myth Scale; AMDV-Sex = Attitudes Towards Male Sexual Dating Violence.

Table 2 presents the fit indices of the seven alternative models of the PPTS. Models 1, 2, 3, 5 and 6 were rejected based on the CFI and TLI (values below .95) and RMSEA (values above .05) statistics. Models 4 and 7 offer good representations, with Model 7 providing the best fit to the data (CFI = .96, TLI = .95, RMSEA = .040 [90%CI = .036/.045], WRMR = 1.15).

Table 2.

Fit Indices for Seven Alternative Models of the PPTS

	χ^2	df	CFI	TLI	RMSEA (90% CI)	WRMR
1. One Factor Model	2087.34***	170	.64	.60	.102 (.098/.106)	3.15
2. Three Factor Model	1302.43***	167	.79	.76	.079 (.075/.083)	2.47
3. Bifactor Model (3 grouping factors)	710.18***	150	.90	.87	.059 (.054/.063)	1.66
4. MTMM Model (3 factors with 2 method factors)	421.32***	143	.95	.93	.042 (.038/.047)	1.16
5. Four Factor Model	1162.52***	164	.81	.78	.075 (.071/.079)	2.31
6. Bifactor Model (4 grouping factors)	1308.02***	150	.78	.73	.084 (.080/.089)	2.38
7. MTMM Model (4 factors with 2 method factors)	403.39***	146	.96	.95	.040 (.036/.045)	1.15

Note. χ^2 = chi square goodness of fit statistic; *df* = degrees of freedom; CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root-Mean-Square Error of Approximation; CI = Confidence Interval; WRMR = Weighted Root Mean Square Residual.
*** indicates χ^2 is statistically significant ($p < .001$).

Table 3. *Standardized Factor Loadings for the four Psychopathy Factors (Factor 1 = affective responsiveness, Factor 2 = cognitive responsiveness, Factor 3 = interpersonal manipulation, and Factor 4 = egocentricity) and Two Method Factors (Method 1 = knowledge/skills, and Method 2 = attitudes/beliefs) of the PPTS*

Original item numbers	Method 1	Method 2	Factor 1	Factor 2	Factor 3	Factor 4
1. I don't care if I upset someone to get what I want.		.32***	.82***			
2. Before criticizing somebody, I try to imagine and understand how it would make them feel.		.12*		.56***		
3. I know how to make another person feel guilty.	.12*				.64***	
4. I tend to focus on my own thoughts and ideas rather than on what others might be thinking.		.11*				.42***
5. What other people feel doesn't concern me.		.32***	.79***			
6. I always try to consider the other person's feelings before I do something.		.17**		.65***		
7. I know how to pay someone compliments to get something out of them.	.09*				.71***	
8. I don't usually appreciate the other person's viewpoint if I don't agree with it.		.14**				.49***
9. Seeing people cry doesn't really upset me.		.37***	.56***			
10. I am good at predicting how someone will feel.	.21**			.73***		
11. I know how to simulate emotions like pain and hurt to make others feel sorry for me.	.22**				.69***	
12. In general, I'm only willing to help other people if doing so will benefit me as well.		.46***				.65***
13. I tend to get emotionally involved with a friend's problems.		.13*	.84***			
14. I'm quick to spot when someone is feeling awkward or uncomfortable.	.24***			.74***		
15. I sometimes provoke people on purpose to see their reaction.	.05*				.70***	
16. I believe in the motto: "I'll scratch your back, if you scratch mine".		.52***				.59***
17. I get filled with sorrow when people talk about the death of their loved ones.		.19**	.67***			
18. I find it difficult to understand what other people feel.	.24***			.41***		
19. I sometimes tell people what they want to hear to get what I want from them.	.20**				.83***	
20. It's natural for human behaviour to be motivated by self-interest.		.10*				.63***

Note. Factor loadings are statistically significant at * $p < .05$; ** $p < .01$; *** $p < .001$

The adequacy of Model 7 (MTMM model including two correlated method factors and four psychopathy factors) can also be determined based on parameter estimates. As shown in Table 3, all items displayed statistically significant factor loadings. Further inspection of the factor loadings for the four psychopathy factors provides important information regarding the correctness of including these latent factors in the scoring of the PPTS. If the items load strongly on each of the four psychopathy factors and less strongly on method factors, this suggests the superiority of the four factors over the method factors in the conceptualization of the factor structure of the PPTS, and thus its related scoring scheme. These results suggest that the PPTS consists of four latent factors (affective responsiveness, cognitive responsiveness, interpersonal manipulation, egocentricity) while controlling for the method of measurement (knowledge/skills and attitudes/beliefs).

Table 4 shows correlations between latent factors. All correlations between four psychopathy factors were weak to moderate, except for the correlation between affective responsiveness and cognitive responsiveness ($r = .50$) facets, which indicates a significant overlap between the variables. As suggested by Boduszek and Debowska (2016), when the best model fit is multidimensional and some factors are highly correlated (.50 and above), a differential predictive validity test has to be conducted to verify whether the factors correlate differentially with external criteria. Table 5 presents the outcome of regression analyses. Based on statistics provided, affective responsiveness and cognitive responsiveness correlate differentially with CSAMS, criminal social identity, self-esteem, and violent offending. These results confirm that affective and cognitive responsiveness factors should be included as separate factors in the PPTS.

In order to assess the internal reliability of the PPTS factors, composite reliability was performed. Results suggest that all four psychopathy factors (affective responsiveness = .86, cognitive responsiveness = .76, interpersonal manipulation = .84, and egocentricity = .69) demonstrate adequate to good internal reliability.

Table 4.

Associations between the PPTS Factors

Factor	F1	F2	F3	F4	M1	M2
F1. Affective responsiveness	1					
F2. Cognitive responsiveness	.50***	1				
F3. Interpersonal manipulation	.28***	.11***	1			
F4. Egocentricity	.44***	.23***	.43***	1		
M1. (knowledge/skills)	.42***	.44***	.87***	.47***	1	
M2. (attitudes/beliefs)	.85***	.57***	.39***	.79***	.90***	1

Note. *** $p < .001$

Table 5.

Associations between the Four PPTS Factors and External Variables

Variable	CSAMS (10% variance) β (95% CI)	AMDV-Sex (21% variance) β (95% CI)	CSI (19% variance) β (95% CI)	SE (8% variance) β (95% CI)	Violence OR (95% CI)
Affective responsiveness	-.01 (-.08/.07)	.20*** (.13/.27)	.14*** (.07/.21)	.10** (.02/.17)	1.14** (1.02/1.27)
Cognitive responsiveness	.06* (.01/.12)	.15*** (.09/.22)	.03 (-.03/.10)	-.10** (-.17/-.03)	1.04 (.94/1.15)
Interpersonal manipulation	.12*** (.06/.19)	.04 (-.02/.12)	.22*** (.16/.29)	-.07* (-.13/-.01)	.99 (.92/1.09)
Egocentricity	.17*** (.10/.25)	.15*** (.08/.22)	.12*** (.06/.19)	-.06 (-.13/.01)	89* (.81/.99)

Note. First four columns present results from multiple regression analyses; last column presents results from binary logistic regression. CSAMS = Child Sexual Abuse Myth Scale; AMDV-Sex = Attitudes Towards Male Sexual Dating Violence; CSI = Criminal Social Identity; SE = Self-esteem; Violence (1 = violent offences and 0 = non-violent offences).

*p < .05, **p < .01, *** p < .001

According to Cleckley's (1941) description of psychopathy, the essence of a psychopathic personality is grasped by affective deficits, unresponsiveness in interpersonal relations, and pathological egocentricity. The final trait, however, has been largely neglected in psychopathy assessment research to date. Further, this early understanding of psychopathy construct has been complemented by recent empirical research evidence, indicating that individuals with elevated psychopathic qualities are also characterized by deficiency in inferring emotional states (e.g., Brook and Kosson, 2013; Shamay-Tsoory *et al*., 2010). Finally, in spite of the fact that criminal/antisocial tendencies have been traditionally considered an important part of psychopathy (e.g., Hare & Neumann, 2005; Neumann, Hare, & Pardini, 2014), some current studies have demonstrated that such behaviour may ensue from psychopathic personality traits (e.g., Boduszek & Debowska, 2016; Boduszek, Dhingra, Hyland, & Debowska, 2015; Cooke & Michie, 2001; Skeem & Cooke, 2010a, b). The aim of the current study, therefore, was to develop and validate the Psychopathic Personality Traits Scale (PPTS) consisting of four dimensions, namely affective responsiveness, cognitive responsiveness, interpersonal manipulation, and egocentricity.

As for the factor structure of the PPTS, Boduszek and Debowska (2016), in a critical evaluation of psychopathy measurement, indicated that it is unacceptable to assume that only one model exists for a particular scale and that competing solutions ought to be tested in order to fully explore the dimensionality of a measure. As per those recommendations, we tested seven different conceptually sound models of the PPTS, using confirmatory factor techniques. Although two alternative multitrait-multimethod (MTMM) models provided good representation for the data, the MTMM model including two correlated method factors (knowledge/skills and attitudes/beliefs) and four psychopathy factors (affective responsiveness, cognitive responsiveness, interpersonal manipulation, and egocentricity)

offered the best fit for the data (based on the CFI, TLI, and RMSEA). Further investigation of the factor loadings revealed that scale items loaded more strongly on the four psychopathy factors, suggesting that the PPTS is best conceptualized as measuring four primary factors of psychopathy, which provided the basis for creating four subscales, and two generally hidden method factors (see Reise *et al*., 2010). Consequently, when applying the PPTS in future research, the four psychopathy factors should be considered as distinct dimensions. Worthy of note, MTMM models have been previously found to best represent the dimensionality of two psychopathy measures, namely the Psychopathy Checklist – Screening Version (PCL-SV; Hart, Cox, & Hare, 1995) (Boduszek *et al*., 2015) and the Self-Report Psychopathy Scale - III (SRP-III; Paulhus *et al*., in press) (Debowska, Boduszek, Kola, & Hyland, 2014), demonstrating the importance of controlling for the method of testing in the assessment of psychopathy.

The appropriateness of the identified factorial solution was also supported by the differential predictive validity of the four psychopathy facets. It was noted that if the best model fit is multidimensional in nature, a differential predictive validity must be performed in order to verify whether the specified factors correlate differently with external variables (Boduszek & Debowska, 2016). Such tests are especially important if the latent factors are highly correlated (.50 and above) (Carmines & Zeller, 1979). Indeed, in the current study, the association between affective responsiveness and cognitive responsiveness factors was high ($r = .50$) and the alternative MTMM model which combined these two dimensions together (Model 4) evidenced an adequate model fit. Nevertheless, individuals scoring higher on affective responsiveness, but not on cognitive responsiveness, were significantly more likely to commit violent offences and have increased criminal social identity scores. Both affective responsiveness and cognitive responsiveness correlated significantly with self-esteem; however, those associations were in opposite directions. Specifically, affective

responsiveness was associated with higher and cognitive responsiveness with lower levels of self-esteem. Additionally, cognitive responsiveness was significantly positively associated with child sexual abuse myths acceptance. In contrast, association between this external criterion and affective responsiveness was negative yet statistically non-significant. Given the differing predictive utility of affective responsiveness and cognitive responsiveness, these two facets should be considered as unique and distinct from each other, revealing statistical but not conceptual appropriateness of the MTMM model coalescing into these two dimensions (Model 4). As for the remaining psychopathy factors, interpersonal manipulation formed significant positive associations with child sexual abuse myths acceptance, criminal social identity, and a significant negative correlation with self-esteem. Egocentricity was found to predict increased scores on child sexual abuse myths scale, attitudes towards sexual dating violence, and criminal social identity. This psychopathy dimension was also associated with violent offending. In light of this evidence, the inclusion of egocentricity items within psychopathy measures yet the failure to control for this aspect of the disorder as a separate and unique dimension (such as in the case of the PCL-R and its derivatives, as well as PPI-R), appears misguided. Finally, the four psychopathy factors evidenced good internal reliability, as measured using composite reliability (Raykov, 2007).

Further, although prior research revealed that psychopathy is associated with emotional recognition deficits (e.g., Brook & Kosson, 2013; Dolan & Fullam, 2006; Hastings *et al*., 2008), some other studies demonstrated psychopaths' unimpaired performance on the 'theory of mind' tasks (e.g., Blair *et al*., 1996; Dolan & Fullam, 2004; Jones, Happé, Gilbert, Burnett, & Viding, 2010). The 'theory of mind,' however, refers to the ability to conceive what other people know, want, feel, or believe in (Premack & Woodruff, 1978) and, as such, goes beyond inferring emotional states only. Indeed, Shamay-Tsoory *et al*. (2010) found that prisoners with increased psychopathic traits were deficient in understanding affective states

(emotions) but not cognitive states (beliefs). These findings suggest that reduced cognitive responsiveness to others' emotional states constitutes an important part of the psychopathy construct. However, it may also be that this ability is affected by a psychopath's level of IQ.[3] Earlier research demonstrated the moderating role of intelligence in the relationship between psychopathy and emotional responding, indicating that psychopaths with higher intelligence are able to respond in a socially desirable manner to emotionally provoking stimuli (Bate, Boduszek, Dhingra, & Bale, 2014). In order to verify whether deficiency in cognitive responsiveness to emotional states of others is a universal feature of psychopathy or is contingent on intelligence levels, future research using the PPTS should control for participants' IQ.

It is important to note that our analysis was based on data from the Polish prison population and, as such, the findings may not be generalizable to other groups. Future studies should validate the PPTS among forensic samples drawn from different linguistic and cultural backgrounds. In addition, since our aim was to create a brief measure of psychopathic traits uncontaminated with behavioural items that could be used in the same way among participants with and without criminal history, the construct validity and factor structure of the PPTS ought to be tested with non-forensic populations.

In spite of the limitations listed above, our study provides a significant contribution to the area of psychopathy measurement. In developing the PPTS, we relied on Cleckleyan conceptualization of psychopathy, as well as the most recent research findings in the field of

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[3] Despite Cleckley's notion that psychopaths have good intelligence, empirical research has consistently shown that psychopathic offenders have significantly lower intellectual functioning than their non-psychopathic peers (DeLisi, Vaughn, Beaver, & Wright, 2010; Loney, Frick, Ellis, & McCoy, 1998; Salekin, Neumann, Leistico, & Zalot, 2004). In a study of adolescents from the United Kingdom that split the sample into four groups based on behavioral risk, negative and null relationships between intelligence and psychopathy were shown (Allen, Briskman, Humayn, Dadds, & Scott, 2013). For instance, the normative risk group had average verbal IQ of nearly 113 and nonverbal IQ of nearly 105. The highest risk group had verbal IQ of 81 and nonverbal IQ of 91.

psychopathic personalities. In light of earlier results revealing that individuals with elevated psychopathic qualities may engage in both criminal/antisocial and non-criminal/antisocial activities (see Boduszek & Debowska, 2016), items referring to behaviours have been intentionally omitted. Next, we rigorously tested the reliability and dimensionality of the PPTS within a large representative sample of inmates drawn from the Polish prison population, obtained for the purpose of the present research using a systematic sampling procedure. We found that the PPTS assessed four meaningful psychopathy factors (affective responsiveness, cognitive responsiveness, interpersonal manipulation, and egocentricity) and two generally hidden method factors (knowledge/skills and attitudes/beliefs). Equally important, the four psychopathy facets evidenced good differential predictive validity.

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