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Self-esteem in adult prison population: The development and validation of the Self-Esteem
Measure for Prisoners (SEM-P)

Agata Debowska, Daniel Boduszek, & Nicole Sherretts

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Correspondence concerning this article should be addresses to Daniel Boduszek, University of Huddersfield, School of Human and Health Sciences, Ramsden Building, Queensgate, Huddersfield, HD1 3DH, United Kingdom, contact email: d.boduszek@hud.ac.uk

Abstract

The main aim of the current study was to develop and validate the Self-Esteem Measure for Prisoners (SEM-P), composed of personal and prison self-esteem, among a systematically selected sample of prisoners ($N = 1,794$). Confirmatory factor analyses revealed that the SEM-P was best captured with the bifactor conceptualization reflecting two grouping factors (personal and prison self-esteem) and one general factor. Although factor loadings were stronger for the general factor, the two grouping factors evidenced good differential predictive validity. The SEM-P is a reliable and valid measure of self-esteem among inmates because it considers the importance of prison culture for self-evaluations.

Key words: Self-esteem; Self-Esteem Measure for Prisoners (SEM-P); Bifactor modelling; Prisoners; Prison culture

Self-esteem in adult prison population: The development and validation of the Self-Esteem Measure for Prisoners (SEM-P)

Self-esteem is a psychological concept which refers to the evaluation an individual makes in relation to themselves and indicates the extent to which they see themselves as capable and worthy (Coopersmith 1967). As such, self-esteem is the subjective emotional response that an individual has towards themselves (Heatherton and Wyland 2003). Enhanced levels of self-esteem have been associated with good health and the ability to cope effectively in adverse circumstances, whereas low self-esteem can result in psychological distress, depression, and antisocial behavior (Battle 1990; Baumeister 1998; Tennen and Affleck 1993; Crocker, Luhtanen, Blaine, and Broadnax 1994; Trzesniewski, Donnellan, and Moffitt 2006).

Given the significance of self-esteem in relation to physical, psychological, and sociological wellbeing, it is not surprising that there are many measures of the construct. Crandall (1973), in a review of 33 self-esteem measures, suggested the superiority of four: the Rosenberg Self-Esteem Scale (RSES; Rosenberg 1965, 1989), the Janis–Field Feelings of Inadequacy Scale (Janis and Field 1959), the Coopersmith Self-Esteem Inventory (Coopersmith 1967), and the Tennessee Self-Concept Scale (Fitts 1964). A more recent development, the Culture Free Self-Esteem Inventory, has been proposed by Battle (1990). All of the above are multidimensional tools measuring various aspects of the psychological concept, with the exception of the RSES, which was suggested to reflect one factor of global self-esteem. Further, Demo (1985) reported best reliability and factor structure indices for Rosenberg and Coopersmith’s inventories; whereas Blascovich and Tomaka (1991) as well as

Marsh, Scalas, and Nagengast (2010) recognized the RSES as the most widely used self-esteem measure in research¹, which may be due to its brevity (10 items).

Most self-esteem scale development work has been undertaken in an attempt to create a measure which could be used invariantly among different populations, regardless of cultural background. Nonetheless, such an approach appears in conflict with theory. For example, according to Cooley's (1998) conception of the looking-glass self, the way a person views themselves is reflective of what others think of them, suggesting the importance of social environment for self-appraisals. Mead (1934), in turn, argued that people learn to respond to themselves in a way that others respond to them. It seems, therefore, that self-esteem may be context-dependent, i.e., one may express positive self-appraisals when those evaluations take place within a social milieu in which they feel valued and accepted, and negative self-appraisals in a more unfavorable environment. Along similar lines, Social Identity Theory (SIT; Tajfel and Turner 1979), a conceptual framework developed to elucidate behavior in intergroup relations, posits that people strive to attain a positive social identity in order to protect their self-esteem. The idea that self-esteem, or at least some of its components, is strongly associated with an individual's social setting may suggest that studying self-esteem in a context-free manner is misguided. Indeed, Gardner and Pierce (1998) revealed that organization-based self-esteem predicts job performance and satisfaction. In another study examining consequences of global and academic self-esteem, it was found that while the former was a strong predictor of psychological wellbeing, the latter was a better predictor of school performance (Rosenberg, Schooler, Schoenbach, and Rosenberg 1995). In considering this differential predictive validity, it appears that indicators priming for self-evaluations in a *specific* cultural context cannot and should not be eschewed in self-esteem assessment (see

¹ Twenty-five per cent of studies reviewed by Blascovich and Tomaka (1991) employed the Rosenberg Self-Esteem Scale.

Marsh 1986, 1990; Marsh and Shavelson 1995; Swann 1987). Accordingly, self-esteem measurement method ought to be adjusted to the population studied.

Given the above, it seems unsurprising that, although the most commonly used self-esteem tool in research, the RSES, has been utilized with forensic populations (e.g., Blatier 2000; Matsuura, Hashimoto, and Toichi 2009), its validity among such samples seems questionable. To corroborate, as long as all 10 RSES items were found to tap into a single dimension of global self-esteem among community adults (e.g., Gray-Little, Williams, and Hancock 1997; Shevlin, Bunting, and Lewis 1995), Boduszek, Hyland, Dhingra, and Mallett (2013b) suggested the supremacy of a two-factor model, comprised of positive and negative self-esteem, within a sample of 669 ex-prisoners. Worthy of note, one standardized factor loading for positive self-esteem dimension was reported as unacceptable (.38; see Comrey and Lee 1992). In addition, Boduszek, Shevlin, Mallett, Hyland, and O’Kane (2012b) found the same two-factor model of the RSES to provide the best fit to the data collected among 312 recidivistic incarcerated offenders. Nevertheless, the TLI was below the critical value of .90 (Hoyle 1995) and three other fit indices (CFI, RMSEA, and SRMR) were only acceptable. Further, factor loadings for two RSES items did not reach the acceptable level (.39 and .16) and one was just satisfactory (.40), indicating that some RSES items may be appropriate for community adult populations only.

Therefore, it may be that the RSES is a valid measure of global self-esteem among adults drawn from the general population, however, it cannot be reliably used with incarcerated samples. In light of the peculiar nature of prison environment, this finding is not unexpected. To elaborate, prison culture is characterized by a unique set of rules, norms, and beliefs (Copes, Brookman, and Brown 2013; Crank and Brezina 2013; Trammell 2009). Masculinity, dominance, and aggression may be decisive factors influencing survival in prison settings (Hua-Fu 2005; Kennedy 2016; Walters and Crawford 2013; Wooldredge and

Steiner 2012). Imprisonment has been argued to reinforce toxic masculinity, defined as the constellation of stereotypical male traits, which fosters hostile and violent behavior and attitudes (Debowska, Boduszek, Dhingra, and DeLisi 2016; Kupers 2010). Incarcerated individuals may adopt prison values and align their actions with prison beliefs in order to survive the pains of confinement (Collica 2010; Copes *et al.* 2013). Although the prison subculture reflects the culture of the community within which it is set, it exaggerates some of its characteristics (Clemmer 1966; Goetting 1985; Michalowski 1985). Consequently, self-evaluations conducted by inmates in relation to other prisoners may differ to those performed in a community setting because the two environments seem to value diverse traits and behaviors. As such, self-esteem appears to be a domain-specific, multidimensional construct².

The current study

As indicated in the introduction, an individual's self-evaluations may vary across settings (Marsh 1986, 1990; Marsh and Shavelson 1995; Swann 1987), suggesting that cultural context should be accounted for in self-esteem assessment. "If the role of self-concept research is to better understand the complexity of self in different contexts, to predict a wide variety of behaviors, to provide outcome measures for diverse interventions, and to relate self-concept to other constructs, then the specific domains of self-concept are more useful than a general domain" (Marsh and Craven 1997, p. 191). Indeed, past research adopting this strategy provided evidence for differential predictive validity of global and domain-specific self-esteem (Gardner & Pierce 1998; Rosenberg *et al.* 1995). Such research among forensic populations is missing, yet, in light of the above, warranted.

² The value of a multidimensional perspective has already been recognized in different areas of psychological research, including intelligence (multiple intelligences vs. a general IQ measure) (Marsh, Craven, and Martin 2006).

Prior studies demonstrate the importance of examining self-esteem among forensic samples. For example, positive self-esteem was found to significantly associate with recidivism (Boduszek *et al.* 2013b). Negative self-esteem, on the other hand, was a significant predictor of the cognitive centrality dimension of criminal social identity (Boduszek, Adamson, Shevlin, Mallett, and Hyland 2013a). Low levels of self-esteem in general were related to a range of violent offending behavior, including interpersonal attacks (Sutherland and Shepherd 2002), sexual assaults (Shine, McCloskey, and Newton 2002), and partner violence (Lewis, Travea, and Fremouw 2002; Sharpe and Taylor 1999). However, some other research suggested that higher levels of total self-esteem are associated with violent offending behavior (e.g., Baumeister, Smart, and Boden 1996; Kernis, Grannemann, and Barclay 1989). Self-esteem, therefore, is usually studied as a predictor of adverse psychological and behavioral outcomes among prisoners. Thus, further research into developing a reliable and valid tool to measure the construct is needed.

Given time constraints and inmates' short attention span, the number of items that can be included in a self-esteem instrument designed specifically for forensic populations is limited. Accordingly, the main objective of the current study was to develop the first brief Self-Esteem Measure for Prisoners (SEM-P) which would reliably capture two dimensions (personal self-esteem and prison self-esteem), within a large systematically selected sample of inmates. Next, the dimensionality of the SEM-P was assessed using confirmatory factor analysis. As per Boduszek and Debowska's (2016) recommendations, we tested four competing, theoretically and methodologically sound, factorial solutions. Lastly, we examined the reliability of the measure using composite reliability (see Boduszek and Debowska 2016; Debowska, Boduszek, Kola, and Hyland 2014) and investigated the differential predictive validity of the SEM-P factors.

Methods

Sampling procedure

In line with the 2015 consensus data, the total prison population in the Republic of Poland is composed of 76,145 inmates. There are 215 correctional units, including main prisons, remand prisons, and detention centers. This study focused only on males from main maximum and medium security prisons. In order to minimize sampling bias and maximize the generalizability of findings, we applied a systematic sampling procedure. In total, 10 prisons (five maximum and five medium security) were randomly chosen for participation. Access to the selected correctional institutions was granted by regional prison wardens. Next, we delivered printed self-report anonymous surveys to the prisons. The distribution of surveys followed a systematic procedure; stratification was based on prison blocks and level of recidivism. Data collection took place in prisoners' living units and was monitored by one prison psychologist or counsellor on each block/wing (prior to this, all prison employees facilitating data collection were trained by the authors). Given inmates' standing as a vulnerable population and the potential that they may feel compelled to participate, all participants were provided with (a) a description of the nature and purpose of the study, (b) an explanation that data collection was anonymous and voluntary, without any form of reward, and (c) a summary of the informed consent. This was done both in writing (on the first page of the survey) and verbally by the trained prison personnel. Prisoners were also informed verbally that they should not participate in the study if they could not read, but they were not asked to provide the specific reason for not participating. Respondents were instructed to place completed surveys in envelopes and return them to a data collector or place them in a correspondence box available on each prison block (the latter option was available only in medium security units). Finally, completed surveys were collected from all

participating prisons by the research team and posted to the home university in the United Kingdom. Ethical approval for the study was granted by a relevant institutional board.

Sample

We approached 2,500 inmates and 1,794 returned completed surveys (response rate = 71.76%). Due to the significant missing data (Little's MCAR test: $\chi^2 = 21.842$, $df = 28$, $p > .05$), 1,128 of inmates were included in the analysis. Participants ranged in age from 19 to 76 ($M = 34.98$, $SD = 9.98$, $Mdn = 34$, and $Mode = 35$). Six hundred and twenty-eight ($N = 628$; 55.2%) participants were from maximum and 505 (44.8%) from medium security prisons. Five hundred and sixty-five ($N = 565$; 50.1%) participating inmates were convicted of violent crimes (such as assault, domestic violence, sex offences, and homicide), 563 (49.9%) inmates were sentenced for non-violent offences (such as theft, burglary, drug-related offences, and financial crimes). Total time spent in prisons for the sample ranged from 1 to 468 months ($M = 71.75$, $SD = 72.62$, $Mdn = 48$, $Mode = 48$). Additionally, 762 (67.6%) of participants were raised by both parents, 219 (19.4%) by mother only, 26 (2.3%) by father only, 46 (4.1%) by relatives, 19 (1.7%) by foster parents, 46 (4.1%) were raised in a child care home, and 10 (.9%) prisoners did not respond to this question. Two hundred and eighty-seven ($N = 287$; 25.4%) participating prisoners reported having primary education (six years of schooling), 181 (16%) junior high education (nine years of schooling), 406 (36%) vocational qualifications (eleven years of schooling), 155 (13.7%) high school education (twelve years of schooling), 62 (5.5%) a technical college degree (thirteen years of schooling), 31 (2.7%) a university degree (between fifteen and eighteen years of schooling), and six (.5%) participants did not indicate their level of education.

Measures

Self-Esteem Measure for Prisoners (SEM-P; Debowska, Boduszek, and Sherretts) is an 8-item self-report measure assessing 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 personal 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.

Attitudes Towards Male Sexual Dating Violence (AMDV-Sex; Price, Byers, and 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 instrument examining 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*). Scores ranged from 12 to 48, with higher scores indicating greater acceptance of sexual violence towards women in dating relationships (Cronbach's alpha = .77).

The Measure of Criminal Social Identity (MCSI; Boduszek, Adamson, Shevlin, and Hyland 2012a) 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 the full scale was .82.

Lie scale (Francis, Brown, and 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 in a dichotomous fashion (0 = *no*, 1 = *yes*). Cronbach's alpha for the scale was .71.

All questionnaires 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. Original translations and back-translations were then shown to three experts in translation who suggested minor changes.

Scale development

Prior research indicated that the existing self-esteem measures cannot be reliably used with prison populations (Boduszek *et al.* 2012b, 2013b). This limitation has prompted the present attempt at creating a new measure of self-esteem reflecting two dimensions: personal self-esteem and prison self-esteem. Item generation for the Self-Esteem Measure for Prisoners (SEM-P) relied on the theoretical conceptualization of self-esteem as well as discussions with a panel of experts (three criminal/forensic psychologists and one research methodologist). Initially, we assembled 16 items, indexed on a 4-point Likert scale (1 = *never*, 4 = *always*). Given that self-esteem is usually studied in relation to other external measures, our aim was to create a scale which would be brief and easy to administer. Accordingly, after two rounds of consultations with the panel, the initial item pool was

reduced to eight (four for each factor). The proposed scale was initially administered to 50 inmates from one maximum security prison for cognitive testing. Forty-two ($N = 42$) participants returned fully completed surveys. Eight ($N = 8$) inmates who agreed to provide feedback on the measure did not report any issues in relation to item comprehension or response format.

Analytical procedure

The dimensionality and construct validity of the SEM-P was assessed using traditional CFA techniques as well as confirmatory bifactor analysis (see Reise, Moore, and Haviland 2010). Four competing models of the SEM-P were specified and tested using *Mplus* version 7.4 (Muthén and Muthén 1998-2015) with maximum likelihood robust (MLR) estimation.

Model 1 is a one-factor solution in which all eight SEM-P items load on a single latent factor of self-esteem. Model 2 is a correlated two-factor solution where items load on a personal self-esteem factor (items 2, 4, 6, and 8) and prison self-esteem factor (items 1, 3, 5, and 7). Model 3 is a hierarchical solution where items load on two subordinate factors described in Model 2. These subordinate factors, in turn, load on a superordinate factor of self-esteem. As such, there is no direct relationship between items and the superordinate factor, but the association between self-esteem and each item is mediated through the subordinate factors. Model 4 is a bifactor conceptualization where all scale items load on one general factor of self-esteem and two subordinate factors described in Model 2. The general and subordinate factors exist on equal conceptual footing and compete for explaining item variance.

The overall fit of each model and the relative fit between models were assessed using a range of goodness-of-fit statistics: the χ^2 statistic, the Comparative Fit Index (CFI;

Cronbach 1990), and the Tucker Lewis Index (TLI; Tucker and Lewis 1973). For CFI and TLI, values above .95 indicate good model fit (Bentler 1990; Hu and Bentler 1999). In addition, the Root Mean Square Error of Approximation (RMSEA; Steiger 1990) with 90% confidence interval as well as Standardized Root Mean Square Residual (SRMR) are presented. A RMSEA and SRMR value less than .05 suggests acceptable errors of approximation in the population (Bentler 1990; Browne and Cudeck 1993; Hu and Bentler 1999). Further, the Bayesian Information Criterion (BIC; Schwarz 1978) was used to evaluate the alternative models, with the smaller value indicating the best-fitting model.

Alpha coefficients as indicators of internal consistency have been criticized within a latent variable modelling context due to their reliance on both the number of items tested as well as correlations between them (see Cortina 1993; Raykov 1998). Therefore, in this research the internal reliability of the SEM-P was examined with the use of composite reliability (for procedure see Raykov 1997; for application in empirical research see Boduszek, Dhingra, Hyland, and Debowska 2015; Debowska *et al.* 2014). Values greater than .60 are generally considered acceptable (Diamantopoulos and Siguaw 2000).

Results

Descriptive statistics for two SEM-P factors (personal self-esteem and prison self-esteem), attitudes towards male sexual dating violence, criminal social identity, and total time in prison are presented in Table 1.

Table 1

Descriptive Statistics for the SEM-P Factors, AMDV-Sex, Criminal Social Identity, and Total Time in Prison

Variables	<i>M</i>	<i>SD</i>	<i>Mdn</i>	Min.	Max.
Personal self-esteem	13.41	2.15	14	4	16
Prison self-esteem	13.71	2.17	14	4	16
AMDV-Sex	19.53	6.06	18	12	48
Criminal social identity	21.41	6.49	22	8	38
Total time in prison	71.75	72.62	48	1	468

Note. AMDV-Sex = Attitudes Towards Male Sexual Dating Violence.

Fit indices for four alternative models of SEM-P are presented in Table 2. One-factor model, correlated two-factor model, and hierarchical model were rejected based on the CFI and TLI (values below .95) as well as RMSEA and SRMR (values above .05) statistics. Bifactor model of the SEM-P provides the best fit to the data based on all statistics (CFI = .99, TLI = .98, RMSEA = .031 [90%CI = .013/.048], SRMR = .016, BIC = 16357.51).

Table 2

Fit Indices for four Alternative Models of the Self-Esteem

	χ^2	<i>df</i>	CFI	TLI	RMSEA (90% CI)	SRMR	BIC
1. One-factor Model	260.49***	20	.84	.78	.105 (.094/.116)	.067	16684.56
2. Two-factor Model	130.59***	19	.93	.89	.073 (.062/.085)	.049	16481.12
3. Hierarchical Model	123.72***	18	.93	.89	.073 (.061/.086)	.049	16488.12
4. Bifactor Model (2 grouping factors)	24.60*	12	.99	.98	.031 (.013/.048)	.016	16357.51

Note. χ^2 = chi square goodness of fit statistic; BIC = Bayesian Information Criterion; CFI = Comparative Fit Index; CI = Confidence Interval; *df* = degrees of freedom; RMSEA = Root-Mean-Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; TLI = Tucker Lewis Index.

*** Indicates χ^2 is statistically significant ($p < .001$).

Table 3

Standardized Factor Loadings for the two Self-Esteem Factors (PeSE = general self-esteem, PrSE = prison self-esteem) and one General Factor

Original item numbers	General	PeSE	PrSE
1. How often do you feel you are worse than most of the inmates you know	.61***		.20**
3. When in a group of inmates, do you have trouble thinking of the right things to say	.54***		.31***
5. How often are you bothered about what other inmates think of you	.41***		.64***
7. How often do you worry that other inmates might have an unfavourable opinion of you	.44***		.54***
2. How often do you feel that you can't do anything well	.68***	.11*	
4. How often do you think that you are worthless	.75***	.20**	
6. Do you have a low opinion of yourself	.59***	.49***	
8. How often do you dislike yourself	.52***	.48***	

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

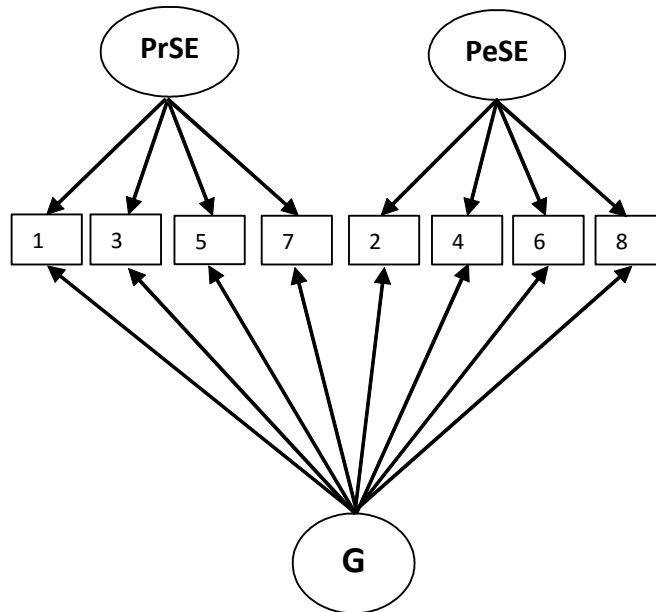


Figure 1. Bifactor model of the Self-Esteem Measure for Prisoners (SEM-P) with one general factor (G) and two grouping factors (PrSE = prison self-esteem and PeSE = personal self-esteem).

The appropriateness of the bifactor model of the SEM-P has also been determined based on statistically significant factor loadings (Table 3). The items load more strongly on the general factor and less strongly on two grouping factors. This indicates the statistical superiority of the general factor of self-esteem over the two grouping factors in the conceptualization of the factor structure of the SEM-P. Although this would suggest that the general factor should be used in the scoring of the SEM-P, the inspection of correlations between self-esteem grouping factors and external criteria is necessary before final conclusions are reached in this regard.

The correlation between two self-esteem factors was high ($r = .54$), which indicates a significant overlap between the variables. Boduszek and Debowska (2016; see also Carmines and Zeller 1979) suggested that when the best model fit is multidimensional and some factors are highly correlated ($r \geq .50$), a differential predictive validity has to be established in order to verify whether the dimensions are associated differentially with external variables. Table 4 demonstrates the outcome of regression analyses. Prison self-esteem formed significant

negative correlations with attitudes towards sexual dating violence and criminal social identity. Total time in prison was significantly positively associated with prison self-esteem and significantly negatively correlated with personal self-esteem. Additionally, increased personal self-esteem scores significantly decreased the odds of violent offending, whereas enhanced scores on prison self-esteem were associated with significantly increased odds of violent offending. This shows that personal and prison self-esteem factors have differential predictive validity, suggesting the supremacy of the theoretical model over the statistical model of the SEM-P. Notably, associations between the general factor of self-esteem and total time in prison as well as violent offending were not statistically significant, which indicates that using the total self-esteem score in prison context can conceal some important relationships between self-esteem and external variables. These results advocate that self-esteem as indexed using the SEM-P is composed of two subscales (personal self-esteem and prison self-esteem) while controlling for the general factor. As such, personal and prison self-esteem ought to be included as separate subscales in the SEM-P.

Internal reliability of the SEM-P factors was investigated using composite reliability instead of Cronbach's alpha (see Boduszek and Debowska 2016; Raykov 1997). Composite reliability was calculated using the following formula:

$$CR = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + \sum Var(\varepsilon_i)}$$

where CR = reliability of the factor score, λ_i = standardized factor loading, and $Var(\varepsilon_i)$ = standard error variance. Results suggest that both personal self-esteem (.78) and prison self-esteem (.74) factors demonstrate good internal reliability (calculations based on a two-factor solution).

Table 4

Associations between the Self-Esteem Factors and External Variables

Variable	AMDV-Sex β (95% CI)	CSI β (95% CI)	Total time in prison β (95% CI)	Violent offending OR (95% CI)
General factor	-.11** (-.17/-.05)	-.10** (-.16/-.04)	.05 (-.01/.11)	1.01 (.98/1.04)
Personal self-esteem	.07 (-.01/.14)	-.01 (-.08/.06)	-.08* (-.15/-.01)	.84* (.73/.97)
Prison self-esteem	-.19*** (-.26/-.12)	-.10** (-.17/-.03)	.13*** (.06/.20)	1.22** (1.06/1.41)

Note. First four columns present results from multiple regression analyses; last column presents results from binary logistic regression. AMDV-Sex = Attitudes Towards Male Sexual Dating Violence; CSI = Criminal social identity.

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

Discussion

Past research revealed the importance of self-esteem in explaining offending behavior, including interpersonal attacks (Sutherland and Shepherd 2002), sexual assaults (Shine *et al.* 2002), partner violence (Lewis *et al.* 2002; Sharpe and Taylor 1999), violent offending (Baumeister *et al.* 1996; Kernis *et al.* 1989), and recidivism (Boduszek *et al.* 2013b), as well as criminal social identity (Boduszek *et al.* 2013a). It appears, therefore, that self-esteem ought to be measured as a part of the risk assessment process. Previous factor analytic work in the area of self-esteem assessment among criminal populations focused on the most widely used self-esteem measure in research, namely the Rosenberg Self-Esteem Scale (RSES; Rosenberg 1965, 1989). Due to unacceptably low factor loadings for some of the scale items reported in those studies, the utility of the RSES among forensic samples appears questionable (see Boduszek *et al.* 2012b, 2013b). Here, based on theoretical assumptions recognizing the importance of others in self-evaluations (e.g., Cooley 1998; Mead 1934; Tajfel and Turner, 1979), we suggested that self-esteem among prisoners should be considered as a multidimensional construct reflecting personal (i.e., context-free) and prison (i.e., context-specific) self-esteem. As such, the main aim of the current study was to develop the Self-Esteem Measure for Prisoners (SEM-P). An additional objective was to validate the SEM-P, as well as test the composite reliability and differential predictive validity of its two dimensions within a large systematically selected prison sample.

As per Boduszek and Debowska's (2016) recommendations, a number of theoretically and statistically sound solutions ought to be tested to fully explore the dimensionality of a measure. In order to address the first objective of the present investigation, we identified and examined four alternative models of the SEM-P (i.e., a one-factor model, correlated two-factor model, hierarchical model with one superordinate and two subordinate factors, and a bifactor model with two grouping factors), using confirmatory factor techniques. Based on all

fit statistics, the only acceptable solution for the 8-item SEM-P was the bifactor model with two grouping factors (personal self-esteem and prison self-esteem) and a general factor. Upon the inspection of standardized factor loadings, it was found that scale items loaded more strongly on the general factor compared with the grouping factors, suggesting that the SEM-P scoring should rely on the instrument's total score (see Reise *et al.* 2010). Although statistically superior, this solution was in opposition to the assumption that the prison culture may affect an individual's self-esteem when self-appraisals are performed in relation to other inmates. Moreover, it has been suggested that specific domains of self-esteem are more useful in predicting a variety of behaviors than a general domain (Marsh and Craven 1997). Indeed, past research demonstrated that, compared with global self-esteem, context-specific self-esteem may be a better predictor of behaviors and attitudes associated with that particular environment. For example, in Rosenberg *et al.*'s (1995) empirical investigation, school performance was predicted by academic self-esteem but not by global self-esteem.

The above indicates that, prior to deciding upon the scoring of a particular measure, differential predictive validity of its facets needs to be determined. As for the current research, it appears that settling for the statistically supreme solution without further explorations of its accuracy, would have obscured important correlations between self-esteem and external criteria. To elaborate, the present results demonstrated that personal and prison self-esteem factors correlated differentially with external measures, confirming their conceptual distinctiveness. Specifically, personal self-esteem correlated negatively and prison self-esteem correlated positively with total time spent in prison. This suggests that more favorable self-appraisals in prison environment may be conducted by individuals with higher scores on traits regarded as desirable in this context, such as masculinity, dominance, and aggression (see Hua-Fu 2005; Walters and Crawford 2013; Wooldredge and Steiner 2012); leading to a greater number of incarcerations and hence longer overall time spent in

confinement. Another interesting finding pertains to the fact that prison but not personal self-esteem related statistically significantly with crime-related attitudes, such as attitudes towards male sexual dating violence and criminal social identity total score. Both associations were in the negative direction, indicating that the intensification of attitudes endorsed by the prison culture may serve to protect an inmate's self-concept and blend in with the group. Of importance, while enhanced levels of personal self-esteem significantly decreased the odds of violent offending, heightened scores on prison self-esteem were associated with significantly increased odds of violent offending. Past research in the area revealed inconsistent findings, with some studies suggesting violent offending to be associated with low (e.g., Lewis *et al.* 2002; Shine *et al.* 2002; Sutherland and Shepherd 2002) and some other with high (e.g., Baumeister *et al.* 1996; Kernis *et al.* 1989) levels of self-esteem. It appears that these prior discrepancies can be partly explained by not controlling for the multidimensionality of self-esteem in forensic context. Finally, personal and prison self-esteem factors evidenced good composite reliability. Thus, these findings reveal the importance of examining domain-specific self-esteem in penitentiaries.

The current study is not free from limitations. Firstly, the use of self-report data among prisoners whose command of language is poor³ may have introduced several well-known limitations, such as response bias. Therefore, the concern is that the participants could not fully understand the questions posed to them. This aspect of the study, however, could not be controlled by the researchers. Secondly, the current study used a sample of Polish male prisoners and hence future research should pursue to validate the SEM-P among female inmates and prisoners from other linguistic and cultural backgrounds to test its factorial invariance. Thirdly, it was suggested that higher scores on prison self-esteem may lead to an

³ Data published by the British government demonstrated that 46 per cent of individuals entering the prison system have literacy skills comparable with those expected of an 11-year-old child (Harding, Romanou, Williams, and Peters 2012).

increased time spent in confinement, whereas low prison self-esteem may result in greater acceptance of antisocial and crime-supportive attitudes. It appears that these associations may be formed in a different temporal order. Namely, low prison self-esteem leads to the acceptance of criminal attitudes, subsequently resulting in enhanced prison self-esteem, followed by re-offending and thus more time spent in prison. Given the cross-sectional design of this study, however, this could not be determined here. Longitudinal research is warranted to corroborate these suggestions.

In spite of the above, the present study provides a significant contribution to both prison research as well as self-esteem measurement. The current investigation, through the application of bifactor modelling, demonstrated that self-esteem among prisoners should be conceptualized as a multidimensional construct reflecting domain-specific and culture-free dimensions. Although majority of the SEM-P item variance is explained by the general factor, personal and prison self-esteem correlate differently with external criteria and hence should be studied as distinct concepts. Given the utility of prison self-esteem in explaining criminal behavior and crime-related attitudes, risk assessment within prison contexts should incorporate questions pertaining to this psychological concept.

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