

Introduction and Psychometric Validation of the Prison Personnel Trauma Measure (PPTM)

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Abstract

Objective: The aim of the study was to create and validate a brief self-report measure of trauma exposure specific to personnel employed within a prison environment which exhibits predicative validity for a number of adverse psychological conditions shown to be a consequence of working within such prison environments.

Method: The Prison Personnel Trauma Measure (PPTM), Hospital Anxiety and Depression Scale (HADS), and the Posttraumatic Stress Disorder Checklist – Civilian Version (PCL-C) were administered to 1995 Prison Personnel in England and Wales. Dimensionality and construct validity of the PPTM were investigated using confirmatory factor analysis. Two alternative models of the PPTM were specified and tested using Mplus with WLSMV estimation.

Results: The three-factor model of the PPTM offered the best representation of the data. The results suggest that the PPTM consists of three sub scales: self-harm/death, violence, and environment. Good composite reliability and differential predictive validity were observed.

Conclusion: This brief measure can be used to ascertain potential vulnerability to the subsequent development of adverse psychological symptoms (PTSD, Anxiety, and Depression) amongst prison personnel for specific trauma related experiences that are known to be an inherent part of certain occupational roles within a prison environment.

Key words: Prison, Trauma Exposure, PTSD, Anxiety, Depression,

Highlights

- The aim was to introduce and validate the Prison Personnel Trauma Measure (PPTM)
- The PPTM was administered to 1995 prison personnel (mostly prison officers) in UK
- The three-factor model of the PPTM offered the best representation of the data
- The PPTM consists of three subscales: self-harm/death, violence, and environment

Introduction

Findings from research conducted across numerous countries suggest that working in a prison environment can induce both stress and trauma. UK research (Johnson, Cooper, Cartwright, Donald, Taylor & Millet, 2005) found that prison officers reported poorer physical and psychological health than other occupational groups. In the course of performing their duties, prison staff, and in particular prison officers, are often exposed, directly and indirectly, to incidents involving violence, injury, and sometimes death (Konda, Tiesman, Reichard, & Hartley, 2013). Commonly reported incidents include being physically assaulted, witnessing attempted or completed suicides, being threatened with physical harm, witnessing assaults, riots, or arson, or learning disturbing details about offenders' crimes on a recurrent basis over their careers. Experiencing violence and aggression from prisoners has been highlighted as an acute source of stress for prison officers. Labour statistics from the USA indicate that correctional officers have a considerably greater risk of non-fatal "on-the-job" injuries than any other occupational group (Kunst, 2011). Reports from prisons in England and Wales (Ministry of Justice, 2017) suggest that self-inflicted deaths among inmates had increased 32% from the previous year and doubled since 2012. Self-harm incidents had increased 23%, prisoner on prisoner assaults increased 28% and serious assaults (classified on severity of injury) by 30%. Crucially assaults on staff had increased 40% with

761 classified as serious and have trebled overall since 2012. In the US from 1999 to 2008, there were 113 confirmed work-related fatalities among corrections officers (Konda et al., 2013), 25% of which were found to be due to homicides.

Whilst prison related occupations have not received comparable research attention, it is evident that prison staff are exposed to many of the same or similar work-related traumatic events as police officers (Perrin et al., 2007), firefighters (Corneil, Beaton, Murphy, Johnson, & Pike, 1999), and military personnel (Fulton et al., 2015). Given that findings indicate high levels of exposure to traumatic events within prison personnel, it is plausible that this population likely experiences similar elevated rates of stress-related health conditions, such as post-traumatic stress disorder (PTSD) and/or depression, anxiety and other deleterious mental health symptomology (see Denhof & Spinaris, 2014).

Several self-report general and context specific trauma measures have been developed over the past 25 years including the Brief Trauma Questionnaire (BTQ: Schnurr, Vielhauer, Weathers & Findler, 1999), Life Events Checklist for DSM-5 (LEC-5: Weathers, Blake, Schnurr, Kaloupek, Marx & Keane, 2013), Life Events Screening Questionnaire (LESQ: Goodman, Corcoran, Turner, Yuan & Green, 1998), Traumatic Life Events Questionnaire (TLEQ: Kubany, Haynes, Leisen, Owens, Kaplan, Watson & Burns, 2000) and the Trauma History Screen (THS: Carlson, Smith, Palmieri, Dalenberg, Ruzek, Kimerling, & Spain, 2011) which seek to measure lifetime trauma history. The context specific Critical Incident History Questionnaire (CIHQ: Weiss, Brunet, Best, Metzler, Liberman, Pole & Marmar, 2010) indexes cumulative exposure to traumatic incidents in Police Officers. However, most measures do not assess whether events were associated with significant or lasting psychological distress and as such further assessment measures and/or clinical diagnoses are often used to assess lasting psychological harm. Despite numerous studies surrounding the

adverse outcomes of traumatic exposure in risk associated occupations (Perrin et al., 2007; Corneil et al., 1999; Fulton et al., 2015; Gates et al., 2012) there is a need for context specific measures of trauma exposure and PTSD in specified populations (Stover & Berkowitz, 2005, O'Hare, Shen & Sherrer, 2013). Isolating context specific trauma exposures from general life history trauma events can help identify and establish relevant problem exposures that may contain differential symptomology and comorbidity.

To date there remains a lack of prison context specific instruments available. The advantage of developing such context specific measures are apparent in the specific situational, cultural, organisational, and occupational populations that they target to assess. Isolating context specific trauma exposure from general life history trauma events, helps establish the essential differentiation between the two situational exposures and ascertain both magnitude and frequency within specified populations and individuals, thus enabling more detailed post trauma treatment diagnosis and strategies. Such measures may also enable clinicians and researchers with vested interests, to better ascertain where and which exposures to potentially traumatic events may be problematic within the working environment and how repeated exposure to specific traumas may lead to adverse psychological outcomes, chronic maladaptation, and other negative health related outcomes.

Despite a large body of literature pertaining to trauma exposure measures in existence, to date there remains a lack of context specific measures available for prison occupational cohorts where exposure to hostility, isolation, violence, injury, and death is a matter of routine. Considering the suggestions that generalised measures of trauma exposure do not effectively encapsulate unique cohorts with potentially different sub symptomology (Stover & Berkowitz, 2005; O'Hare et al., 2013), the aim of the current study was to develop and validate the Prison Personnel Trauma Measure (PPTM) and show differential predictive

validity for the subsequent development of PTSD, Depression, and Anxiety in varying categories of prison establishments and gender.

Methods

Participants

The research protocol was reviewed and approved by the university ethics panel and by the NEC (National Executive Committee) of the POA (Prison Officers Association). Participants were recruited opportunistically from POA members based in England and Wales via an e-mail invite to participate in a study of work related stress and mental health. In total $N = 1995$ prison personnel responded and returned completed surveys. Due to some of the returned surveys having significant missing data, $N = 1562$ respondents were included in the final analysis. The sample consisted of $n = 948$ male and $n = 614$ female participants. Eight hundred and seventeen ($n = 817$) of participants were married, $n = 354$ living with partner, $n = 11$ widowed, $n = 116$ divorced, $n = 53$ separated, and $n = 212$ single. Their age ranged from 19 to 71 years ($M = 43.06$, $SD = 10.72$, $Median = 45$) and reported length of prison work experience ranged from 1 to 43 years ($M = 14.24$, $SD = 8.58$, $Median = 13$). One thousand and thirty-nine ($n = 1039$) of the participants were prison officers, $n = 288$ supervising officers, $n = 128$ custodial managers and governor grades, and $n = 107$ operational support grades. In typology of security classification $n = 284$ participants were from Category A establishments (prisoners whose escape would be highly dangerous to the public or national security), $n = 732$ from Category B (prisoners who do not require maximum security, but for whom escape still needs to be made very difficult), and $n = 546$ from Category C (prisoners who cannot be trusted in open conditions but who are unlikely to try to escape). Ninety ($n = 90$) participants were from female prison establishments, $n = 1002$ from male prisons, $n = 87$ from male young offending institutes, and $n = 383$ from mixed adult and young offending

establishments. In typology of predominate work area $n = 1081$ participants reported working on wings/landings, $n = 253$ in segregation units, $n = 145$ in offender management units, $n = 211$ in reception, $n = 257$ in visits area, $n = 236$ in operations/security department, $n = 212$ of participants were residential supervising officers and custodial managers, $n = 88$ located in office based work, and $n = 182$ in other areas (note some participants reported more than one predominate work area within a weekly period due to the cross deployment nature of some prison establishments). In relation to amount of direct contact with prisoners $n = 972$ of participants reported contact all of the working day, $n = 362$ most of the working day, $n = 152$ half of the working day, $n = 67$ approx. two hours per working day and $n = 9$ of participants reported no direct contact with prisoners.

Scale development procedures and other measures

Prison Personnel Trauma Measure (PPTM) – was developed for the purpose of the current study to assess occupational trauma exposure within prison settings. Item generation for the PPTM relied on theoretical notion and discussions with a panel of experts (criminal/forensic and health psychologists and a research methodologist). Expert opinion was also sought from further discussions with numerous serving prison personnel of varying grades and functions within prison establishments. Nineteen items were assembled and indexed on a four-point Likert scale (‘never’, ‘1 to 10 times’, ‘11 to 20 times’, to ‘21 or more times’) encapsulating three factors, exposure to Death and Self-Harm, Violence, and Environmental exposure. Items were selected for their abilities to encapsulate a scenario specific to the occupational role requirement of prison personnel with relevance to prison officers (i.e. in their interactions with prisoners) as opposed to the organizational stressors that may be a consequence of managerial practices, institution policies, designated workloads, and influences of government policies and resource injection. After pilot study, preliminary

analytical results and consultations with the panel of experts, the initial item pool was reduced to 15 items (see Table 3) with 3 factors: Death and Self-Harm (3 items measuring direct exposure), Violence (8 items with 5 measuring direct exposure and 3 indirect exposure), and Environmental (4 items measuring direct exposure).

Hospital Anxiety and Depression Scale (HADS) is a 14-item self-rating questionnaire measuring 'depression' and 'anxiety' (Zigmond & Snaith, 1983). The HADS uses seven days as reference period. The depression scale (7 items, score range 0–21) measures mostly anhedonia (inability to feel pleasure in normally pleasurable activities) a phenomenon considered to be the central characteristic of major depressive disorder. The anxiety scale (7 items, score range 0–21) measures mostly symptoms of generalized anxiety disorder. The psychometric properties of the HADS have been reported in previous studies (Spinhoven, Ormel, Sloekers, Kempen, Speckens & Van Hemert, 1997, Hermann, 1997, Bjelland, Dahl, Haug, & Neckelmann, 2002). The HADS is a well-established and widely used measure of anxiety and depression. Cronbach's alpha in current study for Anxiety (.86) and Depression (.82) subscales was good.

The Posttraumatic Stress Disorder Checklist – Civilian Version (PCL-C) is a 17-item questionnaire (Weathers, Litz, Herman, Huska, & Keane, 1994) based upon the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) criteria for PTSD (American Psychiatric Association, 1994). The PCL-C utilizes a Likert-type rating scale (from 1 "not at all" to 5 "extremely") for each item, where respondents indicate the extent of symptoms experienced during the past 30 days. The quality of measurement characteristics of the PCL-C (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Orsillo, 2001; Ruggiero, Del Ben, Scotti, & Rabalais, 2003) and its diagnostic utility (Bertelson, Brasel, & deRoon, 2011; Gardner, Knittel-Keren, & Gomez, 2012; Keen, Kutter, Niles, & Krinsley, 2008; McDonald

& Calhoun, 2010) are well substantiated. The PCL-C is among the most widely used PTSD screening devices in clinical and research settings (Elhai, Gray, Kashdan, & Franklin, 2005).

Cronbach's alpha in the current study for PTSD scale was .96.

Analytical Procedures

Construct validity and dimensionality of the PPTM was investigated through the use of traditional confirmatory factor analysis techniques. Two models of the latent factor structure of the PPTM were specified and tested using Mplus version 7.11 (Muthén & Muthén, 1998–2011) with WLSMV estimation. Model 1 is a one-factor solution in which all 15 PPTM items load on a single latent factor of Trauma. Model 2 is a correlated three-factor solution where items load on a death/self-harm exposure factor (items 13, 14 and 15) environment exposure factor (items 9, 10, 11 and 12) and a violence exposure factor (items 1, 2, 3, 4, 5, 6, 7 and 8).

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; Kline, 2010), and the Tucker Lewis Index (TLI; Tucker & Lewis, 1973). For CFI and TLI, values above 0.95 indicate good model fit (Bentler, 1990; Hu & Bentler, 1999). In addition, the Root Mean Square Error of Approximation (RMSEA; Steiger, 1990) with 90% confidence interval is presented. Ideally, this index should be less than 0.05 to suggest good fit (Bentler, 1990; Hu & Bentler, 1999) however values less than 0.08 suggest sufficient fit. Furthermore, the Weighted Root Mean Square Residual (WRMR) was used to evaluate the two models, with the smallest value indicating the best fitting model. Composite reliability was calculated based on formula provided by Raykov (1997; values above .6 represent good internal reliability). Multiple regression analysis was performed to establish differential predictive validity of three-factorial PPTM.

Results and Discussion

Descriptive statistics (M and SD) for the three PPTM factors (Self-Harm/Death, Violence, and Environment), Total Trauma, PTSD, Anxiety, and Depression are reported in Table 1. Additionally, Table 1 presents results from a series of t-tests (differences between male and female prison officers) and ANOVAs (differences between 3 levels of prison security) for all continuous variables. The results show statistically significant differences on all factors of PPTM for males and females and three levels of security therefore, construct validity and dimensionality were conducted on full sample and based on specific subgroups.

As suggested by Boduszek and Debowska (2016) it is unacceptable to assume that only one model exists for a particular scale, suggesting that competing solutions ought to be tested in order to fully explore the dimensionality of any measure. As per those recommendations, we tested two different conceptually sound models of the PPTM (unidimensional and three-dimensional) using confirmatory factor techniques. Fit indices for both models of the PPTM for full sample, males, females, and three levels of security (A, B, and C) are presented in Table 2. In terms of analysis with a full sample and all subgroups, the one factor model offers reasonably acceptable fit based on the CFI, TLI, and RMSEA statistics. However, the three-factor model of the PPTM provides superior fit to the data based on all statistics for the full sample and all subgroups. Therefore, three-factorial solution is preferred.

Further value of three-factorial solution was examined via standardised factor loading statistics and composite reliability. Table 3 presents standardised factor loadings for the three-factor solution for the full sample and all subgroups. All items displayed statistically significant factor loadings ($p < .001$). Composite reliability was .82 for the Self-Harm/Death factor, .90 for the Violence factor, and .66 for the Environment factor.

Table 1. *Descriptive statistics for PPTM factors, PTSD, Depression and Anxiety. (Note: * $p < .05$; ** $p < .01$; *** $p < .001$. Category A, B, and C denotes security classification of prison with A being highest (maximum security)).*

Variable	M (SD) Full sample	M (SD) Males	M (SD) Females	t-value (Cohen's d)	M (SD) Category A	M (SD) Category B	M (SD) Category C	F-ratio (Cohen's d)
Self-Harm/Death	7.58 (1.88)	7.73 (1.77)	7.34 (2.02)	3.86*** (.20)	7.20 (1.99)	7.84 (1.87)	7.56 (1.74)	11.08*** (A<B = .33; A<C = .19 B>C = .16)
Violence	21.24 (4.24)	21.88 (3.91)	20.27 (4.54)	7.45*** (.38)	20.10 (4.66)	21.90 (4.04)	21.30 (3.96)	16.72*** (A<B = .41; A<C = .28; B>C = .15)
Environment	9.76 (2.58)	10.14 (2.47)	9.17 (2.64)	7.37*** (.38)	9.17 (2.57)	10.04 (2.61)	9.79 (2.36)	10.19*** (A<B = .34; A<C = .25)
Total Trauma	38.58 (7.53)	39.75 (6.95)	36.79 (8.03)	7.51*** (.39)	36.47 (8.00)	39.78 (7.38)	38.65 (6.83)	18.00*** (A<B = .43; A<C = .29; B>C = .16)
PTSD	44.67 (17.52)	45.69 (17.69)	43.12 (17.15)	2.77** (.15)	43.49 (18.44)	45.85 (17.26)	45.22 (17.51)	1.50
Anxiety	18.49 (4.46)	18.39 (4.44)	18.64 (4.50)	-1.01	17.80 (4.60)	19.03 (4.29)	18.46 (4.41)	7.31*** (A<B = .28)
Depression	15.32 (4.27)	15.55 (4.31)	14.95 (4.19)	2.70** (.14)	14.88 (4.52)	15.64 (4.13)	15.39 (4.28)	2.76

Table 2. *Fit indices for two alternative models of the PPTM.*

Sample	Model	χ^2 (df)	CFI	TLI	RMSEA (90%CI)	WRMR
Full sample	1 factor	1155.39 (90)	.943	.933	.087 (.083/.092)	2.264
	3 factor	720.71 (87)	.966	.959	.068 (.064/.073)	1.756
Males	1 factor	678.87 (90)	.937	.926	.083 (.077/.089)	1.775
	3 factor	493.28 (87)	.956	.947	.070 (.064/.076)	1.487
Females	1 factor	535.74 (90)	.950	.941	.090 (.083/.097)	1.569
	3 factor	307.58 (87)	.975	.970	.064 (.057/.072)	1.156
Category A	1 factor	258.60 (90)	.949	.941	.090 (.077/.103)	1.113
	3 factor	202.35 (87)	.965	.958	.076 (.062/.090)	0.959
Category B	1 factor	488.40 (90)	.946	.937	.081 (.074/.088)	1.523
	3 factor	359.32 (87)	.963	.955	.068 (.061/.075)	1.282
Category C	1 factor	368.47 (90)	.947	.938	.079 (.071/.088)	1.316
	3 factor	252.45 (87)	.968	.962	.062 (.053/.071)	1.062

Note: Category A, B, and C denotes security classification of prison with A being highest (maximum security).

Running head: PRISON PERSONNEL TRAUMA MEASURE

Table 3. *Standardised factor loadings for the three PPTM factors (Full sample, Males, Females, Category A, B and C Prisons).*

Item	Full	Males	Females	A	B	C
1. Have you ever been threatened physically by a prisoner	.83	.83	.82	.84	.81	.82
2. Have you ever been physically assaulted by a prisoner	.75	.72	.79	.84	.73	.71
3. Have you ever been verbally abused by a prisoner	.85	.80	.91	.86	.80	.84
4. Have you ever been subjected to passive aggression i.e. intimidation	.74	.69	.81	.77	.74	.75
5. Have you ever witnessed prisoner on prisoner violence	.81	.81	.81	.78	.83	.78
6. Have you ever witnessed prisoner on staff violence	.82	.84	.80	.86	.81	.80
7. Have you ever witnessed staff on prisoner violence	.40	.37	.46	.39	.44	.32
8. Have you ever been subjected to an assault with excrement by a prisoner	.55	.50	.59	.63	.51	.51
9. Have you ever worked completely isolated from other staff for long periods of time with prisoners	.37	.33	.40	.39	.37	.31
10. Have you ever worked on poorly designed wings i.e. narrow corridors, blind spots	.50	.47	.52	.35	.50	.55
11. Have you ever worked in dirty protest conditions (where prisoner has smeared excrement around their cells etc.)	.71	.68	.72	.69	.74	.70
12. Have you ever been involved in a cell fire extraction (removed a prisoner from a burning cell)	.67	.61	.73	.68	.68	.62
13. Have you ever witnessed self-harm behaviour by a prisoner	.91	.91	.93	.87	.91	.91
14. Have you ever witnessed suicide attempts by a prisoner	.81	.80	.83	.87	.80	.76
15. Have you ever witnessed the death of a prisoner or colleague	.59	.57	.60	.65	.69	.45

All factor loadings are statistically significant at $p < .001$. Category A, B, and C denotes security classification of prison with A being highest (maximum security).

Correlations between three factors of PPTM were statistically significant with a large effect size (Self-Harm/Death with Violence = .78, $p < .001$; Self-Harm/Death with Environment = .56, $p < .001$; Violence with Environment = .61, $p < .001$). As suggested by Boduszek and Debowska (2016), when the best model fit is multi-dimensional and some factors are highly correlated (.50 and above), a differential predictive validity test should be conducted to verify whether the factors correlate differentially with external variables. Three outcome variables (PTSD, Anxiety, and Depression) were used for examining differential predictive validity of the three factors of the PPTM. Table 4 presents the outcome of nine regression analyses for the full sample and gender split samples. Multicollinearity was assessed via tolerance statistic and variance inflation factor (VIF). The values of tolerance were greater than 0.1 and the values of VIF were below 10. This indicates that the multicollinearity was not an issue.

Self-Harm/Death trauma exposure was significantly correlated, in the male sample, with PTSD, Anxiety, and Depression but no significant correlations were observed in the female sample. Violence trauma exposure was significantly correlated, in the male sample, with only PTSD whereas in female sample Violence was significantly correlated with all outcome variables. Environment trauma exposure was significantly correlated with all outcome variables in the male sample whereas, in the female sample, only with PTSD and Anxiety. Table 5 presents the outcome of a further nine regression analyses for prison officers from three prison categories (A, B, and C) with the same outcome variables as in Table 4.

Table 4. *Regression analyses results for full sample, males and females (predictors = 3 factors of PPTM; outcome variables = PTSD, Anxiety, and Depression).*

	PTSD			Anxiety			Depression		
	Full	Males	Females	Full	Males	Females	Full	Males	Females
Self-Harm / Death	.08* (.48/.48)	.16*** (.08/.25)	-.05 (.14/.05)	.04 (.03/.10)	.09* (.01/.18)	-.05 (.14/.05)	.07* (.00/.13)	.09* (.02/.19)	.04 (.06/.13)
Violence	.19*** (.01/.14)	.11* (.03/.22)	.28*** (.16/.35)	.13*** (.06/.20)	.07 (.02/.17)	.24*** (.13/.33)	.08* (-.01/.14)	-.01 (.10/.09)	.18*** (.07/.27)
Environment	.10** (.04/.16)	.09* (.01/.18)	.13* (.03/.22)	.13*** (.06/.19)	.15*** (.07/.23)	.12* (.02/.22)	.15*** (.08/.21)	.18*** (.11/.27)	.08 (.02/.18)
Total	.31*** (.26/.36)	.29*** (.25/.39)	.33*** (.23/.37)	.25*** (.21/.30)	.25*** (.20/.34)	.29*** (.20/.34)	.24*** (.19/.29)	.21*** (.16/.30)	.27*** (.17/.31)

Note: * $p < .05$; ** $p < .01$; *** $p < .001$.

Table.5 Regression analyses results for A, B, and C prison category (predictors = 3 factors of PPTM; outcome variables = PTSD, Anxiety, and Depression).

	PTSD			Anxiety			Depression		
	A	B	C	A	B	C	A	B	C
Self-Harm / Death	-.04 (.22/.13)	.07 (.03/.17)	.14** (.04/.26)	-.13 (.30/.04)	.06 (.05/.15)	.10 (.01/.22)	-.09 (.25/.09)	.05 (.05/.15)	.14* (.03/.26)
Violence	.21* (.21/.39)	.16** (.05/.28)	.20*** (.10/.34)	.14 (.05/.30)	.09 (.02/.19)	.16** (.04/.29)	.02 (.17/.20)	.08 (.03/.19)	.11 (.01/.24)
Environment	.16 (.01/.33)	.08 (.02/.17)	.08 (.03/.20)	.27*** (.12/.44)	.11* (.01/.19)	.05 (.06/.17)	.30*** (.15/.48)	.11* (.01/.20)	.10 (.01/.22)
Total	.29*** (.16/.41)	.27*** (.20/.35)	.35*** (.30/.48)	.24*** (.11/.35)	.21*** (.13/.28)	.26*** (.19/.37)	.19** (.06/.31)	.20*** (.12/.27)	.28*** (.21/.40)

Note: * $p < .05$; ** $p < .01$; *** $p < .001$. Category A, B, and C denotes security classification of prison with A being highest (maximum security).

Self-Harm/Death trauma exposure was significantly correlated with PTSD and Depression in category C prison officers. Violence trauma exposure was significantly correlated with PTSD in all categories, whereas with Anxiety only in category C. Environment factor was significantly correlated with Anxiety and Depression for officers from category A and B. These results provide further support that the PPTM should be used as three-subscale measure rather than unidimensional measure.

The PPTM can be used to ascertain potential vulnerability to the subsequent development of adverse psychological symptoms namely PTSD, Anxiety, and Depression amongst prison personnel following specified trauma related experiences that occur in the prison environment. However, it is important to note that our analyses were based on data from prison personnel in England and Wales only and, as such, the findings may not be generalizable to other countries. Future studies should validate the PPTM using more systematic sampling (rather than opportunistic) among prison personnel samples drawn from different international organisational backgrounds. In future research the PPTM should also be cross validated with a measure such as the Life Events Checklist (LEC-5) (Weathers et al., 2013) to evaluate the concurrent validity of a life event traumatic stress reaction amongst prison personnel. The current study utilised the PCL-C (Weathers et al., 1994) which maps directly onto DSM-IV diagnostic criteria for PTSD however, future studies should utilise the PCL-5 (Weathers et al., 2013) which maps directly onto DSM-V diagnostic criteria. The PCL-5 can be used to elucidate further investigation into complex PTSD diagnoses as defined in the forthcoming ICD-11 proposals as it allows the sub categorisation classification of the disorder, namely the addition of NACM (negative alterations of cognition and mood) symptoms as well as the current, intrusion, avoidance, and hyper-arousal symptomology. Complex PTSD has been shown to be particularly problematic for cohorts of chronically

trauma exposed individuals (Shevlin, Hyland, Karatzias , Fyvie , Roberts, Bisson, Brewin & Cloitre, 2017).

In spite of the limitations listed above, our study provides a significant contribution to the area of trauma exposure measurement particularly in prison context specific populations. In developing the PPTM, we relied on the most recent research findings in the field of psychological symptomology in prison personnel. We carefully tested the reliability and dimensionality of the PPTM within a large sample of personnel drawn from the prison staffing population of England and Wales, across varying categories of prisons and occupational duties. We found that the PPTM consists of three meaningful factors of trauma exposure (self-harm/death, violence, and environment). Equally important, the three factors evidenced good differential predictive validity. Clear practical implications of the PPTM's ability to distinguish prison personnel trauma is thereby evidenced, providing a more context specific measurement tool of such acute occupational stressors.

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