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Assessment of psycho-social factors predicting recidivistic violent offenses within a sample of male prisoners

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INTRODUCTION

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Violent criminal behaviour is often seen as resulting from the impulsive, spur-of-the-moment, and unpredictable acts of enraged individuals. Some theorists such as Toch (1969) believe that individuals possessing certain personality traits or dispositions are more likely to react violently under certain circumstances. The possible utility of personality for predicting violent offences was exemplified by the research on the construct of “over-controlled hostility” (Megargee, 1966). Research on the personality profiles of violent offenders consistently differentiated those characterized by denial, repression, and lack of general hostility from those characterized by antisocial tendencies, impulsivity, extroversion, and general hostility (Blackburn, 1971, 1975, 1998, 2000; Henderson, 1982; McGurk & McDougall, 1981). The former group was labelled “over-controlled hostile offenders” because they seemed to rely on rigid and broad controls over aggression, as well as repression, to manage their anger (Megargee, 1966). Confronted with repeated exposure to anger-producing stimuli, these defences may occasionally break down causing an outpouring of extreme violence. The utility of over-controlled hostility for predicting unique patterns of violence has been supported by research showing that offenders with these traits evidence infrequent anger and aggression (Henderson, 1982; McGrory, 1991) and rare, but extreme, violence (White & Heilbrun, 1995). Furthermore, the violence committed by over-controlled hostile offenders is more likely to be murderous than the violence of other offenders; they are more likely to be violent toward family and friends; and they are more likely to use weapons with homicidal intent during periods of intoxication and interpersonal conflict (Hershorn & Rosenbaum, 1991; McGrory, 1991).

Eysenck’s (1977) theory proposes three fundamental factors of personality: Psychoticism (P), Extraversion (E), and Neuroticism (N). Based on biological and conditioning processes, Eysenck hypothesized that criminals score high on all three basic dimensions of personality. Empirical investigations, however, indicate that delinquents do score high on P, but not always on E and N. Recent research strongly supports Eysenck’s position that people likely to commit delinquent and criminal behaviour will score high on the P scale (Cale, 2006; Center, Jackson, & Kemp, 2005; Heaven, Newbury, & Wilson, 2004; Kemp & Center, 2003; Levine & Jackson, 2004; van Dam, Janssen, & De Bruyn, 2005; Walker & Gudjonsson, 2006). Heaven et al. (2004) reported that the P-scale is effective in identifying those adolescents likely to commit delinquent offenses of all kinds, but it appears

1 to be effective in identifying only serious violent offending in young adults. The N-scale
2 does well in predicting serious crimes (Kemp & Center, 2003) and is somewhat successful in
3 predicting recidivism (van Dam et al., 2005). It might be expected that the N scale does
4 better at predicting recidivism since Eysenck hypothesized that high N scorers tend to be
5 driven to continue their habitual behaviors and be unusually impulsive. The power of the E-
6 scale as the predictor of criminal behaviour is even more in question, as several studies have
7 found only a weak connection to offending (Cale, 2006; Center et al., 2005; Kemp & Center,
8 2003). However, Eysenck (1987) pointed out that incarcerated persons cannot properly
9 answer the social activity questions which are part of the E-scale (van Dam et al., 2005).
10 Eysenck (1971) recognized this early in his formulation of his theory, when he commented
11 that:

12 *“not all crimes are likely to be equally highly correlated with extraversion and some types of*
13 *criminals, such as the recidivists, lacking entirely in the social skills needed to make a*
14 *success of living outside an institution, may in fact show introverted tendencies”* (p. 289).

15 Therefore, the low scores on the E scale might be due in part to the effects of incarceration.
16 However, the most recent study conducted by Boduszek, Adamson, Shevlin, Hyland, and
17 O’Kane (2012, in press) in a population of recidivistic prisoners indicated that extraversion
18 plays a significant role in the development of distorted cognitive structures (such as criminal
19 thinking styles) and criminal behaviour.

20 *Prisonization* is another possible predictor of repeated violent offences. *Prisonization*
21 is a term coined by Donald Clemmer (1940) to describe the process by which prisoners adopt
22 the customs, mores, and values of the prison culture in which they live. The prisonization
23 thesis provides an explanation for the empirical regularity with which recidivistic offenders
24 cycle in and out of prison to resume offending upon release. Prisonization also provides a
25 criminological theory that articulates how and why prisons can serve as schools of crime and
26 violence (Akers, Hayner, & Gruninger, 1977; Clemmer, 1940; Hochstetler & DeLisi, 2005;
27 Paterline & Petersen, 1999; Sorensen, Wrinkle, & Gutierrez, 1998; Sykes, 1958; Wheeler,
28 1961; Reisig & Lee, 2000; Zaitzow, 1999). One significant example of the role of violent
29 recidivism is a recently published study by DeLisi and Scherer (2006) in which 160 multiple-
30 homicide offenders were compared to 494 single-homicide offenders on a number of
31 concurrent offense and criminal-history variables. The results of this study indicate that

1 multiple violent offending was associated with prior violent convictions, prior incarceration,
2 and greater concurrent involvement in violence. Despite providing support for a criminal-
3 careers perspective on multiple violent offending, the DeLisi and Scherer study did not
4 consider other possible theoretical explanations such as criminal social identity.

5 Zillmann (1979; 1983) believed that violent offences can be predicted by cognitive or
6 thinking processes. Walters (2003) explored the prisonization process in some detail and
7 determined that changes in both identity and thinking were critical in promoting
8 prisonization. In this study, 55 male federal prison inmates with no prior prison experience
9 (novice inmates) and 93 male federal prison inmates with at least one prior incarceration and
10 at least five years of prison experience (experienced inmates) were administered the
11 Psychological Inventory of Criminal Thinking Styles (Walters, 1995) and Social Identity as a
12 Criminal (Cameron, 1999) on two occasions, 6 months apart. Whereas the scores of
13 experienced inmates remained reasonably stable over time, novice inmates showed signs of
14 increased criminal identity and proactive/instrumental criminal thinking. Whether increased
15 instrumentality is a cause, consequence, or correlate of prisonization is currently unknown,
16 but it may well have value in differentiating between single and multiple violent offending.

17 Considering the fact that the role of criminal social identity in predicting violent
18 offences among repeated offenders has been neglected in the research literature, the aim of
19 the current study was to incorporate this variable along with prisonization (measured by the
20 level of recidivism) and personality traits (psychoticism, extraversion, and neuroticism) to
21 investigate what variables can predict violent offending. Boduszek and Hyland (2011)
22 indicated the necessity to consider one's criminal social identity as a particularly important
23 predictor of criminal behaviour, however research in this area has been extremely limited due
24 to the absence of a well validated measurement tool. This problem has now been addressed
25 with the publication of the Measure of Criminal Social Identity (MCSI - Boduszek,
26 Adamson, Shevlin, & Hyland, 2012), an eight item, three-dimensional measure of criminal
27 identity which has been empirically validated within a large sample of recidivistic prisoners.
28 Specifically, the current study set out to investigate the difference between violent and non-
29 violent recidivists on three personality variables (Extraversion, Neuroticism, and
30 Psychoticism), level of recidivism and Criminal Social Identity. Additionally, the study

1 investigated how well personality, level of recidivism and criminal social identity can predict
2 violent recidivism.

3

4

METHOD

5 **Participants and Procedure**

6 The sample included 312 male recidivistic prisoners incarcerated in Nowogard High Security
7 Prison. The offender sample consisted of 133 violent offenders and 179 non-violent
8 offenders. The respondents ranged in age from 20 to 66. The average age for participants was
9 33.85 ($M = 33.85$, $SD = 9.38$). Most offenders (88.1 %; $n = 275$) come from urban areas. 52.2
10 % ($n = 163$) of offenders reported to have primary school education, 45.5% ($n = 142$)
11 secondary school education, and 2.2 % ($n = 7$) some college or university. 68.3% ($n = 213$) of
12 prisoners indicated their marital status as single, 11.9% ($n = 37$) as married, 18.6% ($n = 58$)
13 as divorced or separated, and 1.3% ($n = 7$) as widowed. The frequency of imprisonment
14 reported by offenders ranged from 1 (mostly murderers) to 19 times ($M = 3.57$; $SD = 2.48$)
15 and number of reported police arrests from 1 to 20 ($M = 4.85$; $SD = 4.09$).

16 The sample was recruited over a period of 3 months (March – May, 2011) in Nowogard High
17 Security Prison for recidivists. Ethical approval for this project was granted by the Polish
18 Prison Service. Appropriate prison staff members were instructed by the principal researcher
19 about procedures involved in conducting this study. The questionnaires were delivered to the
20 prison by the principal researcher. Of the 845 imprisoned adult male offenders requested to
21 participate in this research project, 362 offenders (approximately 43 %) volunteered their
22 participation; however only 312 (approximately 37%) were considered for final analysis as
23 50 respondents returned considerably incomplete questionnaires. As all the questionnaires
24 were returned in sealed envelopes, the researcher was not aware of whether the 50 incomplete
25 questionnaires were due to the cognitive or literacy difficulties of the participants.
26 Participants completed anonymous, self-administered, paper-and-pencil questionnaires which
27 were compiled into a booklet along with an instruction sheet and a consent form attached to
28 the front of the booklet. Each participant was provided with a brief description of the study,
29 how to complete the questionnaire, and the general expected completion time. Participants
30 were assured about the confidentiality of their participation and informed that they could

1 withdraw from the study at any point during the completion of the survey. Participants
2 completed the questionnaires within the prison in their living units. After completing the
3 questionnaire, prisoners were asked to place the questionnaire in an envelope, seal it and
4 place it in a bag in the office of the prison educational coordinator. Participants were told that
5 envelopes would be passed on unopened to the researcher. It was expected that this procedure
6 would minimise any response bias as a result of giving the questionnaires to a member of the
7 prison staff.

8 **Materials**

9 *The Measure of Criminal Social Identity (MCSI: Boduszek, Adamson, Shevlin, & Hyland,*
10 *2012)* is an 8-item measure which was adopted and modified from Cameron's (1999) Social
11 Identity Scale (12 items). The measure was developed to reflect Cameron's (2004) three-
12 factor model of social identification: 'cognitive centrality', the importance of belonging to a
13 particular group; 'in-group affect', the emotional valance of belonging to a particular group;
14 and 'in-group ties', the psychological perception of resemblance and emotional connection
15 with other members of that particular group. Boduszek et al. (2012) applied this three-factor
16 conceptualisation to a criminal group in the development of the MCSI and it was found to
17 show an excellent model fit. The MCSI instrument therefore intends to measure prisoners'
18 criminal social identity. Each item was scored on a 5-point Likert scale: 1 = *strongly*
19 *disagree*, 2 = *disagree*, 3 = *sometimes*, 4 = *agree*, 5 = *strongly agree*. Three items included in
20 the scale were scored in a reverse direction (i.e., *strongly disagree* = 5 and *strongly agree* =
21 1). Possible scores ranged between 8 and 40, with higher scores indicating higher level of
22 criminal identity. The measure included three sub-scales: In-Group Ties (3 items) subscale
23 measures the level of personal bonding with other criminals; Cognitive Centrality (3 items)
24 subscale measures the psychological salience of a criminal's group identity; and In-Group
25 Affect (2 items) sub-scale measures a criminals felt attitude toward other in-group criminals.
26 Sample items measured each aspect of criminal social identity: Cognitive Centrality (e.g., "I
27 often think about being a criminal"); In-group Affect (e.g., "In general I'm glad to be a part
28 of a criminal group"); and In-group Ties (e.g., "I have a lot in common with other people who
29 committed a crime").

30

1 *The Eysenck Personality Questionnaire Revised-Abbreviated (EPQR-A: Francis, Brown,*
2 *& Philipchalk, 1992)* is a 24-item inventory of four sub-scales with 6 items each:
3 Extraversion (E), Neuroticism (N), Psychoticism (P) and a Lie scale (L). It was scored on
4 Yes (1) and No (0) format and possible scores ranged between 0 and 6, with higher scores
5 indicating higher levels of the personality trait. Sample questions included; “Do you often
6 feel lonely?” (N), “Do other people think of you as being very lively?” (E), “Is it better to
7 follow society's rules than go your own way?” (P), and “Do you always practice what you
8 preach?” (L).

9 *Level of recidivism* was measured based on the frequency of self-reported incarcerations
10 (“How many times have you been in prison?”). Given the anonymous nature of the study,
11 there was no data available on official recidivism rates.

12 RESULTS

13 Descriptive statistics, correlations and group differences

14 The descriptive statistics and reliability for all continuous variables are presented in Table 1.
15 Table 2 presents group differences (between those prisoners who reported repeated violent
16 offences and prisoners without violent criminal history) for recidivism, in-group ties, in-
17 group affect, cognitive centrality, psychoticism, neuroticism, and extraversion. Independent
18 sample t-test results suggest that violent offenders and non-violent offenders significantly
19 differed ($t(310) = -3.59, p < .001, \eta^2 = .04$) with regards to the scores on recidivism with
20 higher scores reported by violent offenders. Furthermore, violent offenders scored
21 significantly higher ($t(310) = -2.33, p < .05, \eta^2 = .02$) than non-violent offenders on the
22 extraversion scale. Similarly, data suggests that violent offenders tend to report increased
23 scores on cognitive centrality ($t(301) = -2.14, p < .05, \eta^2 = .01$) comparing to non-violent
24 offenders . In terms of scores on psychoticism, neuroticism, in-group affect and in-group ties,
25 independent sample t-tests did not indicate any significant differences between groups.

26 (Insert Table 1 about here)

27 (Insert Table 2 about here)

28

1 **Logistic regression**

2 Direct logistic regression was performed to assess the impact of recidivism, personality traits
3 (psychoticism, extraversion, and neuroticism) and criminal identity (cognitive centrality, in-
4 group-ties, and in-group affect) on the likelihood that recidivistic prisoners would report that
5 they committed multiple violent criminal offences. The correlations amongst the predictor
6 variables (recidivism, in-group ties, in-group affect, cognitive centrality, psychoticism,
7 neuroticism, and extraversion) included in the study were examined (Table 3). All significant
8 correlations were weak to moderate, ranging between $r = .13, p < .05$ and $r = .38, p < .001$.
9 This indicates that multicollinearity was unlikely to be a problem (see Tabachnick & Fidell,
10 2007).

11 (Insert Table 3 about here)

12 A test of the full model containing all predictor variables against a constant-only
13 model was statistically significant, $X^2(7, 305) = 27.35, p < .001$, indicating that the model
14 was able to distinguish between prisoners who reported and did not reported violent criminal
15 offences. The model as a whole explained between 7% (Cox and Snell R square) and 12%
16 (Nagelkerke R square) of the variance in violent offences, and correctly classified 56.8% of
17 cases. As shown in Table 4 only four of the independent variables made a unique statistically
18 significant contribution to the model (recidivism, extraversion, cognitive centrality, and in-
19 group affect). The strongest predictor of reporting violent criminal offences was recidivism
20 recording an odds ratio of 1.18 (OR = 1.18, $p < .001$). This indicated that criminals who
21 spend more time in prison were 1.18 times more likely to report violent repeated criminal
22 offences than those who spent less time in prison, controlling for all other factors in the
23 model. The second and third strongest predictor were extraversion (OR = 1.15, $p < .05$) and
24 cognitive centrality (OR = 1.08, $p < .05$). These findings suggest that those prisoners who
25 score higher on extraversion and cognitive centrality scales were more likely to commit
26 violent criminal offences. The odds ratio of .84 (OR = .84, $p < .001$) for in-group affect was
27 less than 1, indicating that for increased scores on the in-group affect scale. prisoners were
28 .84 times less likely to report having involvement in violent criminal offences, controlling for
29 other factors in the model.

30 (Insert Table 4 about here)

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DISCUSSION

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The primary purpose of this research project was to contribute to the existing literature regarding the predictors of violent criminal behaviour among repeat offenders by exploring the predictive ability of Criminal Social Identity, in conjunction with the more commonly investigated psychological variables such as personality traits and levels of recidivism. Specifically, the study investigated the differences between violent and non-violent recidivism in terms of personality traits and Criminal Social Identity, and examined how these variables predicted violent recidivism.

Initial investigations indicated that violent and non-violent offenders exhibited statistically significant differences in their levels of recidivism, Extraversion, and Cognitive Centrality, with violent offenders reporting higher scores on each respective variable. Although violent offenders reported higher levels of recidivism, Extraversion, and Cognitive Centrality, the magnitude of difference in each case was quite small. Of note however is that both violent and non-violent offenders reported considerably high levels of Extraversion, suggesting that previous concerns regarding the difficulty of measuring this personality trait given the participants environmental abnormalities was unlikely to have been a problem in this case.

Previous research among recidivistic criminals (DeLisi & Scherer, 2006) has indicated an association between violent offences and a greater frequency of incarcerations. Results from this study produced similar evidence with levels of recidivism emerging as the strongest predictor of belonging to the violent offender group. Individuals who reported a greater level of recidivism displayed a greater probability of belonging to the violent offender group than the non-violent offender group (OR = 1.18). Clearly causation cannot be inferred on the basis of these findings, however this observed relationship between number of imprisonments and violent criminal behaviour is interesting as it suggests that the process of prisonization may be influencing the emergence of serious violent criminal behaviour. Walter's (2003) has already produced initial evidence that longer time spent incarcerated with criminals leads to increases in criminal identity and criminal thinking, both factors which are well established as potent predictors of criminal behaviour, therefore it is highly plausible that the process of prisonization can give rise to an increased likelihood of engagement in violent criminal behaviour, and this increased likelihood of committing violent offences is

1 mediated by changes in one's identity and belief systems. Given the seriousness of the
2 implications of such a relationship, it is imperative that longitudinal research be conducted in
3 order to investigate this proposed hypothesis.

4 With respect to the role of personality in the prediction of violent offending
5 behaviour, Extraversion was the only trait to emerge as a differentiating predictor between
6 violent and non-violent offenders. Those prisoners who displayed higher levels of
7 Extraversion were more likely to report being a violent offender (OR = 1.15). A great deal of
8 prior research findings have questioned the predictive role of Extraversion in criminal
9 behaviour, and its utility in understanding criminality more generally, however present
10 findings in conjunction with previous findings from Boduszek et al. (2012, in press) are
11 indicating that Extraversion does in fact have a very important and nuanced role in the
12 understanding of criminal behaviour. Boduszek et al. (2012, in press) first demonstrated that
13 Extraversion serves to moderate the relationships that exist between two of the three factors
14 of Criminal Social Identity (In-Group Affect, and In-Group Ties) and criminal attitudes. Our
15 findings are now indicating that Extraversion also has a role to play in distinguishing violent
16 from non-violent offenders.

17 Neither Neuroticism nor Psychoticism were factors influencing whether prisoners
18 belonged to the violent offender group. Eysenck's definition of Neuroticism suggests that
19 highly neurotic individuals will be unusually impulsive, and since impulsivity has been
20 suggested frequently as an explanation for violent offences, Neuroticism is proposed to act as
21 a predictor of violent criminal behaviour. Our results call into question that assertion,
22 however future research should endeavour to more fully empirically investigate this issue by
23 including a specific measure of impulsivity. It may be that impulsivity rather than
24 Neuroticism is crucial in the prediction of violent criminal behaviour. Like Neuroticism,
25 Psychoticism too could not predict membership of the violent offender group, and this
26 finding is consistent with those of Haven et al. (2004) who reported that Psychoticism could
27 predict violent criminal offences among young offenders but not among older offenders.

28 Boduszek and Hyland (2011) developed a theoretical model of Criminal Social
29 Identity which argued that an individual's social identity would play a crucial role in the
30 prediction and understanding of various aspects of criminality including criminal thinking
31 styles, and criminal behaviour. Concurrent to their theory of Criminal Social Identity,

1 Boduszek and colleagues (2012, in press) developed a validated measure of Criminal Social
2 Identity which included three factors; Cognitive Centrality, In-Group Ties, and In-Group
3 Affect. Consistent with the predictions of Boduszek and Hyland (2011), findings from the
4 current study indicate that Criminal Social Identity is a very important psychological variable
5 in the prediction of being a violent offender.

6 Cognitive Centrality refers to the psychological saliency of identification with one's
7 criminal group and higher scores on this variable predicted a greater likelihood of prisoners
8 reporting that they belong to the violent offender group (OR = 1.08). This suggests that the
9 more accessible one's identification with their criminal peer group is, the greater the
10 likelihood of being a violent offender.

11 In-Group Affect refers to the emotional connection one feels to their criminal group
12 and higher scores on this variable predicts a lower likelihood of prisoners reporting that they
13 will belong to the violent offender group (OR = .84). Contrary then to the role of Cognitive
14 Centrality, a higher level of In-Group Affect reduces a prisoner's likelihood of being a
15 violent offender. These findings clearly demonstrate the need to consider the various aspects
16 of an individual's Criminal Social Identity when seeking to understand what variables are
17 involved in the prediction of violent criminal behaviour.

18 The current findings, particular in terms of the role of social identity, may have
19 implications for other delinquent and criminal populations, such that the different aspects of
20 the construct may be seen as a risk or protective factor that could be implemented in risk
21 assessments for violent offenders. In Ireland, where the prison system is vastly over-stretched
22 and where 50% of prisoners return to prison within four years of release (O'Donnell, Baumer,
23 & Hughes, 2008), knowledge of the predictors of violent re-offending is particularly relevant.
24 The findings of the current study would suggest that those working with criminal populations
25 should be cognisant of the role criminal identity can play in increasing or decreasing an
26 individual's likelihood of violent reoffending.

27 **Strengths and Limitations:**

28 As with any research project the current study had a number of limitations that should be
29 considered by the reader when interpreting these findings. The current study relied on self-
30 reported number of incarcerations as a measure of recidivism. While this measure was used

1 to ensure anonymity of the data and increase truthful participation, it is open to distortion on
2 the part of the offender and lacking the accuracy that official reports of recidivism would
3 provide. Additionally, the reliance of re-incarceration rates as a measure of recidivism is
4 limited as violent offences are more likely to receive custodial sentences when compared
5 with non-violent offences. Thus, the difference found between the two groups on the
6 recidivism variable may have been a reflection on the increased likelihood of getting a
7 custodial sentence for the violent offender rather than an increased recidivism. Furthermore,
8 the current study was based upon an entirely male sample of Polish recidivistic prisoners, all
9 of whom were imprisoned for repeated serious offences in a high security facility. Future
10 studies should seek to replicate this study among prisoners from other regions of the world,
11 female prisoners, young offenders, and inmates who were involved in less serious or repeated
12 criminal activity. Additionally, the use of self-administered paper-and-pencil questionnaires
13 probably excluded a number of offenders lacking in reading and writing skills, however
14 accessibility constraints to this prisoner population meant this was an unavoidable limitation.

15 Notwithstanding these limitations, the study provides valuable information on how
16 Criminal Social Identity contributes to criminality, in particular violent recidivism, an area
17 that there is a considerable lack of research. Furthermore, the large sample size and the
18 recency of the data means that the current study provides is a significant contribution to the
19 prediction of violent recidivism.

20 **Conclusion:**

21 This study had demonstrated that a higher frequency of imprisonments, higher levels of
22 Extraversion, higher levels of Cognitive Centrality, and lower levels of In-Group Affect all
23 predict a greater probability of committing a violent criminal act. These results provide a
24 substantial contribution to the criminal psychology literature by further elucidating the
25 intricate role of Extraversion in the understanding of criminal behaviour, empirically
26 demonstrating the importance of Criminal Social Identity in the prediction of violent criminal
27 behaviour, and providing additional support for the possible role of prisonization effects in
28 the emergence of violent criminal behaviour.

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1 Table 1

2 *Descriptive statistics and reliability coefficients for recidivism, personality traits*
 3 *(psychoticism, extraversion, and neuroticism), and criminal identity (cognitive centrality, in-*
 4 *group ties, and in-group affect)*

Variable	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>Cronbach's Alpha</i>
1. Recidivism	3.57	2.48	1-19	n/a
2. Psychoticism	2.05	1.37	0-6	.61
3. Extraversion	4.22	1.73	0-6	.73
4. Neuroticism	3.38	2.11	0-6	.71
5. Cognitive Centrality	8.70	3.37	3-15	.96
6. In-group Ties	8.67	3.12	3-15	.92
7. In-group Affect	4.05	2.14	2-10	.92

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1 Table 2

2 *Group differences between violent and non-violent prisoners for recidivism, personality traits*
 3 *(psychoticism, extraversion, and neuroticism), and criminal identity (cognitive centrality, in-*
 4 *group ties, and in-group affect)*

	<i>Type of offences</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	η^2
Recidivism	Non-violent	179	3.12	1.78	-3.59	.001	.04
	Violent	133	4.19	3.08			
Psychoticism	Non-violent	179	1.97	1.41	-1.24	.22	--
	Violent	133	2.17	1.31			
Extraversion	Non-violent	179	4.02	1.80	-2.33	.02	.02
	Violent	133	4.48	1.60			
Neuroticism	Non-violent	179	3.34	2.18	-.39	.70	--
	Violent	133	3.43	2.01			
Cognitive Centrality	Non Violent	172	8.34	3.36	-2.14	.03	.01
	Violent	131	9.17	3.33			
In-group Ties	Non-violent	172	8.47	3.07	-1.31	.19	--
	Violent	131	8.94	3.19			
In-group Affect	Non-violent	172	4.16	2.11	1.03	.30	--
	Violent	131	3.90	2.18			

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1 Table 3

2 *Correlations for recidivism, personality traits (psychoticism, extraversion, and neuroticism),*
 3 *and criminal identity (cognitive centrality, in-group ties, and in-group affect)*

Variable	1	2	3	4	5	6	7
1. Recidivism	1						
2. Psychoticism	.16*	1					
3. Extraversion	.13*	.01	1				
4. Neuroticism	.11	.16**	-.17**	1			
5. Cognitive Centrality	.20***	.07	-.04	.26***	1		
6. In-group Ties	.20***	.24***	-.02	.31***	.36***	1	
7. In-group Affect	.21***	.24***	-.03	.25***	.31***	.38***	1

4 *Note.* Statistical significance: * $p < .05$; ** $p < .01$; *** $p < .001$

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1 Table 4

2 *Logistic regression model predicting likelihood of violent offences in a sample of male*

3 *recidivistic prisoners (N=312)*

	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>Odds Ratio</i>	<i>95% Confidence Interval for Odds Ratio</i>	
					<i>Lower</i>	<i>Upper</i>
Recidivism	.17	.06	8.87	1.18**	1.06	1.32
Psychoticism	.16	.10	1.46	1.12	.93	1.35
Extraversion	.14	.07	3.58	1.15*	1.00	1.33
Neuroticism	.01	.07	.01	1.01	.89	1.15
Cognitive Centrality	.08	.04	3.70	1.08*	1.00	1.17
In-group Ties	.03	.05	.49	1.03	.95	1.13
In-group Affect	-.17	.07	6.75	.84**	.74	.96

4 Note. Statistical significance: * $p < .05$; ** $p < .01$

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