The role of criminal cognitions and personality traits in non-violent recidivism: an empirical investigation within a prison sample

Ashling Bourke, Daniel Boduszek and Philip Hyland

Ashling Bourke is based in the Department of Education, St Patrick's College, Dublin, Ireland. Daniel Boduszek is based in the Department of Behavioural and Social Sciences, University of Huddersfield, Huddersfield, UK. Philip Hyland is based in the Psychology Department, University of Ulster, Derry, Northern Ireland.

Abstract

Purpose – *The aim of the current study is to investigate criminal psycho-social cognition, criminal associates and personality traits as predictors of non-violent recidivism.*

Design/methodology/approach – *The sample consisted of 179 male non-violent offenders. Each offender completed self-report measures assessing criminal attitudes, criminal associates, criminal social identity and Eysenck's personality traits. Recidivism was assessed through self-reported frequency of imprisonment. A sequential moderated multiple regression analysis investigated the relationship between criminal thinking, criminal social identity and level of recidivism with the moderating role of personality.*

Findings – *Results indicate that criminal thinking is moderated by personality in the prediction of recidivism such that respondents who score high on psychoticism and low on neuroticism and extraversion show a positive association between criminal think styles and recidivism.*

Research limitations/implications – *It is suggested that future research and risk assessment instruments consider the interaction between risk factors in the prediction of recidivism, rather than investigating the factors independently.*

Originality/value – *This study is a valuable contribution as it investigates non-violent recidivism specifically, and informs on the moderating influence of personality in the prediction of this behaviour.*

Keywords *Criminal cognitions, Personality, Recidivism, Prison study, Moderation analysis, Criminology, Behaviour, Cognition, Men*

Paper type *Research paper*

Introduction

The observation that many offenders re-engage in crime following their initial incarceration, and the effect this crime has on the prison system, and society in general, has lead criminologists to investigate the factors that are associated with re-engagement in crime, and based on these factors to attempt to estimate the risk that an individual will reoffend. With the increased attention given to dangerousness in the criminal justice system, much research has focused on the prediction of violent recidivism. Less attention has been given to the study of non-violent recidivism; however, it has been demonstrated that there is no distinction between the variables that are predictive of violent and general recidivism (Bonta *et al.*, 1996; Gendreau *et al.*, 1996). The purpose of the current study is to investigate the predictors of non-violent recidivism, in particular the role of criminal cognitions and personality factors in non-violent recidivism.

Antisocial cognition, criminal associates, developmental history and personality factors have been suggested to be the ''big four'' risk factors in current criminology theory. Moreover, antisocial cognition and personality variables are suggested to make independent

contributions to criminal behaviour (Andrews *et al*., 2006). A core feature of antisocial cognition is criminal thinking which includes the attitudes and beliefs that are used to rationalise and justify criminal behaviour. Gendreau *et al.* (1996) found that attitudes, values, and behaviours that support a criminal lifestyle were individual predictors of recidivism. Additionally, Walters (2012) conducted a meta-analysis on criminal thinking and recidivism and found that criminal thinking was found to correlate with recidivism. As antisocial cognition has been linked with criminal identity (Andrews and Bonta, 2010; Boduszek *et al*., 2012), it is suggested that criminal identity may also serve to increase an individual's likelihood of recidivism. Antisocial associates have also been found to be a strong predictor of reoffending, and continued association with criminal friends after release from prison will increase an individual's likelihood of re-entry into prison (Andrews and Bonta, 2010).

Criminological research has long investigated the extent to which personality traits are associated with repeated criminal engagement. Eysenck's theory of personality is one of the few theories of personality that explicitly links personality to criminality; thus it would follow that the model may also contribute to the prediction of recidivism. According to the model, the three basic dimensions of personality (psychoticism, extraversion and neuroticism – PEN) are related to physiological mechanisms in the brain and the central nervous system. The theory suggests that through these neuropsychological processes (Eysenck and Gudjonsson, 1989), delinquents should score high on the PEN dimensions. However, support for the theory remains equivocal, and while some research has supported the model (Eysenck and Gudjonsson, 1989; Carrascoa *et al*., 2006; Savina, 2009), others have failed to find support for the model (Fonseca and Yule, 1995). Eysenck and Eysenck (1976) investigated juvenile recidivism and found that non-recidivists scored significantly lower on extraversion with no differences found on the other two dimensions. In a later study, van Dam *et al.* (2005) found that self-reported recidivism was associated with the PEN, but psychoticism was the only predictor of the severity of self-reported recidivism.

Additionally, demographic factors have also been identified as predictors of recidivism; younger offenders (Bonta *et al*., 1998; Gendreau *et al*., 1996), those who are unmarried (Theobald and Farrington, 2009) and those with low levels of education (Nally *et al*., 2012) are more likely to reoffend. The aim of the current study is to investigate the extent to which personality factors, antisocial associates and psycho-social criminal cognition (criminal thinking and criminal social identity), place an individual at a higher risk for non-violent recidivism while controlling for these demographic factors. Specifically, the study aims to investigate the role of personality as a moderating in the relationship between psycho-social criminal cognition and recidivism.

Method

Participants

The sample consisted of 179 ($n = 179$) male non-violent offenders incarcerated in a high security prison for recidivists. The offender sample consisted of 79 burglars and thieves, 25 drug dealers, 11 addicted thieves, and 64 mixed offenders.

The participants ranged in age from 21 to 66. The average age of the participants was 33.49 years (SD = 9.49). Most offenders (46.4 percent; $n = 83$) were from urban areas of Poland (compared to rural). Approximately 51 percent ($n = 92$) of offenders reported to have attained a primary school education only (compared to above primary education). More than 64 percent ($n = 115$) of prisoners indicated their relationship status as single (compared to in relationship). The frequency of imprisonment (recidivism) reported by offenders ranged from 2 to 12 times ($M = 3.12$; SD = 1.78) and the number of reported police arrests ranged from 2 to 20 ($M = 4.30$; SD = 3.44).

Measures

The Measure of Criminal Attitudes and Associates (MCAA) (Mills and Kroner, 1999) is a two-part self-report measure of criminal thinking style and associations with criminal friends. Part A of the measure intends to quantify criminal associations. Participants were asked to

recall four individuals with whom they spent most of their time before incarceration and then answered four questions regarding the degree of criminal involvement of their associates:

1. Has this person ever committed a crime?
2. Does this person have a criminal record?
3. Has this person ever been to jail?
4. Has this person tried to involve you in a crime?

Responses were used to analyse two measures of criminal associations. The first, ''Number of Criminal Friends'' which was calculated by adding up the number of friends to which the participant answered ''yes'' to any of question on criminal association. The second measure was the ''criminal friend index'' calculated by assigning 1-4 to the percent of time options (0-25, 25-50, 50-75, and 75-100 percent) available for each friend. That number was then multiplied by the number of ''yes'' responses to the four questions of criminal association. All answers were summed as the criminal friend index. The potential scores for the criminal friend index (CFI) ranged from 0 to 64, with higher scores indicating stronger association with criminal friends.

Part B is a 46-item measure of criminal thinking style (criminal attitudes) including four sub-scales: violence (12 items), entitlement (12 items), antisocial intent (12 items), and associates (10 items). For the purpose of the current research only three sub-scales (violence, entitlement, and antisocial intent) were considered in final analysis. Sample statements included: ''It's understandable to hit someone who insults you'' (violence); ''A person is right to take what is owed them, even if they have to steal it'' (entitlement); ''For a good reason, I would commit a crime'' (antisocial intent). Participants responded to a dichotomous choice of yes or no. Each approval on an antisocial test item (or rejection on a pro-social one) received 1 point, whereas each rejection on an antisocial item (or acceptance on a pro-social one) yielded 0 points. For each sub-scale the scores were summed, with higher scores reflecting higher criminal attitudes.

The measure of criminal social identity (Boduszek *et al.*, 2012) is an eight-item measure which was adopted and modified from Cameron's (1999) social identity scale. The instrument intends to measure prisoners' criminal social identity. Each item was scored on a five-point Likert scale: 1 – strongly disagree, 2 – disagree, 3 – sometimes, 4 – agree, 5 – strongly agree. Three items included in the scale were scored in a reverse direction (i.e. strongly disagree – 5 and strongly agree – 1). Possible scores ranged between 8 and 40, with higher scores indicating higher level of criminal identity. The measure included three sub-scales: in-group ties (three items) sub-scale measures the level of personal bonding with other criminals; cognitive centrality (three items) sub-scale measures the psychological salience of a criminal's group identity; and in-group affect (two items) sub-scale measures a criminal's felt attitude toward other in-group criminals. Sample items for each aspect of criminal social identity include: cognitive centrality (e.g. ''I often think about being a criminal''); in-group affect (e.g. ''In general I'm glad to be a part of criminal group''); and in-group ties (e.g. ''I have a lot in common with other people who committed a crime'').

The Eysenck personality questionnaire revised-abbreviated (EPQR-A), (Francis *et al.*, 1992) is a 24-item inventory of four sub-scales with six items each: extraversion (E), neuroticism (N), psychoticism (P), and a lie scale (L). It was scored on yes (1) and no (0) format and possible scores ranged between 0 and 6, with higher scores indicating higher levels of the personality trait. Sample questions included; ''Do you often feel lonely?'' (N), ''Do other people think of you as being very lively?'' (E), ''Is it better to follow society's rules than go your own way?'' (P), and ''Do you always practice what you preach?'' (L).

Procedure

The sample was recruited from a high security prison for recidivists. Appropriate prison staff were instructed by the principal researcher about the procedures involved in conducting this study. Participants completed anonymous self-administered, paper-and-pencil questionnaires which were compiled into a single booklet along with an instruction sheet and a consent form attached to the front of the booklet. Each participant was provided with a

brief description of the study including general areas of interest, how to fill out the questionnaire, and the expected completion time. Participants were assured about the confidentiality of their participation and informed that they could withdraw from the study at any time. Participants completed the questionnaires in prison in their living units. After completing the questionnaire, prisoners were asked to return it to the prison educational coordinator in a sealed envelope.

Analysis

Preliminary analysis was conducted in SPSS 20 to ensure that the data is suitable for multiple regression. Additionally, descriptive statistics and the Pearson product-moment correlation coefficients were analysed between scores of criminal identity, criminal friend index, criminal thinking, personality traits, level of recidivism, and number of police arrests.

A sequential moderated multiple regression analysis, as the recommended method for testing interaction effects (Cohen and Cohen, 1983), was applied in order to investigate the relationship between criminal psycho-social cognitions (criminal social identity, criminal thinking) and level of recidivism with the moderating role of personality. In the second model (including interaction terms) criminal social identity, criminal thinking, and personality factors were centred as suggested by Aiken and West (1991).

Results

The descriptive statistics and correlations are shown in Table I. All correlations between predictor variables included in the regression models indicated that multicollinearity was unlikely to be a problem (Tabachnick and Fidell, 2007).

In the first step of sequential moderated multiple regression, the main effect of criminal psycho-social cognitions (criminal thinking style and criminal social identity) on level of recidivism was investigated while controlling for personality traits, criminal friend index, number of police arrests, current age, relationship status, and level of education. This model (model 1) was statistically significant $F(10, 154) = 10.58$; $p < 0.001$ and explained 41 percent of variance in recidivism (Table II). Statistical analysis did not show a significant relationship between these criminal psycho-social cognitions and recidivism while controlling for all covariates. The second step consisted of entering interaction terms coding interaction between personality factors (psychoticism, extraversion and neuroticism) and criminal psycho-social cognitions. Addition of the interaction terms explained an additional 5 percent of the variance and the final regression model (model 2) explained 46 percent of variance in recidivism, $F(16, 148) = 7.92$; $p < 0.001$.

Table I Descriptive statistics and correlations between recidivism, criminal thinking, criminal identity, personality factors, number of police arrests, current age, and criminal friend index

Variables	*R*	*CT*	*CI*	*P*	*N*	*E*	*A*	*NA*	*CFI*
Recidivism (R)	1								
Criminal thinking (CT)	0.23**	1							
Criminal identity (CI)	0.24***	0.39***	1						
Psychoticism (P)	0.02	0.54***	0.21**	1					
Neuroticism (N)	0.10	0.22**	0.36***	0.15*	1				
Extraversion (E)	0.03	−0.02	−0.06	0.03	−0.18*	1			
Current age (A)	0.11	−0.24**	0.07	−0.20**	−0.15*	−0.16*	1		
Number of arrests (NA)	0.55***	0.15*	0.09	0.01	0.08	0.06	−0.04		
Criminal friend index (CFI)	0.37***	0.49***	0.35***	0.30***	0.27***	0.17*	−0.22**	0.30***	1
Mean	3.12	30.29	20.96	1.97	3.36	4.02	33.49	4.30	14.89
SD	1.78	8.21	6.39	1.41	2.18	1.80	9.49	3.44	12.11
Range	2-12	10-44	8-37	0-6	0-6	0-6	21-66	2-20	0-48

Note: Statistically significant at: *$p < 0.05$, **$p < 0.01$ and ***$p < 0.001$

Table II Regression model of recidivism with personality traits as moderator

	R	R^2	β	B	*SE*	*95% CI (B)*
Model 1	0.64	0.41***				
Criminal thinking			0.11	0.02	0.02	−0.01/0.06
Criminal identity			0.11	0.03	0.02	−0.01/0.07
Psychoticism			−0.10	−0.13	0.09	−0.31/0.06
Neuroticism			−0.02	−0.02	0.05	−0.13/0.10
Extraversion			−0.02	−0.02	0.06	−0.15/0.11
Education			0.03	0.10	0.23	−0.36/0.57
Relationship status			−0.09	−0.31	0.29	−0.90/0.27
Current age			0.12	0.02	0.01	−0.01/0.06
Number of police arrests			0.47***	0.25	0.03	0.18/0.31
Criminal friend index			0.21**	0.03	0.01	0.01/0.05
Model 2	0.68	0.46***				
Criminal thinking			0.14	0.03	0.01	−0.01/0.07
Criminal identity			0.11	0.03	0.02	−0.01/0.07
Psychoticism (P)			−0.16*	−0.20	0.10	−0.40/−0.01
Neuroticism (N)			−0.02	−0.02	0.06	−0.14/0.10
Extraversion (E)			−0.02	−0.02	0.06	−0.15/0.11
Education			0.08	0.28	0.23	−0.19/0.74
Relationship status			−0.11	−0.42	0.29	−1.00/0.16
Current age			0.12	0.02	0.01	−0.01/0.06
Number of police arrests			0.47***	0.24	0.03	0.18/0.31
Criminal friend index			0.22**	0.03	0.01	0.01/0.06
Criminal thinking by P			0.13*	0.02	0.01	−0.01/0.04
Criminal thinking by E			−0.24***	−0.03	0.01	−0.045/−0.01
Criminal thinking by N			−0.16*	−0.02	0.01	−0.030/0.01
Criminal identity by P			−0.08	−0.02	0.01	−0.042/0.01
Criminal identity by E			0.12	0.02	0.01	−0.004/0.04
Criminal identity by N			0.10	0.02	0.01	−0.008/0.04

Note: Significant at: *$p < 0.05$, **$p < 0.01$ and ***$p < 0.001$

The results suggested no direct relationship between criminal cognitions and recidivism. The interactions between criminal thinking style and personality factors were statistically significant, suggesting that the effect of criminal thinking on recidivism depends on the level of psychoticism, extraversion and neuroticism. Simple slopes were investigated for low (−1 SD below the mean), medium (mean), and high (+1 SD above the mean) levels of personality factors (Cohen and Cohen, 1983; Jaccard *et al.*, 1990). The results indicated a positive significant association between criminal thinking styles and recidivism for prisoners with higher levels of psychoticism (Figure 1) and negative significant association for higher levels of extraversion (Figure 2) and neuroticism (Figure 3).

In terms of main effects (model 2), the strongest predictor of recidivism was number of police arrests ($\beta = 0.47$), followed by criminal friend index ($\beta = 0.22$), and psychoticism ($\beta = -0.16$).

Discussion

The aim of the current study was to investigate the extent to which psycho-social criminal cognition, criminal associates, and personality factors put an individual at increased risk of non-violent recidivism. The results suggest that criminal thinking alone does not predict non-violent recidivism; however, the interaction between criminal thinking and personality variables was predictive of recidivism when controlling for demographic variables. For those individuals who scored high in psychoticism, a high level of criminal thinking was associated with a higher risk of recidivism. Conversely, a positive association between criminal thinking and recidivism was only found for those respondents with low extraversion and neuroticism scores; while for those respondents who scored high on extraversion and neuroticism, a higher level of criminal thinking was associated with a lower risk for recidivism.

Figure 1 Moderation of the effect of criminal thinking on recidivism by psychoticism

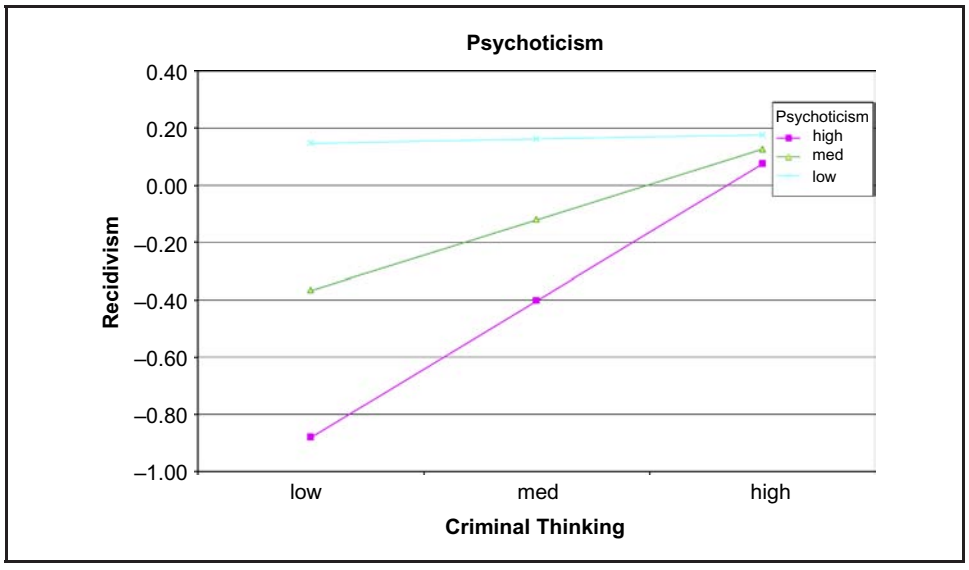
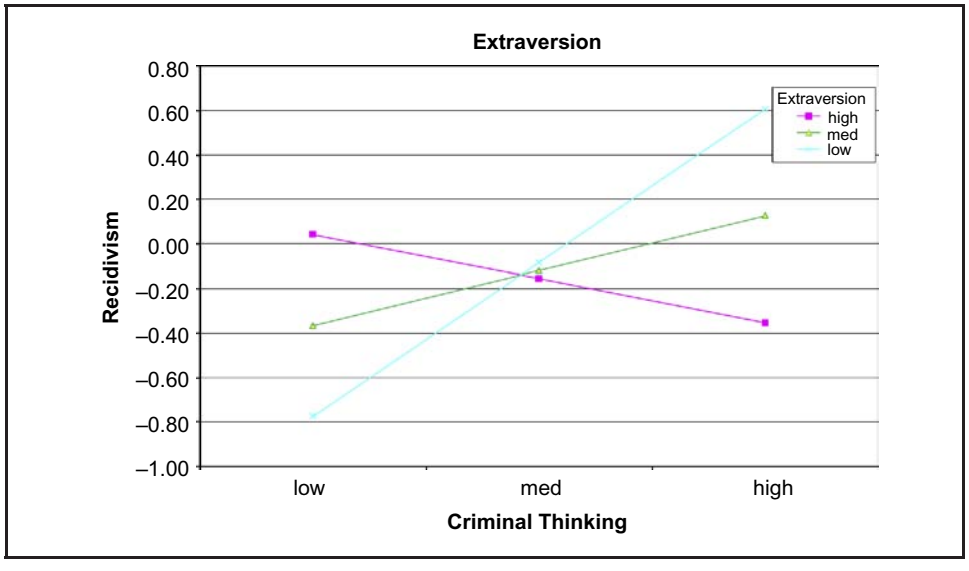


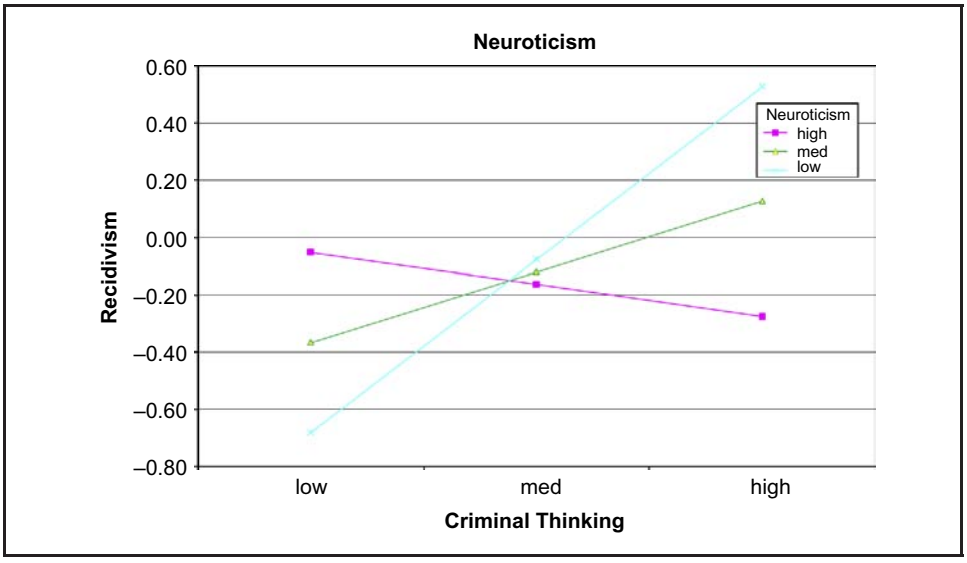
Figure 2 Moderation of the effect of criminal thinking on recidivism by extraversion



The interaction between personality factors and criminal identity were not found to be significant predictors of recidivism. Thus, although criminal identity has been linked with criminal thinking (Andrews and Bonta, 2010; Boduszek *et al.*, 2012), the current research suggests it does not serve to increase an individual's likelihood of non-violent recidivism.

Additionally, and perhaps unsurprisingly, the findings suggest that the number of police arrests was the strongest predictor of recidivism, followed by number of criminal friends and psychoticism. Association with criminal friends has long been identified as a significant risk factor for recidivism (Andrews and Bonta, 2010; Gendreau *et al.*, 1996). Although psychoticism was found to be negatively associated with recidivism alone, the interaction between psychoticism and criminal thinking style was positively associated with recidivism. The current findings do not support Eysenck's theory, which suggest that criminals should score high in three PEN dimensions. However, support for this theory is equivocal. The current research suggest that psychoticism alone may reduce recidivism and it is only

Figure 3 Moderation of the effect of criminal thinking on recidivism by neuroticism



through its interaction with additional risk factors that it may serve to increase an individual's risk of re-offending. Furthermore, contrary to Eysenck's theory, the relationship between thinking and behaviour was strongest for those with low extraversion and low neuroticism. The disparity in this finding may be due to the sample under investigation and Eysenck's theory, is perhaps more applicable to specific delinquent populations. The finding that the effect of criminal thinking style on recidivism is moderated through personality type extends the assertion of Andrews *et al.* (2006) who suggest that these factors are included in the ''big four'' risk factors in criminality. However, in contrast to the suggestion that these factors make independent contributions to criminal behaviour, the current research would suggest, in terms of non-violent recidivism at least, it is the interaction between these factors rather than an independent contribution which predicts recidivism. Specifically, the presence of criminal thinking will increase the risk of non-violent recidivism for individuals high in psychoticism but it will decrease the risk for those high in extraversion or neuroticism.

Based on the current study, it is suggested that future research should look beyond the independent predictors of recidivism to the interaction between risk factors. The current study found this for non-violent recidivists, thus future research could investigate whether these interaction effects are also found for violent recidivists or antisocial behaviour in general. Based on this research, risk/needs assessments could then be designed to assess the moderating role one particular risk factor would have on another risk factor. In particular, personality traits may play an important role in mediating the impact of additional risk factors for recidivism. This research also supports the inclusion of number of police arrests and association with criminal friends in any risk assessment instruments.

In general, research attention and the development of risk assessment instruments has tended to focus on violent or sexual recidivism; however, the overcrowding of our prison systems by re-entrants and the effect of non-violent crime on society, indicates that the prediction of general, non-violent crime warrants more research attention. The current research is notable for its primary focus on non-violent recidivism and its findings in terms of which factors do and do not predict this type of re-engagement. Nonetheless, there are a number of limitations that should be noted. The currents study relied on self-reported number of incarcerations as a measure of recidivism. While this measure was used to ensure anonymity of the data and to encourage true responses, it was open to distortion on the part of the offender and lacked the accuracy that official reports of recidivism would provide. Also the sample consisted of male Polish prisoners and future research could extend this research to other criminal populations. Notwithstanding this, the current research makes a

significant contribution to the literature as it is specifically investigates the prediction of non-violent offending and the interaction of risk factors in this prediction.

References

Aiken, L.S. and West, S.G. (1991), *Multiple Regression: Testing and Interpreting Interactions*, Sage, Newbury Park, CA.

Andrews, D.A. and Bonta, J. (2010), *The Psychology of Criminal Conduct*, 5th ed., LexisNexis Matthew Bender, New Providence, NJ.

Andrews, D.A., Bonta, J. and Wormith, S.J. (2006), ''The recent past and near future of risk/need assessment'', *Crime and Delinquency*, Vol. 52, pp. 7-27.

Boduszek, D., Adamson, G., Shevlin, M. and Hyland, P. (2012), ''Development and validation of a measure of criminal social identity within a sample of Polish recidivistic prisoners'', *Criminal Behaviour and Mental Health*, Vol. 22 No. 5, pp. 315-24.

Bonta, J., Law, M. and Hanson, K. (1998), ''The prediction of criminal and violent recidivism among mentally disordered offenders: a meta-analysis'', *Psychological Bulletin*, Vol. 123, pp. 123-42.

Bonta, J., Harman, W.G., Hann, R.G. and Cormier, R.B. (1996), ''Prediction of recidivism among federally sentenced offenders: a re-validation of the SIR (Statistical Information on Recidivism) scale'', *Canadian Journal of Criminology*, Vol. 38, pp. 61-79.

Cameron, J.E. (1999), ''Social identity and the pursuit of possible selves: implications for the psychological well-being of university students'', *Group Dynamics: Theory, Research, and Practice*, Vol. 3, pp. 179-89.

Carrascoa, M., Barker, E.D., Trembaly, R.E. and Vitaro, E. (2006), ''Eysenck's personality dimensions as predictors of male adolescent trajectories of physical aggression, theft and vandalism'', *Personality and Individual Differences*, Vol. 41, pp. 1309-20.

Cohen, J. and Cohen, P. (1983), *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*, 2nd ed., Erlbaum, Hillsdale, NJ.

Eysenck, H.J. and Eysenck, S.B.G. (1976), *Psychoticism as a Dimension of Personality*, Crane, Russak and Co., New York, NY.

Eysenck, H.J. and Gudjonsson, G.H. (1989), *The Causes and Cures of Criminality*, Plenum, New York, NY.

Fonseca, C. and Yule, W. (1995), ''Personality and antisocial behavior in children and adolescents: an enquiry into Eysenck's and Gray's theories'', *Journal of Abnormal Child Psychology*, Vol. 23, pp. 767-81.

Francis, L.J., Brown, L.B. and Philipchalk, R. (1992), ''The development of an abbreviated form of the revised Eysenck personality questionnaire (EPQR-A): its use among students in England, Canada, the USA and Australia'', *Personality and Individual Differences*, Vol. 13, pp. 443-9.

Gendreau, P., Little, T. and Goggin, C. (1996), ''A meta-analysis of the predictors of adult offender recidivism: what works!'', *Criminology*, Vol. 34, pp. 575-607.

Jaccard, J., Turrisi, R. and Wan, C.K. (1990), *Interaction Effects in Multiple Regression*, Sage, Newbury Park, CA.

Mills, J.F. and Kroner, D.G. (1999), *Measures of Criminal Attitudes and Associates*, Unpublished User Guide.

Nally, J.M., Lockwood, S., Ho, T. and Knutson, K. (2012), ''Post-release employment and recidivism among different types of offenders with a different level of education: a 5-year follow-up study in Indiana'', *Justice Policy Journal*, Vol. 9 No. 1, pp. 2-29.

Savina, N.N. (2009), ''Endogenous factors of juvenile delinquency and the perspectives of its prognosing'', *International Journal of Academic Research*, Vol. 1 No. 2, pp. 195-8.

Tabachnick, B.G. and Fidell, L.S. (2007), *Using Multivariate Statistics*, 5th ed., Allyn and Bacon, Boston, MA.

Theobald, D. and Farrington, D.P. (2009), ''Effects of getting married on offending: results from a prospective longitudinal survey of males'', *European Journal of Criminology*, Vol. 6, pp. 496-516.

van Dam, C., Janssens, J.M. and de Bruyn, E.E. (2005), ''PEN, big five, juvenile delinquency and criminal recidivism'', *Personality and Individual Differences*, Vol. 39 No. 1, pp. 7-19.

Walters, G.D. (2012), ''Criminal thinking and recidivism: meta-analytic evidence on the predictive and incremental validity of the psychological inventory of criminal thinking styles (PICTS)'', *Aggression and Violent Behavior*, Vol. 17 No. 3, pp. 272-8.

About the authors

Dr Ashling Bourke is a lecturer and researcher in developmental and social psychology at St. Patrick's College, Drumcondra, a college of Dublin City University. Her research interests include developmental psychology and criminal behaviour. Ashling Bourke is the corresponding author and can be contacted at: Ashling.Bourke@spd.dcu.ie

Daniel Boduszek is a lecturer and researcher in criminal psychology at the University of Huddersfield. His area of research includes application of advanced statistical analysis and methodology to the field of criminal psychology.

Philip Hyland is a researcher in Counselling/Clinical Psychology, Cognitive Behavioural Therapy, and Abnormal Psychology at the University of Ulster.