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Understanding the Relationships between Trauma and Criminogenic Risk Using the Risk-Need-Responsivity Model

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Abstract

Despite the high rates of trauma histories in offenders and the link between trauma and subsequent criminal behaviour, the mechanisms underlying the relationship between trauma and criminogenic risk factors have not received adequate attention. Trauma-informed care is increasingly a priority in forensic organisations, although individual trauma work is rarely a focus for prison-based intervention. Research conducted with female offenders has consistently found higher rates of complex trauma histories in comparison to male offenders (Benda, 2005; McCabe et al., 2002). Current correctional models are disproportionately informed by studies of male offenders despite findings of disparities between offending pathways based on gender and histories of complex trauma (Gannon et al., 2010). A review of the literature regarding the relationship between trauma and offending behaviour using the Risk-Need-Responsivity (RNR) model of criminogenic needs and the relationship between trauma and offending in females in comparison to males is considered. Findings have both pragmatic and theoretical significance for addressing the gap in exploring etiological mechanisms linking the RNR criminogenic risk factors to crime. Implications and recommendations for correctional policy and model development addressing trauma will be discussed.

Keywords: trauma, offending, crime, risk-need-responsivity, criminogenic needs, gender

Understanding the Relationships between Trauma and Criminogenic Risk Using the Risk-Need-Responsivity Model

Exposure to traumatic childhood experiences has been found to impact upon various adult outcomes, including physical health, mental health, and adolescent and adult criminal behaviours (Stinson et al., 2016; Mersky et al., 2012). The Adverse Childhood Experiences (ACE) study has contributed to a greater understanding of not only the prevalence of various forms of trauma, but also the interrelated nature of these, with 86.5% of the 17,000 respondents who reported being exposed to one trauma, also reporting exposure to at least one additional ACE category (Dube et al., 2003; Felitti et al., 1998). In a recent study of forensic mental health inpatients (Stinson et al., 2016) the authors identified higher rates of adversity than those reported in community samples and higher rates of cumulative adversity. The impact of exposure to multiple adverse experiences during early development, referred to as complex trauma (Herman, 1992) has been found to result in widespread impairments in functioning as a result (Courtois, 2008; Wamser-Nanney & Cherry, 2018). Longitudinal research has found that young people who have experienced multiple traumatic events are at greater risk for offending behaviour after controlling for other risk factors (Baglivio et al., 2015). Therefore, when considering the link between trauma and offending, trauma is conceptualised as a risk factor, a treatment need factor, and a factor that impacts upon the individual's capacity to engage with treatment (Holloway et al., 2018).

Critics of the risk-reduction paradigm that dominates current correctional practice have noted that the challenges of working therapeutically with individuals with trauma histories are not adequately addressed in current models of offender rehabilitation (Miller & Najavits, 2012; Ward et al., 2007; Ogloff & Davis, 2004; Looman & Abracen, 2013), which tend to focus on the provision of group-based intervention. There are currently two overarching frameworks providing principles to guide forensic intervention, the Good Lives

Model (GLM; Ward & Stewart, 2003) and the Risk-Needs-Responsivity Model (Bonta & Andrews, 2017). The Good Lives Model has a strengths-based focus in contrast to the traditional risk-management based approaches that derived from the RNR model (Willis et al., 2012). Although the GLM arguably aligns more closely with the relational frame advocated by proponents of trauma-informed practice (Ziv, 2017), adherence to the RNR principles currently offers the strongest evidence-base for effectiveness of intervention, based on reduction of recidivism (Bonta & Andrews, 2017).

In a recent review of the Psychology of Criminal Conduct (PCC) theory, Fortune and Heffernan (2019) highlight that there is a need for greater explanatory depth in the conceptualisation of dynamic risk factors (Ward et al., 2007; Newsome & Cullen, 2017). Further examination of the composition and causal mechanisms underlying dynamic risk factors would improve the formulation of individual cases. The PCC has been criticized for offering a "one size fits all" approach to Correctional practice (Gannon & Ward, 2014).

This narrative literature review will explore the link between trauma and offending behaviour using the Risk-Need-Responsivity model (RNR; Bonta & Andrews, 2017). Literature from the United States, Canada, Australia and Europe will be included. Literature from electronic databases: PsycINFO, PubMed, SAGE Journals online, ScienceDirect, Google Scholar, and ProQuest Dissertations was searched using key search terms "trauma", "risk", "offending", "offence", "RNR", "Good Lives"; and combinations thereof. The review includes both empirical research, and previous reviews, and where possible the most recent (2000 onwards) articles are included, though there are some instances where prior findings do not appear to have been replicated in the past twenty years (e.g. PTSD resulting from an individual's own offence). The exclusion criteria of recency was only applied where possible. The total number of references included in the review is 184 with the first two authors both reviewing all of the articles. The total number of possible articles that could have been

included is unknown as not all possible combinations of search terms was used, and also brevity prevented an exhaustive review of all possibly relevant literature. The article focuses on the criminogenic risk factors identified in the RNR model, and offers examples of links between these factors and exposure to trauma, as a cohesive understanding of how trauma can create multiple pathways to offending, and that these pathways may parallel the dynamic risk factors currently recognised as criminogenic. In so doing, this review attempts to offer a more parsimonious explanatory framework for understanding how diverse risk factors may stem from trauma with implications for best practice and treatment recommendations (Fortune & Heffernan, 2019; Gannon & Ward, 2014). Comprehensive reviews of theories of trauma and offending are beyond the scope of this literature review, as is a detailed analysis of neurobiological and neuropsychological findings relating to trauma and how the sequalae may result in, amongst other things, offending behaviour.

The Psychology of Criminal Conduct

The first edition of the book *The Psychology of Criminal Conduct* (PCC; Andrews & Bonta, 1994) drew on the results of several meta-analyses and provided four key components to understanding individual differences in the onset and maintenance of criminal behaviour. The current paper focuses on two of these; The Risk, Need and Responsivity model, and the Central Eight risk factors (Bonta & Andrews, 2017). The Risk principle states that the intensity of intervention should correspond with risk level, in other words the type of services and intensity of treatment delivery alongside supervision is in part informed by perceived low or high risk for recidivism (Viglione & Taxman, 2018). Risk level is based on an assessment of the number of criminogenic risk factors present, which refers to the Central Eight risk factors (see below). The need principle is based on research that shows that the greatest reductions in re-offending are associated with providing treatment that targets dynamic risk factors (Bonta & Andrews, 2017). Lastly, the responsivity principle informs the delivery

approach the intervention by responding to individual cognitive ability, learning style, culture, and other characteristics that may impinge intervention success (Yates et al., 2010).

The PCC identifies the Central Eight risk factors as: History of Antisocial Behaviour, Pro-criminal attitudes, Pro-criminal associates, Antisocial Personality Pattern, Family/ Marital relationship problems, Substance abuse, School/Work and Leisure/ Recreation problems (Bonta & Andrews, 2017).

The RNR model is widely used to guide psychological assessment and treatment in forensic populations, however it has been criticised for not providing sufficient consideration of etiological mechanisms, such as trauma, that link risk factors to criminal behaviour (Polaschek, 2012; Ward et al., 2007). The RNR has also been criticised for not considering the challenges of working therapeutically with individuals with trauma histories in so far as offenders with trauma histories and trauma symptoms may have distinct needs and issues that limit response to treatment (Ward et al., 2007; Ogloff & Davis, 2004; Looman & Abracen, 2013). Trauma-informed care is seen as a priority, particularly within correctional environments which can often exacerbate trauma symptoms with practises such as searches, seclusions, and restraint (Covington & Bloom, 2007). Traditionally, the prison environment has been considered inappropriate for individual trauma-focused work. However, when introduced, trauma-informed practices can help to minimise trauma-related behaviours and symptoms that can be difficult for prison staff to manage, as well as fostering a therapeutic environment that is perceived as safe and respectful (Blagden et al., 2016; Miller & Najavits, 2012).

Prevalence of Trauma in Offender Populations

The neurobiology of trauma has been reviewed extensively by Bremner (2007) and the following section provides a brief summary focusing on the neuropsychological consequences of trauma that overlaps with known risk factors for offending behaviour.

Positron emission tomography (PET) and later functional magnetic resonance imaging (fMRI) have been used since the 1990's to examine how different parts of the brain are affected when people experience and remember traumatic events. The neurological and physiological disruptions as a result of trauma exposure continue to alter brain and nervous system functioning even after the trauma incident is over (Bergmann, 2008; Shapiro, 2001, 2014, Siegel & Van De Hart, 2006). Studies have found that the limbic area, predominately the amygdala, is highly activated during a traumatic event, and similarly when recalling the event. Additionally, the frontal lobe of the cortex, including Broca's area which is the speech centre of the brain, shows a significant decrease in activity when experiencing or remembering a traumatic event (Williams et al., 2006). Research has also found that adrenaline continues to rapidly spike to mildly stressful stimuli in individuals who have experienced traumatic events and that the stress response system can either become chronically over-activated or under-responsive over time (Frodl & O'Keane, 2013; McEwan, 2012; McLaughlin et al., 2014.) Studies indicate that during 'flashbacks' of trauma experiences the right side of the brain becomes highly activated. The right side of the brain is generally emotional, visual, spatial and tactual whereas the left side of the brain is linguistic, sequential and analytical (see Karl et al., 2006). In those diagnosed with PTSD, decreases and increases in blood flow, metabolism and volume of gray matter have been found in the amygdala, hippocampus, medial pre-frontal cortex, anterior and posterior cingulate and temporal cortex and these regions of the limbic system are associated with processing negative and positive emotions (Francati et al., 2007).

Two of the primary neuropsychological systems affected by these neurobiological consequences are affect regulation and social cognition. Traumatic exposure appears to negatively impact the ability to effectively modulate physiological and emotional arousal levels (Cook et al., 2005; van der Kolk & Fisler, 1994; Zelechovski, 2016). The increased

activation of the limbic system has been described as a "survival-oriented preoccupation with detecting and surviving threats" (Pine, 2007, as cited in Ford et al., 2012, p. 696). Related to this, in young people who have experienced trauma an early commencement of offending behaviour could be due to underdeveloped brain systems for social cognition, which also includes the ability to deduce emotions from facial expressions and responding to inferred intentions of others. Thus, ambiguity in both tone and facial expression are misinterpreted as threatening, leading to an increased risk for acting pre-emptively in the form of violence (Chen et al., 2011).

The prevalence rates of childhood trauma within offender populations are significantly higher than the general population (Dutton & Hart, 1992; Matheson, 2012; Widom, 1989, 2003). Community sampling in the U.S. has found a 5-10% lifetime prevalence rate of PTSD (Breslau, 2002; Kessler et al., 1995) whilst a European epidemiological study of Mental Disorders found a PTSD lifetime prevalence of 1.4% (Alonso et al., 2004). Comparatively, PTSD prevalence rates in prisoner samples have been found to be as high as 52% (Butler & Allnutt, 2003; Goff et al., 2007). Recently, Baranyi, Cassidy, Fazl., Priebe & Mundt (2018) found that PTSD ranged from 0.1% to 27% for male, and from 12% to 38% for female prisoner populations. The prevalence of PTSD in forensic inpatients tends to be higher, with similar lifetime rates being reported in two studies of German forensic patients (56%; Spitzer et al., 2001; and 55%; Garieballa et al., 2006).

In one of the first studies to explore the links between childhood trauma and offending, Weeks and Widom (1998) examined 301 incarcerated males and found that two-thirds reported experiencing some form of physical and/or sexual abuse prior to the age of 18. Similar findings have been reported in various contemporary North American studies, ranging from 45% in a Canadian study (Martin et al., 2015) to 92.5% in an American sample of n=898 juvenile detainees (Abram et al., 2004). This compares to 30.9% of the general

population being exposed to a traumatic event prior to age 16 in a recent US longitudinal study (Copeland et al., 2018). It has been demonstrated that for each additional adverse childhood experience (ACE) there is a 35 per cent increase in risk for becoming a serious, versatile, violent and chronic offender (Fox et al., 2014; Levenson & Socia, 2015). In a study of 679 adult male sexual offenders, Levenson et al., (2016) compared ACE scores with males in general population. The researchers found sexual offenders had three times the rate of child sexual abuse, twice the rate of physical abuse and four times the rate of emotional neglect.

High rates of childhood trauma has been reported among female offenders (Benda, 2005; Bloom et al., 1994; Matheson, 2012; Zaplin, 2008). In a study conducted among a sample of n=100 female inmates of a correctional centre in the US, Green et al. (2005) found that 98% of female offenders reported trauma experiences, including partner violence (71%) and childhood trauma (62%). In an Australian study of n=953 prisoners, 28.6% of females versus 9.5% of males met criteria for PTSD (Butler & Allnutt, 2003). In a recent study of n=89 female prisoners in the UK, experiencing multiple traumatic events was associated with the severity of offending, as measured by length of prison sentence (Karatzias, 2017). In a study of boys and girls involved in the juvenile justice system, female offenders were more likely to report a history of parental abuse and neglect compared to their male counterparts (McCabe et al., 2002). Farrington and Painter (2004) conducted a large, prospective study of brothers and sisters from the same family, and found that low parental praise, harsh or inconsistent discipline, poor parental supervision, parental conflict, and low paternal interest in the children were stronger predictors of future offending for females compared to males (Farrington & Painter, 2004).

Criminogenic Needs and Trauma

In what follows, the empirical literature regarding the relationship between trauma and criminal behaviour is reviewed according to each dynamic criminogenic need proposed by the RNR model.

Criminal history. The idea that engagement in offending behaviour leads to further offending behaviour through the mechanism of trauma has been tentatively explored (e.g. Pollock, 1999; Payne et al., 2008; Clark et al., 2014). PTSD prevalence rates correlated with violent or sexual offending range from 20 to over 50% (Willemsen et al., 2012). Research studies have also identified that offenders can be traumatised by their acts of violence againt others. It has been estimated that 21-50% of offender's trauma symptoms are a result of the offender's own index offence (Kruppa et al., 1995; Spitzer et al., 2001; Steiner et al., 1997). Pollock (1999) studied offence-related PTSD in n=80 male perpetrators of homicide residing in a UK forensic hospital, including those with no previous trauma in their history, with 95% of those whose PTSD was offence-related having shown reactive violence. Clark et al., (2014) suggest that the link between offence-related trauma and further offending can be explained by changes in self-perception, with loss of control (as in the case of reactive aggression) resulting in the offender perceiving themselves to be a threat. Thus, particular aspects of an offender's trauma response have important implications for risk management, for example unlike victims of trauma perpetrated by others, who perceive themselves as *at* threat, the trauma activation in an offender may be more likely to lead to re-enactment behaviour including further acts of violence. The resolution of this trauma response is considered a key step prior to engaging in offending behaviour treatment (Clark et al., 2014; Gray et al., 2003).

Antisocial personality. There are higher rates of antisocial personality disorder (ASPD) diagnosed in male offenders and higher prevalence of borderline personality disorder (BPD) and histrionic personality disorder diagnosed in female offenders (Black et al., 2007;

Coid et al., 2009; Coolidge et al., 2011; Drapalski et al., 2009; Pondé et al., 2014). The RNR model has classified antisocial personality as a criminogenic need. A large systematic review spanning several decades across 12 countries indicated that 57% of males and 21 % of female prisoners have an ASPD diagnosis (Fazel & Danesh, 2002). Delisi et al.,(2019) recently conducted a study across the U.S. midwestern prisons (n=863) and found that 30% of the participants had met the criteria for an ASPD diagnosis already during childhood, in comparison to another study finding 68.6% of a sample of n=353 males and females met the criteria for ASPD when the requirement for Conduct Disorder was removed (Edens et al., 2015). Individuals diagnosed with ASPD or presenting with psychopathic traits have been shown to perpetrate a higher number of violent offences and present with greater severity, frequency, and versatility in offending behaviour than offenders without such a diagnosis or traits (O'Driscoll, 2012; Bruce & Laporte, 2015; Ogloff et al., 2015). Higher levels of psychopathy and ASPD have also been associated with higher likelihood of reconviction and incarceration amongst an Australian forensic sample (Shepherd et al.,2016).

There is evidence to support the relationship between childhood trauma and the development of personality difficulties (Ruggiero et al., 1999) including antisocial personality disorder (Bruce & Laporte, 2015; Krastins et al., 2014). Grover et al., (2007) found that individuals with histories of childhood trauma endorsed a greater number of personality traits associated with paranoid, narcissistic, borderline, antisocial, obsessive-compulsive, passive-aggressive and avoidant disorders when compared to individuals without childhood trauma histories. It has also been argued that antisocial behaviour may be at least partly driven by PTSD symptoms such as impulse dysregulation, sleep difficulties, intrusions, hyperarousal, and anger outbursts (Erwin et al., 2000).

Procriminal associates, procriminal attitudes, and lack of prosocial activities. Social learning theory has frequently been applied to explain the relationship between child

maltreatment and criminal conduct. This theory suggests that criminal behaviour is learned through criminal associations, definitions, differential reinforcement and imitation (Blanchette & Brown, 2006; Fagan, 2005). According to differential association, criminal behaviour is learned through association and interactions with others who hold deviant beliefs, engage in antisocial behaviours and maintain pro-criminal attitudes (Akers & Jensen, 2006). Definitions refers to the beliefs, rationalisations, and attitudes that either support or prohibit criminal behaviour learned from socialisation (Akers & Jensen, 2006). Differential reinforcement relates to the ratio of rewards (anticipated or actual) relative to the punishments that are consequences of committing criminal behaviour (Akers & Jensen, 2006). Criminal behaviour is therefore more likely to occur when the balance of rewards outweighs the perceived punishments. Imitation refers to engaging in criminal behaviour following exposure to similar behaviour in others (Akers & Jensen, 2006).

Peer-reviewed publications exploring male offending supports the role of social learning theory in male criminal behaviour, specifically that deviant peer association is predictive of recidivism (Blanchette & Brown, 2006; Ayres et al., 1999; Chung et al., 2002; Wiesner & Capaldi, 2003). Social learning theory has also been applied to explain criminal behaviour in females, especially in the context of gangs (Fox, 2013; Gagnon, 2018). Some evidence suggests that having a criminal partner is more predictive of recidivism amongst females compared to males, whereas peer influence appeared stronger for males (Benda, 2005; Piquero et al., 2005; Zoutewelle-Terovan et al., 2014). Affiliation with delinquent peers may arise from self-selection into friendships with individuals with similar behaviour (Young et al., 2014) or because a lack of social acceptance from prosocial alternatives such that rejected children associate with other rejected children (Vitaro et al., 2005). Similarly, individuals with a trauma background may be drawn to and find belonging amongst others

with similar traumas or may be pushed toward delinquent peers because of poor emotion processing and regulation skills.

Crime-supportive "definitions" are also likely to be learned through association with parents and peers (Akers & Jensen, 2006). Child maltreatment has been shown to be correlated with cognitive biases which predispose individuals to appraise situations in a more threatening manner that may lead to aggressive, pre-emptive responses (Wolfe et al., 2004).

Research has also identified that child maltreatment is more likely to occur in families that are low-income, single-parent or no-parent families or where parents have substance abuse problems (Ward et al., 2016; Ha et al., 2015; Fagan, 2005), and as previously mentioned, traumatised children are at increased risk of emotion dysregulation, interpersonal problems, and peer rejection (Kim & Cicchetti, 2010), all of which can reduce opportunities for involvement or inclusion in prosocial activities.

Poor social achievement (school or work). Early traumatic stress results in multifaceted impacts on various aspects of functioning and development (Porche et al., 2011; van der Kolk & McFarlane, 1996) and it is not surprising that children who have experienced trauma have been found to engage in higher rates of disruptive behaviour at school. It has been argued that dropping out of school is not an event but rather a process (Alexander et al., 2001), and behaviours such as lateness, absenteeism, fighting, delinquency and drug use can predict the conclusion of the process, being dropout (Porche et al., 2011; Suh & Suh, 2007). Studies have shown that maltreated children have lower academic engagement compared to non-maltreated children and that school disengagement is mediating risk factor for offending behaviour in males and females (e.g. see Howell, 2003; Shonk & Cicchetti, 2001; Veltman & Browne, 2001). This may be due to the failure to learn internal self-regulation skills and autonomous mastery needed for academic engagement (Shonk & Cicchetti, 2001). Conversely, school can also be a protective factor for traumatised children given that

supportive relationships outside the family are often cited as a significant protective factor for adolescents (Alvord & Grados, 2005). Interestingly, research has identified that positive school performance and school connectedness is a stronger protective factor for girls than for boys (Borgna & Struffolino, 2017; Howell, 2003; Wren, 2018), possibly because girls tend to foster more intimate relationships and have better interactions with their teachers than boys (Bearman et al.,2006). The school environment can modify the effect of childhood trauma on developmental and psychological outcomes for both males and females by improving self-esteem, teaching empathy skills and assisting maltreated children prosocial coping strategies to manage bullying and aggression in others (Arum & Beattie, 1999; Bellis et al., 2013; Veltman & Browne, 2001). Trauma-informed practices as an intervention within educational environments highlight positive effects including improved interpersonal relationships between teachers and students (Hemphill et al., 2013), increases in empathy, leadership skills, self-regulated learning, self-efficacy for self-regulation and decreases in school absenteeism and violence (Escarti et al., 2018).

A large (n=1500) epidemiological study in the United Kingdom found that multiple adverse childhood experiences, including abuse and neglect, were associated not only with poor educational outcome but with incarceration and poor employment outcomes (Bellis et al., 2013) and similarly research in the US involving a national data set (n=2532) found that individuals who experienced multiple childhood trauma were more likely to drop out of school (Porche et al., 2011). This is an important consideration with regard to rehabilitation as the fewer number of years of education has been associated with risk of recidivism post-release from prison, however education program participation in prison and stable employment following release has been found to be protective in preventing recidivism amongst both males and females (Blomberg et al., 2011).

Relationships between childhood trauma and job-related outcomes have been the

focus of very little empirical research (Sansone et al., 2012). Adverse childhood events contribute to reduced participation in the work force (Tam et al., 2003; Zielinksi, 2009), and also predict specific work outcomes including being on employment disability (Sansone et al., 2005), being fired from a job and being paid "under the table" (Sansone et al., 2012).

Job stability provides not only a legal means to survival and providing for dependent children but is also pivotal for building self-efficacy and connection to the community, prosocial social contacts, and a conventional lifestyle (Visher et al., 2005). Using data from the Farrington and West Cambridge study (n=411), Nagin and Waldfogel (1995) found that having a criminal conviction increases job instability via stigmatisation, and this finding has also been more recently replicated in the US (Richey, 2015). Childhood trauma therefore appears to be a risk factor for poor educational achievement and long terms job instability, which, in turn is associated with risk of offending and repeat offending. Interestingly despite the widespread introduction of community employment programs for ex-offenders, a meta-analysis (Visher et al., 2005) found that these programs do not reduce recidivism, implying that intervening in only one domain (employment) at the end point of the trauma – education – employment – offending trajectory is not sufficient to reduce the impact.

Problematic relationships with family or spouse. As discussed previously, offender samples report higher rates of attachment traumas compared to non-offender samples. Attachment theory provides a framework for understanding how developmental and interpersonal factors associated with poor parent-child relationships contribute to subsequent offending, particularly for interpersonal crimes. It has been hypothesised that early disturbances in the infant-caregiver attachment relationship, resulting from child abuse or neglect, impacts upon the development of empathy, moral reasoning, perspective taking and self-regulation of emotions in childhood and adulthood (McKillop et al., 2012). Defenses such as control, aggression, dismissal & avoidance become organizing personality structures

for those with insecure attachment styles (Fonagy et al., 2003; Oka et al., 2014). Insecure attachments in childhood and adulthood have also been found to increase the vulnerability created by childhood abuse and further predispose engagement in offending behaviour (Boduszk et al., 2012; Teague, 2013).

Incarcerated offenders report poor parent-child relationships, childhood abuse and witnessing or experiencing spousal violence (Farrington & Painter, 2004; McCabe et al., 2002) and female offenders, compared to males, report higher incidence of parent-child attachment trauma **(**Benda, 2005; Bloom et al., 1994; Matheson, 2012; Zaplin, 2008; Green et al., 2005; McCabe et al., 2002; Farrington & Painter, 2004). Studies have confirmed a high prevalence rate of disorganised or insecure attachment styles in offenders (Ogilvie et al., 2014; Smallbone & Dadds, 1998; Ward et al., 1996). Ward et al., (1996) found that males convicted of rape and acts of serious violence were most avoidant in their attachments with others compared to other offenders. In a later study of insecure attachment styles in sexual offenders, Ward et al., (1997) found that child sexual offenders were mostly preoccupied, rapists were mostly fearful avoidant and those sexual offenders with more hostility in their offending were mostly dismissive avoidant. A recent systematic review of intimate partner violence (IPV) and attachment styles confirmed the high rate of insecure attachment styles in males and females convicted of IPV and highlighted the need for further investigation into the variables mediating insecure attachment and IPV (Velotti et al., 2018).

Substance abuse. High rates of substance misuse have been identified in forensic populations. Impulsive and aggressive personality traits in childhood and adolescence have been shown to predict early onset of substance abuse and risk-taking behaviours, subsequently acting as a contributing factor in violence perpetration (Walsh et al., 2014). Studies have identified links between substance abuse and violent and aggressive offending behaviour (Farrell, & Zimmerman, 2018; Torok et al., 2015) via impairments in affect

regulation, impulse control and executive functioning. In addition, substance abuse is often comorbid with psychopathology and personality disorders (Boles & Miotto, 2003; Phillips, 2000), particularly ASPD (Lewis, 2011; O'Driscoll et al., 2014). Substance misuse has consistently been found to increase symptom severity in individuals with mental illnesses (Rueve & Welton, 2008; Schwartz et al., 1998).

In Australia, Forsythe and Adams (2009) conducted a cross-sectional study of people detained in police custody and found that self-reported childhood abuse was associated with a higher likelihood of recent drug use and drug dependence and recent criminal charge(s). Also, the severity of childhood adverse experiences has been linked with increased likelihood of substance use problems (Bellis et al., 2013). One study found that 77.7% of the general prison population and 94.3% of prisoners who reported severe childhood trauma met DSM-IV-TR criteria for substance use disorder (Driessen et al., 2006). As childhood trauma usually precedes substance use problems, substance abuse is thought to be a maladaptive coping strategy in that drugs and alcohol can temporarily decrease trauma symptomology (Driessen et al., 2006; Moloney et al., 2009; Howard, et al. 2017).

Some research has also indicated that childhood trauma is more strongly linked to the use of substance use as a maladaptive coping strategy in women than in men (Blanchette & Brown, 2006). In a cross-sectional Australian study of people detained in police custody, females who disclosed a history of child abuse were more likely than males to have recently used drugs, to be drug dependent, and to have been recently charged (Forsythe & Adams, 2009). Females also reported higher use of "harder" illicit drugs (e.g., heroin and amphetamines) compared to males and were more likely to be in custody for a property offence (Forsythe & Adams, 2009). The researchers concluded that the drug subculture provides socially isolated women with a community and sense of belonging. Others have acknowledged female crime is often economically motivated, for example engaging in illegal

behaviours aimed at obtaining money for drugs (Covington & Bloom, 2007; Forsythe & Adams, 2009; Moloney et al., 2009).

Criminogenic needs and Psychopathology.

The RNR model has been criticised for disregarding issues relating to trauma, and neglecting the relationship between mental illness and offending (Looman & Abracen, 2013) despite acknowledging that the presence of trauma and psychopathology is likely to impact an offender's ability to engage in, or benefit from treatment (Gannon & Ward, 2014; Clark et al., 2014, Levenson et al., 2016).

Childhood trauma has been long associated with increased prevalence of mental health problems throughout the life course (Carlson et al., 1989; Egeland et al., 1983; Lansford et al., 2016; Stinson et al., 2016; Mersky et al., 2012). Children who have experienced trauma present with significantly higher rates of major depression, dysthymia, attention-deficit hyperactivity disorder, oppositional defiant disorder and self-destructive behaviours, compared to children with no trauma exposure (De Bellis, 2001; Heim & Nemeroff, 2001). Aggression, anxiety, dissociation, social problems, cognitive problems and school absence have also been linked with childhood traumatic experiences (Lansford et al., 2016).

The consequences of childhood trauma continue to emerge throughout adulthood (Fagan, 2005; Reckdenwald et al., 2014; Smith, 1995; Stith et al., 2000; Widom, 1989). One of the most common long-term consequences of childhood trauma is the development of psychopathology (Carlson et al., 1989; Carrey et al., 1995; Egeland et al., 1983). Psychological disorders and problematic behaviours consistently documented in adults who report childhood trauma include anxiety and depression (Briere et al., 1988; Fromuth & Burkhart, 1989; Sedney & Brooks, 1984) suicidality/self-harm (Brown & Anderson, 1991;

Van der Kolk et al., 1991), and substance abuse (Epstein et al.,1998; Fleming et al., 1999). For both male and female victims of childhood trauma, the most frequently reported disorders are depression, substance abuse and PTSD, with females consistently reporting higher rates of all three disorders (Senior, 2015; Sepehrmanesh et al., 2014).

Given the high rates of trauma exposure, it is not surprising that the prevalence of psychopathology within an offending population is remarkably high (Senior, 2015). Researchers have found psychiatric illnesses as high as 80% in offenders, compared to 31% in the general population (Butler et al., 2006). Also, high levels of comorbid mental health conditions have been found in offending populations (Ogloff et al., 2015; Smith & Trimboli, 2010). Prisoners with anxiety, mood disorders, or psychotic symptoms often present with comorbid substance use and/or personality disorders (O'Driscoll et al., 2012). Regarding gender differences, Forsythe and Gaffney (2012) found that 43% of male offenders and 55% of female offenders reported a previous mental health diagnosis, with mood disorders being the highest reported amongst both gender groups.

Although an association has been found between major mental illness and offending behaviour, only a small proportion of crime has been found to be directly attributable to mental illness (Modestin, 1998; Peterson et al., 2014). The connection between mental illness and crime is proposed to occur via comorbidity with substance abuse and personality related disorders (Gray et al., 2008; O'Driscoll et al., 2012; Ogloff et al., 2015). Ogloff et al.., (2015) found mediating factors included lack of insight, childhood adversity, paranoia, threat perception, recent victimisation, stressful and adverse life experiences and impaired social/familial support.

Post-traumatic Stress Disorder. The most prevalent, debilitating and well-documented mental illness associated with trauma is PTSD (Marra, 2009; Breslau et al., 1995). It is estimated that between 10-15% of individuals exposed to trauma develop PTSD

in their lifetime, with those who have experienced childhood and recurrent trauma being twice to three times as likely to develop the disorder (Breslau et al., 1995; Kessler et al., 1995). PTSD is most likely to develop in early adulthood and is frequently comorbid with disorders including depression, generalised anxiety, and substance use (Breslau et al., 1997; Brewin & Holmes, 2003). The overall rate of PTSD is consistently reported as higher in females in comparison to males (Breslau et al., 1997; Sepehrmanesh et al., 2014). However, most of the previous research examining trauma exposure and PTSD has focused primarily on female samples, with very few studies investigating the rates of childhood trauma in both genders simultaneously (Komarovskaya et al., 2011).

As discussed, rates of PTSD are higher in forensic samples when compared to community samples. A cross-sectional community-based study found that a PTSD diagnosis was associated with a history of arrest, prison sentence, and being charged with a violent offence (Donley et al., 2012). Those with PTSD were significantly more likely to have had a higher number of arrests and more prison sentences relative to those without a PTSD diagnosis, arrest, incarceration, and violent charges were associated with a history of childhood trauma, and childhood trauma was significantly higher in those who had been involved with the criminal justice system. Donley et al. (2012) suggested that the behavioural sequelae of aggression and impulse dysregulation could explain the higher likelihood of violent offences in those with childhood trauma and PTSD. Sadeh & McNiel (2015) found that PTSD was a unique predictor of rearrest, above and beyond other criminogenic factors such as substance use, antisocial personality traits, and other psychiatric disorders. Participants with a PTSD diagnosis were 1.5 times more likely to be rearrested in the 12 months following their index offence.

A potential mechanism through which PTSD leads to criminal behaviour is via hypervigilance and suspiciousness that increases affiliation with antisocial others, and beliefs

of imminent harm to self which increases aggression (Barrett et al., 2011; Orth & Wieland, 2006). Further research is required to provide an explanatory model for the relationship between PTSD and offending. Regardless of the underlying mechanism linking PTSD and reoffending, findings indicate that treating substance use for instance, without treating trauma symptoms will be insufficient in reducing recidivism risk (Sadeh & McNiel, 2015).

Implications for Correctional Treatment

The implications of understanding and embedding trauma-informed practice within a Correctional framework would potentially require an overhaul of a system that currently emphasises group-based delivery of treatment that is delivered in line with the RNR model (Andrews & Bonta, 2010). Instead of making decisions about who should receive treatment based on a quantitative counting of risk factors, trauma-informed practice would encourage decision making based on the extent to which there appears to be a common etiological mechanism underlying the various criminogenic risk factors that have been identified for an individual. The targets for intervention would see trauma and mental health symptomology being addressed alongside, or in advance of, offence-focussed work; and the intervention itself would go beyond symptom-based strategies aimed at changing cognitions and building behavioural skills.

Trauma informed practice is not in itself a treatment model or program, but rather promotes the dissemination and implementation of evidence-based treatment (Knight, 2015). Trauma-informed services are grounded in five key principles: (1) safety, (2) trustworthiness, (3) choice, (4) collaboration, and (5) empowerment (Fallot & Harris, 2006; SAMHSA, 2014) and since 2012 Stephanie Covington and colleagues have been implementing training primarily in Correctional centres within the UK and Canada (Covington, 2012). Kubiak, Covington, and Hillier (2017) have recently reviewed trauma-specific treatment programs

that have been introduced within the Corrections environment and noted that literature predominantly focuses on women. These interventions focus on safety and coping skills and provide integrated treatment for substance use and PTSD (Kubiak et al., 2017). Evidence for effective trauma-specific treatment interventions for males involved in the criminal justice system is emerging, for example an integrated treatment for PTSD and SUD has been piloted with both men and women (Ford & Russo, 2006). In addition, Covington and Rodriguez (2016) have developed a trauma-focused brief intervention for men, which has also been piloted (Kubiak et al., 2017). A review of all forms of therapy offered within the Corrections environment is beyond the scope of the current paper, as is information about effectiveness of different treatment modalities with offenders generally, and traumatised offenders specifically. Offending behaviour programmes do not aim to resolve trauma that may be associated with the offending behaviour. However, in recent years, specific trauma treatment modalities have been utilised with offenders to address the trauma that precedes or occurs alongside offending behaviour. The trauma focussed modalities share an awareness that trauma can have a significant impact on an individual's identity and sense of self. Maladaptive skills and behaviours that were once believed necessary for survival are reframed as current barriers impacting the individual's ability to achieve prosocial goals and establish intimate relationships and healthy boundaries (Levenson et al., 2016).

A number of small *n* or single case study reports have been published on a range of specific treatment approaches that have either implicit or explicit goals of recognising and processing trauma and its role in the offence process. Cognitive Analytic Therapy (CAT) sees that offenders play out 'reciprocal role relationships' with victims that involve a re-enactment of the offender's childhood trauma in which the offender was the victim (Pollock & Stowell-Smith, 2015). Similarly, Narrative exposure therapy (NET) for offender rehabilitation has been used to reduce symptoms of traumatic stress thereby controlling readiness for

aggressive behaviour (Hecker et al., 2015). NET explores positive emotions and experiences linked to past violent and aggressive behaviours which are then contrasted with feelings during the narration process. Over the process of the therapy there is a role change from 'violent offender' to a person who can live a non-violent and socially adjusted life (Hecker et al., 2015). Cognitive Processing Therapy (CPT) is another treatment approach that has been used with traumatised offenders (Ahrens & Rexford, 2002). CPT is advantageous for prison settings because of its cost- and time-effectiveness since it can be delivered in groups.

Schema therapy has been found to be effective in treating personality disorders that are highly prevalent in criminal populations (Bamelis et al., 2014; Bernstein & Nentjes, 2015; Bernstein et al., 2012). Schema therapy includes trauma processing and is predicated on the assumption that problems in emotion regulation characteristic of personality disorders are a function of adverse early experiences (Fassbinder et al., 2016). Research evaluating the use of Eye-Movement desensitisation and reprocessing (EMDR) with offenders is growing. There are single-case study reports (e.g. Pollock, 2000; Clark et al., 2014) detailing the use of EMDR as an adjunct to standard sexual offender treatment for sexual offenders that can lead to improvements in treatment outcomes relating to sexual risk and reduction in trauma symptoms. At the time of writing, there is a randomised control trial of EMDR with different types of offenders being conducted in the UK.

In a small number of women's prisons Dialectical Behaviour Therapy (DBT; Linehan, 1993) is offered to support offence specific RNR interventions. DBT targets emotional dysregulation, unhealthy relationships and maladaptive behaviours, with the goal of increasing adaptive behaviours. In addition to the reported effectiveness of DBT in reducing self-harming, studies have also shown reductions in violence and aggression with male forensic patients (Evershed et al., 2003), and juvenile female offenders (Trupin et al., 2002).

Conclusion

This review has highlighted the importance of considering the role of trauma in the onset of offending and repeat offending in males and females. Research findings have found high rates of trauma experiences in offender samples compared to community samples and that female offenders have higher rates of childhood and adulthood trauma experiences and may therefore have distinct treatment needs. Appraisal of the literature has indicated that trauma may be connected to risk factors for crime as identified by the RNR model and that trauma symptomology may also reduce the effectiveness of conventional approaches to treating those risk factors.

In a recent discussion paper about applying trauma informed practice to legal and judicial jurisdictions, Kezelman and Stavropoulous (2016) commented: "Becoming trauma-informed is accessible to everyone, with no need for clinical knowledge or qualifications. What is required is basic knowledge of the impacts of stress on the brain and body and strategies to avoid exacerbating possible trauma-related problems" (p. 5). Optimally, trauma informed practice should apply to all levels of forensic service delivery, from policy and procedures through to front line professionals who provide psychological and social assessment and intervention. Since trauma negatively impacts neural integration (the capacity of different neural pathways to work together) and research has established that positive relational experiences assist with neural integration, all aspects of service delivery and modes of operation can benefit from a trauma informed approach.

The findings outlined in this review highlight the need for more research within the field of offender rehabilitation to further current understanding of the role of trauma in offenders to further improve upon trauma-informed practice and reduce the risk of onset and repeat offending.

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