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CHILDHOOD TRAUMA AND EXECUTIVE FUNCTIONING IN VIOLENT AND CRIMINAL SAMPLES

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Childhood Trauma And Executive Functioning

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Abstract

Violent and criminal behaviours have significant economic and psychological costs to society that contribute to substantial pain and suffering. It is important to understand the processes involved in such behaviours in order to implement preventative strategies and interventions.

The first paper is a meta-analytic review exploring the association between childhood trauma and violent outcomes in prospective studies. A systematic search yielded 18 eligible papers, all of which defined childhood trauma in terms of child maltreatment and witnessing domestic violence. Overall, childhood trauma was found to increase the risk of violent outcomes with a random-effects odds ratio of 1.8 (95% CI 1.4-2.4) and substantial heterogeneity (I^2 = 92%). It is concluded that childhood trauma is associated with violent outcomes, and the clinical and forensic implications are discussed together with recommendations for future research.

The second paper presents a quantitative study investigating aspects of executive functioning in older probationers. Executive dysfunction is considered to have a role in offending behaviour but to date no studies have specifically examined the executive functioning of older probationers. Thirty-two males aged fifty years and over were recruited

and completed the Verbal Fluency and Stroop tests to assess mental flexibility and response inhibition. They also completed measures of mental health, substance use and cognitive impairment. In comparison to normative data older probationers did not present with deficits in executive functioning although they did display high rates of mental health and substance use difficulties. These preliminary findings can be used to guide future research with older probationers. The study strengths and limitations, service implications, and suggestions for future research are discussed.

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Finally, I dedicate this thesis to Tom.

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Paper A

Childhood Trauma and Violent Outcomes: A Meta-Analysis of Prospective Studies

Lucy Nathania Fitton

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Childhood Trauma and Violent Outcomes: A Meta-Analysis of Prospective Studies

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Abstract

The risk of violence following childhood trauma is uncertain. There is a need to confirm and determine the strength of the association between childhood trauma and violent outcomes. This meta-analytic review identifies prospective studies that have assessed this relationship. Three electronic databases were systematically searched (PsycINFO, EMBASE, and MEDLINE) together with a targeted search on Google Scholar. Non-English-language studies and dissertations were considered. The search yielded 18 eligible studies reporting data on 62,407 cases. Pooled crude odds ratios (ORs) were generated and meta-analysed using random-effects models. Heterogeneity was explored through subgroup analyses and meta-regression. The effect of childhood trauma on violent outcomes was increased with the random-effects OR of 1.8 (95% CI 1.4-2.4). There was substantial heterogeneity (I^2 = 92%) between the included studies. Meta-regression suggested that risk of violence was increased in females, increased in studies with case-linkage methods, and increased with the age that violent outcomes were assessed. In conclusion, childhood trauma is associated with future violence perpetration, and preventative strategies and interventions for childhood trauma may have an important role in violence reduction. Methodological issues and recommendations for future research are discussed.

Keywords: Childhood trauma, child maltreatment, violence, meta-analysis, prospective

Proposed Journal: Clinical Psychology Review (see Appendix A for author guidelines)

Introduction

Traumatic events in childhood are common, although precise incidence and prevalence rates have been difficult to determine due to different definitions and conceptualisations (Saunders & Adams, 2014). Experiences such as childhood maltreatment (abuse and neglect), natural disasters, war, community violence and traumatic loss are largely accepted as types of childhood trauma (CT, [Deblinger, Thakkar-Kolar, & Ryan, 2006]) but there is debate over other experiences, such as parental divorce, bullying, parental discourse, and bereavement from natural death (Saunders & Adams, 2014). Across the literature child maltreatment is the most frequently cited form of CT, and estimates of worldwide prevalence rates of abuse and neglect range from 10 to 29% (Sethi et al., 2013).

CT is associated with a wide range of negative outcomes in adulthood, many of which contribute to the burden of disease around the world (Norman et al., 2012). It has been consistently related to psychopathology (Bendall, Jackson, Hulbert, & McGorry, 2008; Carr, Martins, Stingel, Lemgruber, & Juruena, 2013; Lindert et al., 2014; Varese et al., 2012), physical illness and health-risk behaviours (Anda et al., 2006; Bellis et al., 2014; Gilbert et al., 2009; Maniglio, 2009; Norman et al., 2012), substance misuse (Anda et al., 2006; Bellis et al., 2014; Khoury, Tang, Bradley, Cubells, & Ressler, 2010; Norman et al., 2012), suicidality (Bellis et al., 2014; Maniglio, 2009; Norman et al., 2012), and criminal and violent behaviours (Ardino, 2012; Gilbert et al., 2009; Haapasalo, & Pokela, 1999; Maas, Herrenkohl, & Sousa, 2008; Malvaso, Delfabbro, & Day, 2016; Wilson, Stover, & Berkowitz, 2009).

Prevalence rates of CT are elevated in offender samples. In the UK, nearly one third of adult prisoners report having experienced child abuse (Ministry of Justice, 2012) and almost half of children in custody samples have experienced abuse, with 38% witnessing domestic violence (Glover & Hibbert, 2009). CT is a recognised risk factor for violence in

adolescence and adulthood (Baskin & Somers, 2011; Cusick, Havlicek, & Courtney, 2012; Ehrensaft et al., 2003; Fowler, Cantos, & Miller, 2016; Jespersen, Lalumière, & Seto, 2009), although the hypothesis that children subjected to CT, such as physical abuse, progress to be perpetrators themselves (the 'cycle of violence') is not without controversy, especially as the majority of those who experience CT do not become violent (De Bellis, 2012; Falshaw, Browne, & Hollin, 1996). There are inconsistencies in findings on this topic, and while reviews in the area conclude that there is evidence of a relationship between CT and violence it is difficult to determine the strength of association and what might increase or decrease it (Jespersen et al., 2009; Malvaso, Delfabbro, & Day, 2015; Wilson et al., 2009).

Type of CT may explain some of the variability in the findings. Meta-analytic reviews have found only childhood sexual abuse to be significantly associated with sexual offending (Jespersen et al., 2009) and that experiencing violence has a greater influence on violent offending than witnessing violence (Wilson et al., 2009). However, it is hard to disentangle the effects of different types of CT as they rarely occur in isolation. Sexual abuse, for example, is largely physical, and arguably all child maltreatment is emotionally abusive (Falshaw et al., 1996; Trickett & McBride-Chang, 1995).

There may also be age and gender differences in relation to CT and violence. CT commencing or continuing into adolescence can have more adverse effects (Malvaso et al., 2016), although others contend that CT at any age elevates violent risk (Mersky, Topizes, & Reynolds, 2012). While some studies have shown the risk of violence following child abuse to be greater in women (Maas et al., 2008), others have found males to have more violent offending outcomes following childhood maltreatment (Malvaso et al., 2016). Different methods of recording CT and violence also contribute to variability in findings, particularly whether official or self-reported measures are used (Teague, Mazerolle, Legosz, & Sanderson, 2008).

Pathways from CT to violence are complex, and many individual, social, and contextual factors have been implicated in this process (Haapasalo & Pokela, 1999; Malvaso et al., 2016). Neurobiological perspectives posit that traumatic experiences in childhood lead to dysregulation in the stress response system, whereby high and often sustained levels of fear give rise to increased stress hormones and responsiveness at rest (De Bellis, 2012). This can result in impeded brain development and increased neuronal pruning and loss, with decreased neurogenesis and delayed myelination of neurons (Heide & Solomon, 2006). Consequently, maltreated children have been shown to have an overall reduction in cerebral volume (Glaser, 2000). Long-term changes may occur in the limbic structures (amygdala, orbitofrontal cortex, and anterior cingulate cortex) and the frontal control systems, resulting in an insufficient modulation of aggression, with increases in violent behaviour (Heide & Solomon, 2006; Mitchell & Beech, 2011; Siever, 2008).

Neurobiological explanations are often discussed in the context of Attachment Theory as the same brain structures are involved in social bonding and attachment (Mitchell & Beech, 2011). Children who do not develop secure attachments have a reduced capacity to 'mentalise' and understand their own and others' mental states (Heto, 2015). They may develop a view of the world as 'threatening' and misinterpret others' intentions as hostile – predisposing them to violence (Dodge, Bates, & Pettit, 1990; Fonagy, 2003; Meloy, 2003). Similarly, explanations from Social Learning Theory focus on difficulties with social-information-processing. Children model the violence they have experienced and, in the absence of adaptive means of managing conflict and regulating emotions, consider it to be an effective behaviour (Dodge et al., 1990; Wiersma, 2013).

Much remains to be understood on the relationship between CT and violence. It is important to continue to advance knowledge in this area in order to develop effective preventative strategies and interventions, advise criminal justice proceedings and guide the

trauma-informed care that is becoming increasingly common for violent populations (Ardino, 2012; Harner & Burgess, 2011; Heide & Solomon, 2006; Martin, Eljdupovic, Mckenzie, & Colman, 2015).

Synthesising research on the relationship between CT and violence is complicated by the wide range of definitions and varying methodologies. Common methodological limitations include sole reliance on self-report measures, lack of measurement of the severity or chronicity of CT, absence of control groups, and selective sampling (Thornberry, Knight, & Lovegrove, 2012; Widom, 1989a). Many studies use cross-sectional designs with retrospective measurement of CT. These are dependent on accurate recall of events and there is no control over temporal ordering of exposure and outcome. Prospective studies, however, are advantageous in that this order is controlled for, which allows a more reliable test of whether CT is an antecedent for violence.

For this reason, this meta-analytic review focuses exclusively on prospective studies that assess the relationship between CT and violent outcomes (VO). CT is defined as traumatic experiences (the most widely accepted, as previously cited, including child maltreatment, natural disasters, war, community violence, traumatic loss) occurring before the age of 18 years, and VO are defined as all types of physical violence against others, across the age range.

Previous reviews in this area have focused on general antisocial behaviours and criminal offences (Kerig & Becker, 2015; Malvaso et al., 2016; Wilson et al., 2009) or specific VO such as intergenerational violence (Ertem, Leventhal, & Dobbs, 2000; Thornberry et al., 2012) and sexual offending (Jespersen et al., 2009). Studies that have focused on violence have primarily assessed outcomes in adolescence and have not employed meta-analytic techniques (Falshaw et al., 1996; Maas et al., 2008). This review will therefore add to the literature by fulfilling the following aims: (1) Systematically identify and assess

the quality of studies that explore the relationship between CT and VO with a prospective design, (2) Investigate the magnitude of the relationship between CT and VO using meta-analyses, and (3) Assess whether the relationship between CT and VO differs by factors identified in the literature (gender, age, type of CT, record type, duration between exposure and outcome, sampling, and study methodology).

Methods

This review was conducted following the Preferred Reporting Items for Systematic Review and Meta-analysis Protocols (PRISMA-P) guidelines (Shamseer et al., 2014) and it was prospectively registered on PROSPERO (CRD42016048541).

Search Strategy

Systematic searches were completed on EMBASE (1st January 1980- 21st October 2016), MEDLINE (1st January 1946- 21st October 2016), and PsycINFO (1st January 1806- 21st October 2016). Combinations of search terms relating to childhood trauma (e.g. child* abuse*, maltreat*, physical abuse*) AND violent outcomes (e.g. viol*, crim*, offend*) were used (see Appendix B for the full electronic search terms). On PsycINFO additional limits were used for the methodology (prospective, follow-up, longitudinal; it was not possible to use these limits on EMBASE and MEDLINE). These searches were supplemented by a targeted search on Google Scholar (completed on 18th January 2017) using the key search terms as well as the ‘cited by’ function to explore similar papers to those identified for inclusion. The reference lists of the included papers were searched by hand to identify any additional articles.

Study Eligibility

Studies were included if (a) they directly assessed the relationship between CT and VO; (b) this relationship was assessed using a prospective methodology where the exposure

(CT) was measured before the outcome (VO); (c) CT occurred, and was recorded/measured before 18 years old; and (d) VO were measured as violent acts, rather than aggression, violent thoughts or verbal violence.

Studies were excluded if they did not meet the above criteria or if (a) VO were measured in combination with other non-violent acts; (b) there was no non-exposed comparison group; (c) VO were not blind and CT was assessed in a sample pre-identified as violent; or (d) they used the same dataset as another study (in these cases the study with the largest sample size and/or the one that most directly assessed the relationship between CT and VO was included). When suitability for inclusion was in question this was resolved through discussion between the author and their supervisor. Figure 1 illustrates the paper selection process.

Data Extraction

A standardised form (Appendix C) was used to extract study information including the geographical location of the study, sample size, participant group, gender ratio, age of exposure (CT) and outcome (VO) with duration in between, definitions and measures of CT and VO, attrition/missing data, and statistical methods and findings. This information was condensed and entered onto a Microsoft Excel spreadsheet, including relevant statistical data.

When studies did not directly report odds ratios (ORs) they were calculated to generate pooled ORs. If data were reported as frequencies or proportions ORs were calculated directly with the corresponding 95% confidence intervals (Morris & Gardner, 1988). When data were reported as regression coefficients, they were converted to ORs using the exponential function (Miller, Reardon, & Safi, 2001). If data were reported as correlation coefficients they were converted to Cohen's *d* and then log-transformed ORs (Chinn, 2000; Rosenthal & DiMatteo, 2001). Chi-square values were converted to correlation coefficients and then to log-transformed ORs via Cohen's *d* (Rosenthal, 1994).

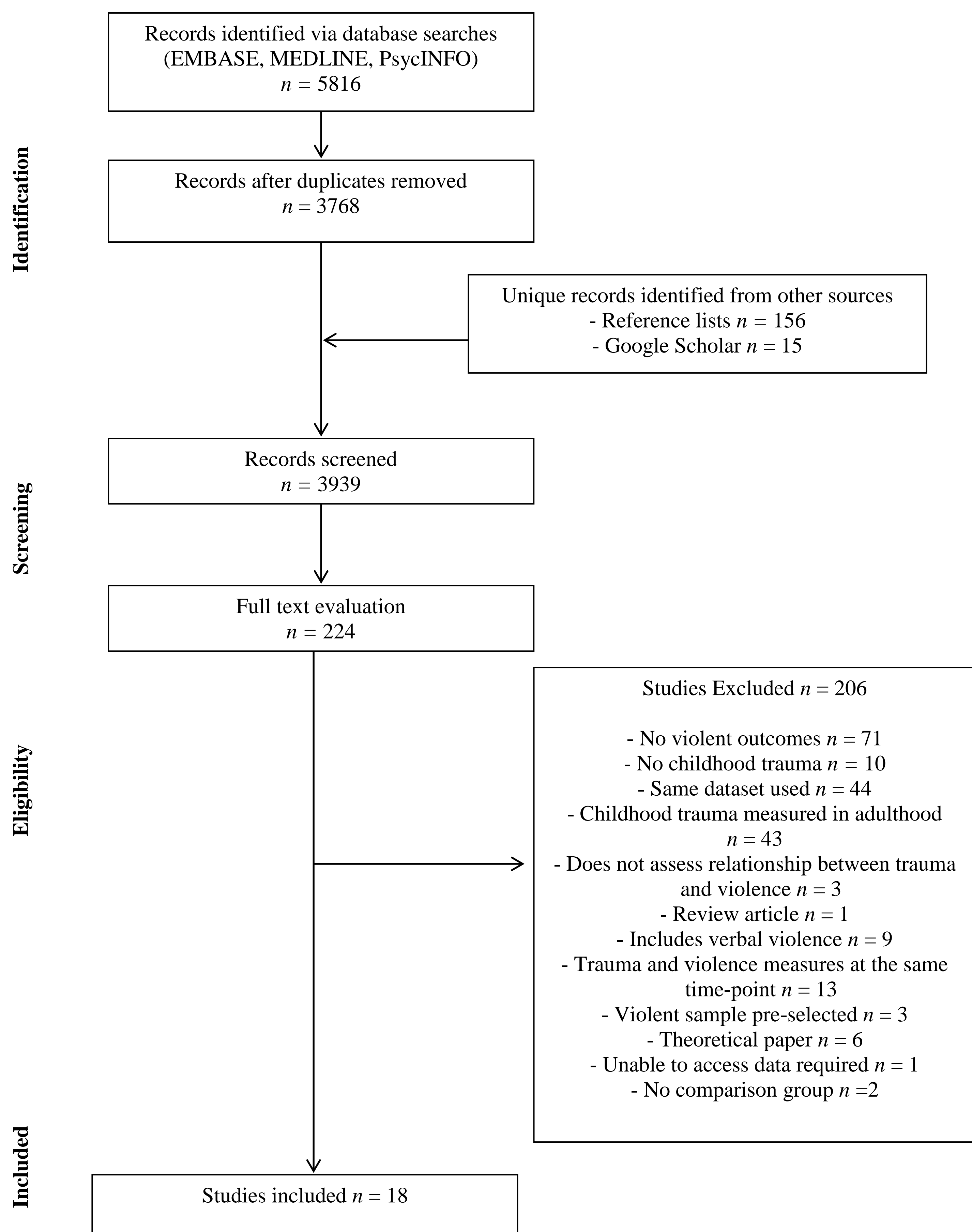

Figure 1. Flowchart of Studies Included in the Meta-analysis.

Analysis of variance values were converted first to Cohen's *d* and then ORs according to Thalheimer and Cook's (2002) methodology. See Appendix D for conversion formulae used. All ORs were reported to one decimal place. The calculations were cross-referenced by a postdoctoral research fellow to ensure conversion accuracy.

Quality Assessment

Quality was assessed using the Newcastle-Ottawa Quality Assessment Scale for Cohort Studies (Wells et al., 2004 [Appendix E]), a tool that critiques the selection of cohorts, comparability of cohorts, and assessment of outcome. The scale provides a rating score where high-quality choices are awarded a star, and each study can have a maximum of nine stars. Uncertainties about quality were resolved through discussions between the author and their supervisor.

Statistical Analysis

The overall analysis and subgroup analyses were performed using STATA version 14, for Mac. Random-effects models were used to account for heterogeneity between studies. This method is used when the studies are not expected to represent a uniform population and effect sizes between studies are likely to vary (Baker, White, Cappelleri, Kluger, & Coleman, 2009). Random-effects models use more balanced weighting of studies and account for within- and between-study variance, which results in larger confidence intervals than fixed-effects models (Borenstein, Hedges, & Rothstein, 2007).

The I^2 statistic was used to measure heterogeneity, which describes the percentage variation across studies due to heterogeneity rather than chance (Higgins, Thompson, Deeks, & Altman, 2003). Low, medium, and high heterogeneity relate to I^2 values of 25%, 50%, and 75%, respectively (Higgins et al., 2003).

Meta-regression was also completed, whereby the linear relationships between the outcome and covariates were assessed to explore heterogeneity (Baker et al., 2009). Meta-

regression analyses use linear regression principles to explore whether the outcome variable is associated with explanatory variables (between-study characteristics) whilst taking into account study weighting (Baker et al., 2009).

Publication bias was assessed using Begg's test that assesses the correlation between the log-odds ratio and the study weight (Begg & Mazumdar, 1994). The influence of a single study on the overall pooled ORs was estimated using the METANINF command in STATA, whereby magnitude of change in overall OR was assessed following removal of each study.

Results

Study Characteristics

The search yielded 18 eligible studies (see Appendix F for full references). A summary of the study characteristics is presented in Table 1. The included studies were published between 1989 and 2016, in four different countries, and included information on 62,407 cases. Only studies defining CT as child maltreatment (abuse and neglect) and witnessing domestic violence were eligible for inclusion. Seven studies focused on VO in childhood/adolescence (birth to 18 years), five studies looked at VO in adulthood alone (above age 18 years) and six studies measured VO in both childhood/adolescence and adulthood.

The majority (78%) of the studies were completed in the USA. Participants were selected from the general population (39%), child protection cases (22%), and specifically selected groups (39%, often 'high risk' groups such as those in poverty). More males were sampled than females (50,232 males, 12,175 females) with four studies including only males, and one study including only females. Racial demographic information was provided in 78% of the papers (*n* =17,581 cases) with African-Americans most often included (46%), followed by Whites/Caucasians (27%) and Hispanics (8%). The remainder were classified as 'other' or

Table 1. Summary of Included Studies

Study	Country	Sample (*n*, % male, race when given)	Type of CT	Type of VO	Mean age/age range (years) (1) CT (2) VO	Measures 1) CT 2) VO	% with VO CT group	% with VO in comparison group	Quality assessment stars received
Caspi et al., 2002	New Zealand	National sample of consecutive births. 442. 100% male.	Abuse (physical, emotional, sexual) and neglect	Violent offences	(1) 3-11 (2) 26	(1) Two of: behavioural observation, parental reports, retrospective adult reports* (2) Official records (court)	24%	9%	8
English et al., 2002	USA	Sample of abused and neglected children made dependents of the court and comparison matched controls from the same jurisdiction. 1754. 47% male. 70% Caucasian, 22% African-American, 6% Native American, 2% Other.	Abuse (physical, emotional, sexual) and neglect	Violent offences	(1) Birth to11 (2) 24 (and a juvenile sample younger than 18)	(1) Official (court) records (2) Official (arrest) records	27%[ƽ]	9%	9
Herrenkohl et al., 1997	USA	Two groups of families from child welfare abuse and protective service programs and three from Head-Start classrooms, day-care programmes, and private nursery programmes. 418. 54% male. 83% White, 12% Spanish, and 5% African-American.	Severe physical discipline; neglect; severe emotional discipline	Violent behaviour	(1) 1.5-10 (2) 14-22 years	(1) Self-report – interview with mother (2) Self-report – interview with adolescent/adult	-	-	5
Herrera & McCloskey, 2001	USA	Children of women that had co-resided with a man in the last 12 months (battered women were oversampled, recruited from both shelters and the community). Comparison group of mothers recruited from the same area that had not experienced partner abuse. 299. 51% male. 56 % Anglo-European, 34% Hispanic, 4% African-American, 4% Native-American, 2% Asian Other.	Family violence (spouse abuse) and marital violence; physical parental punishment	Violent offences	(1) 6-12 (2) 11-18	(1) Self-report – interview with mother and child (2) Official (court) records	17%	5%	5
Lansford et al., 2007	USA	General population sample of children entering Kindergarten. 574. 52% male. 81% were European-American, 17% African-American, 2% Other.	Physical abuse	Violent offences	(1) 1-5 (2) 5-18	(1) Self-report – interview with mother (2) Self report – interview with adolescent/adult and official (court) records	-	-	4.5[§]

Note. CT = Childhood Trauma. VO = Violent Outcomes. *n* given is what the analysis was based on, whereas the demographics (gender, race) provided in the paper are often based on the whole sample. Percentage with VO is provided when available in paper; percentages of VO provided are based on the main study findings or results for aggregated categories of CT. Quality assessment is based on the data used in the analysis. *For severe maltreatment measured in the review. [ƽ]Data for both adult and juvenile offences. [§]4 stars for self-report outcome, 5 stars for official record outcome.

Table 1. Summary of Included Studies

Study	Country	Sample (*n*, % male, race when given)	Type of CT	Type of VO	Mean age/age range (years) (1) CT (2) VO	Measures 1) CT 2) VO	% with VO CT group	% with VO in comparison group	Quality assessment stars received
Leach et al., 2016	Australia	Children with a maltreatment history with either a child protection notification, police caution, finalised juvenile court appearance, or finalised adult court appearance. 38282. 100% male.	Abuse (physical, emotional, sexual) and neglect	Sexual offences*	(1) Mean 7 (at first notification) 9 (at last notification) (2) Up to 25	(1) Official (child protection) records (2) Official (police and court) records	2%	1%	8
Millett et al., 2013	USA	Families with low or no income with children who had been investigated for abuse or neglect and a matched comparison group from the same population. 5377. 50% male. 79% African-American, 11% White-American.	Abuse (physical, sexual) and neglect	Intimate partner violence and other violent offences	(1) Up to age 17 (2) Up to age 27	(1) Official (child protection) records (2) Official (police and court) records	20%	9%	9
Narayan et al., 2014	USA	Children of mothers considered at risk due to poverty. 182. 54% male. 67% Caucasian, 11 % African-American, 18% other, 4 % Unreported.	Abuse (physical and Sexual), neglect, and inter-parental violence	Dating violence[ᶓ]	(1) Birth to 64 months (2) 23	(1) Self-report – mother, home observation, and official (child protection) records (2) Self-report – adult questionnaire	-	-	4
Ogloff et al., 2012	Australia	Children from a forensic medicine department medically confirmed to have experienced sexual abuse and a matched comparison sample from the same locality. 5436. 20% male.	Sexual abuse	Violent offences[§]	(1) 10 (2) 36	(1) Official (medical) records (2) Official (police) records	10%	1%	9
Pardini et al., 2012	USA	Boys from public schools that scored within the upper 30% of an antisocial behaviour screening measure and a comparison sample from the same group that did not. 503. 100% male. 40% White, 56% African-American, 4% Other.	Abuse (physical and Sexual) and neglect	Violent acts	(1) 12 (2) 13-18[×]	(1) Official (children services) records (2) Self report – interview with adolescent/adult	-	-	4
Rebellon & van Gundy, 2005	USA	National probability sample of adolescents. 1524. 53% male. 15% African-American, 85% Other.	Physical abuse	Violent offences	(1) 11-17 (2) 13-19	(1) Self-report – interview with adolescent (2) Self-report – interview with adolescent[¶]	-	-	4

Note. CT = Childhood Trauma. VO = Violent Outcomes. *n* given is what the analysis was based on, whereas the demographics (gender, race) provided in the paper are often based on the whole sample. Percentage with VO is provided when available in paper; percentages of VO provided are based on the main study findings or results for aggregated categories of CT. Quality assessment is based on the data used in the analysis. *The authors were contacted for data on violent offences also but this was not available [ᶓ]No examples of sexual violence given, not known if it is included. [§]Sexual violence not included. [×] Data on ages 15-18 included in the meta-analysis. [¶]The only study to use count data – where the relationship between physical abuse and violent offence counts was assessed.

Table 1. Summary of Included Studies

Study	Country	Sample (*n*, % male, race when given)	Type of CT	Type of VO	Mean age/age range (years) (1) CT (2) VO	Measures 1) CT 2) VO	% with VO CT group	% with VO in comparison group	Quality assessment stars received
Siegel & Williams, 2003	USA	Emergency room records from one hospital – sexual abuse victims and matched comparison sample with no sexual abuse. 411. 0% male. 84% African-American, 16% Other.	Sexual abuse	Violent offences	(1) 1-12 (2) Up to 35[*]	(1) Medical records and interview with child or family member (2) Official (court and arrest) records	9%	4%	8.5[illegible]
Silva et al., 2012	Canada	Children at kindergarten in neighbourhoods with the lowest socioeconomic status. 851[§]. 100% male.	Abuse (physical and emotional) and neglect	Violent offences	(1) 10-12 (2) 12-24	(1) Self-report – child questionnaire (2) Official (criminal) records	-	-	4[§]
Smith & Thornberry, 1995	USA	Stratified general population sample to over-represent delinquency and drug use. 889. 74% male. 18% White, 66% African-American, 16% Hispanic.	Abuse (physical, emotional, sexual) and neglect	Violent offences	(1) Before 12 (1) 14	(1) Official (child protection) records (2) Self-report – adolescent questionnaire	-	-	5
Thomas, 2007	USA	Sample from a juvenile detention centre. 1604. 63% male. 56% African-American, 16% non-Hispanic White, 27% Hispanic, 1% other.	Abuse (physical and Sexual) and neglect	Violent offences	(1) 15 (2) 20	(1) Official (court) records and self-report – interview with child/adolescent (2) Self-report – interview with adolescent/adult	47%	50%	4
Widom, 1989b	USA	Sample of validated court cases of abused and neglected children with a matched non-abused sample from the same community. 1575. 49%. 67% White, 31% African-American, 2% Other.	Abuse (physical and Sexual) and neglect	Violent offences	(1) 5 (2) 26	(1) Official (court) records (2) Official (criminal) records	9%	6%	9
Wright & Fagan, 2013	USA	Sample from stratified probability sample of 80 neighbourhood clusters in one city. 1372. 51% male. 32% African-American, 17% Caucasian, 47% Hispanic, 4% Other.	Physical abuse	Violent acts[¶]	(1) 9-15 (2) 12-18	(1) Self-report – interview with parent (2) Self-report – adolescent/adult questionnaire	-	-	6
Zingraff et al., 1993	USA	Children with a substantiated maltreatment from one county and comparison school and poverty samples from the same area. 914[×]. 46% male. Overall sample 46% White, 54% Other.	Abuse (physical and Sexual) and neglect	Violent offences[+]	(1) 9 (2) 15	(1) Official (social service) records (2) Official (court) records	3%	1%[×]	7

Note. CT = Childhood Trauma. VO = Violent Outcomes. *n* given is what the analysis was based on, whereas the demographics (gender, race) provided in the paper are often based on the whole sample. Percentage with VO is provided when available in paper; percentages of VO provided are based on the main study findings or aggregated categories of CT. Quality assessment is based on the data used in the analysis. *Approximate age, exact not provided. [illegible]9 for adult outcomes, 8 for adolescent outcomes. [§]For CT measured at age 12. [¶]Does not include sexual offences. [×]For CT and school comparison sample (including poverty sample *N*=1091). [+]No examples of sexual violence given, not known if sexual offences are included.

were not described (19%).

The majority of the studies (61%) had contact with the participants and used a 'follow-up' longitudinal design, where they followed them over time measuring the exposure and/or outcome directly. The rest (39%) used case-linkage methodologies. The average follow-up time was 17 years in case-linkage studies and 13 years in follow-up studies. The most frequently used definitions of CT were combinations of physical abuse, sexual abuse, neglect, emotional abuse, and witnessing domestic violence (72% of studies). Three studies assessed only physical abuse (17%) and two only sexual abuse (11%). Exposure to CT was ascertained through official records (45% of studies), self-report from child or parent (33%) or via multiple means (e.g. official records, self-report, and behavioural observation [22% of studies]). Nearly all studies (78%) defined and/or measured CT before the age of 12 years with only four (22%) measuring CT past age 12.

VO were defined as violent offences (66%), violent behaviours or acts (17%), dating/partner violence (11%, two studies - one also included violent offences), and sexual offences alone (6%). For the latter (Leach et al., 2016) the sexual offences were defined as sexual assault and considered eligible for inclusion. This study also separately assessed non-sexual violent offences but the authors could not provide the required data for this. Most studies included sexual violence within their definition of VO (66%). Three studies (17%) do not give examples of VO and it is not known if sexual violence was included, while three studies (17%) do not include sexual violence within the examples given. Official records of violent offences were the most commonly used measure of VO (58%), followed by methods of self-report (42%) via interview or questionnaire.

All of the seven case-linkage studies used official measures of CT and VO, while the studies with follow-up methods measured CT through official records (18%), self-report

measures (73%), and both self-report and official records (9%) and measured VO through official records (36%) and self-report methods (64%).

All but three of the papers were published in peer-reviewed journals - English et al. (2002) was published as a governmental report; Ogloff et al. (2012) was published in a peer-reviewed governmental series; and Thomas (2007) was an unpublished dissertation. Every study also assessed other variables in the relationship between CT and VO, such as genotypes and social bonding (a summary of the additional variables is presented in Appendix G). Due to the diversity of these variables it is beyond the scope of this review to include them in the critique.

Quality Assessment

Four studies met full criteria on the Newcastle-Ottawa scale and obtained the full nine stars; four received seven-to-eight stars, and the remaining 10 studies scored six stars or less. See Appendix H for a summary table. The most common methodological limitation, identified in eight studies, was a below-adequate duration between outcome and exposure ($\leq$10 years; if duration was not explicitly stated this was estimated from the longest possible time between age of CT and VO). To understand the relationship between CT and VO it is important that there is a sufficient amount of time for VO to manifest, especially if VO are defined as adult offences. The validity has been questioned on studies with a duration less than five years (Thornberry et al., 2012) and this occurred in 39% of studies.

Twelve studies were able to account for $\geq$ 90% of their initial sample. Ten studies had missing data or attrition and detailed information on this was only provided in one case (English et al., 2002). Despite the prospective study designs another common methodological weakness (identified in seven studies) was the lack of demonstration that VO were not present at the start of the study (this includes omission of a statement addressing temporal order of CT and VO).

Five studies used specially selected groups and all studies used comparison samples drawn from the same population as the exposed group. Seven studies were deemed to have comparability of cohorts where they described controlling or matching samples by at least two factors (such as gender, age, race, socioeconomic status). Whereas seven studies controlled for only one factor and four did not control for any. However, it should be noted that this critique was based on the data included in the meta-analysis, and some studies controlled for such variables in other analyses that are not assessed here.

All but one study (Silva et al., 2012) ascertained exposure through official records or structured interviews. Twelve studies assessed outcome via official records and six relied on self-report measures only.

Overall Relationship between Childhood Trauma and Violent Outcomes

Across the 18 studies the random-effects pooled crude OR of VO was 1.8 (95% CI = 1.4 – 2.4) among cases with CT[1] compared to those without. There was high heterogeneity among studies (I^2 = 92%). See Figure 2.

Type of Violent Outcome

CT was associated with VO when defined as violent offences only (21,032 cases in the included studies, k = 13, OR = 2.1 [1.4 – 3.0] I^2 = 94%) and when defined in other ways (sexual offences, dating violence, and violent behaviours/acts: 52,041 cases, k = 7, OR = 1.6 [1.3 – 1.9], I^2= 59%) and both categories of VO had substantial heterogeneity. It was not possible to compare studies that included sexual violence and those that did not due to the small number of studies (only three studies without sexual violence).

[1] In this overall analysis CT was defined as abuse and neglect in 10 studies, physical abuse only in six studies and sexual abuse only in two studies. VO were defined as violent offences in 13 studies, violent acts/behaviours in three studies, sexual offences only in one study, and partner violence only in one study.

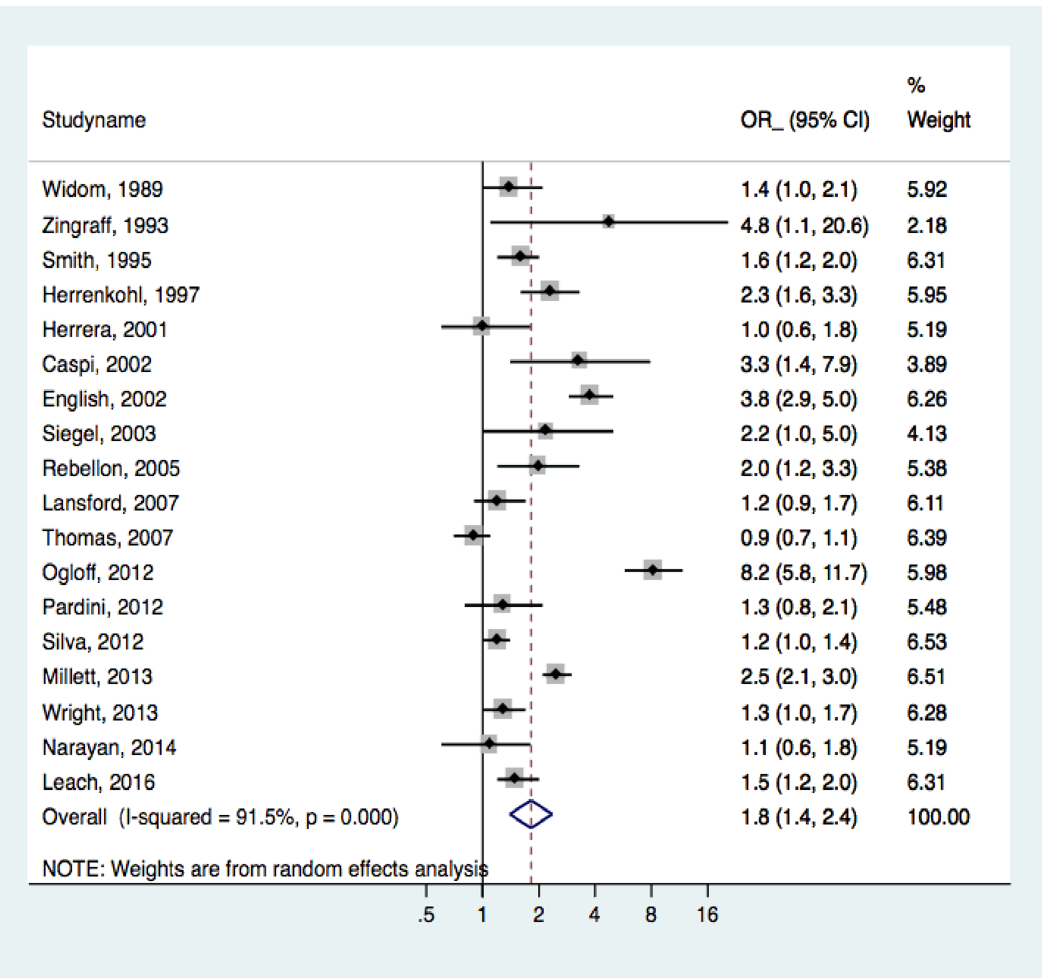

Figure 2. Odds of violent outcomes in cases with childhood trauma compared with individuals who had not experienced childhood trauma

Type of Childhood Trauma

There was no difference in risk estimates of VO by type of CT (physical abuse: 46,960 cases, k = 10, OR = 1.4 [1.1 – 1.7] I^2 = 68%; sexual abuse: 47,852 cases, k = 6, OR = 2.0 [0.7 – 5.5], I^2 = 93%; neglect: 5,208 cases, k = 5, OR = 1.6 [0.9 – 2.9], I^2 = 90%; and emotional abuse: 3,023 cases, k = 3, OR = 1.3 [1.0 - 1.7] I^2 = 37%). There was substantial heterogeneity in all cases, with the exception of emotional abuse (although as only three studies were assessed this is likely to be underpowered). Data on witnessing violence were only available in one study, and therefore it was not included in the analysis.

It was only possible to compare type of CT by one type of VO – violent offences (only three of the studies defining VO in other ways had data by type of CT – two for

physical abuse and one for sexual abuse). In this case the only difference was the exclusion of one study in the physical abuse category, which resulted in no significant change in OR (difference of 0.2; 45,588 cases, k = 9, OR = 1.4 [1 – 1.8], I^2 = 72%).

Measurement Type

Risk of VO following CT was observed in both official- and self-reported outcomes. There was no difference in ORs between studies that measured CT by official records (54,730 cases, k = 8, OR = 2.4 [1.6 – 3.6], I^2 = 93%) and those that used self-report (4,891 cases, k = 6, OR = 1.4 [1.1 – 1.8], I^2 = 65%). Nor was there difference between official measures of VO (55,768 cases, k = 11, OR = 2.2 [1.5-3.2], I^2 = 93%) and self-report measures of VO (7,066 cases, k = 8, OR = 1.5 [1.2 – 1.9] I^2 = 76%). In all cases there was substantial heterogeneity.

Gender and Age

Gender and age differences were explored using meta-regression. Female gender and an older age at time of VO were associated with higher risk estimates (see Table 2). There was not enough information in the papers to explore findings by age of CT (only five studies specified a mean age and all of these were $\leq$12 years, with just four studies recording CT past age 12).

Sampling

Sample size was not associated with risk estimates nor did it explain heterogeneity (see Table 2). There was a significant difference in risk estimates between studies using child protection samples (54,167 cases, k = 8, OR = 2.7 [1.8 – 4.1], I^2= 91%) and those that included other samples (general population or specially selected groups: 8,240 cases, k = 10, OR = 1.3 [1.1 – 1.5], I^2= 57%), each with substantial heterogeneity. See Appendix I for forest plots of the subgroup analyses and Appendix J for a table of all the ORs.

Study Methodology

Case-linkage studies had higher risk estimates than studies individually following up participants (‘follow-up’ see Table 2), This difference was explained by the greater duration between outcome and exposure in case-linkage studies (p = .02), although duration alone did not account for heterogeneity (see Table 2).

Publication Factors

Publication year did not explain the identified heterogeneity (see Table 2). Begg’s test for publication bias was not significant (p = .535). When the influence of a single study was assessed the omission of Millett et al. (2013) moved the OR estimate just onto the lower confidence interval (OR =1.6 [1.5 – 1.7]) and omission of Silva et al. (2012) moved the OR estimate just outside of the upper confidence interval (OR = 1.8 [1.7 – 2.0]). Neither of these figures, however, were considered to be excessively different from the combined analysis results. See Appendix K for a plot showing the influence of each study.

Table 2 Univariable meta-regression results assessing the relationship between childhood trauma and violent outcomes by between-study characteristics

Characteristic	b	Standard Error	*p*
Sample size	8.6	0.00002	.96
Duration	0.3	0.02	.11
Publication year	-0.01	0.02	.75
Age of violent outcome	.06	0.17	.002**
Male gender	-0.01	0.004	.05*
Study methodology (case-linkage vs follow-up)	0.7	0.24	.01**

Note. Age of violent outcomes was provided as a mean or exact age in 13 studies. If only age range was provided the median was used (there was no significant difference between ORs of means or medians and therefore these were combined together in the meta-regression). * $p \leq .05$, ** $p \leq .01$

Discussion

This meta-analysis assessed the relationship between CT and VO, with 18 prospective studies sampling over 60,000 cases. The overall finding was that CT (defined as child abuse and neglect) increased the risk of violence with an OR of 1.8. There was no definitive explanation for the high levels of heterogeneity identified, although this is not surprising as by including only prospective studies much of the methodological diversity was accounted for. This review builds on previous research through using systematic review methods and focusing on VO specifically, across the age range. Past reviews in this field have often relied on findings from cross-sectional studies and this review focused on prospective studies that use the most rigorous research methods.

There were four main findings in this review. Firstly, the risk of VO following CT was higher in females than in males. This finding should be taken as tentative evidence only, as males were over-represented in the papers reviewed. Maas and Colleagues (2008) also identified this gender difference and found that youth intimate partner violence perpetration following child maltreatment was particularly salient in females. However, other reviews in this area have either not found a gender difference or identified a greater risk of VO for males (Jespersen et al., 2009; Malvaso et al., 2016; Wilson et al., 2009). It is unclear why this gender difference may exist. As the prevalence of violence for females in the general population is lower than males, this could have inflated the overall difference between the rates of VO in the CT and comparison groups.

Females have been found to have an increased average risk for antisocial acts where at higher risk levels additional risk factors have a greater impact (while for males additional risk factors have the same impact with a step-wise linear increase [Wong et al., 2013]). It has been suggested that females may be more vulnerable to the effects of CT (Maas et al., 2008)

and it could be that in the context of multiple risk factors CT has a greater impact on violent risk for females.

A second finding was that the older the age VO were assessed the stronger the association between CT and VO. Although this finding is limited in that the majority of the papers assessed VO in later adolescent and early adult years – age periods associated with the highest risk of violence (Piel & Schouten, 2017). Only two studies assessed participants in their thirties and one of these also included some participants in their forties. As violence is recognised to decline after around age 30 (Fogel, 2009) this age difference may not have been observed if a greater number of older participants were included. As age increases so does the opportunity for violence, and the probability of future violence increases with each past episode (Fogel, 2009). Prior violence was not addressed in this current review as it was only measured in two studies (Rebellon & van Gundy, 2005; Thomas, 2007) and the age effect observed could be explained by prior violence, although it is not possible to confirm this here.

The third and fourth findings were that the risk of VO following CT was significantly higher in studies with a case-linkage methodology (than those individually following up participants) and in studies with child protection samples (than general population and specifically selected samples). There was significant overlap in each of these analyses as all but one of the child protection samples had a case-linkage methodology. It is therefore difficult to disentangle the effects of study methods and sample type.

The higher risk estimate identified in case-linkage studies was explained by the longer duration between exposure and outcome. The case-linkage studies also always used official records as measures of CT and VO, which could have contributed to the finding. Although, duration and means of measurement alone did not account for the heterogeneity observed.

A benefit of official records as measures of CT is that they are likely to include substantiated cases, although identification of participants through such records and selection of child protection samples can add bias through choosing the most severe cases of CT that are not necessarily reflective of all who experience CT. Additional biases then exist across child protection services as different localities have different thresholds (Malvaso, 2015). However, children identified through official records are also those who are more likely to have received interventions for CT.

Social desirability bias is a particular concern for self-report of CT and violence, especially in studies that rely on parental reports of CT (where they themselves may have been the perpetrators) and adolescent self-report of VO (as this group can over-report antisocial behaviour [Wilson et al., 2009]). However, the results did not reveal differences between studies using self-report or official measures.

As there are similar demographic and family risk factors for CT and VO, it is important that comparison samples are closely matched to the CT samples (Malvaso et al., 2015), but this was not always achieved in the papers reviewed. An inherent challenge in this area of research is ensuring that the comparison sample has not been exposed to CT. This is difficult to control for, especially when relying on official records only, as the comparison sample may have experienced CT without it reaching the attention of authorities. Measurement from multiple sources can help identify such cases, and this occurred in only four studies (Caspi et al., 2002; Narayan et al., 2014; Siegel & Williams, 2003; Thomas, 2007).

The contribution of race/ethnicity and socio-economic status on the risk of VO could not be examined as data were not available. The majority of studies were completed in the USA, and African-American participants were overrepresented in the samples. This might limit the generalisability of the results. Minority races and lower income socio-economic

groups are thought to be over-represented in this line of research as they are more likely to come to the attention of social services (Smith & Thornberry, 1995).

Samples may have been further biased by high rates of attrition or missing data (identified in one third of studies [Herrenkohl et al., 1997; Lansford et al., 2007; Narayan et al., 2014; Rebellon & van Gundy, 2005; Silva et al., 2012; Thomas, 2007]) as it is recognised that participants most likely to be lost to follow-up can have higher rates of antisocial behaviours; failure to include these cases can reduce overall differences between groups (Thornberry, Bjerregaard, & Miles, 1993). Sample sizes ranged from 299 to 38,282, however, these could considerably decrease when results were then stratified by type of CT, with a risk of being underpowered.

It was not possible to compare VO by type of CT in all studies and when comparisons could be made no differences were identified. These findings should be interpreted with caution as only a small number of studies separately assessed emotional abuse, and the subgroup analysis in this case might be underpowered. Similarly, only a small number of studies assessed specific categories of VO and it was only possible to compare violent offences to all other types of VO. If differences were identified between type of CT and type of VO this could inform theories on the 'cycle of violence' and whether specific types of CT lead to specific types of outcomes (Jespersen et al., 2009; Wilson et al., 2009).

There was variability in the definitions of CT across the studies; as a result there may have been differences both in severity and repeated exposure to types of CT. For example, severe parental discipline or punishment (Herrenkohl et al., 1997; Herrera & McClosky, 2001) could be quite different from sexual abuse identified at an emergency room (Siegel & Williams, 2003). Equally, there was variability in definitions of VO and within the category of violent offences alone this could range from common assault to homicide. More information on severity would be beneficial to better understand the relationship between CT

and VO and it could determine whether a dose-response relationship exists, something that was not possible in the current review. Given that severe abuse and neglect has been associated with more adverse outcomes (Norman et al., 2012), there is reason to believe a dose-response relationship would be found. Details on the nature, duration, frequency, perpetrators, and age of trauma help determine severity of CT – although this is often difficult to judge (Radford et al., 2010) and definitions used in research frequently vary and impede assimilation of findings (Malvaso et al., 2016).

It was not possible to assess the timing of CT due to lack of detail in the papers. Moreover, it was not clear whether the age provided reflected the age CT occurred or the age it was reported. Lack of a distinction between the two has been highlighted as a common problem in this field (Malvaso et al., 2016). Single measures of CT up to a certain age are limited in that CT could continue from this point and even be a consequence of delinquent and violent behaviour (Malvaso et al., 2015). This bi-directional relationship cannot be ruled out, especially in cases where temporal order is not established.

It remains to be known exactly how CT leads to violence, and why some who experience CT become violent while others do not. As previously discussed a range of factors have been implicated in this relationship, and these are not mutually exclusive. Substance abuse is considered to have an important role as it is more prevalent among those who have experienced CT and is a recognised risk factor for violence (Boles & Miott, 2003; Khoury et al., 2010). Substances can be used to self-medicate or dampen mood states associated with traumatic events and violence can result from the direct effects of substances (such as disinhibition, irritability, paranoia), the lifestyles associated with substances (drug use and distribution), and the acquisition of drugs (economic impulsive violence to support addiction [Boles & Miott, 2003; Khoury et al., 2010]).

Dissociation is another factor considered to mediate the association between CT and violence (Daisy & Hien, 2003). It consists of a disruption of consciousness, identity, emotion, memory, perception, and behaviour (American Psychiatric Association, 2013). Dissociative states are thought to allow an individual to survive intolerable experiences such as CT, however, they can continue to be activated in situations where there is no threat (Kennedy & Kennerley, 2013). Intense rage resulting from CT, together with difficulties integrating affect, can lead to violence towards others (Daisy & Hien, 2003). It is suggested that those who experience CT but do not become violent are able to overcome dissociation and integrate the trauma into their identity (Haapasalo & Pokela, 1999).

Limitations of the Current Review

Several limitations of this review should be noted. First, attempts were made to include all relevant grey literature in the current review, however, there may be studies that were not identifiable in the databases searched. The findings here are expected to be subject to the file-drawer effect where significant findings are more likely to be published (Dubben & Beck-Bornholdt, 2005). As highlighted by Norman and Colleagues (2012), this may be a particular problem in studies using multiple statistical analyses as the significant findings are more likely to be included.

Second, CT was defined as trauma occurring from birth to 18 years, a generally accepted age period (Pinheiro, 2006; Thornberry et al., 2012). Several studies were excluded as CT was measured after age 18 years, often in the early twenties. This may have resulted in exclusion of other relevant studies. This review is limited in only identifying, and including, studies defining CT as child maltreatment and not other forms. When studies provided multiple measurements of CT aggregated results were chosen (i.e. all forms of abuse and neglect), followed by physical abuse (as this was the most frequently assessed form of CT). As a result physical abuse is likely to be overrepresented in the findings.

Future Directions for Research

Overall only four studies met the highest quality research standards and scored the full nine stars on the quality assessment measure. Future prospective studies can consider using longer follow-up times; multiple, valid, and reliable measurements; thorough matching of comparison groups and samples representative of the general population; tighter controls on temporal order and controls of prior violence; and greater efforts to include elusive participants likely to be lost to follow-up.

The gender differences identified can be investigated further to determine if there are gender-specific pathways between CT and VO. All of the papers explored additional variables that may be implicated in the relationship between CT and VO and which were not included in this review due to their diversity. Future studies would benefit from establishing consistency in identifying and measuring these variables to determine which factors may affect the association between CT and VO. It is important to identify dynamic risk factors involved, as these are most amenable to intervention. This information can then inform theoretical explanations.

More precision in definitions of CT, including details on severity and specific age of trauma, would provide useful information and determine how factors such as developmental stage may be involved. Future studies could also assess whether other traumatic events such as natural disasters and war are associated with risk of VO. The literature search for this review identified many papers using the same datasets and there is a need for continued research using current generations, as participant groups from past generations are not representative of current ones.

Preventative and Treatment Implications

The current review provides further evidence for the importance of preventative and treatment strategies for CT in preventing violence. This could be achieved through allocation

of resources to parenting and family programmes, interventions such as the German Dunkelfeld project targeting paedophiles before they offend (Beier et al., 2015), and education strategies for children and adolescents on victimisation and perpetration (Radford et al., 2010). Tighter safeguards, specialist training, and interdisciplinary working can help ensure signs of CT are identified, especially within healthcare, school, childcare, and criminal justice contexts (Ko et al., 2008; Radford et al., 2010).

Children experiencing CT should be offered timely interventions such as trauma-focused cognitive behavioural therapy and psychotherapy, although the evidence base for such interventions requires development (Silverman et al., 2008). It is important that interventions are not focused solely on reducing trauma symptomatology but that they also address other biopsychosocial factors and enhance protective factors, resilience and post-traumatic growth (Maniglio, 2009; Masten, 2001; Meyerson, Grant, Carter, & Kilmer, 2011). Awareness that violent offenders may have a history of CT can be incorporated into assessments, formulations, and interventions with these individuals.

Conclusion

This review confirms the relationship between CT and future violence, and that individuals subjected to CT have a higher risk of VO. There is some evidence that this risk is increased in females, although future research is required to confirm and better understand the role gender may play. It is important to note that not all who experience CT become violent, and continued research into moderating and mediating factors can help to understand developmental pathways. Early interventions targeting CT may prevent future violence, and trauma-informed care is expected to have an important role in the rehabilitation of violent individuals.

Paper A Highlights

- Childhood trauma is associated with future violent outcomes with an overall random-effects OR of 1.8 (95% CI 1.4-2.4).
- There is tentative evidence from meta-regression that the association is stronger for females.
- All 18 studies defined childhood trauma as forms of child maltreatment or witnessing domestic violence. There is a dearth of prospective studies assessing other forms of traumatic experiences in childhood.

References

References marked with an asterisk indicate studies included in the meta-analysis

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Anda, F., Felitti, J., Bremner D. J., Walker, J. D., Whitfield, C., Perry, B. D., … Giles, W. H. (2006). The enduring effects of abuse and related adverse experiences in childhood: A convergence of evidence from neurobiology and epidemiology. *European Archives of Psychiatry and Clinical Neuroscience*, *256*, 174-186. doi: 10.1007/s00406-005-0624-4

Ardino, V. (2012). Offending behaviour: the role of trauma and PTSD. *European Journal of Psychotraumatology*, *3*, 1-4. doi:10.3402/ejpt.v3i0.18968

Baker, W. L., White, C. M., Cappelleri, J. C., Kluger, J., & Coleman, C. I. (2009). Understanding heterogeneity in meta-analysis: the role of meta-regression. *The International Journal of Clinical Practice, 63,* 1426-1434. doi: 10.1111/j.1742-1241.2009.02168.x

Baskin, D. R., & Somers, I. (2011). Child maltreatment, placement strategies, and delinquency. *American Journal of Criminal Justice, 36,* 106-119. doi: 10.1007/s12103-010-9088-9

Begg, C. B., & Mazumdar, M. (1994). Operating characteristics of a rank correlation test for publication bias. *Biometrics, 50*, 1088-1101. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/7786990

Beier, K. M., Grundmann, D., Kuhle, L. F., Scherner, G., Konrad, A., & Amelung, T. (2015). The German Dunkelfeld project: a pilot study to prevent child sexual abuse and the use of child abusive images. *Journal of Sexual Medicine, 12,* 529-542. doi: 10.1111/jsm.12785

Bellis, M. A., Hughes, K., Leckenby, N., Jones, L., Baban, A., & Kachaeva, M. (2014).

Adverse childhood experiences and associations with health-harming behaviours in young adults: surveys in eight eastern European countries. *Bulletin of the World Health Organization, 92*, 641–655. doi: 10.2471/BLT.13.129247

Bendall, S., Jackson, H. J., Hulbert, C. A., & McGorry, P. D. (2008). Childhood trauma and psychotic disorders: a systematic, critical review of the evidence. *Schizophrenia Bulletin*, *34*, 568–579. doi: 10.1093/schbul/sbm121

Boles, S. M., & Miotto, K. (2003). Substance abuse and violence: A review of the literature. *Aggression and violent behavior, 8,* 155-174. doi: 10.1016/S1359-1789(01)00057-X

Borenstein, M., Hedges, L., & Rothstein, H. (2007). *Introduction to meta-analysis.* Retrieved from www.meta-analysis.com

Carr, C. P., Martins, C. M. S., Stingel, A. M., Lemgruber, V. B., & Juruena, M. F. (2013). The role of early life stress in adult psychiatric disorders: A systematic review according to childhood trauma subtypes. *Journal of Nervous and Mental Disease*, *201*, 1007–1020. doi: 10.1097/NMD.0000000000000049

*Caspi, A., McClay, J., Moffitt, T. E., Mill, J., Martin, J., Craig, I. W., … & Poulton, R. (2002). Role of genotype in the cycle of violence in maltreated children. *Science, 297,* 851-854. doi: 10.1126/science.1070824

Chinn, S. (2000). A simple method for converting an odds ratio to effect size for use in meta-analysis. *Statistics in Medicine, 19,* 3127-3131. doi: 10.1002/1097-0258(20001130)19:22<3127::AID-SIM784>3.0.CO;2-M

Cusick, G. R., Havlicek, J. R., & Courtney, M. E. (2012). Risk for arrest: The role of social bonds in protecting foster youth making the transition to adulthood. *American Journal of Orthopsychiatry, 82,* 19-31. doi:10.1111/j.1939-0025.2011.01136.x.

Daisy, N. V. & Hien (2014). The role of dissociation in the cycle of violence. *Journal of Family Violence, 29,* 99-107. doi: 10.1007/s10896-013-9568-z

De Bellis, M. D. (2012). The intergenerational transmission of family violence: the neurobiology of the relationships among child victimisation, parental mental health, and addiction. In C. S. Widom (Ed.), *Trauma, psychopathology, and violence: causes, consequences, or correlates?* (pp. 79-108). Oxford, England: Oxford University Press.

Deblinger, E., Thakkar-Kolar, R., & Ryan, E. (2006). Trauma in childhood. In V. C. Follette & J. I. Ruzek (Eds.), *Cognitive behavioral therapies for trauma* (2nd ed., pp. 405-432). London, England: The Guildford Press.

Dodge, K. A., Bates, J. E., & Pettit, G. S. (1990). Mechanisms in the cycle of violence. *Science, 250,* 1678-1683. Retrieved from http://www.sciencemag.org/content/250/4988/1678.full.pdf\

Dubben, H. H., & Beck-Bornholdt, H. P. (2005). Systematic review of publication bias in studies on publication bias. *BMJ, 331,* 433. doi: 10.1136/bmj.38478.497164.F7

Ehrensaft, K., Cohen, P., Brown, J., Smailes, E., Chen, H., & Johnson, G. (2003). Intergenerational transmission of partner violence: A 20-year prospective study. *Journal of Consulting and Clinical Psychology*, *71*, 741-753. doi: 10.1037/0022-006X.71.4.741

*English, D. J., Widom, C. S., & Brandford, C. (2002). *Childhood victimisation and delinquency, adult criminality, and violent criminal behaviour: A replication and extension, final report.* Rockville, MD: National Criminal Justice Reference Service.

Ertem, I., Leventhal, J., & Dobbs, S. (2000). Intergenerational continuity of physical abuse: how good is the evidence? *Lancet, 356,* 814-819. doi: 10.1016/S0140-6736(00)02656-8

Falshaw, L., Browne, K. D., & Hollin, C. R. (1996). Victim to offender: A review. *Aggression and Violent Behavior*, *1*, 389–404. doi: 10.1016/S1359-1789(96)00005-5

Fogel, M. H. (2009). Violence risk assessment evaluation: Practices and procedures. In J .T. Andrade (Ed.), *Handbook of violence risk assessment and treatment: New approaches for mental health professionals* (pp 41-82). New York, NY: Springer Publishing

Company, LLC.

Fonagy, P. (2003). Towards a developmental understanding of violence. *British Journal of Psychiatry, 183,* 190-192. doi: 10.1192/bjp.183.3.190

Fowler, D. R., Cantos, A. L., & Miller, S. A. (2016). Exposure to violence, typology, and recidivism in a probation sample of domestic violence perpetrators. *Child Abuse & Neglect*, *59*, 66–77. doi: 10.1016/j.chiabu.2016.07.007

Gilbert, R., Widom, C. S., Browne, K., Fergusson, D., Webb, E., & Janson, S. (2009). Burden and consequences of child maltreatment in high-income countries. *The Lancet*, *373*, 68–81. doi: 10.1016/S0140-6736(08)61706-7

Glaser, D. (2000). Child abuse and neglect and the brain – a review. *Journal of Child Psychology and Psychiatry, 41,* 97-116. doi: 10.1111/1469-7610.00551

Glover, P. & Hibbert, P. (2009). *Locking up or Giving Up? Why custody thresholds for teenagers aged 12, 13 and 14 need to be raised. An analysis of the cases of 214 children sentenced to custody in England 2007-08*. Retrieved from Barnardo's: http://www.barnardos.org.uk/locking_up_or_giving_up_august_2009.pdf

Haapasalo, J., & Pokela, E. (1999). Child-rearing and child abuse antecedents of criminality. *Aggression and Violent Behavior*, *4*, 107–127. doi:10.1016/S1359-1789(97)00027-X

Harner, H., & Burgess A. W. (2011). Using trauma-informed framework to care for incarcerated women. *Journal of Obstetric, Gynaecological & Neonatal Nursing, 40,* 469-476. doi: 0.1111/j.1552-6909.2011.01259.x

Heide, K. M., & Solomon, E. P. (2006). Biology, childhood trauma, and murder: rethinking justice. *International Journal of Law and Psychiatry, 29,* 220-233. doi: 10.1016/j.ijlp.2005.10.001

*Herrenkohl, R. C., Egolf, B. P., & Herrenkohl, E. C. (1997). Preschool antecedents of adolescent assaultive behaviour: A longitudinal study. *American Journal of Orthopsychiatry, 6,* 422-432. doi: 10.1037/h0080244

*Herrera, V. M., & McCloskey, L. A. (2001). Gender differences in the risk for delinquency among youth exposed to family violence. *Child Abuse & Neglect, 25,* 1037-1051. doi: 10.1016/S0145-2134(01)00255-1

Heto, M. S. (2015). Psychological perspectives of violence. In C. A. Pietz & C. A. Mattson (Eds.), *Violent offenders: Understanding and assessment* (pp. 3-18). Oxford, England: Oxford University Press.

Higgins, J. P. T., Thompson, S. G., Deeks, J. J., & Altman, D. G. (2003). Measuring inconsistency in meta-analyses. *BMJ, 327,* 557-560. doi: 10.1136/bmj.327.7424.557

Jespersen, A. F., Lalumière, M. L., & Seto, M. C. (2009). Sexual abuse history among adult sex offenders and non-sex offenders: A meta-analysis. *Child Abuse and Neglect*, *33*, 179-192. doi:10.1016/j.chiabu.2008.07.004

Kennedy, F. C., & Kennerley, H. (2013). The development of our understanding of dissociation. In F. Kennedy, H. Kennerley, & D. Pearson (Eds.), *Cognitive behavioural approaches to the understanding and treatment of dissociation.* Hove, England: Routledge.

Kerig, P. K., & Becker, S. P. (2015). Early abuse and neglect as risk factors for the development of criminal and antisocial behavior. In J. Morisot, & L. Kazemian (Eds.), *The development of criminal and antisocial behaviour* (pp. 181-200). New York, NY: Springer International Publishing.

Khoury, L., Tang, Y. L., Bradley, B., Cubells, J. F., & Ressler, K. J. (2010). Substance use, childhood traumatic experience, and posttraumatic stress disorder in an urban civilian population. *Depression and Anxiety*, *27*, 1077–1086. doi: 10.1002/da.20751

Ko, S. J., Ford, J. D., Kassam-Adams, N., Berkowitz, S. J., Wilson, C., Wong, M., Brymer, M. J., & Layne, C. M. (2008). Creating trauma-informed systems: Child welfare, education, first responders, health care, juvenile justice. *Professional Psychology: Research and Practice, 39*, 396-404. doi: 10.1037/0735-7028.39.4.396

*Lansford, J. E., Miller-Johnson, S., Berlin, L. J., Dodge, K. A., Bates, J. E., & Pettit, G. S. (2007). Early physical abuse and later violent delinquency: A prospective longitudinal study. *Child Maltreatment, 12,* 233-245. doi: 10.1177/1077559507301841

*Leach, C., Stewart, A., & Smallbone, S. (2016). Testing the sexually abused-sexual abuser hypothesis: A prospective longitudinal birth cohort study. *Child Abuse & Neglect, 51,* 144-153. doi: 10.1016/j.chiabu.2015.10.024

Lindert, J., von Ehrenstein, O. S., Grashow, R., Gal, G., Braehler, E., & Weisskopf, M. G. (2014). Sexual and physical abuse in childhood is associated with depression and anxiety over the life course: systematic review and meta-analysis. *International Journal of Public Health, 59,* 359-372. doi: 10.1007/s00038-013-0519-5

Maas, C., Herrenkohl, T. I., & Sousa, C. (2008). Review of research on child maltreatment and violence in youth. *Trauma Violence Abuse*, 9, 56–67. doi: 10. 1177/1524838007311105.

Malvaso, C. G., Delfabbro, P., & Day, A. (2015). The maltreatment-offending association: A systematic review of the methodological features of prospective and longitudinal studies. *Trauma, Violence & Abuse*, 1-15. doi: 10.1177/1524838015620820

Malvaso, C. G., Delfabbro, P. H., & Day, A. (2016). Risk factors that influence the maltreatment-offending association: A systematic review of prospective and longitudinal studies. *Aggression and Violent Behavior*, *31*, 1–15. doi: 10.1016/j.avb.2016.06.006

Maniglio, R. (2009). The impact of child sexual abuse on health: A systematic review of

reviews. *Clinical Psychology Review*, *29*, 647–657. doi: 10.1016/j.cpr.2009.08.003

Martin, M. S., Eljdupovic, G., Mckenzie, K., & Colman, I. (2015). Risk of violence by inmates with childhood trauma and mental health needs. *Law and Human Behavior*, *39,* 614-623. doi: 10.1037/lhb0000149

Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist, 56,* 227-238. doi: 10.1037//0003-066X.56.3.227

Meloy, J. R. (2003). Pathologies of attachment, violence, and criminality. In A. M. Goldstein & I. B. Weiner (Eds.), *Handbook of psychology: volume 11 forensic psychology* (pp. 509-527). Hoboken, NJ: John Wiley and Sons, Inc.

Mersky, P., Topitzes, J., & Reynolds, J. (2012). Unsafe at any age: Linking childhood and adolescent maltreatment to delinquency and crime. *Journal of Research in Crime and Delinquency*, *49*, 295-318. doi: 10.1177/0022427811415284

Meyerson, D. A., Grant, K. E., Carter, J. S., & Kilmer, R. P. (2011). Posttraumatic growth among children and adolescents: A systematic review. *Clinical Psychology Review*, *31*, 949–964. doi: 10.1016/j.cpr.2011.06.003

Miller, C. C., Reardon, M. J., & Safi, H. J. (2001). *Risk stratification: A practical guide for clinicians.* Cambridge, England: Cambridge University Press.

*Millett, L. S., Kohl, P. L., Jonson-Reid, M., Drake, B., & Petra, M. (2013). Child maltreatment victimisation and subsequent perpetration of young adult intimate partner violence: An exploration of mediating factors. *Child Maltreatment, 18,* 71-84. doi: 10.1177/1077559513484821

Ministry of Justice (2012). *Prisoners' childhood and family backgrounds: Results from the surveying prisoner crime reduction (SPCR) longitudinal cohort study of prisoners.* Retrieved from https://www.gov.uk/government/publications/prisoners-childhood-and-family-backgrounds

Mitchell, I. J., & Beech, A. R. (2011). Towards a neurobiological model of offending. *Clinical Psychology Review*, *31*, 872–882. Doi: 10.1016/j.cpr.2011.04.001

Morris, J. A., & Gardner, M. J. (1988). Calculating confidence intervals for relative risks (odds ratios) and standardised ratios and rates. *British Medical Journal, 296,* 1313-1316. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2545775/

*Narayan, A. J., Englund, M. M., Carlson, E. A., & Egeland, B. (2014). Adolescent conflict as a developmental process in the prospective pathway from exposure to interparental violence to dating violence. *Journal of Abnormal Child Psychology, 42,* 239-250. doi: 10.1007/s10802-013-9782-4

Norman, R. E., Byambaa, M., De, R., Butchart, A., Scott, J., & Vos, T. (2012). The long-term health consequences of child physical abuse, emotional abuse, and neglect: A systematic review and meta-analysis. *PLoS Medicine*, *9*. doi: 10.1371/journal.pmed.1001349

*Ogloff, J. R. P., Cutajar, M. C., Mann, E., & Mullen, P. (2012). Child sexual abuse and subsequent offending and victimisation: A 45 year follow-up study. *Trends & Issues in Crime and Criminal Justice, 440.* Retrieved from http://www.aic.gov.au/publications/current%20series/tandi/421-440/tandi440.html

*Pardini, D. A., Loeber, R., Farrington, D. P., & Stouthamer-Loeber, M. (2012). Identifying direct protective factors for nonviolence. *American Journal of Preventative Medicine, 43,* S28-S40. doi:10.1016/j.amepre.2012.04.024

Piel, J. L., & Schouten, R. (2017). Violence risk assessment. In R. Schouten (Ed.), *Mental health practice and the law* (pp. 39-60). Oxford, England: Oxford University Press.

Pinheiro, P. S. (2006) *World report on violence against children*. New York, NY: United Nations.

Radford, L., Corral, S., Bradley, C., Fisher, H., Bassett, C., Howat, N., & Collishaw, S. (2010). *Child abuse and neglect in the UK today.* Retrieved from NSPCC

https://www.nspcc.org.uk/globalassets/documents/research-reports/child-abuse-neglect-uk-today-research-report.pdf

*Rebellon, C. J., & van Gundy, K. (2005). Can control theory explain the link between parental physical abuse and delinquency? A longitudinal analysis. *Journal of Research in Crime and Delinquency, 42,* 247-274. doi: 10.1177/0022427804271926

Rosenthal, R. (1994). Parametric measures of effect size. In H. Cooper & L. V. Hedges (Eds.), *The handbook of research synthesis* (pp. 231-244). New York, NY: Russel Sage Foundation

Rosenthal, R., & DiMatteo, M. R. (2001). Meta-analysis: Recent developments in quantitative methods for literature review. *Annual Review of Psychology, 52,* 59-82. doi: 10.1146/annurev.psych.52.1.59

Saunders, B. E., & Adams, Z. W. (2014). Epidemiology of traumatic experiences in childhood. *Child and Adolescent Psychiatric Clinics of North America*, *23*, 167–184. doi: 10.1016/j.chc.2013.12.003

Sethi, D., Bellis, M., Hughs, Gilbert, R., Mitis, F., & Galea, G. (2013). *European report on preventing child maltreatment.* Copenhagen, Denmark: World Health Organisation.

Shamseer, D., Moher, D., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., … Stewart, L. A. (2014). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement: Elaboration and explanation. *BMJ*, *349.* doi: 10.1136/bmj.g7647

*Siegel, J. E., & Williams, L. M. (2003). The relationship between child sexual abuse and female delinquency and crime: A prospective study. *Journal of Research in Crime and Delinquency, 40,* 71-94. doi: 10.1177/0022427802239254

Siever, L. J. (2008). Reviews and overviews neurobiology of aggression and violence. *American Journal of Psychiatry*, *165*, 429-442. doi:10.1176/appi.ajp.2008.07111774

*Silva, T. C., Larm, P., Vitaro, F., Tremblay, R. E., & Hodgins, S. (2012). The association between maltreatment in childhood and criminal convictions to age 24: a prospective study of a community sample of males from disadvantaged neighbourhoods. *European Child & Adolescent Psychiatry, 21,* 403-413. doi: 10.1007/s00787-012-0281-xORIGINAL

Silverman, W. K., Ortiz, C. D., Viswesvaran, C., Burns, B. J., Kolko, D. J., Putnam, F. W., & Amaya-Jackson, L. (2008). Evidence-based psychosocial treatments for children and adolescents exposed to traumatic events. *Journal of Clinical Child and Adolescent Psychology*, *37*, 156–183. doi: 10.1080/15374410701818293

*Smith, C., & Thornberry, T. P. (1995). The relationship between childhood maltreatment and adolescent involvement in delinquency. *Criminology, 33,* 451-481. Retrieved from http://heinonline.org/HOL/Page?handle=hein.journals/crim33& collection=journals&i d=461&startid=461&endid=492

Teague, R., Mazerolle, P., Legosz, M., & Sanderson, J. (2008). Linking childhood exposure to physical abuse and adult offending: Examining mediating factors and gendered relationships. *Justice Quarterly*, *25*, 313–348. doi: 10.1080/07418820802024689

Thalheimer, W. & Cook, S. (2002). *How to calculate effect sizes from published research: A simplified methodology.* Retrieved from www.work-learning.com

*Thomas, U. C. (2007). *Maltreatment and subsequent violent behavior: A prospective longitudinal study of delinquent youth* (unpublished doctoral dissertation). Northwestern University, Illinois.

Thornberry, T. P., Bjerregaard, B., & Miles, W. (1993). The consequences of respondent attrition in panel studies: A simulation based on the Rochester youth development study. *Journal of Quantitative Criminology*, *9*, 127–158. doi: 10.1007/BF01071165

Thornberry, T. P., Knight, K. E., & Lovegrove, P. J. (2012). Does maltreatment beget

maltreatment? a systematic review of the intergenerational literature. *Trauma Violence Abuse, 13,* 135-152. doi:10.1177/1524838012447697

Trickett, P. K., & McBride-Chang, C. (1995). The developmental impact of different forms of child abuse and neglect. *Developmental Review*, *15*, 331-337. doi: 10.1006/drev.1995.1012

Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., & Viechtbauer, W. (2012). Childhood adversities increase the risk of psychosis: A meta-analysis of patient-control, prospective- and cross-sectional cohort studies. *Schizophrenia Bulletin, 38,* 661-671. doi: 10.1093/schbul/sbs050

Wells, G. A., Shea, B., O'Connell, D., Peterson, Welch, V., Losos, M., & Tugwell, P. (2004). *Quality Assessment Scales for Observational Studies*. Retrieved from Ottawa Health Research Institute http://www.ohri.ca/programs/clinical_epidemiology/oxford.asp

Widom, C. S. (1989a). Does violence beget violence? A critical examination of the literature. *Psychological Bulletin*, *106*, 3–28. http://doi.org/10.1037/0033-2909.115.2.287

*Widom, C. S. (1989b). Child abuse, neglect, and violent criminal behavior. *Criminology 27,* 251-271. doi: 10.1111/j.1745-9125.1989.tb01032.x

Wiersma, J. (2013). Cycle of violence. In L. L. Finley (Ed.), *Encyclopedia of domestic violence and abuse* (pp. 101-104). Santa Barbara, CA: ABD-CLIO, LLC.

Wilson, H. W., Stover, C. S., & Berkowitz, S. J. (2009). Research review: The relationship between childhood violence exposure and juvenile antisocial behavior: A meta-analytic review. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *50*, 769–779. doi:10.1111/j.1469-7610.2008.01974.x

Wong, T. M. L., Loeber, R., Slotboom, A. M., Bijleveld, C. C. J. H., Hipwell, A. E., Stepp, S. D., & Koot, H. M. (2013). Sex and age differences in the risk threshold for delinquency. *Journal of Abnormal Child Psychology, 41,* 641-652. doi: 10.1007/s10802-012-9695-7

*Wright, E. M., & Fagan, A. A. (2013). The cycle of violence in context: Exploring the moderating roles of neighbourhood disadvantage and cultural norms. *Criminology, 51,* 217-249. doi: 10.1111/1745-9125.12003

*Zingraff, M. T., Leiter, J., Myers, K. A., & Johnsen, M. C. (1993). Child maltreatment and youthful problem behavior. *Criminology, 31,* 173-202. doi: 10.1111/j.1745-9125.1993.tb01127.x

Paper B

Executive Functioning in Older Probationers

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Executive Functioning in Older Probationers

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Abstract

The number of older people on probation has increased rapidly in the past decade, however this group has received little research attention. This study provides preliminary information on older probationers' executive functioning. Thirty-two male probationers were recruited from probation services and completed the Verbal Fluency and Stroop tests. Their performance on these tests was compared to test normative data. Information was also gathered on mental health, substance use, and cognitive impairment. Older probationers did not present with deficits in executive functioning. They did, however, present with a high prevalence of mental health difficulties, particularly depression and alcohol abuse. These tentative findings can be used to guide future research with older probationers, and service implications are discussed.

Keywords: Executive functioning, probation, older people, forensic, mental health.

Proposed Journal: Journal of Forensic Psychiatry and Psychology (see Appendix L for author guidelines)

Introduction

There is growing evidence that neuropsychological factors have a role in antisocial and offending behaviour (Ogilvie, Stewart, Chan, & Shum, 2011). Research in this area is dominated by studies on younger often incarcerated adult and adolescent samples, and older participants are commonly excluded (Dolan & Anderson, 2002; Dolan, Millington, & Park, 2002; Massau et al., 2017). Less is known about the neuropsychological processes in older individuals who offend; this is reflective of the forensic literature more generally, where there is a paucity of studies focusing on older offending samples, especially those in probation services (Howse, 2003; Sirdifield, 2012). Throughout this paper reference will be made to 'offending samples/groups' and 'antisocial samples/groups'. These terms will be used to refer to groups of people who are categorised based on the presence of previous antisocial or criminal behaviour, however, it is acknowledged that people who offend or have antisocial traits are not a homogenous group. This language was preferred to the terms 'offenders' and 'criminals' that are widely used in the literature. Such terms can be stigmatising and it is recommended that they are avoided when referring to forensic populations (The British Psychological Society, 2004).

It is a challenge to confidently define old age in people who offend and age cut-offs are 'inevitably arbitrary' (Howse, 2003, p. 2). While there is debate over what age is optimal in describing old age, governmental reviews and the Chief Inspector of prisons both acknowledge a cut-off of 50 years (House of Commons Justice Committee, 2013). The research findings that informed this cut-off are predominantly based on prison populations and it is unclear how applicable it is to probation groups. The chaotic lifestyles characteristic of many people who offend are considered to result in a health status 10 years older than someone in the general population (Howse, 2003; Omolade, 2014). Consequently, a cut-off

of 50 years is favoured when defining old age in this group (Cooney & Braggins, 2010; Hayes, Burns, Turnbull, & Shaw, 2012).

The number of people aged over 50 in prison or on probation has grown rapidly in recent years. Between 2006 and 2016 the number of men aged over 50 serving community or suspended sentences doubled, and exceeded 10,500 by the end of 2016 (Ministry of Justice [MOJ] 2017a). Population ageing does not fully explain this increase; the rise in reported sex crimes, increased use of custodial sentences, increased length of sentences, and increased post-release supervision periods are contributing factors (Codd & Bramhall, 2002; Howse, 2003; Office for National Statistics, 2015). Sexual offences are disproportionately represented in groups of older men who offend and can account for between 48 to 62% of offences in prison and probation samples (Codd & Bramhall, 2002; Curtice, Parker, Wismayer, & Tomison, 2003; Fazel, Hope, O'Donnell, & Jacoby, 2001; Hayes et al., 2012; Kennedy & Kitt, 2013). Violent non-sexual offences remain relatively constant in probationers aged over 50, while rates of other crimes such as burglary and robbery are seen to decrease (Codd & Bramhall, 2002). Due to the higher prevalence of serious offences among older probationers, a larger proportion are serving custodial sentences with post-release supervision than probationers of all ages (65% of those aged over 65 vs. 29% [Kennedy & Kitt, 2013]).

It is not clear how many older probationers are first-time offenders. An exploratory study found that nearly half (46%) had no prior convictions (Shichor, 1988). It has been suggested that older people receive greater leniency from the criminal justice system than their younger counterparts and are issued more warnings and cautions (Brown, 1998). However, caution rates are now decreasing and conviction rates increasing among older people who offend (Howse, 2003). Recent statistics for 2015 reveal a lower reoffending rate

for people over 50 (13%) than all ages combined (25%), although this rate has increased by 3% since 2004 (while for all-ages there has been a 2% reduction [MOJ, 2017b]).

Older people who offend are a distinct population and their services cannot be provided based on estimates taken from younger offending groups or elderly people in the community (Fazel & Grann, 2002). Equally, probationers are not directly comparable to prisoners and have differing needs. It is important to have an understanding of older probationers in order to implement effective preventative and rehabilitation strategies (Brooker, Syson-Nibbs, Barrett, & Fox, 2009; Lewis, Fields, & Rainey, 2006). It is not known how the proposed accelerated ageing impacts neuropsychological functioning in offending groups as this subject has received little research attention. The ageing process may increase the risk of offending through uncovering behaviours that were previously well controlled by compensatory strategies (Curtice et al., 2003), and age-related cognitive decline could explain a proportion of first-time elderly offenders (Richard-Devantoy et al., 2010; Roth, 1968). Specific neuropsychological functions have been widely explored in a range of younger antisocial samples. The few studies with older groups have primarily focused on generalised cognitive impairment and dementia and less is known about distinct neuropsychological domains (Fazel & Grann, 2002; Hayes et al., 2012). For this reason, the current study aims to explore aspects of executive functioning (EF) in a sample of older probationers by assessing two specific components – mental flexibility and response inhibition.

Executive functioning

Executive functioning is an umbrella construct used to define a range of processes that enable individuals to perform purposive, goal-directed, and self-serving behaviours (Lezak, Howieson, Bigler, & Tranel, 2012). There is yet to be consensual agreement on an operational definition for what processes constitute executive functions (Andrewes, 2015)

although it is generally accepted that working memory, cognitive flexibility, planning, inhibition, initiation and monitoring of action are types of executive function (Barkley, 2012). Various theoretical models of EF exist; these often focus on higher-level processes supervising lower-level demands (Gilbert & Burgess, 2008). However, none of the current models are considered to adequately account for the complexity of executive functions (Sparrow & Hunter, 2012b).

Executive functions are associated with a range of cortical, subcortical and cerebellar areas (Sparrow & Hunter, 2012a). The prefrontal cortex (PFC), and its vast connectivity to other structures, has a pivotal role in this brain-behaviour relationship (Heyder, Suchan, & Daum, 2004). Structural and functional impairments in the PFC, particularly the orbitofrontal, dorsolateral, ventromedial, and anterior cingulate cortex, have been identified in antisocial groups, and executive functions are regarded to have a central role in antisocial and offending behaviours (Brower & Price, 2001; Vallabhajosula, 2015; Yang & Raine, 2009). However, the relationship between brain dysfunction and offending is complex and a neuroanatomical region specific to criminality has not been identified; antisocial behaviour following brain damage rarely occurs in isolation and is often in the context of a range of behavioural changes and contextual factors (Joyal, Black, & Dassylva, 2007). Moreover, not all with neuropsychological impairment and executive dysfunction will engage in antisocial or offending behaviour; while the research findings to date provide evidence of an association between EF and offending they do not prove causal inference.

A variety of factors are implicated in the relationship between EF and offending including pre- and perinatal substance abuse, child abuse and neglect, traumatic brain injury, neurodevelopmental disorders, substance abuse, and psychiatric conditions (Fabian, 2010). However, it is difficult to disentangle the effects of such factors and determine whether neurobiological differences identified in offending groups are attributable to these alone or

specific to antisocial or criminal traits (Ogilvie et al., 2011; Yang & Raine, 2009). Meta-analyses conclude that there is strong evidence of an association between EF and antisocial behaviours. Antisocial groups are shown to perform between .44 and .62 standard deviations worse on measures of EF than comparison samples, with the largest mean effect sizes seen in criminal groups (d = 1.09 and 0.61 [Morgan & Lilienfeld, 2000; Ogilvie et al., 2011]). However, it is not certain whether these deficits are specific to EF or reflect generalised impairment (Morgan & Lilienfeld, 2000). Furthermore, the interaction between environmental factors and EF in antisocial groups is poorly understood (Ogilvie et al., 2011). Impoverished and sedentary environments could contribute to deficits identified in prisoners and EF may be preserved in non-incarcerated individuals (Maschi, Kwak, Ko, & Morrissey, 2012; Massau et al., 2017). Different offending behaviours are thought to involve different neuropsychological processes (Yechiam et al., 2008). This has resulted in a diverse range of studies focusing on both different offending samples and different executive functions.

Mental flexibility and response inhibition

Mental flexibility is the capacity to adapt and shift thinking in changing situations (Meltzer, 2014). It has an important role in allowing one to adjust their behaviour to meet new demands (Milders, Ietswaart, Crawford, & Currie, 2008). Perseveration is an example of poor mental flexibility, where the same response is repeated when it is no longer relevant or appropriate (Lezak et al., 2012). Response inhibition is the process of suppressing responses that distract from, and interfere with, goal-directed behaviour (Mostofsky & Simmonds, 2008). It is a form of attentional control that allows one to resist temptations and impulsive action (Diamond, 2014).

Antisocial and offending behaviour may reflect impairment to the dorsolateral prefrontal regions that have a critical role in mental flexibility and perseverative behaviour (Raine, 2002). Reduced mental flexibility is expected to prevent people who offend from

switching to more functional behaviours or finding new solutions to problems (Broomhall, 2005; Meijers, Harte, Jonker, & Meynen, 2015). Furthermore, offence recidivism appears to resemble perseverative behaviour as behaviours are repeated despite negative consequences (Raine, 2002). The ventromedial PFC and orbitofrontal cortex are implicated in response inhibition. Damage to these areas can result in disinhibited and impulsive behaviours that parallel those seen in antisocial and criminal samples, such as aggressive outbursts, social conduct problems, and hypersexuality (Lezak et al., 2012; Torregrossa, Quinn, & Taylor, 2008). The frontal cortex modulates the reactive emotional responses of the limbic system, and insufficient regulation can prevent inhibition of impulses, increasing the likelihood of antisocial behaviour (Vallabhajosula, 2015).

Antisocial and offending groups show impairment on measures of mental flexibility and response inhibition (Barker et al., 2007; Broomhall, 2005; Joyal, Beaulieu-Plante, & de Chanterac, 2013; Meijers et al., 2015). Studies in this area, however, are often based on small specific clinical samples that cannot be generalised to all offending groups (Séguin, Sylvers, & Lilienfeld, 2007). Variability in findings is common and is thought to result from differing methodologies as well as the variable sensitivity of EF measures to identify differences in antisocial groups (Ogilvie et al., 2011). Subcategories of offences have been explored in an attempt to account for different findings. This categorisation has become increasingly specific, for example within the subcategory of sex offences those committed against children have been compared to those against adults (Joyal et al., 2007). It is argued that even further categorisation, such as comparisons between contact and non-contact child sex offences, may determine whether there are specific cognitive profiles associated with specific offending behaviours (Joyal et al., 2013). Although, it can be difficult to make distinctions by offence type in practice, especially when relying on criminal records as people may have committed offences without being cautioned or convicted for them.

Lack of controls for confounding factors such as psychiatric conditions, substance misuse, neurological conditions, education and intelligence also contribute to the inconsistencies in neuropsychological findings (Dolan et al., 2002). Studies often fail to account for the impact of wider psychobiosocial factors involved in offending behaviour. Psychobiosocial perspectives of offending emphasise the complex interaction between a range of psychological, biological, and social factors at both an individual and environmental level (Thornberry et al., 2012). Social learning, cognitive and moral development, socioeconomic factors, family dynamics and dysfunction, and genetics are just some of the many variables that are implicated alongside neuropsychological factors in offending behaviour (Fabian, 2010). There are challenges in attempting to isolate offending behaviour within one framework alone. However, research on individual factors, such as EF, can be used to inform integrative theories and is clinically relevant as it can identify specific areas for intervention.

Executive functioning in older people who offend

Age does not appear to moderate the relationship between EF and antisocial behaviour (Morgan & Lilienfeld, 2000). However, distinctions have primarily been made between adolescent and adult samples. There is a need for research across all stages of the lifespan, especially as declines in EF are typically seen throughout the process of normal adult ageing (Ogilvie et al., 2011; Smith & Rush, 2006).

Few studies have addressed EF in older offending groups. Fazel, O'Donnell, Hope, Gulati, and Jacoby (2007) assessed set-shifting, initiation, and abstraction (as aspects of EF) in male prisoners aged over 59 and compared the performance of those convicted of sex offences to those convicted of non-sex offences. No differences were found between these groups or when compared to data on older community controls. Conversely, Combalbert and colleagues (2016) found that in comparison to a general population sample French male

prisoners aged 50 years and older had significant impairments on EF tests measuring mental flexibility, conceptualisation, inhibition, and sensitivity to interference. In Australia, Rodriguez and Ellis (2017) completed a pilot study assessing the neuropsychological functioning of men aged 50 years and over who were incarcerated (90% of sample) or completing a community sex offender treatment programme. In terms of EF, response inhibition and suppression, mental flexibility, and decision-making were assessed. The performance of 'first-time child exploitation material offenders' (FTCEMOs) was compared with 'historic sex offenders' (who were convicted before the age of 50) and with 'non-sex offender' controls. It was hypothesised that the two sex offending groups would have poorer neuropsychological functioning than the non-sex offending group. Overall, it was concluded that there were no significant differences between the groups, although in comparison to normative data the FTCEMOs showed more impairment in decision-making. Taken together, studies assessing aspects of EF in older offending samples have yielded inconsistent findings that are difficult to draw firm conclusions from and warrant further research.

To the author's knowledge there is yet to be a study assessing EF specifically in older probationers. Information in this area can guide future research and contribute to knowledge of this population that can ultimately be used to inform offender rehabilitation, risk assessment, and preventative strategies (Brower & Price, 2001; de Brito & Hodgins, 2009; Hancock, Tapscott, & Hoaken, 2010). This may be particularly relevant for cognitive-based interventions, as prisoners with deficits in EF are less likely to make progress in these programmes (Fishbein & Sheppard, 2006). Information on aspects of older probationers' EF could highlight areas of need that can be matched to appropriate rehabilitation interventions such as the Enhanced Thinking Skills Programme (Mullin & Simpson, 2007); a programme proven to be beneficial for those with poorer EF as it aims to reduce re-offending through improving cognitive abilities (Mullin & Simpson, 2007).

Aim of the current study

The aim of the current study is to gather some preliminary information on mental flexibility and response inhibition in a sample of older male probationers, as measured by the Verbal Fluency (VF) and Stroop tests. Following recommendations on research with British prisoners, old age will be defined as 50 years and over (Hayes et al., 2012). It is not known how this age distinction can reliably be applied to probation populations, however, in the absence of evidence to suggest an alternative age cut-off for older probationers 50 years will also be used. As the first study in this specific area it was decided that the probation group as a whole would be the focus, rather than probationers convicted for specific offences. Other studies have adopted this approach and focused on offending samples not defined by offence type (Kavanagh, Rowe, Hersch, Barnett, & Reznik, 2010; Stewart, Wilton, & Sapers, 2016). The current study findings could then guide future studies in this area and identify whether a focus on specific subgroups of probationers might be beneficial. This decision was also influenced by concerns regarding the feasibility of recruiting probationers and the uncertainty over response rate if the participant pool was narrowed based on specific offences. Probationers are regarded as a hard to reach population and research with this group presents several challenges including recruitment (Sirdifield, Owen, & Brooker, 2016).

Factors known to impact EF will also be measured to aid interpretation of test performance. These include: age (to assess whether there is evidence of the suggested accelerated ageing that might negatively impact EF), mental health conditions (Testa & Pantelis, 2009), substance use (Moser, Frantz, & Brick, 2008), neurological and cardiovascular conditions (Arciniegas, 2013; Waldstein, Wendell, Hosey, Seliger, & Katzel, 2010), medication use (Keedwell, Surgaldze, & Phillips, 2009; Stein & Strickland, 1998), cognitive impairment (Mast & Gerstenecker, 2010), and estimated intellectual functioning (Lezak et al., 2012; [see Appendix M for additional information on these factors as well as

further rationale on measure selection]). Serious consideration was given to participant exclusion based on the presence of impairment in any of these areas, given the impact this could have on EF performance. The prevalence rate of such conditions is currently unknown among older probationers, however, based on studies with older prisoners and younger probationers this was predicted to be high (Brooker, Sirdifield, Blizard, Denney, & Pluck, 2012; Hayes et al., 2012; Williams et al., 2010). It was therefore decided that excluding participants based on the presence of these factors might result in a selective sample of older probationers not necessarily representative of the wider group. These factors, however, would be assessed and considered when interpreting and drawing conclusions on the EF test results. Additionally, it would be beneficial to identify any presence of executive dysfunction irrespective of the aetiology as this could then guide future research and might indicate other areas that could be targets for intervention. As the first study in this specific area importance was placed on providing as representative an overview as possible of older probationers, rather than focusing on a selective subgroup. It is hypothesised that (1) older probationers' VF and Stroop scores will be significantly lower than the normative sample and (2) older probationers' performance on the VF and Stroop tests will be related to age and drug, alcohol, and depression scores (with VF scores showing a negative correlation, and Stroop scores showing a positive correlation).

Method

Design

A quantitative single cohort correlational design was employed. Participants' scores were compared to normative data, a method previously used in research on EF in offending samples (Broomhall, 2005; Joyal et al., 2007).

Selection of sample size

It was not possible to conduct a priori power analysis to determine sample size as it is the first study of its kind in this specific area. Based on other similar preliminary studies with offending samples a target sample size of 30 participants was selected (Broomhall, 2005; Joyal et al., 2007). The present study will provide future studies with information to enable power and sample size calculations.

Participants

Thirty-two male probationers, aged 50 years and older, were recruited from various probation sites within England. Probation services are provided by the National Probation Service (NPS, public sector) and the Community Resettlement Companies (CRCs, private sector). The NPS supervise the highest risk probationers, while the CRCs supervise probationers of medium to low risk (See Appendix N for additional information on probation services).

Inclusion criteria required participants to be currently on probation within the community, aged at least 50 years old, and male. Due to the small number of older women on probation in the target sites females were excluded to decrease demographic variability and to protect anonymity. Probationers were also excluded if their first language was not English (as those with English as a second language would be disadvantaged on the verbal tasks [Strauss, Sherman, & Spreen, 2006]), if they could not provide informed consent, or if they raised significant risk concerns (harm to others that would prevent them from safely participating, as indicated by probation staff). As previously described these wide inclusion criteria and narrow exclusion criteria were decided upon in attempt to recruit as representative sample of older probationers as possible. Other neuropsychological studies have adopted this approach and included information on confounding factors in test interpretation - only excluding participants if conditions prevented them from completing the assessment, for example in an acute psychotic episode (Fonseca et al., 2012; Kavanagh, et al., 2010). In the present study

anyone presenting with such severe symptoms would have been excluded based on the inability to provide informed consent. See Figure 1 for a flowchart illustrating recruitment into the study.

Measures

Test of Premorbid Functioning (TOPF)

The TOPF (PsychCorp, 2009) estimates premorbid intellectual functioning. It was used to provide descriptive information on the sample and as a proxy measure of general intellectual functioning. On the TOPF subjects are required to read phonetically irregular words of increasing difficulty. Numbers of correct responses are scored, adjusted for education, and converted to an estimated full-scale intelligence quotient (FSIQ) score. The TOPF has good internal consistency (split-half reliability r = .92 to .99) and good test-retest reliability (r = .89 to .95 [PsychCorp, 2009]). It is a favoured premorbid test as it was recently developed and normed with the Wechsler Adult Intelligence Scale, 4th edition (WAIS-IV [Watt, Gow, Norton, & Crowe, 2016; Wechsler, 2008]). It takes approximately five minutes to administer.

TOPF scores correlate highly with the WAIS-IV FSIQ (r = .70 [PsychCorp, 2009]). It was based on this that the TOPF was selected as a proxy measure of general intellectual functioning. Within cognitively intact groups reading tasks such as the TOPF are regarded as a fairly accurate predictor of FSIQ (Lezak et al., 2012). This approach of estimating intellectual functioning based on a premorbid measure has been adopted in other studies assessing EF in offending and antisocial groups (Abracen, O'Carroll, & Ladha, 1991; Dolan & Park, 2002; Mullin & Simpson, 2007). Practically, it was considered more feasible to administer a TOPF over a WAIS-IV, or its abbreviated version, as the TOPF is a briefer less taxing assessment with a shorter completion time. It was thought that its use would maximise participant engagement over a formal IQ test, however, the limits of this method were taken

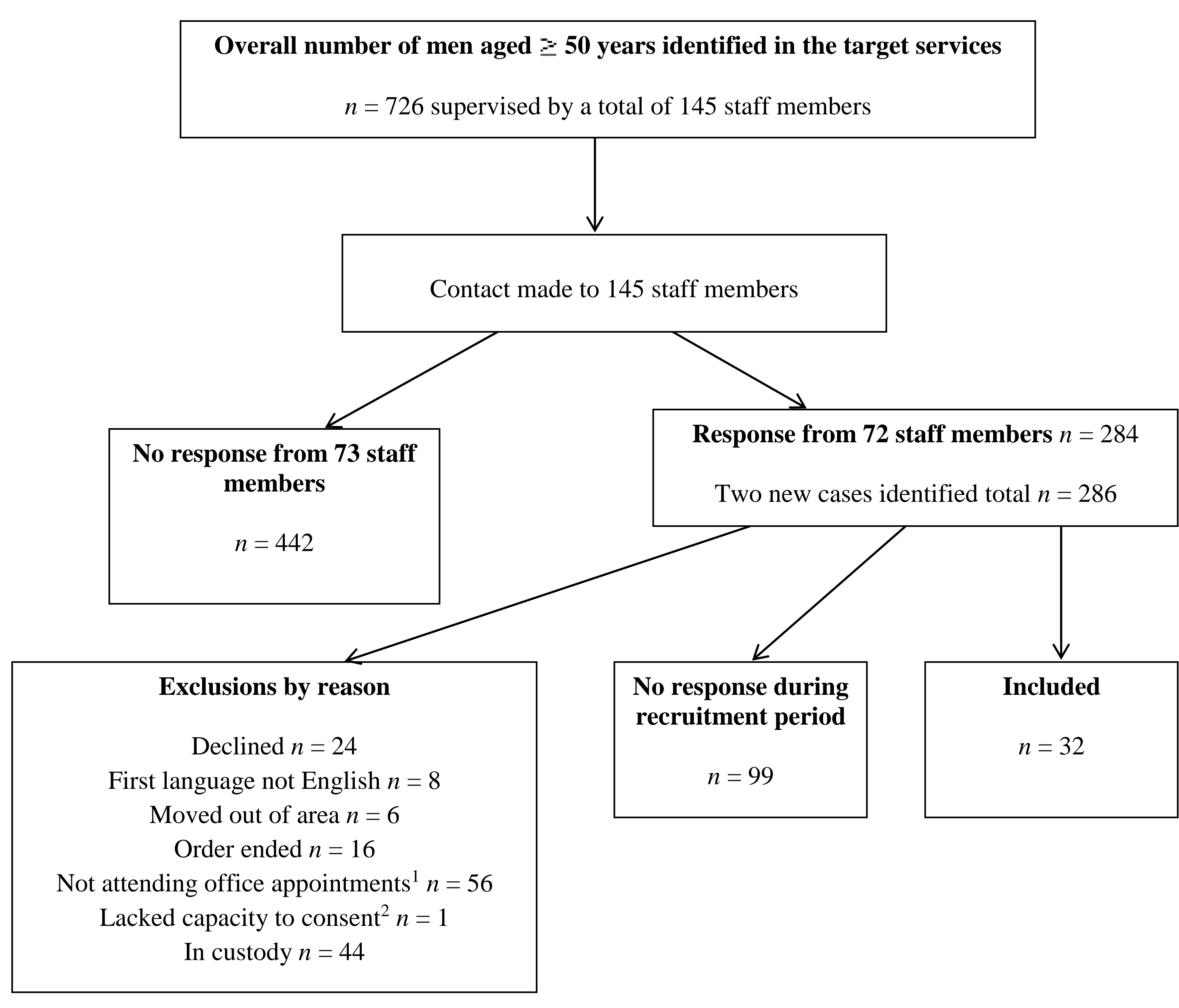

Figure 1. Flowchart illustrating recruitment into the study.
Note: [1]Not attending office appointments: *n* =1 due to physical illness, *n* = 5 due to mental ill health, *n* = 50 order with conditions of unpaid work (with no office appointments). [2]One participant was met twice to discuss the study but was not deemed to have capacity to consent. Recruitment was completed over four months.

into consideration. These limitations include that premorbid measures do not provide an accurate estimate of current intellectual functioning in individuals who have had neurological insults (Lezak et al., 2012). Additionally, the TOPF has good accuracy at predicting FSIQ at low-average and average ranges, however, it has less accuracy within the high average range with floor and ceiling effects for extreme scores (Wanlass, 2012; Watt et al., 2016).

Verbal Fluency Test: Delis-Kaplan Executive Function System (D-KEFS)

The Letter Fluency and Category Fluency conditions from the D-KEFS VF test (Delis, Kaplan, & Kramer, 2001) were used to assess mental flexibility. Subjects are asked to spontaneously produce as many words as they can in one minute following pre-specified rules. For the Letter Fluency condition these are words beginning with the letters F, A, and S, and in the Category Fluency condition these are animals and boys' names. The number of correctly produced unique words is scored and converted into a scaled score. The VF tests have been used in a range of studies with forensic samples (Morgan & Lilienfeld, 2000), including older offending groups (Combalbert et al., 2016; Fazel et al., 2007).

The VF tests are regarded as measures of EF as the process of producing words based on a single letter (letter/phonemic fluency) and a single category (category/semantic fluency) is not habitual and requires effortful participation to provide correct responses (Henry & Crawford, 2004). Subjects are required to think flexibly as they efficiently access their lexicon, find words that meet the criteria and inhibit repetitive, inappropriate and dominant responses (Shao, Janse, Visser, & Meyer, 2014). This relies on efficient organisation of verbal retrieval and recall, inhibition of responses, self-monitoring of responses, and self-initiation (Henry & Crawford, 2004). The VF tests also involve a range of other processes such as short-term memory (in monitoring responses), processing speed, and vocabulary storage (Mitrushina, Boone, Razani, & D'Elia, 2005). For subjects aged between 50 to 89

years the D-KEFS Letter and Category Fluency tests have acceptable internal consistency (.63 and .90, respectively) and test-retest reliability (.88 and .82, respectively [Delis et al., 2001]).

Color-Word Interference Test: D-KEFS

The inhibition condition on the D-KEFS color-word interference test (Delis et al., 2001) was used as a measure of response inhibition. This condition simulates the traditional Stroop task (and will be referred to as the Stroop test). Subjects are shown a list of colour words printed in a different colour ink and are asked to name the colour of the ink and not the read the word. Completion time is used to determine overall scaled score. Prior to the inhibition condition subjects are also required to complete timed naming (naming different colour patches) and reading (read different colour words printed in black ink) conditions to identify any significant difficulties in naming and reading that may impact inhibition performance.

The Stroop test requires response inhibition through suppression of dominant response tendencies as the subject needs to overcome the automatic over-learned response of reading the word to name the colour (Duncan, 2001). It also involves attention vigilance, processing speed, and appropriate response selection as the subject has to respond in a specific way (Suchy, 2009). For subjects aged 50 to 89 years the D-KEFS Stroop test has acceptable internal consistency (.77 to .86) and test-retest reliability (.43 to .58 [Delis et al., 2001]). This specific test has been used with forensic samples (Broomhall, 2005; Hancock et al., 2010).

Mini-International Neuropsychiatric Interview (MINI 5.0.0)

The MINI (Sheehan et al., 1998) is a brief diagnostic interview that assesses current and past symptoms of mental disorders, based on the International Classification of Diseases (ICD-10 [World Health Organization, 1993]) and the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV [American Psychiatric Association, 2000]) criteria. The

subject is asked a range of screening questions for different psychiatric disorders and symptoms.

The MINI was developed for use in clinical research and primarily assesses prevalence of current symptoms but also records lifetime prevalence for mania, panic disorder, psychosis, antisocial personality disorder, and past suicide attempts. It is recognised to have good reliability and validity as well as acceptable concordance with expert opinion and other diagnostic interviews such as the Composite International Diagnostic Interview (CIDI [Sheehan et al., 1998]). The MINI takes approximately 20 minutes to administer and has been used widely in forensic research, including with probationers and elderly prisoners (Brooker et al., 2012; Combalbert et al., 2016; Lurigio et al., 2003; Rivlin, Hawton, Marzano, & Fazel, 2010; see Appendix O).

Geriatric Depression Scale – Short Form (GDS-15)

The GDS-15 (Yesavage et al., 1983) measures current symptoms of depression. Subjects are asked to respond either yes or no to 15 questions about depression symptoms experienced in the past week. One point is scored for each of the depression criteria met (with a maximum score of 15) and a score of five is used as a cut-off for likely depression.

The GDS-15 is regarded as a good screening tool for major depression symptoms in older populations, with sensitivity rates of 93% and specificity rates of 65% (Almeida & Almeida, 1999). It has positive and negative predictive values of 83% when compared with the ICD-10 diagnosis for a major depressive episode (Almeida & Almeida, 1999). Using a cut-off score of four or five, the GDS-15 has acceptable reliability and validity across different ages, genders, and health statuses with internal consistency of .80, test-retest reliability of .83, and inter-rater reliability of .94 to .99 (Nyunt, Fones, Niti, & Ng, 2009). The GDS-15 takes approximately five minutes to administer and has been used in research with older forensic groups (Murdoch, Morris, & Holmes, 2008; see Appendix O).

Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001) is used to screen for risky or harmful alcohol use across 10 multiple-choice questions (scored from zero to four). It has a maximum score of 40 and scores of eight and over indicate hazardous drinking. It takes under five minutes to administer. The AUDIT has satisfactory levels of validity and reliability, with sensitivity ranging from 61 to 100% and specificity ranging from 58 to 95% (de Meneses-Gaya, Zuardi, Loureiro, & Crippa, 2009). It is a measure routinely used by the NPS and has been used in research with probationers (Brooker et al., 2012; see Appendix O).

Drug Abuse Screening Test – short form (DAST-10)

The DAST-10 (Skinner, 1982) is a brief 10-item self-report screening tool that assesses problematic drug use over 10 questions requiring a binary (yes/no) answer. Positive symptoms of drug abuse score one point, and there is a maximum score of 10. A score of three or more indicates drug abuse or dependence. The DAST-10 has moderate to high levels of validity and reliability, with sensitivity ranging from 41 to 95%, specificity ranging from 68 to 99%, and internal consistency ranging from .92 to .94 (Yudko, Lozhkina, & Fouts, 2007). It has been used in research with probationers (Brooker et al., 2012) and takes under five minutes to administer (see Appendix O).

Six-Item Cognitive Impairment Test (6CIT)

The 6CIT (Katzman et al., 1983) is a six-item brief screening tool assessing cognitive deficits across domains of memory, orientation, and calculation/attention. It is inversely scored, where points are obtained for errors. A higher score indicates more impairment, with a total possible score of 28 (all items incorrect). Scores of zero to seven are within the normal range and scores of eight and over indicate difficulties warranting further assessment. The 6CIT correlates with the Mini-Mental State Examination (MMSE, .91 [Brooke & Bullock, 1999]), but is considered a more sensitive measure than the MMSE at detecting dementia with

sensitivity ranging from 79 to 89% and specificity ranging from 88 to 100% (Abdel-Aziz & Larner, 2015; Brooke & Bullock, 1999; Callahan, Unverzagt, Hui, Perkins, & Hendrie, 2002). It is a recommended screening tool for older forensic samples (Curtice et al., 2003) and takes under five minutes to administer (see Appendix O).

Pilot

Prior to the study commencement, the assessment process was piloted on three men from the general population (aged between 52 to 77) recruited via personal contacts. The procedure and materials were found to be feasible and acceptable. A version of the study proposal was also presented to a service user at the Oxford Doctoral Course in Clinical Psychology Service User and Carer Sub-committee. The service user attending did not disclose a forensic history but he was an over 50 year old male and provided feedback on aspects of the study procedure. The only concern he raised was about the challenges of recruiting the target population.

Procedure

A data analyst from the probation service identified all male probationers aged 50 years and older together with the name of their probation officer. The researcher contacted each of these probation officers via email in an attempt to invite all of the identified cases. The researcher provided the probation officers with a staff information letter, and requested that they invite their client to participate with an invitation letter and information sheet (see Appendix P). If the probationer was interested in participating the probation officer arranged for the researcher to meet them at the probation office as part of a routine appointment.

Participants who agreed to participate signed an informed consent form (Appendix Q). Each participant was interviewed to obtain demographic and clinical information (age, ethnicity, educational and occupational history, current medication, history of any psychiatric, cardiovascular, or neurological disorders including hospitalisation for a head

injury) that was recorded on a data collection form (Appendix R). The study measures were then administered in a standardised order by the author. All information was gathered in one individual session that lasted between 30 minutes and two hours, depending on complexity (see Appendix S for additional procedural details).

Every participant consented to the researcher accessing their probation record, and after the assessments were completed details of participants' index offence and risk scores were recorded. Risk scores were calculated using the Offender Group Reconviction Scale – version 3 (OGRS [Taylor, 1999]). The OGRS predicts risk of reoffending within one and two years (from release from custody or the start of a community sentence) using a logistic regression model incorporating criminal history and demographic factors (see Appendix T for a list of these factors).

Research approval

Research approval was granted by the Oxford Doctoral Course in Clinical Psychology's Research Subcommittee, the University of Oxford's Central University Research Ethics Committee (CUREC, ref: R47292/RE001), and the National Offender Management Service (NOMS, ref: 2016-290). The study was conducted following The British Psychological Society's (2010) Code of Human Research Ethics (See Appendix U).

Ethical Considerations

Informed consent was obtained from all participants and they were reminded that participation, or non-participation, would not affect the current support they received. Participants were made aware of the limits of confidentiality and that if they disclosed anything that indicated significant risk of harm to themselves or others then confidentiality would need to be broken to seek appropriate support. At the end of the session participants were debriefed; the difficult nature of some of the questions was acknowledged and the participant had the opportunity to ask questions. If the participant achieved clinically

significant scores on the mental health and substance measures they were informed that help might be available for the difficulties they described and were advised to speak with their general practitioner or probation officer about this (see Appendix V for more details on ethical considerations and risk management).

Data analysis

All neuropsychological test scores were cross-checked by an independent doctoral student. Statistical analyses were completed using SPSS (version 24.0), for Mac. To address hypothesis (1) one sample *t*-tests were used for the between-group analyses where participants' scaled scores on the VF and Stroop tests were compared to normative data. For the VF test, comparisons were made to available published general population data that was as closely matched to the older probationer group as could be identified. Data from Skirbekk, Stonawski, Bonsang, and Staudinger (2013; UK general population male sample aged 55-59) were used for the Animals test and for the Boys' Names test data from Fine, Delis, Paul, and Filoteo (2011; USA general population male and female sample, mean age 67) were used. For the FAS normative data from Tombaugh, Kozak, and Rees (1999; Canadian general population male and female sample, aged 16-59) were used. It was not possible to identify appropriate published normative data for the D-KEFS version of the Stroop test. Consequently, each participant's raw score (completion time) was converted to an age-scaled score using the test manual and as a group these scores were compared to the average scaled score obtained for those aged between 50-89 (Delis et al., 2001; North American male and female sample). This method has been used in other neuropsychological studies (Broomhall, 2005; Lippa & Davis, 2010). To test hypothesis (2) correlation analyses were used to assess the relationship between the raw scores on the VF (number of correct responses) and Stroop tests (completion time) with scores on the GDS-15, AUDIT, DAST, and age as well as years

of education, and TOPF raw scores. Descriptive statistics were used to describe demographic, forensic, and clinical characteristics.

Results

Demographic, forensic, and clinical characteristics

Table 1 provides descriptive information on the participants. Most participants (72%) fell into the lower third of socio-economic classifications (see Appendix W for full breakdown) and nearly all were White British. A large proportion of participants were on probation for sex offences (66%). The majority of these sex offences were non-contact (67%) and against children (67%), with over half of all sex offences non-contact child offences (52%). Sentence durations varied between four months to indeterminate and life sentences. Sentences of 24 months were most common (38%).

The mean estimated pre-morbid IQ on the TOPF was within the average range. Overall 75% of the sample had TOPF scores within the average range, with 9% obtaining scores within the high average range, 9% within the low average range, and 6% in the borderline range. All but one participant had at least 10 years education and the average number of years of education was 12. Most participants (81%) were on some form of medication, three types of which could impact cognitive functioning (anti-retrovirals [3% of all participants]; immunosuppressants [3% of all participants]; and psychotropic medications [31% of all participants], see Appendix X for further details on the medications reported). On the MINI, 69% of participants scored case positive for clinically meaningful symptoms, with a high proportion of these participants (73%) presenting with co-morbidity. See Table 2 for a breakdown of prevalence rates.

Missing data

There were three items of missing data. One participant did not complete the Stroop test (due to visual difficulties), one did not complete the suicide screen on the MINI and another did

Table 1. Characteristics of the participants

Characteristic	Mean (SD)	Range	% (*n*)
Age	58.1 (6.9)	50 - 75	-
50-59 years	-	-	71.9 (23)
60-69 years	-	-	15.6 (5)
70+ years	-	-	12.5 (4)
Ethnicity			
White British	-	-	93.8 (30)
White Irish	-	-	3.1 (1)
Afro-Caribbean	-	-	3.1 (1)
Service			
NPS	-	-	84.4 (27)
CRCs	-	-	15.6 (5)
Offence Type			
Violent	-	-	15.6 (5)
Sexual	-	-	65.6 (21)
Weapon carrying	-	-	9.4 (3)
Other	-	-	9.4 (3)
Type of Sentence			
Community Order	-	-	31.3 (10)
Suspended Sentence	-	-	34.4 (11)
Custody	-	-	34.4 (11)
Length of Sentence			
Life	-	-	9.4 (3)
Indeterminate (IPP)	-	-	12.5 (4)
Over 10 years	-	-	0 (0)
5-10 years	-	-	3.1 (1)
Up to 5 years	-	-	59.4 (19)
Up to 1 year	-	-	15.6 (5)
Prediction of reoffending (OGRS)			
1 year	9.4% (11.8)	1 – 59%	-
2 years	15.6% (16.1)	3 – 75%	-
Years of education[1]	12.2 (1.8)	8 – 17.5	-
Estimated IQ (TOPF)	97.0 (9.7)	74 – 117	-
Self reported -			
Past head injury	-	-	21.9 (7)
With loss of consciousness	-	-	12.5 (4)
Cardiovascular or neurological conditions[2]	-	-	40.6 (13)
Mental health conditions[3]	-	-	46.9 (15)
Depression scores (GDS-15)	4.0 (4.2)	0 - 14	-
Depression indicated (scores ≥5)	-	-	31.3 (10)
Alcohol scores (AUDIT)	7.2 (8.5)	0 - 36	-
Hazardous drinking indicated (scores ≥8)	-	-	31.3 (10)
Drug use scores (DAST-10)	0.2 (0.8)	0 - 4	-
Abuse/dependence indicated (scores ≥ 3)	-	-	3.1 (1)
Cognitive impairment scores (6CIT)	2.8 (3.0)	0 - 12	
Above cut-off indicating difficulties (scores ≥ 7)	-	-	6.3 (2)

Note: NPS = National Probation Service. CRCs = Community Rehabilitation Companies. IPP = Imprisonment for Public Protection. OGRS = Revised Offender Group Reconviction Scale. TOPF = Test of Premorbid Functioning. GDS-15 = Geriatric Depression Scale-Short Form. AUDIT= Alcohol Use Disorders Identification Test. DAST-10 = Drug Abuse Screening Test. 6CIT = Six-Item Cognitive Impairment Test. [1]96.9% completed at least secondary education, 90.6% had academic qualifications of at least a Certificate in Secondary Education, 9.4% were educated to a Higher National Diploma Level and 9.4% to university level.[2] of whole sample 3.1% Transient ischemic attack 3.1%, angina, 3.1% cardiac event, 3.1% pulmonary embolism, 3.1% cavernous sinus thrombosis, 31.2% hypertension.[3] of whole sample 3.1% emotionally unstable personality disorder, 34.4% depression, 6.3% psychosis, 15.6% anxiety, 3.1% Asperger's Disorder, 3.1% Post Traumatic Stress Disorder, 3.1% insomnia, 3.1% Bipolar Disorder, and 3.1% Erotomania.

Table 2. Participants who scored case positive on the MINI

	% (*n*)	95% CI
Current disorders (past month)		
Depressive Disorder	25.0 (8)	10.0 – 40.0
Panic Disorder	0.0 (0)	-
Agoraphobia	18.8 (6)	5.2 - 32.3
Social Phobia	12.5 (4)	10.0 – 24.0
Generalised Anxiety Disorder	15.6 (5)	3.0 - 28.2
Post-Traumatic Stress Disorder	9.4 (3)	0.0 - 19.5
Obsessive Compulsive Disorder	3.1 (1)	0.0 - 9.2
Alcohol Abuse or Dependence	18.8 (6)	5.2 - 32.3
Substance Abuse or Dependence	3.1 (1)	0.0 - 9.2
Psychotic Disorder	3.1 (1)	0.0 - 9.2
Eating Disorder	0.0 (0)	-
Past Disorders (Lifetime)		
Panic Disorder	18.8 (6)	5.2 - 32.3
Psychotic Disorder	18.8 (6)	5.2 - 32.3
Anti Social Personality Disorder	6.3 (2)	0.0 - 14.6
Other Clinical Symptoms		
Suicidality[1]	51.6 (16)	34 - 69.2
Current symptoms only	32.3 (10)	5.2 - 32.3
Past attempt only	19.4 (6)	5.4 - 33.3
Hypomanic Episode		
Current symptoms	0.0 (0)	-
Past symptoms	0.0 (0)	-
Manic Episode	0.0 (0)	-
Current symptoms	0.0 (0)	-
Past symptoms	34.4 (11)	17.9 - 50.8
Caseness in any area	68.8 (22)	52.7 - 84.8

Note*:* MINI. = Mini International Neuropsychiatric Interview. [1]Suicidality for 31 participants only. Overlap between symptoms present. Confidence intervals are for the percentage prevalence estimates.

not complete the Category Fluency test (both due to administration error). Analyses were completed with these data omitted.

Hypothesis 1 – Older probationers' Verbal Fluency and Stroop scores will be significantly lower than the normative sample

Normality was assessed using measures of kurtosis and skewness (a numerical method considered appropriate for smaller samples [Field, 2013]). Scores on the VF and Stroop tests were found to be normally distributed, therefore, one sample *t*-tests were used to compare

participants' scores (*n* = 32 or 31) with the normative data. No outliers were identified (using box plots).

On the Letter Fluency (FAS) test there was no difference between participants' scores (*m* = 44.4, *sd* = 11.4) and the normative comparison sample (*m* = 40.5, *sd* = 10.7), *t*(31) = 1.916, *p*=.065 (95% CI of mean difference: -0.25 – 8.00, with a small effect size *d*= 0.36). Participants' scores on the Animals Category Fluency test (*m* = 22.1, *sd* = 5.8) did not differ from the normative sample (*m* = 21.9, *sd* = 7.2), *t*(30) = 0.09, *p*=.926 (95% CI of mean difference: -2.02 – 2.21, with a small effect size *d* = 0.03). On the Boys' names Category Fluency Test there was no difference between participants' scores (*m* = 22.4, *sd* = 4.6) and the normative comparison sample (*m* = 21.5, *sd* = 5.0), *t*(30) = 1.134, *p*=.266 (95% CI of mean difference: -0.74 – 2.60, with a small effect size *d* = 0.18). On the Stroop test participants' scaled scores (*m* = 10.90, *sd* = 2.71) did not differ from the normative sample (*m* = 10.43, *sd* = 3.07), *t*(30) = .971, *p*=.34 (95% CI of mean difference: -.52 – 1.47, with a small effect size *d* = 0.15). None of the participants had difficulties on the naming and reading conditions. Post-hoc power calculations were completed using G*Power 3.1 (α = .05, two-tail). The Letter Fluency and Stroop analyses were statistically powered at the 0.99 and 0.92 levels, respectively. While the Category Fluency tests had low power (Animals at the 0.10 level and Boys' Names at the 0.29 Level). See Table 3 for a summary of the raw scores achieved on the EF tests.

Table 3. Raw scores attained on the Verbal Fluency and Stroop tests for all ages

	Test and subtest							
	Letter Fluency Overall	Letter Fluency: F	Letter Fluency: A	Letter Fluency: S	Category Fluency Overall	Category Fluency: Animals	Category Fluency: Boys' names	Stroop inhibition
Mean raw score (SD)	44.4 (11.4)	14.8 (4.8)	13.3 (3.9)	16.3 (4.8)	44.5 (8.6)	22.1 (5.8)	22.4 (4.6)	59.1 (15.2)

Hypothesis 2 - Older probationers' Verbal Fluency and Stroop scores will be related to age, and drug, alcohol, and depression scores (with VF scores showing a negative correlation, and Stroop scores showing a positive correlation).

Spearman's Rank Order Correlation co-efficient was used to assess the relationship between scores on the measures of EF and scores on the GDS-15, AUDIT and DAST, as well as age, years of education, and IQ estimate (TOPF). Normality and linearity assumptions were not met for all of these variables, therefore non-parametric methods were favoured. Three significant relationships were identified. TOPF raw scores had a positive correlation with Letter Fluency scores (correct responses, n = 32) r_s =.47, 95% BCa CI (.10 – .73), p = .01 (with power at the 0.99 level) and a negative correlation with Stroop scores (completion time, n = 31) r_s = -.44, 95% BCa CI (-.73 – -.03), p = .01 (with power at the 0.99 level). Stroop raw scores were also found to have a significant negative correlation AUDIT scores (n=31), r_s = -.40, 95% BCa CI (-.71 – .01), p = .03 (with power at the .99 level). See Table 4 for all correlations. Appendix Y provides reflections on the study findings and completion.

Table 4. Spearman's Rank Order Correlations between variables

	GDS-15	AUDIT	DAST-10	TOPF	Age	Education
Letter Fluency[1]	.18	.14	.09	.47*	.17	-.19
Category Fluency: Animals[2]	-.13	-.20	-.14	.11	.22	-.19
Category Fluency: Boys' names[2]	.01	-.01	.10	.07	-.09	.00
Stroop[2]	-.13	-.40*	.26	-.44*	.32	-.21

Notes: TOPF = Test of Premorbid Functioning. GDS-15 = Geriatric Depression Scale-Short Form. AUDIT = Alcohol Use Disorders Identification Test. DAST-10 = Drug Abuse Screening Test. [1] based on 32 participants' scores. [2] based on 31 participants' scores * p < .05

Discussion

This study provides preliminary information on 32 older probationers' EF in terms of mental flexibility and response inhibition. The first hypothesis predicted that older probationers would have significantly lower VF and Stroop test scores than the normative sample. Older probationers did not achieve EF scores significantly below the normative comparison despite the prevalence of neurological and cardiovascular conditions, mental health symptoms, substance use, past head injuries, and difficulties on the cognitive impairment screen. The second hypothesis expected VF and Stroop test scores to be related to age, and drug, alcohol and depression scores, where the older the age and the greater the depression, alcohol, and drug scores the lower the VF and Stroop test scores. This hypothesis was also disproved as older age, and higher substance use, and depression did not appear to negatively impact EF scores.

Only three significant correlations were identified. Two of these were with the TOPF and the Letter Fluency and Stroop scores. Premorbid intellectual functioning scores correlate highly with VF scores and IQ is a substantial contributor to performance on verbal measures of EF (Crawford et al., 1992; Mitrushina et al., 2005; Strauss et al., 2006). However, there is not a robust linear relationship between these variables and this may explain why Category Fluency and TOPF scores did not correlate, as might be expected (Harrison, Buxton, Husain, & Wise, 2000). A more surprising finding was the negative correlation identified between the Stroop scores (completion time) and the alcohol use scores, suggesting increased alcohol intake was associated with enhanced performance on the Stroop test (as no significant errors were identified on this test). This single significant finding could be an artifact of the small sample size and the number of correlation analyses completed (Forstmeier, Wagenmaker, & Parker, 2017). Additionally, the older probationers were a diverse sample ranging in age, education, estimated IQ, and presence of neurological conditions. This unusual finding may

be a reflection of the heterogeneous sample and the interrelation of multiple confounding factors. Still, the predicted significant correlations were not seen between EF tests and depression or substance use scores. Similar findings were observed by Combalbert et al. (2016) who did not observe a relationship between depression and VF or response inhibition scores (on the Go/No go task). Such findings could reflect the complex interaction between mental health, substance use, and EF and that impairment in EF is not inevitable with the presence of a psychiatric condition or substance abuse (Testa & Pantelis, 2009). Equally, no correlation was observed between age and EF scores as was predicted and might be expected if accelerated ageing did occur in this group. However, this analysis was limited in that the majority of participants were from a younger age range (in their fifties). Based on the Flynn Effect, it is suggested that increases in chronological age do not necessarily result in lower cognitive abilities and this too might explain the lack of relationship identified (Skirbekk et al., 2012).

Overall, the findings from the between-group comparisons are taken as evidence of no obvious impairment in mental flexibility and response inhibition. They are consistent with those of Fazel and colleagues (2007) who did not find older prisoners to be impaired on measures of EF. However, they contrast with the results of Combalbert et al. (2016), where older prisoners showed impairment on a screening battery assessing the same facets of EF as the current study. These conflicting findings are compatible with the wider literature on EF in antisocial groups and may reflect the limited sensitivity of current measures in detecting differences in these groups (Ogilvie et al., 2011). EF measures were developed primarily to identify impairment in a physical health setting at a clinical level, where individuals could be incapable of self-care and independent living (Lezak et al., 2012). While a number of participants presented with clinical difficulties, such as self-reported head injuries, they were all able to attend routine supervision appointments independently. This behaviour is not

suggestive of significant impairments in independent functioning. Offending groups may present with multiple subclinical difficulties that individually would not be considered significant but through a cumulative effect can result in executive dysfunction (Sparrow & Hunter, 2012a). Most measures of EF have poor ecological validity and rarely provide information about an individual's ability in real-life or context specific performance (Chan, Shum, Toulopoulou, & Chen, 2008; Chaytor, Schmitter-Edgecombea, & Burr, 2006). It remains unclear how the results from specific EF tests relate to the complex processes involved in offending behaviours (Massau et al., 2017).

Participants were predominantly White British men in their fifties. A higher proportion of White men were sampled compared to the proportion (of all ages) in the region recruited from (94% versus 86% [MOJ, 2017a]). The age representation is similar to the national proportion of probationers over 50 years (with 76% aged between 50-69 years [MOJ, 2017a]). However, this restricts the degree to which the findings are likely to adequately reflect probationers in the older age ranges, especially as the oldest participant was 75. As most participants were under 60 years old this may have limited the impact of any significant ageing effects on cognition. Just two participants (6%) were identified to have difficulties on the cognitive impairment screen – a similar prevalence rate to that of prisoners aged over 50 years (7%, Hayes et al., 2012). Overall, there is no evidence that older probationers present with remarkable generalised cognitive impairment. A higher proportion of participants were on probation for sex offences than the proportion of older male probationers in the region recruited from (NPS cases: 78% versus 59% [J. Rakestrow-Dickens, May 2017, Personal Communication]). As a result the present findings may be more characteristic of older men who commit sex offences than those who commit other offences. Due to the small sample size, it was not possible to make reliable comparisons by type of offence.

The extent to which the additional clinical information obtained could be used to explain the predicted impaired performance is limited as deficits in EF were not observed. While impairment in EF was not identified, psychological difficulties were – with over two thirds of the sample presenting with clinically meaningful mental health symptoms and high rates of co-morbidity. Although there was not a specific research question on prevalence of such difficulties it is one of the more novel findings, as the mental health of older probationers has received little research attention (Hayes et al., 2012). Resettlement back into the community, experiences of loss, and the impact of a criminal conviction on relationships and occupations may predispose older probationers to mental health difficulties (Combalbert et al., 2016; Evans & Cubellis, 2015; Forsyth et al., 2014; Hayes, Burns, Turnbull, & Shaw, 2013). Moreover, the impact a criminal conviction has on personal relationships and occupations can be a leading cause of stress. This may be especially true among the most stigmatised crimes such as sex offences, which represented a large proportion of the participants and older probationers as a whole (Evans & Cubellis, 2014).

Consistent with studies investigating mental health in older prisoners, two of the most prevalent conditions identified were current depression and alcohol misuse (Hayes et al., 2012). Over one quarter of participants met criteria for depression on the MINI and nearly one third had current symptoms on the GDS-15. This exceeds UK survey estimates of common mental health conditions (such as depression) in general population males aged over 45 years (6 to 14% [McManus, Meltzer, Brugha, Bebbington, & Jenkins, 2007]). Older probationers' depression rates are more similar to older prisoners (30% [Fazel et al., 2001]; 34% [Hayes et al., 2012]) than to older men in the general population. The rates of alcohol abuse and dependence, while high, are similar to rates identified in men aged 45 years and older in the general population (17 to 30% on the AUDIT [McManus et al., 2007]). They are lower than rates identified in younger probationers (56% on the AUDIT [Brooker et al.,

2012]) and taking into account confidence intervals they do not differ from rates in older prisoners (30% on the MINI [Hayes et al., 2012]).

A range of other clinical symptoms and psychological difficulties were present in older probationers, including current suicidal ideation and past suicide attempts. Suicidality in probationers has received less attention than in prisoners. However, there is some evidence to suggest that probationers' suicide rates are equal to, or surpass, those of prisoners. Probationers aged between 55 to 64 years were found to be over 1.5 times more likely to die from suicide/self-inflicted death than prisoners of the same age and over 13 times more likely to die from these causes than men of the same age in the general population (Sattar, 2003). A review of studies on the mental health of probationers identified high rates of co-morbidity (Sirdifield, 2012). This appears to be true for older probationers also, as the majority with mental health or substance difficulties had symptoms in more than one area. The discrepancy between self-reported mental illness and that identified through assessment might indicate that older probationers are not aware of such needs, are reluctant to divulge them, or are not receiving treatment for them.

Strengths and limitations

This study adds to the small number on older offending samples, and to the author's knowledge it is the first study providing information on the EF and mental health of older probationers. The findings should be interpreted with caution as the between-group comparisons for the Category Fluency tests did not have sufficient power to detect an effect. While the target number for recruitment was achieved, the small sample size and resultant low power is a limitation.

The limits of the normative comparison data should also be acknowledged; while attempts were made to identify general population comparison of a similar demographic none of these were directly comparable to the British male probation sample. However, Older

probationers' in the current study obtained Letter Fluency (FAS) scores similar to a recent sample of older men who had committed a range of non-sex offences (*m* 43.9, *sd* 10.5; Rodriguez & Ellis, 2017]). The absence of an individually recruited, carefully matched, comparison sample is a limitation. For this study, it was decided that identifying a well-matched comparison group would be difficult to achieve, especially in the absence of prior knowledge on older probationers. A sample better matched for sex, ethnicity and education may have yielded more reliable findings. Considering that the scores achieved by the older probationers were similar to scores from an older English sample (Skirbekk et al., 2013) and with those recently obtained by an older offending group (Rodriguez and Ellis, 2017) there may be less utility in hypothesising and testing with test normative data unless this is recent and well matched.

The measures in this study were selected to balance reliability and validity with feasibility (considering the age group of the participants and the time available for interview). However, absence of a measure of current general intellectual functioning is an important limitation. Instead, a test of premorbid intellectual ability was conducted, which has a strong correlation with current general intellectual functioning (PsychCorp, 2009). As performance on pre-morbid measures is resistant to cognitive impairment associated with neurological and psychiatric conditions, they do not provide an accurate representation of current general intellectual functioning in groups that may present with such conditions (Crawford et al., 1992). The estimated intellectual functioning in the current study could therefore be over-estimated. The main implication of this is that interpreting EF tests as measuring EF in people with a lower IQ (<85) is invalid and scores may reflect low intellectual functioning rather than abnormal EF (Pyszora, Jaldow, & Kopelman, 2009; Strauss et al., 2006). A criticism of the D-KEFS Stroop test is that the primary score is taken from speed alone and some argue that speed and accuracy combined provide better estimations of inhibition

(Scarpina & Tagini, 2017). Furthermore, the EF measures were selected to measure mental flexibility and response inhibition, however, they also depend on other executive and non-executive functions that were not accounted for in the present study (Mitrushina et al., 2015).

Participation was voluntary and the sample recruited might be some of the more motivated and compliant probationers, possibly with more motivated probation officers as invitation was dependent on them. The final sample might not be representative of chaotic and non-compliant probationers and the findings cannot be reliably applied to female probationers or probationers from other localities. It is possible that the probationers included were more educated with higher intellectual functioning than the wider older probation population, given that probationers and prisoners typically present with low educational attainment (Prison Reform Trust, 2013). The topic of the study, with a focus on cognition, may have attracted participants who felt more confident in their cognitive abilities. It would have been beneficial to pilot the study with some people from the target probation population beforehand to gain insight on this and consider whether such sampling bias could be avoided.

Future research

The current study indicates that measuring older probationers' EF and mental health was feasible. Future studies in the area could address some of the limitations discussed, such as utilising a better matched comparison group, selecting a larger sample better representative of all ages of the older probation population, and completing a measure of current general intellectual functioning rather than relying on a pre-morbid measure. If future studies were to focus on a subcategory of older probationers in attempt to select a more homogenous sample those who have committed sex offences may be the most viable group to recruit given high proportion recruited in the current study. However, as older probationers did not present with any obvious deficits on the measures of EF research efforts may be better spent validating or developing tests for forensic groups.

A heterogeneous sample was recruited in terms of index offence and clinical presentation. In an attempt to provide as representative an overview of the older probation sample as possible this recruitment method was favoured over selecting subcategories by, for example, specific offence types or excluding people based on the presence of clinical symptoms. A disadvantage of this approach is the challenge of drawing firm conclusions on such a heterogenous group. However, the findings from the current study can be used to inform future research design in this area. Specifically, the discrepancy between self-reported mental illness and that identified on the psychiatric interview suggests that self-report alone might not be a reliable means to determine eligibility. Additionally, in a forensic context subjective retrospective reports of conditions such as head injuries can lead to biased accounts (Williams et al., 2010). Consequently, future studies could consider either screening potential participants or using multiple sources of information, such as self-report and medical records, when determining eligibility to participate.

The prevalence of mental health difficulties in older probationers deserves further exploration, particularly how these factors may interact with offending, risk, and recidivism. Unmet need was not a focus in this current study but the high prevalence of mental health difficulties identified raises important questions regarding the level of unmet need - especially given the limited access probationers have to mental health services (Brooker & Ramsbotham, 2014). This area of research may provide more immediate and useful information on this group and as highlighted by Brooker and colleagues (2012) there is a requirement for a national study on the mental health needs of probationers.

Theoretical and service implications

There remains a need for advancement of theories on the relationship between EF and offending in order to develop hypotheses for future research as current theories are limited in their ability to explain the complexity of offending (Ogilvie et al., 2012). There are inherent

challenges in attempting to define a complex phenomenon such as offending behaviour from one framework alone. It is therefore important to view neuropsychological factors within an integrative framework and in combination with a range of other psychobiosocial factors, as single explanatory models are likely to be insufficient (Thornberry et al., 2012).

The current study did not identify a need to specifically tailor older probationers' rehabilitation for deficits in EF. It did, however, identify the presence of mental health difficulties and substance use that might represent unmet need. The Bradley Report (Bradley, 2009) emphasised the necessity of research into the health and social needs of people in all stages of the criminal justice system, yet older probationers have not been a focus of research. Despite the important role mental health may have in protecting the public and reducing reoffending there is not a national mental health strategy for probationers, and their access to mental health services is fraught with difficulties (Brooker & Ramsbotham, 2014). Mental Health Treatment Requirements are rarely issued (under 1% of all requirements) and there is no procedure in place to grant access to community mental health teams (Sainsbury Centre for Mental Health, 2009; Seymour, Rutherford, Khanom, & Samele, 2008). Furthermore, liaison and diversion services are insecurely funded, provision varies across localities, and case identification is often dependent on police or court staff (Sainsbury Centre for Mental Health, 2009). The current findings provide further evidence that there is a need for clear mental health pathways for probationers. This could involve increasing staff awareness in all parts of the criminal justice system as well as better links between probation and mental health services (Brooker, 2015).

Conclusions

This study provides preliminary information on aspects of older probationers' EF. When compared to normative data, older probationers do not present with deficits in mental flexibility or response inhibition. Clinical variables such as mental health and substance use

do not appear to impair EF scores. Despite this, there was a high prevalence of mental health difficulties among older probationers. The extent to which this represents unmet need requires further work.

References

Abdel-Aziz, K., & Larner, A. J. (2015). Six-item cognitive impairment test (6CIT): pragmatic diagnostic accuracy study study for dementia and MCI. *International Psychogeriatrics, 27,* 991-997. doi: 10.1017/S1041610214002932

Abracen, J., O'carroll, R., & Ladha, N. (1991). Neuropsychological dysfunction in sex offenders? *The Journal of Forensic Psychiatry, 2,* 167-177. doi: 10.1080/09585189108407646

Almeida, O. P., & Almeida, S. A. (1999). Short versions of the geriatric depression scale: A study of their validity for the diagnosis of a major depressive episode according to ICD-10 and DSM-V. *International Journal of Geriatric Psychiatry, 14,* 858-865. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10521885

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.). Arlington, VA: American Psychiatric Publishing.

Andrewes, D. (2015). *Neuropsychology: From theory to practice* (2nd ed.). Hove, England: Psychology Press Ltd.

Arciniegas, D. B. (2013). Mental state examination. In D. B. Arciniegas, C. A. Anderson, & C. M. Filley (Eds.), *Behavioural neurology & neuropsychiatry* (pp. 344-393). Cambridge, England: Cambridge University Press.

Babor, T.F., Higgins-Biddle, J.C., Saunders, J.B., & Monteiro, M.G. (2001). AUDIT: *The Alcohol Use Disorders Identification Test: Guidelines for Use in Primary Health Care*. Geneva, Switzerland: World Health Organization.

Barker, E. D., Seguin, J. R., White, H. R., Bates, M. E., Lacourse, E., Carbonneau, R., & Tremblay, R. E. (2007). Developmental trajectories of male physical violence and theft: relations to neurocognitive performance. *Archives of General Psychiatry*, *64*, 592-712. doi:10.1001/archpsyc.64.5.592

Barkley, R. A. (2012). *Executive functions: what they are, how they work, and why they evolved.* New York, NY: The Guildford Press.

Bradley, K. (2009). *The Bradley Report: Lord Bradley's review of people with mental health problems or learning disabilities in the criminal justice system.* London, England: Department of Health.

British Psychological Society. (2004). *Style guide.* Leicester, England: The British Psychological Society.

British Psychological Society. (2010). *Code of human research ethics.* Leicester, England: British Psychological Society.

Brooke, P., & Bullock, R. (1999). Validation of a 6 item cognitive impairment test with a view to primary care usage. *International Journal of Geriatric Psychiatry, 14,* 936-940. Retrieved from http://onlinelibrary.wiley.com/store/10.1002/(SICI)1099-1166(199911)14:11%3C936::AID-GPS39%3E3.0.CO;2-1/asset/39_ftp.pdf?v =1&t=ijtxuea9&s=7ce42a697999aaeeab52e8e8845a8a84ee9dbad c

Brooker, C. (2015). Healthcare and probation: the impact of government reforms. *Probation Journal,* 1-5. doi: 10.1177/0264550515587971

Brooker, C., & Ramsbotham, L. D. (2014). Probation and mental health: who cares? *British Journal of General Practice*, *64*, 170–171. doi: 10.3399/bjgp14X677743

Brooker, C., Sirdifield, C., Blizard, R., Denney, D., & Pluck, G. (2012). Probation and mental illness. *The Journal of Forensic Psychiatry & Psychology, 23*, 37–41. doi: 10.1080/14789949.2012.704640

Brooker, C., Syson-Nibbs, L., Barrett, P., & Fox, C. (2009). Community managed offenders' access to healthcare services: Report of a pilot study. *Probation Journal*, *56*, 45–59. doi: 10.1177/0264550509102401

Broomhall, L. (2005). Acquired Sociopathy: A Neuropsychological study of executive

dysfunction in violent offenders. *Psychiatry, Psychology and Law*, *12*, 367–387. doi:10.1375/pplt.12.2.367

Brower, M. C., & Price, B. H. (2001). Neuropsychiatry of frontal lobe dysfunction in violent and criminal behaviour: a critical review. *Journal of Neurology, Neurosurgery, and Psychiatry*, *71*, 720–726. doi:10.1136/jnnp.71.6.720

Brown, L. B. (1998). The joint effort to supervise and treat elderly offenders: a new solution to a current corrections problem. *Ohio State Law Journal, 59,* 259-302. Retrieved from https://kb.osu.edu/dspace/bitstream/handle/1811/64948/OSLJ_V59N1_0259.pdf

Callahan, C. M., Unverzagt, Hui, S. L., Perkins, A. J., & Hendrie, H. C. (2002). Six-item screener to identify cognitive impairment among potential subjects for clinical research. *Medical Care, 40,* 771-781. Retrieved from http://journals.lww.com/lww-medicalcare/Abstract/2002/09000/Six_Item_Screener_to_Identify_Cognitive_Impairment.7.aspx

Chan, R. C. K., Shum, D., Toulopoulou, T., & Chen, E. Y. H. (2008). Assessment of executive functions: review of instruments and identification of critical issues. *Archives of Clinical Neuropsychology : The Official Journal of the National Academy of Neuropsychologists*, *23*, 201–16. doi: 10.1016/j.acn.2007.08.010

Chaytor, N., Schmitter-Edgecombe, M., & Burr, R. (2006). Improving ecological validity of executive functioning assessment. *Archives of Clinical Neuropsychology, 21,* 217-227. doi:10.1016/j.acn.2005.12.002

Codd, H. & Bramhall, G. (2002). Older offenders and probation: A challenge for the future. *Probation Journal, 49,* 27-34. Retrieved from http://journals.sagepub.com/doi/pdf/10.1177/026455050204900105

Combalbert, N., Pennequin, V., Ferrand, C., Vandevyvère, R., Armand, M., & Geffray, B. (2016). Mental disorders and cognitive impairment in ageing offenders. *The Journal of*

Forensic Psychiatry & Psychology, *27*, 853–866. doi: 10.1080/14789949.2016.1244277

Cooney, F., & Braggins, J. (2010). *Doing time: good practice with older people in prison - the views of prison staff.* London, England: Prison Reform Trust.

Crawford, J. R., Moore, J. W., & Cameron, I. M. (1992). Verbal fluency: A NART-based equation for the estimation of premorbid performance. *British Journal of Clinical Psychology, 31,* 327-329. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/1393161

Curtice, M., Parker, J., Wismayer, F. S, & Tomison, A. (2003). The elderly offender: an 11-year survey of referrals to a regional forensic psychiatric service. *Journal of Forensic Psychiatry & Psychology*, *14*, 253–265. doi: 10.1080/1478994031000077989

de Brito, S., & Hodgins, S. (2009). Executive functions of persistent violent offenders: a critical review of the literature. In S. Hodgins, E. Viding, & A. Plodowski (Eds.), *The neurobiological basis of violence: science and rehabilitation* (pp. 167-200). Oxford, England: Oxford Univeristy Press.

de Meneses-Gaya, Zuardi, A. W., Loureiro, S. R., & Crippa, J. A. S. (2009). Alcohol use disorders identification test (AUDIT): An updated systematic review of psychometric properties. *Psychology & Neuroscience, 2,* 83-97. doi: 10.3922/j.psns.2009.1.12

Delis, D. C., Kaplan, E., & Kramer, J. H. (2001). *Delis-Kaplan executive system (D-KEFS).* San Antonio, TX: The Psychological Corporation.

Diamond, A. (2014). Executive Functions. *Annual Review of Clinical Psychology*, *64*, 135–168. doi: 10.1146/annurev-psych-113011-143750.

Dolan, M., & Anderson, I. M. (2002). Executive and memory function and its relationship to trait impulsivity and aggression in personality disordered offenders. *Journal of Forensic Psychiatry, 13*, 503–527. doi: 10.1080/0958518021000019452

Dolan, M., Millington, J., & Park, I. (2002). Personality and neuropsychological function in violent, sexual and arson offenders. *Medicine, Science, and the Law*, *42*, 34–43. doi: 10.1177/002580240204200107

Dolan, M., & Park, I. (2002). The neuropsychology of antisocial personality disorder. *Psychological Medicine*, *32*, 417–427. doi: 10.1017/S0033291702005378

Duncan, J. (2001). An adaptive coding model of neural functioning in prefrontal cortex. *Nature Reviews Neuroscience, 2,* 820-829. doi:10.1038/35097557

Evans, D. N. & Cubellis, M. A. (2015). Coping with stigma: How registered sex offenders manage their public identities. *American Journal of Criminal Justice, 40,* 593-619. doi: 10.1007/s12103-014-9277-z

Fabian, J. M. (2010). Neuropsychological and neurological correlates in violent and homicidal offenders: A legal and neuroscience perspective. *Aggression and Violent Behavior*, *15*, 209–223. doi:10.1016/j.avb.2009.12.004

Fazel, S., & Grann, M. (2002). Older criminals: A descriptive study of psychiatrically examined offenders in Sweden. *International Journal of Geriatric Psychiatry*, *17*, 907–913. doi: 10.1002/gps.715

Fazel, S., Hope, T., O'Donnell, I., & Jacoby, R. (2001). Hidden psychiatric morbidity in elderly prisoners. *British Journal of Psychiatry*, *179*, 535–539. doi: 10.1192/bjp.179.6.535

Fazel, S., O'Donnell, I., Hope, T., Gulati, G., & Jacoby, R. (2007). Frontal lobes and older sex offenders: a preliminary investigation. *International Journal of Geriatric Psychiatry, 22,* 87-89. doi: 10.1002/gps.1648

Field, A. (2013). *Discovering statistics using IBM SPSS statistics.* London, England: Sage Publications Ltd.

Fine, E. M., D. C. Delis, B. M. Paul, & Filoteo, V. (2011). Reduced verbal fluency or proper names in nondemented patients with Parkinson's disease: A quantitative and qualitative analysis. *Journal of Clinical and Experimental Neuropsychology, 33,* 226-233. doi: 10.1080/13803395.2010.507185

Fishbein, D., & Sheppard, M. (2006). *Assessing the role of neuropsychological functioning in inmates' treatment response.* Baltimore, MD: U.S. Department of Justice.

Flynn, J. R. (2007). *What is intelligence? Beyond the flynn effect.* Cambridge, England: Cambridge University Press.

Fonseca, R. P., Zimmermann, N., Cotrena, C., Cardoso, C., Kristensen, C. H., & Grassi-Oliveira, R. (2012). Neuropsychological assessment of executive functions in traumatic brain injury: hot and cold components. *Psychology & Neuroscience, 5,* 183-190. doi: 10.3922/j.psns.2012.2.08

Forsyth, K., Senior, J., Stevenson, C., O'Hara, K., Hayes, A., Challis, D., & Shaw, J. (2014). "They just throw you out": Release planning for older prisoners. *Ageing and Society*, *35,* 2011–2025. doi: 10.1017/S0144686X14000774

Forstmeier, W., Wagenmaker, E. J., & Parker, T. H. (2017). Detecting and avoiding likely false-positive findings - a practical guide. *Biological Review, 92,* 1941-1968. doi: 10.1111/brv.12315

Gilbert, S. J., & Burgess, P. W. (2008). Executive function. *Current Biology, 18,* R110-R114. doi:10.1016/j.cub.2007.12.014

Hancock, M., Tapscott, J. L., & Hoaken, P. N. S. (2010). Role of executive dysfunction in predicting frequency and severity of violence. *Aggressive Behavior*, *36*, 338–349. doi: 10.1002/ab.20353

Harrison, J. E., Buxton, P., Husain, M., & Wise, R. (2000). Short test of semantic and phonological fluency: Normative performance, validity and test-retest reliability.

British Journal of Clinical Psychology, 39, 181-191. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/10895361

Hayes, A. J., Burns, A., Turnbull, P., & Shaw, J. J. (2012). The health and social needs of older male prisoners. *International Journal of Geriatric Psychiatry*, *27*, 1155–1162. doi: 10.1002/gps.3761

Hayes, A. J., Burns, A., Turnbull, P., & Shaw, J. J. (2013). Social and custodial needs of older adults in prison. *Age and Ageing*, *42*, 589–593. doi:10.1093/ageing/aft066

Henry, J. D., & Crawford, J. R. (2004). A meta-analytic review of verbal fluency performance following focal cortical lesions. *Neuropsychology, 18,* 284-295. doi: 10.1037/0894-4105.18.2.284

Heyder, K., Suchan, B., & Daum, I. (2004). Cortico-subcortical contributions to executive control. *Acta Psychologica*, *115*, 271–289. doi:10.1016/j.actpsy.2003.12.010

House of Commons Justice Committee. (2013). *Older prisoners: fifth report of session 2013-14.* London, England: The Stationary Office Limited.

Howse, K. (2003). *Growing old in prison: A scoping study in older prisoners.* London, England: Prison Reform Trust.

Joyal, C. C., Beaulieu-Plante, J., & de Chanterac, A. (2013). The neuropsychology of sex offenders: A meta-analysis. *Sexual Abuse: A Journal of Research and Treatment*, *26*, 149–177. doi: 10.1177/1079063213482842

Joyal, C. C., Black, D. N., & Dassylva, B. (2007). The neuropsychology and neurology of sexual deviance: A review and pilot study. *Sexual Abuse: A Journal of Research and Treatment*, *19*, 155–173. doi: 10.1177/107906320701900206\

Katzman, R., Brown, T., Fuld, P., Peck, A., Schechter, R. & Schimmel, H. (1983). Validation of a short orientation-memory-concentration test of cognitive

impairment. *American Journal of Psychiatry, 140*, 734-739. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/6846631

Kavanagh, L., Rowe, D., Hersch J., Barnett, K. J., & Reznik, R. (2010). Neurocognitive deficits and psychiatric disorders in a NSW prison population. *International Journal of Law and Psychiatry, 33,* 20-26. doi:10.1016/j.ijlp.2009.10.004

Keedwell, P., Surgaldze, S. A., & Philips, M. (2009). Neuropsychological investigation in mood disorders. In S. J. Wood, N. B. Allen, & C. Pantelis (Eds.), *The neuropsychology of mental illness* (pp. 353-364). Cambridge, England: Cambridge University Press.

Kennedy, S. & Kitt, I. (2013). *Developing services for older offenders in Northumbria.* Retrieved from http://www.tdi.org.uk/files/downloads/research_older%20 offenders.pdf

Lewis, C. F., Fields, C., & Rainey, E. (2006). A study of geriatric forensic evaluees: who are the violent elderly? *The Journal of the American Academy of Psychiatry and the Law*, *34*, 324–332. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/17032956

Lezak, M. D., Howieson, D. B., Bigler, E. D., & Tranel, D. (2012). *Neuropsychological assessment* (5th ed.). Oxford, England: Oxford University Press.

Lippa, S. M. & Davis, R. N. (2010). Inhibition/switching is not necessarily harder than inhibition: An analysis of the D-KEFS color-word interference test. *Archives of Clinical Neuropsychology, 25,* 146-152. doi: 10.1093/arclin/acq001

Lurigio, A. J., Cho, Y. I., Swartz, J. A., Johnson, T. P., Graf, I., & Pickup, L. (2003). Standardized assessment of substance-related, other psychiatric, and comorbid disorders among probationers. *International Journal of Offender Therapy and Comparative Criminology*, *47*, 630–52. doi: 10.1177/0306624X03257710

Maschi, T., Kwak, J., Ko, E., & Morrissey, M. B. (2012). Forget me not: Dementia in prison. *Gerontologist*, *52*, 441–451. doi: 10.1093/geront/gnr131

Massau, C., Tenbergen, G., Kärgel, C., Weiß, S., Gerwinn, H., Pohl, A., … Schiffer, B. (2017). Executive Functioning in Pedophilia and Child Sexual Offending, *Journal of the International Neuropsychological* Society, *23*, 1–11. doi: 10.1017/S1355617717000315

Mast, B. T., & Gerstenecker, A. (2010). Screening instruments and brief batteries for dementia. In P. A. Lichtenberg (Ed.), *Handbook of assessment in clinical gerontology* (2nd ed., pp. 503-530). London, England: Elsevier.

McManus, S., Meltzer, H., Brugha, T., Bebbington, P., & Jenkins, R. (2007). *Adult psychiatric morbidity in England, 2007: Results of a household survey.* London, England: The NHS Information Centre for health and social care.

Meijers, J., Harte, J. M., Jonker, F. A., & Meynen, G. (2015). Prison brain? Executive dysfunction in prisoners. *Frontiers in Psychology*, *6*, 2–7. doi: 10.3389/fpsyg.2015.00043

Meltzer, L. (2014). Teaching executive functioning processes: Promoting metacognition, strategy use, and effort. In S. Goldstein & J. A. Naglieri (Eds.), *Handbook of executive functioning* (pp. 445-494). New York, NY: Springer

Milders, M., Ietswaart, M., Crawford, J. R., & Currie, D. (2008). Social behavior following traumatic brain injury and its association with emotion recognition, understanding of intentions, and cognitive flexibility. *Journal of the International Neuropsychological Society*, *14*, 318–326. doi: 10.1017/S1355617708080351

Ministry of Justice. (2017a). *Offender management statistics quarterly: Probation: 2016.* Retrieved from https://www.gov.uk/government/statistics/offender-management-statistics-quarterly-october-to-december-2016

Ministry of Justice. (2017b). *Proven reoffending statistics.* Retrieved from https://www.gov.uk/government/statistics/proven-reoffending-statistics-july-2014-to-june-2015

Mitrushina, M. N., Boone, K. B., Razani, L. J., & D'Elia, L. F (2005). *Handbook of normative data for neuropsychological assessment* (2nd ed.). Oxford, England: Oxford University Press.

Morgan, A. B., & Lilienfeld, S. O. (2000). A meta-analytic review of the relation between antisocial behavior and neuropsychological measures of executive function. *Clinical Psychology Review*, *20*, 113–136. doi: 10.1016/S0272-7358(98)00096-8

Moser, R. S., Frantz, C. E., & Brick, J. (2008). The neuropsychological consequences of alcohol and drug abuse. In J. Brick (Ed.), *Handbook of the medical consequences of alcohol and drug abuse* (2nd ed., pp. 57-96). London, England: Routledge.

Mostofsky, S., & Simmonds, D. (2008). Response inhibition and response selection: two sides of the same coin. *Journal of Cognitive Neuroscience*, *20*, 751–61. doi:10.1162/jocn.2008.20500

Mullin, S., & Simpson, J. (2007). Does executive functioning predict improvement in offenders' behaviour following enhanced thinking skills training? An exploratory study with implications for rehabilitation. *Legal and Criminological Psychology, 12,* 117–131. doi: 10.1348/135532505X91560

Murdoch, N, Morris, P., & Holmes, C. (2008). Depression in elderly life sentence prisoners. *International Journal of Geriatric Psychiatry, 23,* 957-962. doi: 10.1002/gps.2017

Nyunt, M. S. Z., Fones, C., Niti, M., & Ng, T.P. (2009). Criterion-based validity and reliability of the geriatric depression screening scale (GDS-15) in a large validation sample of community-living Asian older adults. *Aging & Mental Health, 13,* 376-382. doi: 10.1080/13607860902861027

Office for National Statistics. (2015). *Crime statistics, focus on violent crime and sexual offences: chapter 1: violent crime and sexual offences - overview.* Retrieved from http://www.ons.gov.uk/ons/dcp171776_394474.pdf

Ogilvie, J. M., Stewart, A. L., Chan, R. C. K., & Shum, D. H. K. (2011). Neuropsychological measures of executive function and antisocial behavior: A meta-analysis. *Criminology*, *49*, 1063–1107. doi:10.1111/j.1745-9125.2011.00252.x

Omolade, S. (2014). *The needs and characteristics of older prisoners*. Retrieved from Ministry of Justice https://www.gov.uk/government/publications/needs-and-characteristics-of-older-prisoners-spcr-survey-results

Prison Reform Trust. (2013). *Prison: the facts – Bromley briefings summer 2013.* Retrieved from http://www.prisonreformtrust.org.uk/Publications

PsychCorp. (2009). *Test of Premorbid Functioning (TOPF): Administration and Scoring Manual*. San Antoniou, TX: The Psychological Corporation.

Pyszora, N., Jaldow, E., & Kopelman, M. (2009). Amnesia. In S. Young, M. Kopelman, & Gudjonsoon, G. (Eds.), *Forensic neuropsychology in practice: A guide to assessment and legal processes* (pp. 135-165). Oxford, England: Oxford University Press.

Raine, A. (2002). The role of pre-frontal deficits, low automatic arousal, and early health factors in the development of antisocial and aggressive behavior in children. *Journal of Child Psychology and Psychiatry*, *43*, 417–434. doi: 10.1111/1469-7610.00034

Richard-Devantoy, S., Gallarda, T., Annweiler, C., Dorey, J. M., Mesu, C., Garré, J. B., … Beauchet, O. (2010). Homicide and dementia in older adults: The key role of dysexecutive function. *Journal of Clinical Psychiatry*, *71*, 1402–1403. doi:10.4088/JCP.10l06029oli

Rivlin, A., Hawton, K., Marzano, L., & Fazel, S. (2010). Psychiatric disorders in male prisoners who made near-lethal suicide attempts: case-control study. *The British Journal of Psychiatry, 197,* 313-319. doi: 10.1192/bjp.bp.110.077883

Rodriguez, M., & Ellis, A. (2017). The neuropsychological function of older first-time child exploitation material offenders: A pilot study. *International Journal of Offender Therapy and Comparative Criminology,* 1-17. doi: .org/10.1177/0306624X17703406

Roth M. (1968). Cerebral and mental disorders of old age as causes of antisocial behaviour. In A. De Reuck, & R. Porter (Eds.), *The Mentally Disordered Mind* (pp. 35-41). London, England: Churchill.

Sainsbury Centre for Mental Health. (2009). *Briefing 39: Mental health care and the criminal justice system.* London, England: Sainsbury Centre for Mental Health.

Sattar, G. (2003). The death of offenders in England and Wales. *Crisis, 24,* 17-23. doi: 10.1027//0227-5910.24.1.17

Scarpina, F., & Tagini, S. (2017). The Stroop color and word test. *Frontiers in Psychology, 8.* doi: 10.3389/fpsyg.2017.00557

Shichor, D. (1988). An exploratory study of elderly probationers. *International Journal of Offender Therapy and Comparative Criminology, 32,* 163-174. Retrieved from http://ijo.sagepub.com/content/32/2/163.abstract

Séguin, J. R., Sylvers, P., & Lilienfeld, S. O. (2007). The neuropsychology of violence. In D. J. Flannery, A. T. Vazspmyi, & I. D. Waldman (Eds.), *The Cambridge Handbook of Violent Behaviour and Aggression* (pp. 187-214). Cambridge, England: Cambridge University Press.

Seymour, L., Rutherford, M., Khanom, H. & Samele, C. (2008). *Journal of Mental Health Law,* 53-65. Retrieved from http://heinonline.org/HOL/LandingPage?handle=hein.journals/jmhl17&div=8&id=&page=

Shao, Z., Janse, E., Visser, E., & Meyer, A. S. (2014). What do verbal fluency tasks measure? Predictions of verbal fluency performance in older adults. *Frontiers in Psychology, 5*(772). doi: 10.3389/fpsyg.2014.00772

Sheehan, D. V., Lecrubier, Y., Sheehan, H., Amorim, P., Janavas, J., Weiller, E., … Dunbar, G. C. (1998). The mini-international neuropsychiatric interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry, 59(supplement 20),* 22-33. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/9881538

Sirdifield, C. (2012). The prevalence of mental health disorders amongst offenders on probation: a literature review. *Journal of Mental Health*, *21*, 485–98. doi:10.3109/09638237.2012.664305

Sirdifield, C., Owen, S., & Brooker, C. (2016). Engaging offenders on probation in health research: lessons from the field. *Nurse Research, 24,* 18-23. doi: 10.7748/nr.2016.e1448

Skinner, H. A. (1982). The drug abuse screening test. *Addictive Behaviors*, *7*, 363–371. doi: 10.1016/0306-4603(82)90005-3

Skirbekk, V., Stonawski, M., Bonsang, E., & Staudinger, U. M. (2013). The Flynn effect and population aging. *Intelligence, 41,* 169-177. doi:10.1016/j.intell.2013.02.001

Smith, G., & Rush, B. K. (2006). Normal aging and mild cognitive impairment. In D. K. Attix & K. A. Welsh-Bohmer (Eds.), *Geriatric neuropsychology: Assessment and intervention* (pp. 27-55). New York: Guildford Press

Sparrow, E. P. & Hunter, S. J. (2012a). Introduction in S. J. Hunter & E. P. Sparrow (Eds.), *Executive function and dysfunction: Identification, assessment and treatment* (pp. 1-4). Cambridge, England: Cambridge University Press.

Sparrow, E. P., & Hunter, S. J. (2012b). Models of executive functioning. In S. J. Hunter, & E. P. Sparrow (Eds.), *Executive function and dysfunction: Identification, assessment and treatment* (pp. 5-16). Cambridge, England: Cambridge University Press.

Stein, R. A., & Strickland, T. L. (1998). A review of the neuropsychological effects of commonly used prescription medications. *Archives of Clinical Neuropsychology, 13,* 259-284. Retrieved from http://www.sciencedirect.com/science/article/ pii/ S0887617797000279

Stewart, L. A., Wilton, G., & Sapers, J. (2016). Offenders with cognitive deficits in a Canadian prison population: Prevalence, profile, and outcomes. *International Journal of Law and Psychiatry, 44,* 7-14. doi: 10.1016/j.ijlp.2015.08.026

Strauss, E., Sherman, E. M. S., & Spreen, O. (2006). *A compendium of neuropsychological tests: Administration, norms and commentary* (3rd ed.). Oxford, England: Oxford University Press.

Suchy, Y. (2009). Executive functioning: Overview, assessment, and research issues for non-neuropsychologists. *Annals of Behavioral Medicine, 37,* 106-116. doi: 10.1007/s12160-009-9097-4

Taylor, R. (1999). *Predicting reconvictions for sexual and violent offences using the Revised Offender Group Reconviction Scale.* Home Office Research, Development and Statistics Directorate Research Findings No. 104. London: Home Office.

Testa, R. & Pantelis, C. (2009). The role of executive functions in psychiatric disorders. In S. J. Wood, N. B. Allen, & C. Pantelis (Eds.), *The neuropsychology of mental illness* (pp. 117-137). Cambridge, England: Cambridge University Press

Thornberry, T. P., Giordano, P. C., Uggen, C., Matsunda, M., Masten, A. S., Bulten, E., & Donker, A. G. (2012). Explanations for offending. In R. Loeber, & D. P. Farrington

(Eds.), *From juvenile delinquency to adult crime* (pp. 47-85). Oxford, England: Oxford University Press.

Tombaugh, T. N., Kozak, J., & Rees, L. (1999). Normative data stratified by age and education for two measures of verbal fluency: FAS and Animal naming. *Archives of Clinical Neuropsychology, 14,* 167-177. doi: 10.1093/arclin/14.2.167

Torregrossa, M. M., Quinn, J. J., & Taylor, J. R. (2008). Impulsivity, compulsivity, and habit: The role of orbitofrontal cortex revisited. *Biological Psychiatry, 63,* 253-255. doi: 10.1016/j.biopsych.2007.11.014

Vallabhajosula, B. (2015). *Murder in the courtroom: The cognitive neuroscience of violence.* New York, NY: Oxford University Press.

Waldstein, S. R., Wendell, C. R., Hosey, M. M., Seliger, S. L., & Katzel, L. I. (2010). Cardiovascular disease and neurocognitive function. In C. L. Armstrong & L. Morrow (Eds.), *Handbook of medical neuropsychology: Applications of cognitive neuroscience* (pp. 69-100). New York, NY: Springer Science+Business Media.

Wanlass, R. L. (2012). *The neuropsychology toolkit: Guidelines, formats, and language.* New York, NY: Springer.

Watt, S., Gow, B., Norton, K., & Crowe, S. F. (2016). Investigating discrepancies between predicted and observed adult intelligence scale-version IV full-scale intelligence quotient scores in a non-clinical sample. *Australian Psychologist, 51,* 380-388. doi: 10.1111/ap.12239

Wechsler, D. (2008). *Wechsler adult intelligence scale (4th ed.).* San Antonio, TX: The Psychological Corporation.

Williams, W. H., Mewse, A. J., Tonks, J., Mills, S., Burgess, C. N. W., & Corday, G. (2010). Traumatic brain injury in a prison population: Prevalence and risk for re-offending. *Brian Injury,24,* 1184-1188. doi: 10.3109/02699052.2010.495697

World Health Organisation. (1993). International statistical classification of diseases and related health problems 10th revision (ICD-10). Retrieved from http://apps.who.int/classifications/icd10/browse/2015/en

Yang, Y., & Raine, A. (2009). Prefrontal structural and functional brain imaging findings in antisocial, violent, and psychopathic individuals: A meta-analysis. *Psychiatry Research - Neuroimaging*, *174*, 81–88. doi: 10.1016/j.pscychresns.2009.03.012

Yechiam, E., Kanz, J. E., Bechara, A., Stout, J. C., Busemeyer, J. R., Altmaier, E. M., & Paulsen, J. S. (2008). Neurocognitive deficits related to poor decision making in people behind bars. *Psychonomic Bulletin & Review*, *15*, 44–51. doi:10.3758/PBR.15.1.44

Yesavage, J.A., Brink, T.L., Rose, T.L., Lum, O., Huang, V., Adey, M.B., & Leirer, V.O. (1983). Development and validation of a geriatric depression screening scale: A preliminary report. *Journal of Psychiatric Research*, *17*, 37-49. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/7183759

Yudko, E., Lozhkina, O., & Fouts, A. (2007). A comprehensive review of the psychometric properties of the Drug Abuse Screening Test. *Journal of Substance Abuse Treatment, 32,* 189-198. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/17306727

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Appendix B

Electronic Search Terms

Concept 1: Childhood Trauma

"Child* abuse*" [Title/Abstract]	OR
"Child* trauma*" [Title/Abstract]	OR
"Physical* abuse*" [Title/Abstract]	OR
Rape* [Title/Abstract]	OR
"Psychological* abuse*" [Title/Abstract]	OR
"Emotional* abuse*" [Title/Abstract]	OR
Neglect* [Title/Abstract]	OR
Maltreat* [Title/Abstract]	OR
"Domestic abuse*" [Title/Abstract]	OR
"Interparental viole*" [Title/Abstract]	OR
"Interparental abuse*" [Title/Abstract]	OR
"Child* post traumatic stress disorder" [Title/Abstract]	OR
"Child PTSD" [Title/Abstract]	

AND

Concept 2: Violent Outcomes

Viol* [Title/Abstract]	OR
Crim* [Title/Abstract]	OR
Aggress* [Title/Abstract]	OR
Offend* [Title/Abstract]	OR
Danger* [Title/Abstract]	

Appendix C

Data Extraction Sheet

Author	
Date	
Title	
Data set/study	
Geographical Location	
Year/s study completed	
N	
Average age of participants	Age CT measured Age VO measured
Participant group	
Gender ratio	
Definition of childhood Trauma	
Measure of Childhood Trauma	
Definition of Violent outcomes	
Measure of Violent outcomes	
Length of time between exposure and outcome	
Attrition rate	
Statistical methods and outcome	

Appendix D

Formulae Used to Calculate Odds Ratios

Odds Ratios from Frequencies or Proportions (Morris & Gardner, 1988)

Study Group	Exposed	
	YES	NO
Cases	a	b
Controls	c	d

$OR = ad/bc$

95% Confidence Interval calculated through upper and lower limits on the log scale $ln(\text{OR}) \pm 1.96\left(\sqrt{\frac{1}{a}+\frac{1}{b}+\frac{1}{c}+\frac{1}{d}}\right)$ then converted using the exponential function $e^{ln(\text{OR}) \pm 1.96\left(\sqrt{\frac{1}{a}+\frac{1}{b}+\frac{1}{c}+\frac{1}{d}}\right)}$

Odds Ratios from Regression Coefficients (Miller et al., 2001)

$OR = e^{regression\ coefficient}$

Odds Ratios from Correlation Coefficients (Chinn, 2000; Rosenthal & DiMatteo, 2001)

$d = \frac{2r}{\sqrt{1-r^2}}$

$OR = e^{\frac{\pi d}{\sqrt{3}}}$

Odds Ratios from Chi Square Values (Rosenthal, 1994)

$r = \sqrt{\frac{Chi\ square}{n}}$

Then *r* converted as above.

Odds Ratios from Analysis of Variance Values (Thalheimer & Cook, 2002)

$$d = \sqrt{F\left(\frac{n_t - n_c}{n_t n_c}\right)\left(\frac{n_t + n_c}{n_t + n_c - 2}\right)}$$

F = F statistic
n_t = Number of subjects in treatment/exposed group
n_c = Number of subjects in comparison group

Then *d* converted to OR as above.

References

Chinn, S. (2000). A simple method for converting an odds ratio to effect size for use in meta-analysis. *Statistics in Medicine, 19,* 3127-3131. doi: 10.1002/1097-0258(20001130)19:22<3127::AID-SIM784>3.0.CO;2-M

Miller, C. C., Reardon, M. J., & Safi, H. J. (2001). *Risk stratification: A practical guide for clinicians.* Cambridge, England: Cambridge University Press.

Morris, J. A., & Gardner, M. J. (1988). Calculating confidence intervals for relative risks (odds ratios) and standardised ratios and rates. *British Medical Journal, 296,* 1313-1316. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2545775/

Rosenthal, R. (1994). Parametric measures of effect size. In H. Cooper & L. V. Hedges (Eds.), *The handbook of research synthesis* (pp. 231-244). New York, NY: Russel Sage Foundation

Rosenthal, R., & DiMatteo, M. R. (2001). Meta-analysis: Recent developments in quantitative methods for literature review. *Annual Review of Psychology, 52,* 59-82. doi: 10.1146/annurev.psych.52.1.59

Thalheimer, W. & Cook, S. (2002). *How to calculate effect sizes from published research: A simplified methodology.* Retrieved from www.work-learning.com

Appendix E

Newcastle-Ottawa Quality Assessment Scale: Cohort Studies

COHORT STUDIES

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability

Selection

1) Representativeness of the exposed cohort
   a) truly representative of the average _______________ (describe) in the community ❋
   b) somewhat representative of the average ______________ in the community ❋
   c) selected group of users eg nurses, volunteers
   d) no description of the derivation of the cohort

2) Selection of the non exposed cohort
   a) drawn from the same community as the exposed cohort ❋
   b) drawn from a different source
   c) no description of the derivation of the non exposed cohort

3) Ascertainment of exposure
   a) secure record (eg surgical records) ❋
   b) structured interview ❋
   c) written self report
   d) no description

4) Demonstration that outcome of interest was not present at start of study
   a) yes ❋
   b) no

Comparability

1) Comparability of cohorts on the basis of the design or analysis
   a) study controls for _____________ (select the most important factor) ❋
   b) study controls for any additional factor ❋ (This criteria could be modified to indicate specific control for a second important factor.)

Outcome

1) Assessment of outcome
   a) independent blind assessment ❋
   b) record linkage ❋
   c) self report
   d) no description

2) Was follow-up long enough for outcomes to occur
   a) yes (select an adequate follow up period for outcome of interest) ❋
   b) no

3) Adequacy of follow up of cohorts
   a) complete follow up - all subjects accounted for ❋
   b) subjects lost to follow up unlikely to introduce bias - small number lost - > ____ % (select an adequate %) follow up, or description provided of those lost) ❋
   c) follow up rate < ____% (select an adequate %) and no description of those lost
   d) no statement

Appendix F

Reference List for Studies Included in the Meta-analysis

Caspi, A., McClay, J., Moffitt, T. E., Mill, J., Martin, J., Craig, I. W., … & Poulton, R. (2002). Role of genotype in the cycle of violence in maltreated children. *Science, 297,* 851-854. doi: 10.1126/science.1070824

English, D. J., Widom, C. S., & Brandford, C. (2002). *Childhood victimisation and delinquency, adult criminality, and violent criminal behaviour: A replication and extension, final report.* Rockville, MD: National Criminal Justice Reference Service.

Herrenkohl, R. C., Egolf, B. P., & Herrenkohl, E. C. (1997). Preschool antecedents of adolescent assaultive behaviour: A longitudinal study. *American Journal of Orthopsychiatry, 6,* 422-432. doi: 10.1037/h0080244

Herrera, V. M., & McCloskey, L. A. (2001). Gender differences in the risk for delinquency among youth exposed to family violence. *Child Abuse & Neglect, 25,* 1037-1051. doi: 10.1016/S0145-2134(01)00255-1

Lansford, J. E., Miller-Johnson, S., Berlin, L. J., Dodge, K. A., Bates, J. E., & Pettit, G. S. (2007). Early physical abuse and later violent delinquency: A prospective longitudinal study. *Child Maltreatment, 12,* 233-245. doi: 10.1177/1077559507301841

Leach, C., Stewart, A., & Smallbone, S. (2016). Testing the sexually abused-sexual abuser hypothesis: A prospective longitudinal birth cohort study. *Child Abuse & Neglect, 51,* 144-153. doi: 10.1016/j.chiabu.2015.10.024

Millett, L. S., Kohl, P. L., Jonson-Reid, M., Drake, B., & Petra, M. (2013). Child maltreatment victimisation and subsequent perpetration of young adult intimate partner violence: An exploration of mediating factors. *Child Maltreatment, 18,* 71-84. doi: 10.1177/1077559513484821

Narayan, A. J., Englund, M. M., Carlson, E. A., & Egeland, B. (2014). Adolescent conflict as a developmental process in the prospective pathway from exposure to interparental violence to dating violence. *Journal of Abnormal Child Psychology, 42,* 239-250. doi: 10.1007/s10802-013-9782-4

Ogloff, J. R. P., Cutajar, M. C., Mann, E., & Mullen, P. (2012). Child sexual abuse and subsequent offending and victimisation: A 45 year follow-up study. *Trends & Issues in Crime and Criminal Justice, 440.* Retrieved from http://www.aic.gov.au/publications/current%20series/tandi/421-440/tandi440.html

Pardini, D. A., Loeber, R., Farrington, D. P., & Stouthamer-Loeber, M. (2012). Identifying direct protective factors for nonviolence. *American Journal of Preventative Medicine, 43,* S28-S40. doi:10.1016/j.amepre.2012.04.024

Rebellon, C. J., & van Gundy, K. (2005). Can control theory explain the link between parental physical abuse and delinquency? A longitudinal analysis. *Journal of Research in Crime and Delinquency, 42,* 247-274. doi: 10.1177/0022427804271926

Siegel, J. E., & Williams, L. M. (2003). The relationship between child sexual abuse and female delinquency and crime: A prospective study. *Journal of Research in Crime and Delinquency, 40,* 71-94. doi: 10.1177/0022427802239254

Silva, T. C., Larm, P., Vitaro, F., Tremblay, R. E., & Hodgins, S. (2012). The association between maltreatment in childhood and criminal convictions to age 24: a prospective study of a community sample of males from disadvantaged neighbourhoods. *European Child & Adolescent Psychiatry, 21,* 403-413. doi: 10.1007/s00787-012-0281-xORIGINAL

Smith, C., & Thornberry, T. P. (1995). The relationship between childhood maltreatment and adolescent involvement in delinquency. *Criminology, 33,* 451-481. Retrieved from

http://heinonline.org/HOL/Page?handle=hein.journals/crim33&collection=journals&id=461&startid=461&endid=492

Thomas, U. C. (2007). *Maltreatment and subsequent violent behavior: A prospective longitudinal study of delinquent youth* (unpublished doctoral dissertation). Northwestern University, Illinois.

Widom, C. S. (1989). Child abuse, neglect, and violent criminal behavior. *Criminology, 27,* 251-271. doi: 10.1111/j.1745-9125.1989.tb01032.x

Wright, E. M., & Fagan, A. A. (2013). The cycle of violence in context: Exploring the moderating roles of neighbourhood disadvantage and cultural norms. *Criminology, 51,* 217-249. doi: 10.1111/1745-9125.12003

Zingraff, M. T., Leiter, J., Myers, K. A., & Johnsen, M. C. (1993). Child maltreatment and youthful problem behavior. *Criminology, 31,* 173-202. doi: 10.1111/j.1745-9125.1993.tb01127.x

Appendix G

Additional Variables Considered in the Included Studies

Table G.1. Additional variables measured in the reviewed studies

Study	Variables
Caspi et al., 2002	Genotype (gene encoding the neurotransmitter MAOA); severity of maltreatment.
English et al., 2002	Race; gender.
Herrenkohl et al., 1997	Severity of abuse; mother's interaction with child at pre-school.
Herrera & McCloskey, 2001	Gender.
Lansford et al., 2007	Race; gender.
Leach et al., 2016	Number of CT notifications; poly-victimisation.
Millett et al., 2013	Individual factors – Race; age; disability; juvenile substance use; juvenile mental health service use by gender. Family factors – Caregiver education; caregiver mental health/substances; caregiver arrest history; number of children in family Neighbourhood factors - Residential mobility; child poverty.
Narayan et al., 2014	Adolescent relational conflict; externalising behaviour at age 16; life stress; gender.
Ogloff et al., 2012	Age at abuse; penetration; frequency of abuse; number of perpetrators; presence of criminal history.
Pardini et al., 2012	Race; socioeconomic status. Individual predictors - Attention-deficit-hyperactivity problems; depression; negative attitude towards school; academic achievement; religious observance; victim of

Study	Variables
	theft; serious injuries; interpersonal callousness; anxiety; shy/withdrawn; attitude towards delinquency; likelihood of getting caught. Family predictors – Family involvement; family socioeconomic status; family on public assistance; caretaker changes by age 10 years; house size; number of biological parents in the home; parental reinforcement; supervision; family size; housing quality. School predictors – Repeated grade. Peer predictors – Peer delinquency; relationship with peers. Neighbourhood predictors – Neighbourhood poverty/crime.
Rebellon & van Gundy, 2005	Prior violence; social bonding.
Siegel & Williams, 2003	Dependency status.
Silva et al., 2012	Conduct problems; hurtful and uncaring behaviours; parent's criminal convictions.
Smith & Thornberry, 1995	Number and type of maltreatment; severity of maltreatment.
Thomas, 2007	Gender; race; past violence.
Widom, 1989	Frequency of offence; type and number of arrests.
Wright & Fagan, 2013	Neighbourhood disadvantage; cultural norms.
Zingraff et al., 1993	Family structure.

Appendix H

Quality Assessment Scores on the Newcastle-Ottawa Scale

Table H.1. Quality Assessment Scores

Study	Selection				Comparability	Outcome			Stars Received
	Representativeness of the exposed cohort	Selection of the non exposed cohort	Ascertainment of exposure	Demonstration that outcome of interest was not present at start of study	Comparability of cohorts on the basis of the design or analysis	Assessment of outcome	Was follow-up long enough for outcomes to occur	Adequacy of follow up of cohorts	
Caspi et al., 2002	*	*	*	*	*	*	*	*	8
English et al., 2002	*	*	*	*	**	*	*	*	9
Herrenkohl et al., 1997	*	*	*			*	*		5
Herrera & McCloskey, 2001	*	*	*			*		*	5
Lansford et al., 2007	*	*	*			½*	*		4.5
Leach et al., 2016	*	*	*	*	*	*	*	*	8
Millett et al., 2013	*	*	*	*	**	*	*	*	9
Narayan et al., 2014		*	*	*			*		4
Ogloff et al., 2012	*	*	*	*	**	*	*	*	9
Pardini et al., 2012		*	*		*			*	4
Rebellon & van Gundy, 2005	*	*	*		*				4
Siegel & Williams, 2003	*	*	*	½*	**	*	*	*	8.5
Silva et al., 2012		*			**	*			4
Smith & Thornberry, 1995		*	*	*	*			*	5
Thomas, 2007		*	*	*	*				4
Widom, 1989	*	*	*	*	**	*	*	*	9
Wright & Fagan, 2013	*	*	*		**			*	6
Zingraff et al., 1993	*	*	*	*	*	*		*	7

Note. Half stars awarded when there are differences between adolescent and adult outcome measurement. The quality assessment is based on the data used in the meta-analyses.

Appendix I

Forest Plots

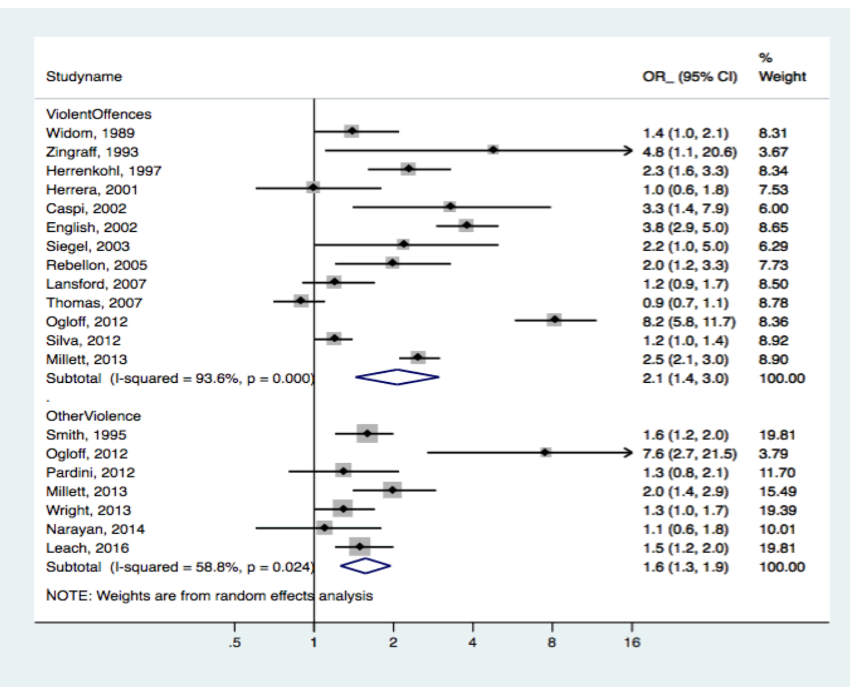

Figure I.1. Odds of violent outcomes in cases with childhood trauma compared with individuals who had not experienced childhood trauma by type of violent outcome (violent offences vs. sex offences, dating violence, and violent acts/behaviours combined)

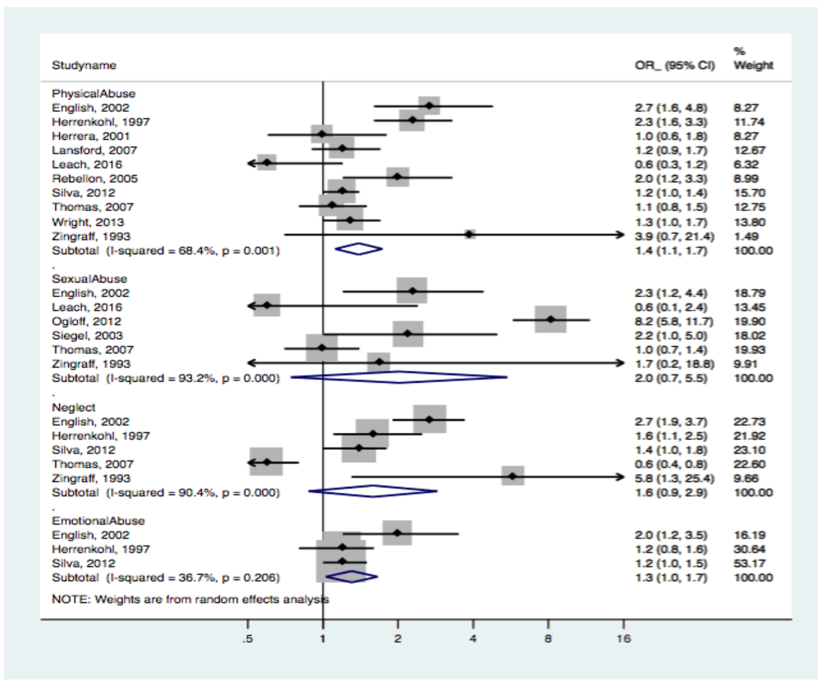

Figure I.2. Odds of violent outcomes in cases with childhood trauma compared with individuals who had not experienced childhood trauma by type of childhood trauma (physical abuse vs. sexual abuse vs. neglect vs. emotional abuse)

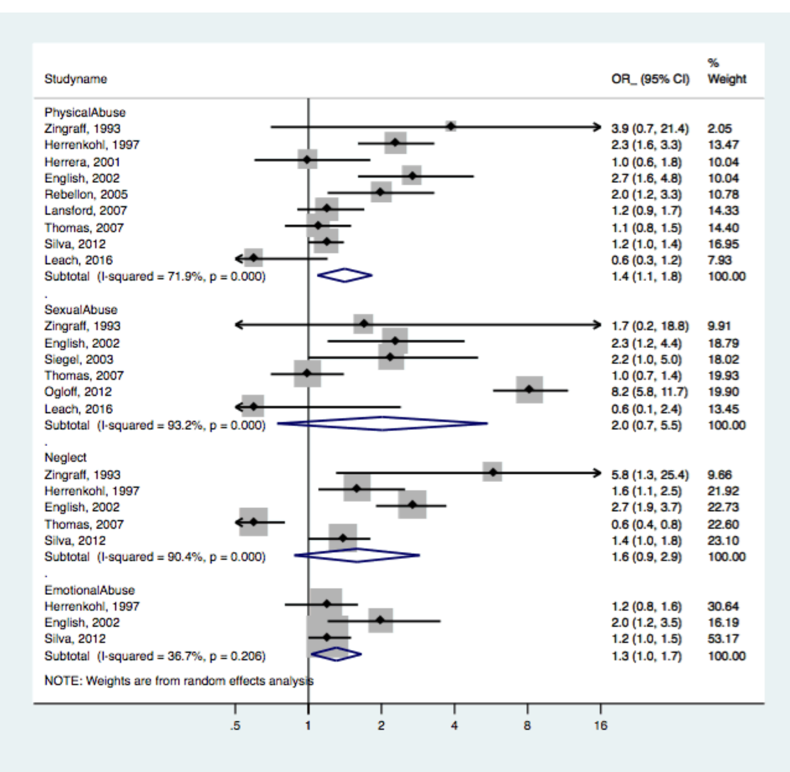

Figure I.3. Odds of violent outcomes in cases with childhood trauma compared with individuals who had not experienced childhood trauma by type of childhood trauma in violent offences only

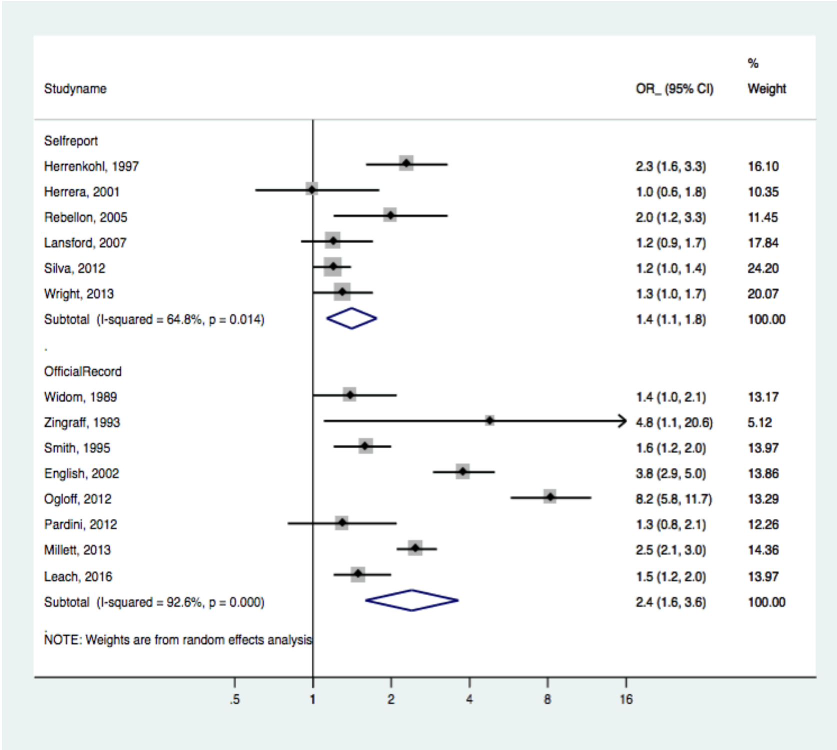

Figure I.4. Odds of violent outcomes in cases with childhood trauma compared with individuals who had not experienced childhood trauma by type of measure of childhood trauma (self-report vs. official records)

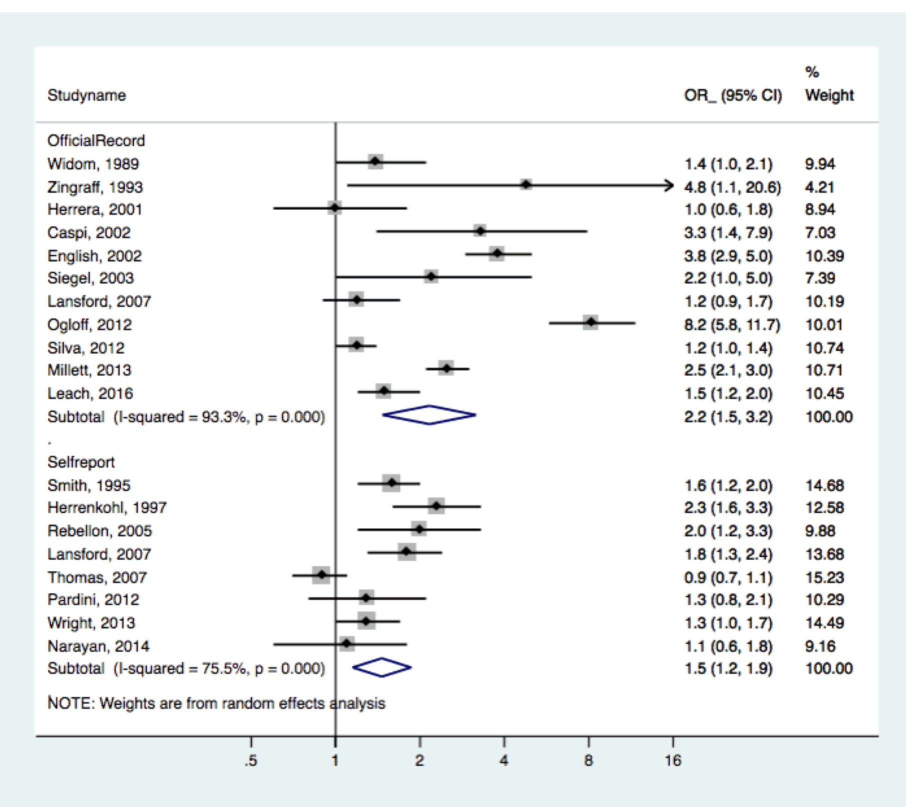

Figure I.5. Odds of violent outcomes in cases with childhood trauma compared with individuals who had not experienced childhood trauma by type of measure of violent outcome (official records vs. self-report)

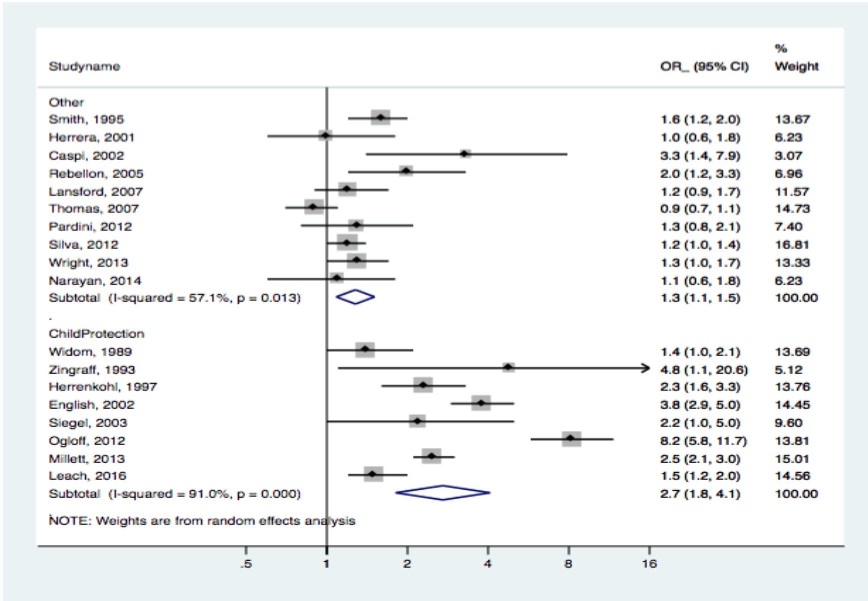

Figure I.6. Odds of violent outcomes in cases with childhood trauma compared with individuals who had not experienced childhood trauma by type of sample (child protection vs. general population and specially selected combined)

Appendix J

Table of all the Random-effects Pooled Crude Odds Ratios

Table J.1.Pooled Crude Odds Ratios

Characteristic	*K*	*N* cases included in the study	Random-effects pooled crude OR (95% CI)	Heterogeneity I^2 (%)
Type of VO				
Violent Offences	13	21,032	2.1 (1.4-3.0)	94
Other	7	52,041	1.6 (1.3-1.9)	89
Type of CT				
Physical Abuse	10	46,960	1.4 (1.1-1.7)	68
Sexual Abuse	6	47,852	2.0 (0.7-5.5)	93
Neglect	5	5,208	1.6 (0.9-2.9)	90
Emotional Abuse	3	3,023	1.3 (1.0-1.7)	37
Violent Offences only by Type of CT				
Physical Abuse	9	45,588	1.4 (1.1-1.8)	72
Sexual Abuse	6	47,852	2.0 (0.7-5.5)	93
Neglect	5	5,208	1.6 (0.9-2.9)	90
Emotional Abuse	3	3,023	1.3 (1.0-1.7)	37
Type of measure of CT				
Official record	8	54,730	2.4 (1.6-3.6)	93
Self-report	6	4,891	1.4 (1.1-1.8)	65
Type of measure of VO				
Official record	11	55,768	2.2 (1.5-3.2)	93
Self-report	8	7,066	1.5 (1.2-1.9)	76
Sample				
Child Protection Sample	8	54,167	2.7(1.8-4.1)	91
Other (General Population and Specially Selected Samples)	10	8,240	1.3(1.1-1.5)	57
Overall	18	60,407	1.8 (1.4-2.4)	92

Appendix K

Influence of a Single Study

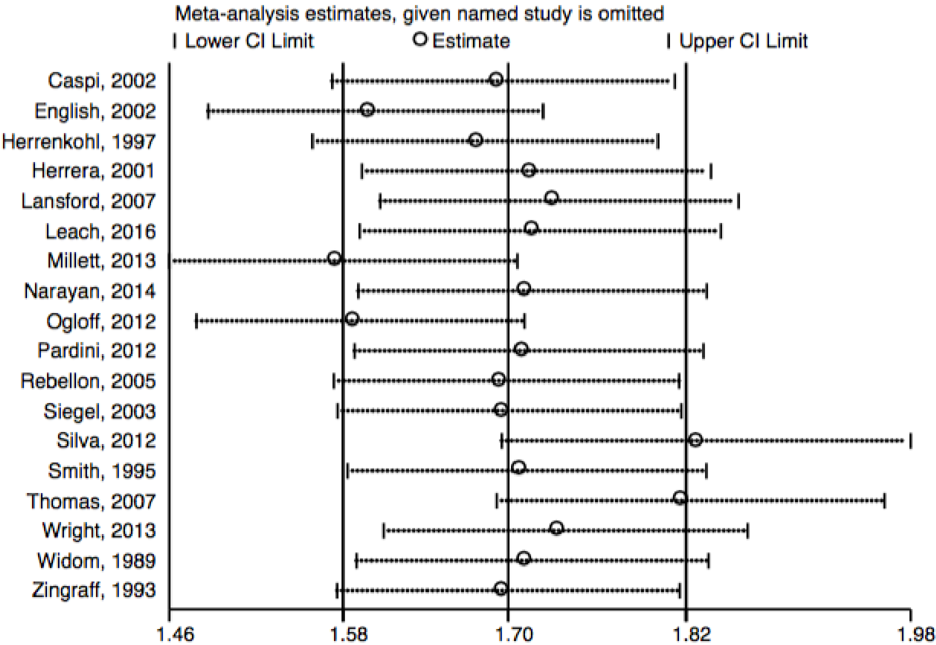

Figure K.1. Influence of each study on the overall meta-analysis result

Appendix L

Author Guidelines for the Journal of Forensic Psychiatry and Psychology

Preparing your paper

Structure

Manuscripts should be compiled in the following order: title page (including Acknowledgements as well as Funding and grant-awarding bodies); abstract; keywords; main text; references; appendices (as appropriate); table(s) with caption(s) (on individual pages); figure caption(s) (as a list).

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Please include a word count for your paper.

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   For multiple agency grants: This work was supported by the [Funding Agency 1]; under Grant [number xxxx]; [Funding Agency 2] under Grant [number xxxx]; and [Funding Agency 3] under Grant [number xxxx].
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Appendix M

Rationale for Measurement of Additional Clinical Factors and Measure Selection

Additional Clinical Factors

Mental health difficulties, neurological and cardiovascular disorders, substance misuse, and intellectual ability can contribute to performance on measures of executive functioning. For this reason information on these factors was recorded to assist interpretation of impaired performance on the Stroop and Verbal Fluency tests.

Mental health/psychiatric disorders

Individuals diagnosed with a psychiatric disorder can show impairments across a range of neuropsychological domains, including executive functioning. Schizophrenia has been associated with generalised cognitive impairments, with the most severe deficits seen in episodic memory and executive functioning (Gray, McMahon, & Gold, 2013; Reichenberg & Harvey, 2007). Furthermore, violent forensic patients with schizophrenia have shown more impairment in executive functioning than non-violent patients with schizophrenia (Barkataki et al., 2005).

Deficits in executive functioning have been seen in those with depression (Liotti & Mayberg, 2001) and there is evidence that suicidality has neuropsychological markers. Meta-analyses in this area found that suicide was associated with impairments in decision making, problem solving, and cognitive flexibility (Jollant, Lawrence, Olié, Guillaume, & Courtet, 2011; Richard-Devantoy, Berlim, & Jollant, 2014). People with substance-use disorders have been found to have impairments in a range of domains, including executive functioning (Bates, Voelbel, Buckman, Labouvie, & Barry, 2005; Scott et al., 2007), while forensic populations with antisocial personality disorder are shown to have impairments in the

executive functions of planning, set shifting, and response inhibition/selection (Dolan & Park, 2002).

It was expected that the presence of psychiatric disorders and mental health symptoms would be associated with lower executive functioning scores on the measures. Specific to hypothesis two, depression, alcohol, and drug scores were predicted to negatively correlate with scores on the Verbal Fluency and Stroop tests.

Neurological and cardiovascular conditions

Executive dysfunction is common in conditions that damage the neurological systems responsible for, or supporting, executive functions (Arciniegas, 2013). It can occur in a range of neurological conditions such as traumatic brain injury, dementia, age-related cognitive impairment, multiple sclerosis, and Huntington's disease (Kramer & Stephens, 2014). Similarly, cardiovascular disorders can negatively impact executive functioning through reduced cerebral blood flow or metabolism (Waldstein, Wendell, Hosey, Seliger, & Katzel, 2010). The presence of neurological and cardiovascular conditions (including high blood pressure) was expected to be associated with poorer performance on the tests of executive functioning. While there was not a specific hypothesis related to these conditions, information on these factors would be used to interpret any deficits identified.

Medication

Slowing of processing speed can be a side effect of a range of psychiatric and anti-epileptic medications that can result in a poorer performance on measures of executive functioning, including the Stroop and Verbal Fluency Tests (Barr, 2015; Eddy, Rickards, & Cavanna, 2011; Konopka & Zimmerman, 2014). While there was no specific hypothesis set for medication use, this information would be used to discuss impaired performance on the tests of executive functioning.

Intellectual functioning

Measures of intellectual functioning are shown to positively correlate with measures of executive functioning such as the D-KEFS test battery (Groth-Marnat & Wright, 2016). It is therefore beneficial to measure intellectual functioning when assessing executive functioning, and vice versa, to consider the effect of these processes on test performance (Weiss, Saklofske, Coalson, & Raiford, 2010). Caution is given in using measures of executive functioning with individuals presenting with lower levels of intellectual functioning (IQ <85) because EF test performance is not a valid reflection of EF and may merely reflect low intellectual functioning (Pyszora, Jaldow, & Kopelman, 2009; Strauss et al., 2006).

Measure Selection

Criteria for selection of measures

The following criteria were considered important when selecting the measures:

- Adequate psychometric properties – to ensure validity and reliability
- Prior use with forensic populations – to ensure feasibility in present study
- Brevity – to ensure feasibility and maximise engagement
- Could be administered to participants – to avoid difficulties such as inability to complete written tasks due to physical disability and to control the length of the session (which could be substantially increased if relying on the participant to individually complete each measure).

Selection of measures of executive functioning

The Stroop and Verbal Fluency tests were considered to meet all the above criteria, and they were two of the more commonly use measures with forensic and antisocial samples (as highlighted by Morgan and Lilienfeld, 2000, and Ogilvie, Stewart, Chan, & Shum, 2011). Other measures that assess mental flexibility and response inhibition were also considered,

such as the Trail Making Test and the Wisconsin Card Sorting Test, however, these were not deemed to meet the above criteria as well as the Verbal Fluency and Stroop tests.

Measures assessing other domains of executive functioning were contemplated, primarily decision making. Decision making was of interest as disadvantageous or risky decision making is thought to indicate an inability to comprehend or weigh up future consequences, which may lead people to engage in criminal activity (Monterosso, Kalechstein, & Cordova, 2007). This has been assessed using the Iowa Gambling Task (IGT) in forensic groups (Yechiam et al. 2008). Due to the greater time constraints of this task, requirement for electronic administration, and less frequent use with forensic samples (compared to the Verbal Fluency and Stroop tests) this measure was not included.

Serious consideration was given to the use of a self-report questionnaire measure of executive functioning (the Dysexecutive [DEX] Questionnaire from the Behavioural Assessment of the Dysexecutive System [BADS], Wilson, Alderman, Burgess, Emslie & Evans, 1996). Such questionnaires are typically administered to the client as well as an independent rater who knows them well – often a family or staff member. For the DEX the independent rater's scores (particularly if completed by a professional) can detect executive dysfunction, however self-ratings are seen to have no relationship with executive functioning scores achieved on tests (Bennett, Ong, & Ponsford, 2005; Norris & Tate, 2000). For this reason, it was decided that the implementation of the DEX would not necessarily answer the research questions and meet the aims of the study.

Consideration of other measures of mental health, cognitive impairment, and intellectual functioning

In development of the study other measures were considered to assess additional areas known to impact executive functioning. These included assessment of personality disorder (using the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders-IV

Axis II [SCID-II], First, Spitzer, Gibbon, Williams, & Benjamin, 1997), Autism Spectrum Disorder (using the Autism Spectrum Quotient-10 [AQ-10], Allison, Auyeung, & Baron-Cohen, 2012), anxiety (using the Beck Anxiety Inventory [BAI], Beck, Epstein, Brown, & Steer, 1988), and suicidality (using the Beck Scale for Suicidal Ideation [BSS], Beck, Kovacs, & Weissman, 1979). While each of these measures could have provided useful information, the need for brevity was regarded to outweigh the benefits of their use – especially as the Mini Neuropsychiatric Interview (MINI) would provide information on nearly all of these areas.

Alternative measures of cognitive impairment were contemplated, specifically the Montreal Cognitive Assessment (MoCA [Nasreddine et al., 2005]) given its good psychometric properties. However, because the MoCA includes assessment of executive functioning (while the Six-Item Cognitive Impairment Test [6CIT] does not) the 6CIT was favoured. This decision was made to reduce the overlap between the cognitive impairment and executive function measures, which would make it easier to determine whether any identified deficits were specific to executive functioning.

The National Adult Reading Test (NART, [Beardsall & Brayne, 1990]) was considered as an alternative to the Test of Premorbid Functioning (TOPF). The TOPF was favoured as it is the most up-to-date test and because the NART has been found to significantly over-estimate FSIQ predictions among people with average and low average IQ (Watt, Gow, Norton, & Crowe, 2016).

References

Allison, C., Auyeung, B., & Baron-Cohen, S. (2012). Toward brief “red flags” for autism screening: the short autism spectrum quotient and the short quantitative checklist in 1,000 cases and 3,000. *Journal of the American Academy of Child &*

Adolescent Psychiatry, 51, 202-217. Retrieved from http://docs.autism researchcentre.com/papers/2012_Allisonetal_JAACAP_RedFlags.pdf

Arciniegas, D. B. (2013). Mental state examination. In D. B. Arciniegas, C. A. Anderson, & C. M. Filley (Eds.), *Behavioural neurology & neuropsychiatry* (pp. 344-393). Cambridge, England: Cambridge University Press.

Barkataki, I., Kumari, V., Das, M., Hill, M., Morris, R., O'Connell, P., … Sharma, T.(2005). A neuropsychological investigation into violence and mental illness. *Schizophrenia Research*, *74*, 1–13. doi:10.1016/j.schres.2004.08.001

Barr, W. B. (2015). Neuropsychological assessment of patients with epilepsy. In W. B. Barr & C. Morrison (Eds.), *Handbook on the neuropsychology of epilepsy* (pp. 1-36). New York, NY: Springer.

Bates, M. E., Voelbel, G. T., Buckman, J. F., Labouvie, E. W., & Barry, D. (2005). Short-term neuropsychological recovery in clients with substance use disorders. *Alcoholism: Clinical & Experimental Research*, *29*, 367–377. doi:10.1097/01.ALC.0000156131.88125.2A

Beardsall, L., & Brayne, C. (1990). Estimation of verbal intelligence in an elderly community: a prediction analysis using a shortened NART. *British Journal of Clinical Psychology, 29,* 83-90. Retrieved from http://www.ncbi.nlm. nih.gov/pubmed/2310873

Beck, A.T., Epstein, N., Brown, G., & Steer, R.A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. Journal of Consulting and Clinical Psychology, *56,* 893–897. Retrieved from www.ncbi.nih.gov/pubmed/3204199

Beck, A. T., Kovacs, M., & Weissman, A. (1979). Assessment of suicidal intention: the scale for suicide ideation. *Journal of Consulting and Clinical Psychology, 47,* 343-352. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/469082

Bennett, P. C., Ong, B., & Ponsford, J. (2005). Measuring executive dysfunction in an acute rehabilitation setting: Using the dysexecutive questionnaire (DEX). *Journal of the International Neuropsychological Society, 11,* 376-385. doi: 10.10170S1355617705050423

Dolan, M., & Park, I. (2002). The neuropsychology of antisocial personality disorder. *Psychological Medicine*, *32*, 417–427. doi: 10.1017/S0033291702005378

Eddy, C. M., Rikards, H. E., & Cavanna, A. E. (2011). The cognitive impact of antiepileptic drugs. *Therapeutic Advances in Neurological Disorders, 4,* 358-407. doi: 10.1177/1756285611417920

First, M.B., Spitzer, M., Gibbon, R. L., Williams, J. B. W., & Benjamin, L. S. (1997). *The Structured Clinical Interview for DSM-IV Axis II Personality Disorders.* Washington, DC: American Psychiatric Press

Gray, B. E., McMahon, R. P., & Gold, J. M. (2013). General intellectual ability does not explain the general deficit in schizophrenia. *Schizophrenia Research*, *147*, 315–319. doi:10.1016/j.schres.2013.04.016

Groth-Marnat, G. & Wright, A. J. (2016). *Handbook of psychological assessment* (6th ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Jollant, F., Lawrence, N. L., Olié, E., Guillaume, S., & Courtet, P. (2011). The suicidal mind and brain: a review of neuropsychological and neuroimaging studies. *The World Journal of Biological Psychiatry, 12*, 319–339. doi: 10.3109/15622975.2011.556200

Konopka, L. M. & Zimmerman, E. M. (2014). Neurofeedback and psychopharmacology. In D. S. Cantor & J. R. Evans (Eds.), *Clinical Neurotherapy: Applications of techniques for treatment* (pp. 55-84). London, England: Academic Press.

Kramer, J. H., & Stephens, M. L. (2014). Executive function. In M. J. Aminoff & R. B. Daroff (Eds.), *The neurological sciences* (2nd ed., pp. 236-238). London, England: Academic Press.

Liotti, M. & Mayberg, H. S. (2001). The role of functional neuroimaging in the neuropsychology of depression. *Journal of Clinical and Experimental Neuropsychology, 23,* 121-136. doi: 10.1076/jcen.23.1.121.1223

Monterosso, J. R., Kalechstein, A., & Cordova, X. (2007). If only the hangover preceded intoxication: an integration of behavioral economic and neuropsychological approaches to impulsive choice. In A. Kalechstein & W. G. van Gorp (Eds.), *Neuropsychology and substance use: State-of-the-art and future directions* (pp. 407-435). New York, NY: Taylor and Francis.

Morgan, A. B., & Lilienfeld, S. O. (2000). A meta-analytic review of the relation between antisocial behavior and neuropsychological measures of executive function. *Clinical Psychology Review*, *20*, 113–136. doi: 10.1016/S0272-7358(98)00096-8

Nasreddine, Z. S., Phillips, N. A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I., … Chertkow, H. (2005). The Montreal cognitive assessment, MoCA: A brief screening tool for mild cognitive impairment. *Journal of the American Geriatrics Society, 53,* 695-699. doi:10.1111/j.1532-5415.2005.53221.x

Norris, G., & Tate, R. L. (2000). The behavioural assessment of dysexecutive syndrome (BADS): Ecological, concurrent and construct validity. (2010). *Neuropsychological Rehabilitation, 10,* 3-45. doi: 10.1080/09602010038928

Ogilvie, J. M., Stewart, A. L., Chan, R. C. K., & Shum, D. H. K. (2011). Neuropsychological measures of executive function and antisocial behavior: A meta-analysis. *Criminology*, *49*, 1063–1107. doi:10.1111/j.1745- 9125.2011.00252.x

Pyszora, N., Jaldow, E., & Kopelman, M. (2009). Amnesia. In S. Young, M. Kopelman, & Gudjonsoon, G. (Eds.), *Forensic neuropsychology in practice: A guide to assessment and legal processes* (pp. 135-165). Oxford, England: Oxford University Press.

Reichenberg, A., & Harvey, P. D. (2007). Neuropsychological impairments in schizophrenia: Integration of performance-based and brain imaging findings. *Psychological Bulletin*, *133*, 833–858. doi:10.1037/0033-2909.134.3.382

Richard-Devantoy, S., Berlim, M. T., & Jollant, F. (2014). A meta-analysis of neuropsychological markers of vulnerability to suicidal behavior in mood disorders. *Psychological Medicine*, *44*, 1–11. doi: 10.1017/S0033291713002304

Scott, J. C., Woods, S. P., Matt, G. E., Meyer, R. A, Heaton, R. K., Atkinson, J. H., & Grant, I. (2007). Neurocognitive effects of methamphetamine: A critical review and meta-analysis. *Neuropsychology Review*, *17*, 275–297. doi:10.1007/s11065-007-9031-0

Strauss, E., Sherman, E. M. S., & Spreen, O. (2006). *A compendium of neuropsychological tests: Administration, norms and commentary* (3rd ed.). Oxford, England: Oxford University Press.

Waldstein, S. R., Wendell, C. R., Hosey, M. M., Seliger, S. L., & Katzel, L. I. (2010). Cardiovascular disease and neurocognitive function. In C. L. Armstrong & L. Morrow (Eds.), *Handbook of medical neuropsychology: Applications of cognitive neuroscience (*pp. 69-100). New York, NY: Springer Science+Business Media.

Watt, S., Gow, B., Norton, K., & Crowe, S. F. (2016). Investigating discrepancies between predicted and observed adult intelligence scale-version IV full-scale intelligence quotient scores in a non-clinical sample. *Australian Psychologist, 51,* 380-388. doi: 10.1111/ap.12239

Weiss, L. G., Saklofske, D. H., Coalson, D. L., & Raiford, S. E. (2010). Theoretical, empirical and clinical foundations of the WAIS-IV index scores. In L. G. Weiss, D. H. Saklofske, D. L. Coalson, & S. E. Raiford (Eds.), *WAIS-IV clinical use and interpretation* (pp. 61-96). London, England: Academic Press.

Wilson, B. A., Alderman, N., Burgess, P. W., Emslie, H., & Evans, J. J. (1996). *Behavioural Assessment of the Dysexecutive Syndrome.* Bury St Edmunds: Thames Valley Test Company.

Yechiam, E., Kanz, J. E., Bechara, A., Stout, J. C., Busemeyer, J. R., Altmaier, E. M., & Paulsen, J. S. (2008). Neurocognitive deficits related to poor decision making in people behind bars. *Psychonomic Bulletin & Review*, *15*, 44–51. doi: 10.3758/PBR.15.1.44

Appendix N

Additional Information on Probation Services

People are placed on probation after a court ordered community sentence, a suspended sentence, or following release from prison. Probation services function to "protect the public; reduce reoffending; carry out the proper punishment of offenders; ensure offenders are aware of the effects of crime on the victims of crime and the public; and rehabilitate offenders" (National Audit Office, 2014, p. 9). Probationers are monitored through regular meetings to ensure adherence to sentence plans. They may be required to complete unpaid work, training courses, drug programmes, or other treatments.

Following government reforms, the probation services in England and Wales moved to a payment by results approach. They were opened up to the private and charity sector to increase efficiency of service delivery through competition (Home Office, 2015). The public sector probation services (National Probation Service [NPS]) remain responsible for offenders with the highest risk of harm to others, and therefore supervise primarily violent and sexual offenders [National Audit Office, 2014]). The private and charity sector (known as the Community Resettlement Companies [CRCs]) supervise all other offenders.

References

Home Office. (2015). *Policy paper 2010 to 2015 government policy: reoffending and rehabilitation*. Retrieved from https://www.gov.uk/government/publications /2010-to-2015-government-policy-reoffending-and-rehabilitation/2010-to- 2015-government-policy-reoffending-and-rehabilitation

National Audit Office. (2014). *Probation: Landscape view*. Retrieved from http://www.nao.org.uk/wp-content/uploads/2014/03/Probation-landscape- review.pdf

Appendix O

Copies of the MINI, GDS-15, AUDIT, DAST-10, and 6CIT

The Mini Neuropsychiatric Interview

M.I.N.I.

MINI INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW

English Version 5.0.0

DSM-IV

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DISCLAIMER

Our aim is to assist in the assessment and tracking of patients with greater efficiency and accuracy. Before action is taken on any data collected and processed by this program, it should be reviewed and interpreted by a licensed clinician.

This program is not designed or intended to be used in the place of a full medical and psychiatric evaluation by a qualified licensed physician – psychiatrist. It is intended only as a tool to facilitate accurate data collection and processing of symptoms elicited by trained personnel.

M.I.N.I. 5.0.0 (July 1, 2006)

Patient Name:		*Patient Number:*	
Date of Birth:		*Time Interview Began:*	
Interviewer's Name:		*Time Interview Ended:*	
Date of Interview:		*Total Time:*	

	MODULES	TIME FRAME	MEETS CRITERIA	DSM-IV	ICD-10	
A	MAJOR DEPRESSIVE EPISODE	Current (2 weeks)	☐	296.20-296.26 Single	F32.x	☐
		Recurrent	☐	296.30-296.36 Recurrent	F33.x	☐
	MDE WITH MELANCHOLIC FEATURES Optional	Current (2 weeks)	☐	296.20-296.26 Single 296.30-296.36 Recurrent	F32.x F33.x	☐ ☐
B	DYSTHYMIA	Current (Past 2 years)	☐	300.4	F34.1	☐
C	SUICIDALITY	Current (Past Month) Risk: ☐ Low ☐ Medium ☐ High	☐			☐
D	MANIC EPISODE	Current Past	☐ ☐	296.00-296.06	F30.x-F31.9	☐
	HYPOMANIC EPISODE	Current Past	☐ ☐	296.80-296.89	F31.8-F31.9/F34.0	☐
E	PANIC DISORDER	Current (Past Month) Lifetime	☐ ☐	300.01/300.21	F40.01-F41.0	☐
F	AGORAPHOBIA	Current	☐	300.22	F40.00	☐
G	SOCIAL PHOBIA (Social Anxiety Disorder)	Current (Past Month)	☐	300.23	F40.1	☐
H	OBSESSIVE-COMPULSIVE DISORDER	Current (Past Month)	☐	300.3	F42.8	☐
I	POSTTRAUMATIC STRESS DISORDER	Current (Past Month)	☐	309.81	F43.1	☐
J	ALCOHOL DEPENDENCE	Past 12 Months	☐	303.9	F10.2x	☐
	ALCOHOL ABUSE	Past 12 Months	☐	305.00	F10.1	☐
K	SUBSTANCE DEPENDENCE (Non-alcohol)	Past 12 Months	☐	304.00-.90/305.20-.90	F11.1-F19.1	☐
	SUBSTANCE ABUSE (Non-alcohol)	Past 12 Months	☐	304.00-.90/305.20-.90	F11.1-F19.1	☐
L	PSYCHOTIC DISORDERS	Lifetime Current	☐ ☐	295.10-295.90/297.1/ 297.3/293.81/293.82/ 293.89/298.8/298.9	F20.xx-F29	☐
	MOOD DISORDER WITH PSYCHOTIC FEATURES	Lifetime Current	☐ ☐	296.24/296.34/296.44 296.24/296.34/296.44	F32.3/F33.3/ ☐ F30.2/F31.2/F31.5 F31.8/F31.9/F39 ☐	
M	ANOREXIA NERVOSA	Current (Past 3 Months)	☐	307.1	F50.0	☐
N	BULIMIA NERVOSA	Current (Past 3 Months)	☐	307.51	F50.2	☐
	ANOREXIA NERVOSA, BINGE EATING/PURGING TYPE	Current	☐	307.1	F50.0	☐

O	GENERALIZED ANXIETY DISORDER	Current (Past 6 Months)	☐	300.02	F41.1	☐
P	ANTISOCIAL PERSONALITY DISORDER Optional	Lifetime	☐	301.7	F60.2	☐

Which problem troubles you the most? Indicate your response by checking the appropriate check box(es).

GENERAL INSTRUCTIONS

The M.I.N.I. was designed as a brief structured interview for the major Axis I psychiatric disorders in DSM-IV and ICD-10. Validation and reliability studies have been done comparing the M.I.N.I. to the SCID-P for DSM-III-R and the CIDI (a structured interview developed by the World Health Organization for lay interviewers for ICD-10). The results of these studies show that the M.I.N.I. has acceptably high validation and reliability scores, but can be administered in a much shorter period of time (mean 18.7 ± 11.6 minutes, median 15 minutes) than the above referenced instruments. It can be used by clinicians, after a brief training session. Lay interviewers require more extensive training.

INTERVIEW:

In order to keep the interview as brief as possible, inform the patient that you will conduct a clinical interview that is more structured than usual, with very precise questions about psychological problems which require a yes or no answer.

GENERAL FORMAT:

The M.I.N.I. is divided into **modules** identified by letters, each corresponding to a diagnostic category.
•At the beginning of each diagnostic module (except for psychotic disorders module), screening question(s) corresponding to the main criteria of the disorder are presented in a **gray box**.
•At the end of each module, diagnostic box(es) permit the clinician to indicate whether diagnostic criteria are met.

CONVENTIONS:

Sentences written in « normal font » should be read exactly as written to the patient in order to standardize the assessment of diagnostic criteria.

Sentences written in « CAPITALS » should not be read to the patient. They are instructions for the interviewer to assist in the scoring of the diagnostic algorithms.

Sentences written in « **bold** » indicate the time frame being investigated. The interviewer should read them as often as necessary. Only symptoms occurring during the time frame indicated should be considered in scoring the responses.

Answers with an arrow above them (➡) indicate that one of the criteria necessary for the diagnosis(es) is not met. In this case, the interviewer should go to the end of the module, circle « **NO** » in all the diagnostic boxes and move to the next module.

When terms are separated by a *slash (/)* the interviewer should read only those symptoms known to be present in the patient (for example, question H6).

Phrases in (parentheses) are clinical examples of the symptom. These may be read to the patient to clarify the question.

RATING INSTRUCTIONS:

All questions must be rated. The rating is done at the right of each question by circling either Yes or No. Clinical judgment by the rater should be used in coding the responses. The rater should ask for examples when necessary, to ensure accurate coding. The patient should be encouraged to ask for clarification on any question that is not absolutely clear.

The clinician should be sure that each dimension of the question is taken into account by the patient (for example, time frame, frequency, severity, and/or alternatives).
Symptoms better accounted for by an organic cause or by the use of alcohol or drugs should not be coded positive in the M.I.N.I. The M.I.N.I. Plus has questions that investigate these issues.

For any questions, suggestions, need for a training session, or information about updates of the M.I.N.I., please contact :

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A. MAJOR DEPRESSIVE EPISODE

(➡ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

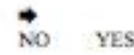
A1	Have you been consistently depressed or down, most of the day, nearly every day, for the past two weeks?	NO	YES
A2	In the past two weeks, have you been much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?	NO	YES
	IS **A1** OR **A2** CODED **YES?**	➡ NO	YES
A3	**Over the past two weeks, when you felt depressed or uninterested:**		
a	Was your appetite decreased or increased nearly every day? Did your weight decrease or increase without trying intentionally (i.e., by ±5% of body weight or ±8 lbs. or ±3.5 kgs., for a 160 lb./70 kg. person in a month)? IF YES TO EITHER, CODE YES.	NO	YES *
b	Did you have trouble sleeping nearly every night (difficulty falling asleep, waking up in the middle of the night, early morning wakening or sleeping excessively)?	NO	YES
c	Did you talk or move more slowly than normal or were you fidgety, restless or having trouble sitting still almost every day?	NO	YES *
d	Did you feel tired or without energy almost every day?	NO	YES
e	Did you feel worthless or guilty almost every day?	NO	YES
f	Did you have difficulty concentrating or making decisions almost every day?	NO	YES
g	Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead?	NO	YES

ARE **5** OR MORE ANSWERS (**A1-A3**) CODED **YES**?

NO	YES *
MAJOR DEPRESSIVE EPISODE, CURRENT	

IF PATIENT HAS CURRENT MAJOR DEPRESSIVE EPISODE CONTINUE TO A4, OTHERWISE MOVE TO MODULE B:

A4 a During your lifetime, did you have other episodes of two weeks or more when you felt depressed or uninterested in most things, and had most of the problems we just talked about? ➡ NO YES



b In between 2 episodes of depression, did you ever have an interval of at least 2 months, without any depression and any loss of interest?

NO	YES
MAJOR DEPRESSIVE EPISODE, RECURRENT	

* If patient has Major Depressive Episode, Current, use this information in coding the corresponding questions on page 5 (A6d, A6e).

MAJOR DEPRESSIVE EPISODE WITH MELANCHOLIC FEATURES (optional)

(➡ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

IF THE PATIENT CODES POSITIVE FOR A CURRENT MAJOR DEPRESSIVE EPISODE (**A3 = YES**), EXPLORE THE FOLLOWING:

A5	a	During the most severe period of the current depressive episode, did you lose almost completely your ability to enjoy nearly everything?	NO	YES
	b	During the most severe period of the current depressive episode, did you lose your ability to respond to things that previously gave you pleasure, or cheered you up? **IF NO: When something good happens does it fail to make you feel better, even temporarily?**	NO	YES
		IS EITHER **A5a** OR **A5b** CODED **YES**?	➡ NO	YES
A6		**Over the past two week period, when you felt depressed and uninterested:**		
	a	Did you feel depressed in a way that is different from the kind of feeling you experience when someone close to you dies?	NO	YES
	b	Did you feel regularly worse in the morning, almost every day?	NO	YES
	c	Did you wake up at least 2 hours before the usual time of awakening and have difficulty getting back to sleep, almost every day?	NO	YES
	d	IS **A3c** CODED **YES** (PSYCHOMOTOR RETARDATION OR AGITATION)?	NO	YES
	e	IS **A3a** CODED **YES** FOR ANOREXIA OR WEIGHT LOSS?	NO	YES
	f	Did you feel excessive guilt or guilt out of proportion to the reality of the situation?	NO	YES

ARE **3** OR MORE ***A6*** ANSWERS CODED **YES**?

NO	**YES**
Major Depressive Episode **with** ***Melancholic Features*** ***Current***	

B. DYSTHYMIA

(➡ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

IF PATIENT'S SYMPTOMS CURRENTLY MEET CRITERIA FOR MAJOR DEPRESSIVE EPISODE, DO NOT EXPLORE THIS MODULE.

B1	Have you felt sad, low or depressed most of the time for the last two years?	➡ NO	YES
B2	Was this period interrupted by your feeling OK for two months or more?	NO	➡ YES
B3	**During this period of feeling depressed most of the time:**		
a	Did your appetite change significantly?	NO	YES
b	Did you have trouble sleeping or sleep excessively?	NO	YES
c	Did you feel tired or without energy?	NO	YES
d	Did you lose your self-confidence?	NO	YES
e	Did you have trouble concentrating or making decisions?	NO	YES
f	Did you feel hopeless?	NO	YES
	ARE **2** OR MORE **B3** ANSWERS CODED **YES**?	➡ NO	YES
B4	Did the symptoms of depression cause you significant distress or impair your ability to function at work, socially, or in some other important way?		

NO **YES**

DYSTHYMIA
CURRENT

C. SUICIDALITY

In the past month did you:

				Points
C1	Suffer any accident? IF NO TO C1, SKIP TO C2; IF YES, ASK C1a,:	NO	YES	0
C1a	Plan or intend to hurt yourself in that accident either passively or actively? IF NO TO C1a, SKIP TO C2: IF YES, ASK C1b,:	NO	YES	0
C1b	Did you intend to die as a result of this accident?	NO	YES	0
C2	Think that you would be better off dead or wish you were dead?	NO	YES	1
C3	Want to harm yourself or to hurt or to injure yourself?	NO	YES	2
C4	Think about suicide?	NO	YES	6

IF YES, ASK ABOUT THE INTENSITY AND FREQUENCY OF THE SUICIDAL IDEATION:

Frequency		Intensity	
Occasionally	❒	Mild	❒
Often	❒	Moderate	❒
Very often	❒	Severe	❒

→ Can you control these impulses and state that you will not act on them while in this program?
Only score 8 points if response is NO. NO YES 8

C5	Have a suicide plan?	NO	YES	8
C6	Take any active steps to prepare to injure yourself or to prepare for a suicide attempt in which you expected or intended to die?	NO	YES	9
C7	Deliberately injure yourself without intending to kill yourself?	NO	YES	4
C8	Attempt suicide? Hoped to be rescued / survive ❒ Expected / intended to die ❒	NO	YES	10

In your lifetime:

C9	Did you ever make a suicide attempt?	NO	YES	4

IS AT LEAST 1 OF THE ABOVE (EXCEPT C1) CODED **YES**?

IF YES, ADD THE TOTAL NUMBER OF POINTS FOR THE ANSWERS (C1-C9) CHECKED 'YES' AND SPECIFY THE LEVEL OF SUICIDE RISK AS INDICATED IN THE DIAGNOSTIC BOX:

MAKE ANY ADDITIONAL COMMENTS ABOUT YOUR ASSESSMENT OF THIS PATIENT'S CURRENT AND NEAR FUTURE SUICIDE RISK IN THE SPACE BELOW:

NO **YES**

SUICIDE RISK CURRENT

1-8 points	Low	❒
9-16 points	Moderate	❒
≥ 17 points	High	❒

D. (HYPO) MANIC EPISODE

(➡ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

D1	a	Have you **ever** had a period of time when you were feeling 'up' or 'high' or 'hyper' or so full of energy or full of yourself that you got into trouble, or that other people thought you were not your usual self? (Do not consider times when you were intoxicated on drugs or alcohol.) IF PATIENT IS PUZZLED OR UNCLEAR ABOUT WHAT YOU MEAN BY 'UP' OR 'HIGH' OR 'HYPER', CLARIFY AS FOLLOWS: By 'up' or 'high' or 'hyper' I mean: having elated mood; increased energy; needing less sleep; having rapid thoughts; being full of ideas; having an increase in productivity, motivation, creativity, or impulsive behavior. IF NO, CODE NO TO **D1b**: IF **YES** ASK:	NO	YES
	b	Are you currently feeling 'up' or 'high' or 'hyper' or full of energy?	NO	YES
D2	a	Have you **ever** been persistently irritable, for several days, so that you had arguments or verbal or physical fights, or shouted at people outside your family? Have you or others noticed that you have been more irritable or over reacted, compared to other people, even in situations that you felt were justified? IF NO, CODE NO TO **D2b**: IF **YES** ASK:	NO	YES
	b	Are you currently feeling persistently irritable?	NO	YES
		IS **D1a** OR **D2a** CODED **YES**?	NO ➡	YES

D3 IF **D1b** OR **D2b** = **YES**: EXPLORE THE **CURRENT** AND THE MOST SYMPTOMATIC **PAST** EPISODE, OTHERWISE IF **D1b** AND **D2b** = **NO**: EXPLORE ONLY THE MOST SYMPTOMATIC **PAST** EPISODE

During the times when you felt high, full of energy, or irritable did you:

		Current Episode		Past Episode	
a	Feel that you could do things others couldn't do, or that you were an especially important person? IF YES, ASK FOR EXAMPLES. THE EXAMPLES ARE CONSISTENT WITH A DELUSIONAL IDEA. ❒ No ❒ Yes	NO	YES	NO	YES
b	Need less sleep (for example, feel rested after only a few hours sleep)?	NO	YES	NO	YES
c	Talk too much without stopping, or so fast that people had difficulty understanding?	NO	YES	NO	YES
d	Have racing thoughts?	NO	YES	NO	YES
e	Become easily distracted so that any little interruption could distract you?	NO	YES	NO	YES
f	Become so active or physically restless that others were worried about you?	NO	YES	NO	YES
g	Want so much to engage in pleasurable activities that you ignored the risks or consequences (for example, spending sprees, reckless driving, or sexual indiscretions)?	NO	YES	NO	YES

	Current Episode		Past Episode	
D3 (SUMMARY): ARE **3** OR MORE **D3** ANSWERS CODED **YES** (OR **4** OR MORE IF **D1a** IS **NO** (IN RATING PAST EPISODE) AND **D1b** IS NO (IN RATING CURRENT EPISODE)? RULE: ELATION/EXPANSIVENESS REQUIRES ONLY THREE D3 SYMPTOMS WHILE IRRITABLE MOOD ALONE REQUIRES **4** OF THE **D3** SYMPTOMS. VERIFY IF THE SYMPTOMS OCCURRED DURING THE SAME TIME PERIOD.	NO	YES	➡ NO	YES
D4 Did these symptoms last at least a week **and** cause significant problems at home, at work, socially, or at school, **or** were you hospitalized for these problems?	NO ↓	YES ↓	NO ↓	YES ↓
THE EPISODE EXPLORED WAS A:	❒ *HYPOMANIC EPISODE*	❒ *MANIC EPISODE*	❒ *HYPOMANIC EPISODE*	❒ *MANIC EPISODE*

IS **D4** CODED **NO**?

SPECIFY IF THE EPISODE IS CURRENT OR PAST.

NO	**YES**
HYPOMANIC EPISODE	
CURRENT	❒
PAST	❒

IS **D4** CODED **YES**?

SPECIFY IF THE EPISODE IS CURRENT OR PAST.

NO	**YES**
MANIC EPISODE	
CURRENT	❒
PAST	❒

E. PANIC DISORDER

(➡ MEANS : CIRCLE NO IN E5, E6 AND E7 AND SKIP TO F1)

E1	a	Have you, on more than one occasion, had spells or attacks when you **suddenly** felt anxious, frightened, uncomfortable or uneasy, even in situations where most people would not feel that way?	➡ NO	YES
	b	Did the spells surge to a peak within 10 minutes of starting?	➡ NO	YES
E2		At any time in the past, did any of those spells or attacks come on unexpectedly or occur in an unpredictable or unprovoked manner?	➡ NO	YES
E3		Have you ever had one such attack followed by a month or more of persistent concern about having another attack, or worries about the consequences of the attack or did you make a significant change in your behavior because of the attacks (e.g., shopping only with a companion, not wanting to leave your house, visiting the emergency room repeatedly, or seeing your doctor more frequently because of the symptoms?	NO	YES
E4		**During the worst spell that you can remember:**		
	a	Did you have skipping, racing or pounding of your heart?	NO	YES
	b	Did you have sweating or clammy hands?	NO	YES
	c	Were you trembling or shaking?	NO	YES
	d	Did you have shortness of breath or difficulty breathing?	NO	YES
	e	Did you have a choking sensation or a lump in your throat?	NO	YES
	f	Did you have chest pain, pressure or discomfort?	NO	YES
	g	Did you have nausea, stomach problems or sudden diarrhea?	NO	YES
	h	Did you feel dizzy, unsteady, lightheaded or faint?	NO	YES
	i	Did things around you feel strange, unreal, detached or unfamiliar, or did you feel outside of or detached from part or all of your body?	NO	YES
	j	Did you fear that you were losing control or going crazy?	NO	YES
	k	Did you fear that you were dying?	NO	YES
	l	Did you have tingling or numbness in parts of your body?	NO	YES
	m	Did you have hot flushes or chills?	NO	YES
E5		ARE BOTH **E3**, AND **4** OR MORE **E4** ANSWERS, CODED **YES**? IF YES TO E5, SKIP TO E7.	NO	YES *PANIC DISORDER LIFETIME*
E6		IF **E5** = **NO**, ARE ANY E4 ANSWERS CODED **YES**? THEN SKIP TO **F1**.	NO	YES *LIMITED SYMPTOM ATTACKS LIFETIME*
E7		In the past month, did you have such attacks repeatedly (2 or more) followed by persistent concern about having another attack?	NO	YES *PANIC DISORDER CURRENT*

F. AGORAPHOBIA

F1	Do you feel anxious or uneasy in places or situations where you might have a panic attack or the panic-like symptoms we just spoke about, or where help might not be available or escape might be difficult: like being in a crowd, standing in a line (queue), when you are alone away from home or alone at home, or when crossing a bridge, traveling in a bus, train or car?	NO	YES

IF **F1** = **NO**, CIRCLE **NO** IN **F2**.

F2	Do you fear these situations so much that you avoid them, or suffer through them, or need a companion to face them?	NO	YES *AGORAPHOBIA CURRENT*

IS **F2** (CURRENT AGORAPHOBIA) CODED **NO**

and

IS **E7** (CURRENT PANIC DISORDER) CODED **YES**?

NO **YES**

PANIC DISORDER without Agoraphobia CURRENT

IS **F2** (CURRENT AGORAPHOBIA) CODED **YES**

and

IS **E7** (CURRENT PANIC DISORDER) CODED **YES**?

NO **YES**

PANIC DISORDER with Agoraphobia CURRENT

IS **F2** (CURRENT AGORAPHOBIA) CODED **YES**

and

IS **E5** (PANIC DISORDER LIFETIME) CODED **NO**?

NO **YES**

AGORAPHOBIA, CURRENT without history of Panic Disorder

G. SOCIAL PHOBIA (Social Anxiety Disorder)

(➡ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO AND MOVE TO THE NEXT MODULE)

		➡	
G1	In the past month, were you fearful or embarrassed being watched, being the focus of attention, or fearful of being humiliated? This includes things like speaking in public, eating in public or with others, writing while someone watches, or being in social situations.	NO	YES
G2	Is this social fear excessive or unreasonable?	➡ NO	YES
G3	Do you fear these social situations so much that you avoid them or suffer through them?	➡ NO	YES

G4 Do these social fears disrupt your normal work or social functioning or cause you significant distress?

SUBTYPES

Do you fear and avoid 4 or more social situations?

If YES Generalized social phobia (social anxiety disorder)

If NO Non-generalized social phobia (social anxiety disorder)

NOTE TO INTERVIEWER: PLEASE ASSESS WHETHER THE SUBJECT'S FEARS ARE RESTRICTED TO NON-GENERALIZED ("ONLY 1 OR SEVERAL") SOCIAL SITUATIONS OR EXTEND TO GENERALIZED ("MOST") SOCIAL SITUATIONS. "MOST" SOCIAL SITUATIONS IS USUALLY OPERATIONALIZED TO MEAN 4 OR MORE SOCIAL SITUATIONS, ALTHOUGH THE DSM-IV DOES NOT EXPLICITLY STATE THIS.

EXAMPLES OF SUCH SOCIAL SITUATIONSTYPICALLY INCLUDE INITIATING OR MAINTAINING A CONVERSATION, PARTICIPATING IN SMALL GROUPS, DATING, SPEAKING TO AUTHORITY FIGURES, ATTENDING PARTIES, PUBLIC SPEAKING, EATING IN FRONT OF OTHERS, URINATING IN A PUBLIC WASHROOM, ETC.

NO **YES**

SOCIAL PHOBIA
(Social Anxiety Disorder)
CURRENT

GENERALIZED ❒

NON-GENERALIZED ❒

H. OBSESSIVE-COMPULSIVE DISORDER

(➡ MEANS: GO TO THE DIAGNOSTIC BOX, CIRCLE **NO** AND MOVE TO THE NEXT MODULE)

H1	In the past month, have you been bothered by recurrent thoughts, impulses, or images that were unwanted, distasteful, inappropriate, intrusive, or distressing? (For example, the idea that you were dirty, contaminated or had germs, **or** fear of contaminating others, **or** fear of harming someone even though you didn't want to, **or** fearing you would act on some impulse, **or** fear or superstitions that you would be responsible for things going wrong, **or** obsessions with sexual thoughts, images or impulses, **or** hoarding, collecting, **or** religious obsessions.) (DO NOT INCLUDE SIMPLY EXCESSIVE WORRIES ABOUT REAL LIFE PROBLEMS. DO NOT INCLUDE OBSESSIONS DIRECTLY RELATED TO EATING DISORDERS, SEXUAL DEVIATIONS, PATHOLOGICAL GAMBLING, OR ALCOHOL OR DRUG ABUSE BECAUSE THE PATIENT MAY DERIVE PLEASURE FROM THE ACTIVITY AND MAY WANT TO RESIST IT ONLY BECAUSE OF ITS NEGATIVE CONSEQUENCES.)	NO YES ↓ SKIP TO **H4**
H2	Did they keep coming back into your mind even when you tried to ignore or get rid of them?	NO YES ↓ SKIP TO **H4**
H3	Do you think that these obsessions are the product of your own mind and that they are not imposed from the outside?	NO YES obsessions
H4	In the past month, did you do something repeatedly without being able to resist doing it, like washing or cleaning excessively, counting or checking things over and over, or repeating, collecting, arranging things, or other superstitious rituals?	NO YES compulsions
	IS **H3** OR **H4** CODED **YES**?	➡ NO YES
H5	Did you recognize that either these obsessive thoughts or these compulsive behaviors were excessive or unreasonable?	➡ NO YES
H6	Did these obsessive thoughts and/or compulsive behaviors significantly interfere with your normal routine, your work or school, your usual social activities, or relationships, or did they take more than one hour a day?	**NO YES** ***O.C.D. CURRENT***

I. POSTTRAUMATIC STRESS DISORDER (optional)

(➡ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE **NO**, AND MOVE TO THE NEXT MODULE)

			➡	
I1		Have you ever experienced or witnessed or had to deal with an extremely traumatic event that included actual or threatened death or serious injury to you or someone else? EXAMPLES OF TRAUMATIC EVENTS INCLUDE: SERIOUS ACCIDENTS, SEXUAL OR PHYSICAL ASSAULT, A TERRORIST ATTACK, BEING HELD HOSTAGE, KIDNAPPING, FIRE, DISCOVERING A BODY, SUDDEN DEATH OF SOMEONE CLOSE TO YOU, WAR, OR NATURAL DISASTER.	NO	YES
I2		Did you respond with intense fear, helplessness or horror?	➡ NO	YES
I3		During the past month, have you re-experienced the event in a distressing way (such as, dreams, intense recollections, flashbacks or physical reactions)?	➡ NO	YES
I4		**In the past month:**		
	a	Have you avoided thinking about or talking about the event ?	NO	YES
	b	Have you avoided activities, places or people that remind you of the event?	NO	YES
	c	Have you had trouble recalling some important part of what happened?	NO	YES
	d	Have you become much less interested in hobbies or social activities?	NO	YES
	e	Have you felt detached or estranged from others?	NO	YES
	f	Have you noticed that your feelings are numbed?	NO	YES
	g	Have you felt that your life will be shortened or that you will die sooner than other people?	NO	YES
		ARE **3** OR MORE **I4** ANSWERS CODED **YES**?	➡ NO	YES
I5		**In the past month:**		
	a	Have you had difficulty sleeping?	NO	YES
	b	Were you especially irritable or did you have outbursts of anger?	NO	YES
	c	Have you had difficulty concentrating?	NO	YES
	d	Were you nervous or constantly on your guard?	NO	YES
	e	Were you easily startled?	NO	YES
		ARE **2** OR MORE **I5** ANSWERS CODED **YES**?	➡ NO	YES
I6		During the past month, have these problems significantly interfered with your work or social activities, or caused significant distress?		

NO **YES**

POSTTRAUMATIC STRESS DISORDER CURRENT

J. ALCOHOL ABUSE AND DEPENDENCE

(➡ MEANS: GO TO DIAGNOSTIC BOXES, CIRCLE NO IN BOTH AND MOVE TO THE NEXT MODULE)

			➡	
J1		**In the past 12 months**, have you had 3 or more alcoholic drinks within a 3 hour period on 3 or more occasions?	NO	YES
J2		**In the past 12 months**:		
	a	Did you need to drink more in order to get the same effect that you got when you first started drinking?	NO	YES
	b	When you cut down on drinking did your hands shake, did you sweat or feel agitated? Did you drink to avoid these symptoms or to avoid being hungover, for example, "the shakes", sweating or agitation? IF **YES** TO EITHER, CODE **YES**.	NO	YES
	c	During the times when you drank alcohol, did you end up drinking more than you planned when you started?	NO	YES
	d	Have you tried to reduce or stop drinking alcohol but failed?	NO	YES
	e	On the days that you drank, did you spend substantial time in obtaining alcohol, drinking, or in recovering from the effects of alcohol?	NO	YES
	f	Did you spend less time working, enjoying hobbies, or being with others because of your drinking?	NO	YES
	g	Have you continued to drink even though you knew that the drinking caused you health or mental problems?	NO	YES

ARE **3** OR MORE **J2** ANSWERS CODED **YES**?

* IF YES, SKIP J3 QUESTIONS, CIRCLE N/A IN THE ABUSE BOX AND MOVE TO THE NEXT DISORDER. DEPENDENCE PREEMPTS ABUSE.

NO **YES***

ALCOHOL DEPENDENCE
CURRENT

J3		**In the past 12 months:**		
	a	Have you been intoxicated, high, or hungover more than once when you had other responsibilities at school, at work, or at home? Did this cause any problems? (CODE **YES** ONLY IF THIS CAUSED PROBLEMS.)	NO	YES
	b	Were you intoxicated more than once in any situation where you were physically at risk, for example, driving a car, riding a motorbike, using machinery, boating, etc.?	NO	YES
	c	Did you have legal problems more than once because of your drinking, for example, an arrest or disorderly conduct?	NO	YES
	d	Did you continue to drink even though your drinking caused problems with your family or other people?	NO	YES

ARE **1** OR MORE **J3** ANSWERS CODED **YES**?

NO **N/A** **YES**

ALCOHOL ABUSE
CURRENT

K. NON-ALCOHOL PSYCHOACTIVE SUBSTANCE USE DISORDERS

(➡ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

Now I am going to show you / read to you a list of street drugs or medicines.

			➡	
K1	a	**In the past 12 months**, did you take any of these drugs more than once, to get high, to feel better, or to change your mood?	NO	YES

CIRCLE EACH DRUG TAKEN:

Stimulants: amphetamines, "speed", crystal meth, "crank", "rush", Dexedrine, Ritalin, diet pills.

Cocaine: snorting, IV, freebase, crack, "speedball".

Narcotics: heroin, morphine, Dilaudid, opium, Demerol, methadone, codeine, Percodan, Darvon, OxyContin.

Hallucinogens: LSD ("acid"), mescaline, peyote, PCP ("angel dust", "peace pill"), psilocybin, STP, "mushrooms", "ecstasy", MDA, MDMA, or ketamine ("special K").

Inhalants: "glue", ethyl chloride, "rush", nitrous oxide ("laughing gas"), amyl or butyl nitrate ("poppers").

Marijuana: hashish ("hash"), THC, "pot", "grass", "weed", "reefer".

Tranquilizers: Quaalude, Seconal ("reds"), Valium, Xanax, Librium, Ativan, Dalmane, Halcion, barbiturates, Miltown, GHB, Roofinol, "Roofies".

Miscellaneous: steroids, nonprescription sleep or diet pills. Any others?

SPECIFY MOST USED DRUG(S): ______________________________

	CHECK ONE BOX
ONLY ONE DRUG / DRUG CLASS HAS BEEN USED	☐
ONLY THE MOST USED DRUG CLASS IS INVESTIGATED.	☐
EACH DRUG CLASS USED IS EXAMINED SEPARATELY (PHOTOCOPY K2 AND K3 AS NEEDED)	☐

b SPECIFY WHICH DRUG/DRUG CLASS WILL BE EXPLORED IN THE INTERVIEW BELOW IF THERE IS CONCURRENT OR SEQUENTIAL POLYSUBSTANCE USE:______________________________

K2 **Considering your use of (NAME THE DRUG / DRUG CLASS SELECTED), in the past 12 months:**

a	Have you found that you needed to use more (NAME OF DRUG / DRUG CLASS SELECTED) to get the same effect that you did when you first started taking it?	NO	YES
b	When you reduced or stopped using (NAME OF DRUG / DRUG CLASS SELECTED), did you have withdrawal symptoms (aches, shaking, fever, weakness, diarrhea, nausea, sweating, heart pounding, difficulty sleeping, or feeling agitated, anxious, irritable, or depressed)? Did you use any drug(s) to keep yourself from getting sick (withdrawal symptoms) or so that you would feel better? IF **YES** TO EITHER, CODE **YES**.	NO	YES
c	Have you often found that when you used (NAME OF DRUG / DRUG CLASS SELECTED), you ended up taking more than you thought you would?	NO	YES
d	Have you tried to reduce or stop taking (NAME OF DRUG / DRUG CLASS SELECTED) but failed?	NO	YES
e	On the days that you used (NAME OF DRUG / DRUG CLASS SELECTED), did you spend substantial time (>2 HOURS), obtaining, using or in recovering from the drug, or thinking about the drug?	NO	YES

f Did you spend less time working, enjoying hobbies, or being with family or friends because of your drug use? NO YES

g Have you continued to use (NAME OF DRUG / DRUG CLASS SELECTED), even though it caused you health or mental problems? NO YES

ARE **3** OR MORE **K2** ANSWERS CODED **YES**?

SPECIFY DRUG(S): ________________________________

* IF YES, SKIP K3 QUESTIONS, CIRCLE N/A IN THE ABUSE BOX FOR THIS SUBSTANCE AND MOVE TO THE NEXT DISORDER.
DEPENDENCE PREEMPTS ABUSE.

NO	**YES** *
SUBSTANCE DEPENDENCE **CURRENT**	

Considering your use of (NAME THE DRUG CLASS SELECTED), in the past 12 months:

K3 a Have you been intoxicated, high, or hungover from (NAME OF DRUG / DRUG CLASS SELECTED) more than once, when you had other responsibilities at school, at work, or at home? Did this cause any problem? NO YES

(CODE **YES** ONLY IF THIS CAUSED PROBLEMS.)

b Have you been high or intoxicated from (NAME OF DRUG / DRUG CLASS SELECTED) more than once in any situation where you were physically at risk (for example, driving a car, riding a motorbike, using machinery, boating, etc.)? NO YES

c Did you have legal problems more than once because of your drug use, for example, an arrest or disorderly conduct? NO YES

d Did you continue to use (NAME OF DRUG / DRUG CLASS SELECTED), even though it caused problems with your family or other people? NO YES

ARE **1** OR MORE **K3** ANSWERS CODED **YES**?

SPECIFY DRUG(S): ________________________________

NO	**N/A**	**YES**
SUBSTANCE ABUSE **CURRENT**		

L. PSYCHOTIC DISORDERS AND MOOD DISORDER WITH PSYCHOTIC FEATURES

ASK FOR AN EXAMPLE OF EACH QUESTION ANSWERED POSITIVELY. CODE **YES** ONLY IF THE EXAMPLES CLEARLY SHOW A DISTORTION OF THOUGHT OR OF PERCEPTION OR IF THEY ARE NOT CULTURALLY APPROPRIATE. BEFORE CODING, INVESTIGATE WHETHER DELUSIONS QUALIFY AS "BIZARRE".

DELUSIONS ARE "BIZARRE" IF: CLEARLY IMPLAUSIBLE, ABSURD, NOT UNDERSTANDABLE, AND CANNOT DERIVE FROM ORDINARY LIFE EXPERIENCE.

HALLUCINATIONS ARE SCORED "BIZARRE" IF: A VOICE COMMENTS ON THE PERSON'S THOUGHTS OR BEHAVIOR, OR WHEN TWO OR MORE VOICES ARE CONVERSING WITH EACH OTHER.

		Now I am going to ask you about unusual experiences that some people have.			BIZARRE
L1	a	Have you ever believed that people were spying on you, or that someone was plotting against you, or trying to hurt you? NOTE: ASK FOR EXAMPLES TO RULE OUT ACTUAL STALKING.	NO	YES	YES
	b	**IF YES OR YES BIZARRE:** do you currently believe these things?	NO	YES	YES →L6
L2	a	Have you ever believed that someone was reading your mind or could hear your thoughts, or that you could actually read someone's mind or hear what another person was thinking?	NO	YES	YES
	b	**IF YES OR YES BIZARRE:** do you currently believe these things?	NO	YES	YES →L6
L3	a	Have you ever believed that someone or some force outside of yourself put thoughts in your mind that were not your own, or made you act in a way that was not your usual self? Have you ever felt that you were possessed? CLINICIAN: ASK FOR EXAMPLES AND DISCOUNT ANY THAT ARE NOT PSYCHOTIC.	NO	YES	YES
	b	**IF YES OR YES BIZARRE:** do you currently believe these things?	NO	YES	YES →L6
L4	a	Have you ever believed that you were being sent special messages through the TV, radio, or newspaper, or that a person you did not personally know was particularly interested in you?	NO	YES	YES
	b	**IF YES OR YES BIZARRE:** do you currently believe these things?	NO	YES	YES →L6
L5	a	Have your relatives or friends ever considered any of your beliefs strange or unusual? INTERVIEWER: ASK FOR EXAMPLES. ONLY CODE **YES** IF THE EXAMPLES ARE **CLEARLY** DELUSIONAL IDEAS NOT EXPLORED IN QUESTIONS L1 TO L4, FOR EXAMPLE, SOMATIC OR RELIGIOUS DELUSIONS OR DELUSIONS OF GRANDIOSITY, JEALOUSY, GUILT, RUIN OR DESTITUTION, ETC.	NO	YES	YES
	b	**IF YES OR YES BIZARRE:** do they currently consider your beliefs strange?	NO	YES	YES
L6	a	Have you ever heard things other people couldn't hear, such as voices? HALLUCINATIONS ARE SCORED "BIZARRE" ONLY IF PATIENT ANSWERS **YES** TO THE FOLLOWING:	NO	YES	
		IF YES: Did you hear a voice commenting on your thoughts or behavior or did you hear two or more voices talking to each other?	NO		YES
	b	**IF YES OR YES BIZARRE TO L6a:** have you heard these things in the past month? HALLUCINATIONS ARE SCORED "BIZARRE" ONLY IF PATIENT ANSWERS **YES** TO THE FOLLOWING: Did you hear a voice commenting on your thoughts or behavior or did you hear two or more voices talking to each other?	NO	YES	YES →L8b

L7 a Have you ever had visions when you were awake or have you ever seen things other people couldn't see? — NO / YES
CLINICIAN: CHECK TO SEE IF THESE ARE CULTURALLY INAPPROPRIATE.

b **IF YES:** have you seen these things in the past month? — NO / YES

CLINICIAN'S JUDGMENT

L8 b IS THE PATIENT CURRENTLY EXHIBITING INCOHERENCE, DISORGANIZED SPEECH, OR MARKED LOOSENING OF ASSOCIATIONS? — NO / YES

L9 b IS THE PATIENT CURRENTLY EXHIBITING DISORGANIZED OR CATATONIC BEHAVIOR? — NO / YES

L10 b ARE NEGATIVE SYMPTOMS OF SCHIZOPHRENIA, E.G. SIGNIFICANT AFFECTIVE FLATTENING, POVERTY OF SPEECH (ALOGIA) OR AN INABILITY TO INITIATE OR PERSIST IN GOAL-DIRECTED ACTIVITIES (AVOLITION), PROMINENT DURING THE INTERVIEW? — NO / YES

L11 a ARE 1 OR MORE « a » QUESTIONS FROM L1a TO L7a CODED **YES OR YES BIZARRE** AND IS EITHER:

MAJOR DEPRESSIVE EPISODE, (CURRENT OR RECURRENT)
OR
MANIC OR HYPOMANIC EPISODE, (CURRENT OR PAST) CODED **YES**? — NO ➡L13 / YES

IF NO TO L11 a, CIRCLE NO IN BOTH 'MOOD DISORDER WITH PSYCHOTIC FEATURES' DIAGNOSTIC BOXES AND MOVE TO L13.

b You told me earlier that you had period(s) when you felt (depressed/high/persistently irritable).

Were the beliefs and experiences you just described (SYMPTOMS CODED YES FROM L1a TO L7a) restricted exclusively to times when you were feeling depressed/high/irritable?

IF THE PATIENT EVER HAD A PERIOD OF AT LEAST 2 WEEKS OF HAVING THESE BELIEFS OR EXPERIENCES (PSYCHOTIC SYMPTOMS) WHEN THEY WERE NOT DEPRESSED/HIGH/IRRITABLE, CODE NO TO THIS DISORDER.

IF THE ANSWER IS NO TO THIS DISORDER, ALSO CIRCLE NO TO L12 AND MOVE TO L13

NO	**YES**
MOOD DISORDER WITH *PSYCHOTIC FEATURES*	
LIFETIME	

L12 a ARE 1 OR MORE « b » QUESTIONS FROM L1b TO L7b CODED **YES OR YES BIZARRE** AND IS EITHER:

MAJOR DEPRESSIVE EPISODE, (CURRENT)
OR
MANIC OR HYPOMANIC EPISODE, (CURRENT) CODED **YES**?

IF THE ANSWER IS YES TO THIS DISORDER (LIFETIME OR CURRENT), CIRCLE NO TO L13 AND L14 AND MOVE TO THE NEXT MODULE.

NO	**YES**
MOOD DISORDER WITH *PSYCHOTIC FEATURES*	
CURRENT	

L13 ARE 1 OR MORE « b » QUESTIONS FROM L1b TO L6b, CODED **YES BIZARRE**?

OR

ARE 2 OR MORE « b » QUESTIONS FROM L1b TO L10b, CODED **YES** (RATHER THAN **YES BIZARRE**)?

AND DID AT LEAST TWO OF THE PSYCHOTIC SYMPTOMS OCCUR DURING THE SAME 1 MONTH PERIOD?

NO	**YES**
PSYCHOTIC DISORDER **CURRENT**	

L14 IS **L13** CODED **YES**

OR

ARE 1 OR MORE « a » QUESTIONS FROM L1a TO L6a, CODED **YES BIZARRE**?

OR

ARE 2 OR MORE « a » QUESTIONS FROM L1a TO L7a, CODED **YES** (RATHER THAN **YES BIZARRE**)

AND DID AT LEAST TWO OF THE PSYCHOTIC SYMPTOMS OCCUR DURING THE SAME 1 MONTH PERIOD?

NO	**YES**
PSYCHOTIC DISORDER **LIFETIME**	

M. ANOREXIA NERVOSA

(➡ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE **NO**, AND MOVE TO THE NEXT MODULE)

M1	a	How tall are you?	☐ ft. ☐☐ in. / ☐☐☐ cm.
	b.	What was your lowest weight in the past 3 months?	☐☐☐ lbs. / ☐☐☐ kgs.
	c	IS PATIENT'S WEIGHT EQUAL TO OR BELOW THE THRESHOLD CORRESPONDING TO HIS / HER HEIGHT? (SEE TABLE BELOW)	➡ NO YES

In the past 3 months:

M2		In spite of this low weight, have you tried not to gain weight?	➡ NO YES
M3		Have you intensely feared gaining weight or becoming fat, even though you were underweight?	➡ NO YES
M4	a	Have you considered yourself too big / fat or that part of your body was too big / fat?	NO YES
	b	Has your body weight or shape greatly influenced how you felt about yourself?	NO YES
	c	Have you thought that your current low body weight was normal or excessive?	NO YES
M5		ARE 1 OR MORE ITEMS FROM **M4** CODED **YES**?	➡ NO YES
M6		FOR WOMEN ONLY: During the last 3 months, did you miss all your menstrual periods when they were expected to occur (when you were not pregnant)?	➡ NO YES

FOR WOMEN: ARE **M5 AND M6** CODED **YES**?

FOR MEN: IS **M5** CODED **YES**?

NO **YES**

ANOREXIA NERVOSA
CURRENT

HEIGHT / WEIGHT TABLE CORRESPONDING TO A BMI THRESHOLD OF 17.5 KG/M²

Height/Weight														
ft/in	4'9	4'10	4'11	5'0	5'1	5'2	5'3	5'4	5'5	5'6	5'7	5'8	5'9	5'10
lbs.	81	84	87	89	92	96	99	102	105	108	112	115	118	122
cm	145	147	150	152	155	158	160	163	165	168	170	173	175	178
kgs	37	38	39	41	42	43	45	46	48	49	51	52	54	55

Height/Weight					
ft/in	5'11	6'0	6'1	6'2	6'3
lbs.	125	129	132	136	140
cm	180	183	185	188	191
kgs	57	59	60	62	64

The weight thresholds above are calculated using a body mass index (BMI) equal to or below 17.5 kg/m² for the patient's height. This is the threshold guideline below which a person is deemed underweight by the DSM-IV and the ICD-10 Diagnostic Criteria for Research for Anorexia Nervosa.

N. BULIMIA NERVOSA

(➡ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

N1	In the past three months, did you have eating binges or times when you ate a very large amount of food within a 2-hour period?	➡ NO	YES
N2	In the last 3 months, did you have eating binges as often as twice a week?	➡ NO	YES
N3	During these binges, did you feel that your eating was out of control?	➡ NO	YES
N4	Did you do anything to compensate for, or to prevent a weight gain from these binges, like vomiting, fasting, exercising or taking laxatives, enemas, diuretics (fluid pills), or other medications?	➡ NO	YES
N5	Does your body weight or shape greatly influence how you feel about yourself?	➡ NO	YES
N6	DO THE PATIENT'S SYMPTOMS MEET CRITERIA FOR ANOREXIA NERVOSA?	NO ⬇ Skip to N8	YES
N7	Do these binges occur only when you are under (____lbs./kgs.)? INTERVIEWER: WRITE IN THE ABOVE PARENTHESIS THE THRESHOLD WEIGHT FOR THIS PATIENT'S HEIGHT FROM THE HEIGHT / WEIGHT TABLE IN THE ANOREXIA NERVOSA MODULE.	NO	YES

N8 IS **N5** CODED **YES** AND IS EITHER **N6** OR **N7** CODED **NO**?

NO	**YES**
BULIMIA NERVOSA **CURRENT**	

IS **N7** CODED **YES**?

NO	**YES**
ANOREXIA NERVOSA *Binge Eating/Purging Type* **CURRENT**	

O. GENERALIZED ANXIETY DISORDER

(➡ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE **NO**, AND MOVE TO THE NEXT MODULE)

O1	a	Have you worried excessively or been anxious about several things over the past 6 months?	➡ NO	YES
	b	Are these worries present most days?	➡ NO	YES
		IS THE PATIENT'S ANXIETY RESTRICTED EXCLUSIVELY TO, OR BETTER EXPLAINED BY, ANY DISORDER PRIOR TO THIS POINT?	NO	➡ YES
O2		Do you find it difficult to control the worries or do they interfere with your ability to focus on what you are doing?	➡ NO	YES
O3		FOR THE FOLLOWING, CODE **NO** IF THE SYMPTOMS ARE CONFINED TO FEATURES OF ANY DISORDER EXPLORED PRIOR TO THIS POINT.		
		When you were anxious over the past 6 months, did you, most of the time:		
	a	Feel restless, keyed up or on edge?	NO	YES
	b	Feel tense?	NO	YES
	c	Feel tired, weak or exhausted easily?	NO	YES
	d	Have difficulty concentrating or find your mind going blank?	NO	YES
	e	Feel irritable?	NO	YES
	f	Have difficulty sleeping (difficulty falling asleep, waking up in the middle of the night, early morning wakening or sleeping excessively)?	NO	YES

ARE **3** OR MORE **O3** ANSWERS CODED **YES**?

NO **YES**

GENERALIZED ANXIETY DISORDER
CURRENT

P. ANTISOCIAL PERSONALITY DISORDER (optional)

(➡ MEANS : GO TO THE DIAGNOSTIC BOX AND CIRCLE NO.)

P1		**Before you were 15 years old, did you:**		
	a	repeatedly skip school or run away from home overnight?	NO	YES
	b	repeatedly lie, cheat, "con" others, or steal?	NO	YES
	c	start fights or bully, threaten, or intimidate others?	NO	YES
	d	deliberately destroy things or start fires?	NO	YES
	e	deliberately hurt animals or people?	NO	YES
	f	force someone to have sex with you?	NO	YES
		ARE **2** OR MORE **P1** ANSWERS CODED **YES**?	➡ NO	YES
		DO NOT CODE **YES** TO THE BEHAVIORS BELOW IF THEY ARE EXCLUSIVELY POLITICALLY OR RELIGIOUSLY MOTIVATED.		
P2		**Since you were 15 years old, have you:**		
	a	repeatedly behaved in a way that others would consider irresponsible, like failing to pay for things you owed, deliberately being impulsive or deliberately not working to support yourself?	NO	YES
	b	done things that are illegal even if you didn't get caught (for example, destroying property, shoplifting, stealing, selling drugs, or committing a felony)?	NO	YES
	c	been in physical fights repeatedly (including physical fights with your spouse or children)?	NO	YES
	d	often lied or "conned" other people to get money or pleasure, or lied just for fun?	NO	YES
	e	exposed others to danger without caring?	NO	YES
	f	felt no guilt after hurting, mistreating, lying to, or stealing from others, or after damaging property?	NO	YES

ARE **3** OR MORE **P2** QUESTIONS CODED **YES**?

NO **YES**

ANTISOCIAL PERSONALITY DISORDER
LIFETIME

THIS CONCLUDES THE INTERVIEW

REFERENCES

Sheehan DV, Lecrubier Y, Harnett-Sheehan K, Janavs J, Weiller E, Bonara LI, Keskiner A, Schinka J, Knapp E, Sheehan MF, Dunbar GC. Reliability and Validity of the MINI International Neuropsychiatric Interview (M.I.N.I.): According to the SCID-P. European Psychiatry. 1997; 12:232-241.

Lecrubier Y, Sheehan D, Weiller E, Amorim P, Bonora I, Sheehan K, Janavs J, Dunbar G. The MINI International Neuropsychiatric Interview (M.I.N.I.) A Short Diagnostic Structured Interview: Reliability and Validity According to the CIDI. European Psychiatry. 1997; 12: 224-231.

Sheehan DV, Lecrubier Y, Harnett-Sheehan K, Amorim P, Janavs J, Weiller E, Hergueta T, Baker R, Dunbar G: The Mini International Neuropsychiatric Interview (M.I.N.I.): The Development and Validation of a Structured Diagnostic Psychiatric Interview. J. Clin Psychiatry, 1998;59(suppl 20):22-33.

Amorim P, Lecrubier Y, Weiller E, Hergueta T, Sheehan D: DSM-III-R Psychotic Disorders: procedural validity of the Mini International Neuropsychiatric Interview (M.I.N.I.). Concordance and causes for discordance with the CIDI. European Psychiatry. 1998; 13:26-34.

Translations	**M.I.N.I. 4.4 or earlier versions**	**M.I.N.I. 4.6/5.0, M.I.N.I. Plus 4.6/5.0 and M.I.N.I. Screen 5.0:**
Afrikaans	R. Emsley	W. Maartens
Arabic		O. Osman, E. Al-Radi
Bengali		H. Banerjee, A. Banerjee
Braille (English)		
Brazilian Portuguese	P. Amorim	P. Amorim
Bulgarian	L.G.. Hranov	
Chinese		L. Carroll, Y-J. Lee, Y-S. Chen, C-C. Chen, C-Y. Liu, C-K. Wu, H-S. Tang, K-D. Juang, Yan-Ping Zheng.
Czech		P. Zvlosky
Danish	P. Bech	P. Bech, T. Schütze
Dutch/Flemish	E. Griez, K. Shruers, T. Overbeek, K. Demyttenaere	I. Van Vliet, H. Leroy, H. van Megen
English	D. Sheehan, J. Janavs, R. Baker, K. Harnett-Sheehan, E. Knapp, M. Sheehan	D. Sheehan, R. Baker, J. Janavs, K. Harnett-Sheehan, M. Sheehan
Estonian		J. Shlik, A. Aluoja, E. Khil
Farsi/Persian		K. Khooshabi, A. Zomorodi
Finnish	M. Heikkinen, M. Lijeström, O. Tuominen	M. Heikkinen, M. Lijeström, O. Tuominen
French	Y. Lecrubier, E. Weiller, I. Bonora, P. Amorim, J.P. Lepine	Y. Lecrubier, E. Weiller, P. Amorim, T. Hergueta
German	I. v. Denffer, M. Ackenheil, R. Dietz-Bauer	G. Stotz, R. Dietz-Bauer, M. Ackenheil
Greek	S. Beratis	T. Calligas, S. Beratis
Gujarati		M. Patel, B. Patel, Organon
Hebrew	J. Zohar, Y. Sasson	R. Barda, I. Levinson, A. Aviv
Hindi		C. Mittal, K. Batra, S. Gambhir, Organon
Hungarian	I. Bitter, J. Balazs	I. Bitter, J. Balazs
Icelandic		J.G. Stefansson
Italian	I. Bonora, L. Conti, M. Piccinelli, M. Tansella, G. Cassano, Y. Lecrubier, P. Donda, E. Weiller	L. Conti, A. Rossi, P. Donda
Japanese		T. Otsubo, H. Watanabe, H. Miyaoka, K. Kamijima, J.Shinoda, K.Tanaka, Y. Okajima
Kannada		Organon
Korean		K.S. Oh and Korean Academy of Anxiety Disorders
Latvian	V. Janavs, J. Janavs, I. Nagobads	V. Janavs, J. Janavs
Lithuanian		A. Bacevicius
Malayalam		Organon
Marathi		Organon
Norwegian	G. Pedersen, S. Blomhoff	K.A. Leiknes , U. Malt, E. Malt, S. Leganger
Polish	M. Masiak, E. Jasiak	M. Masiak, E. Jasiak
Portuguese	P. Amorim	P. Amorim, T. Guterres
Punjabi		A. Gahunia, S. Gambhir
Romanian		O. Driga
Russian		A. Bystritsky, E. Selivra, M. Bystritsky, L. Shumyak, M. Klisinska.
Serbian	I. Timotijevic	I. Timotijevic
Setswana		K. Ketlogetswe
Slovenian		M. Kocmur, M. Kocmur
Spanish	L. Ferrando, J. Bobes-Garcia, J. Gilbert-Rahola, Y. Lecrubier	L. Ferrando, L. Franco-Alfonso, M. Soto, J. Bobes-Garcia, O. Soto, L. Franco, G. Heinze, C. Santana, R. Hidalgo
Swedish	M. Waern, S. Andersch, M. Humble	C. Allgulander, H. Agren M. Waern, A. Brimse, M. Humble.
Tamil		Organon
Telugu		Organon

Thai		P. Kittirattanapaiboon, S. Mahatnirunkul, P. Udomrat, P. Silpakit,, M. Khamwongpin, S. Srikosai.
Turkish	T. Örnek, A. Keskiner, I. Vahip	T. Örnek, A. Keskiner, A.Engeler
Urdu		S. Gambhir

A validation study of this instrument was made possible, in part, by grants from SmithKline Beecham and the European Commission.
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The Geriatric Depression Scale – Short form

Geriatric Depression Scale (GDS) Short Form

Choose the best answer for how you have felt over the past week:

1. Are you basically satisfied with your life?	Yes	No
2. Have you dropped many of your activities and interests?	Yes	No
3. Do you feel that your life is empty?	Yes	No
4. Do you often get bored?	Yes	No
5. Are you in good spirits most of the time?	Yes	No
6. Are you afraid that something bad is going to happen to you?	Yes	No
7. Do you feel happy most of the time?	Yes	No
8. Do you often feel helpless?	Yes	No
9. Do you prefer to stay at home rather than going out and doing new things?	Yes	No
10. Do you feel you have more problems with memory than most?	Yes	No
11. Do you think it is wonderful to be alive now?	Yes	No
12. Do you feel pretty worthless the way you are now?	Yes	No
13. Do you feel full of energy?	Yes	No
14. Do you feel that your situation is hopeless?	Yes	No
15. Do you think that most people are better off than you are?	Yes	No

Source: Sheikh, J.I., and Yesavage, J.A. Geriatric Depression Scale (GDS): Recent evidence and development of a shorter version. *Clinical Gerontologist* 5(1-2): 165-173, 1986.

Prevention Pathways: *Online Courses*
http://www.samhsa.gov/preventionpathways

The Alcohol Use Disorders Identification Test

The Alcohol Use Disorders Identification Test: Interview Version

Read questions as written. Record answers carefully. Begin the AUDIT by saying "Now I am going to ask you some questions about your use of alcoholic beverages during this past year." Explain what is meant by "alcoholic beverages" by using local examples of beer, wine, vodka, etc. Code answers in terms of "standard drinks". Place the correct answer number in the box at the right.

1. How often do you have a drink containing alcohol?
   (0) Never [Skip to Qs 9-10]
   (1) Monthly or less
   (2) 2 to 4 times a month
   (3) 2 to 3 times a week
   (4) 4 or more times a week

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
   (0) 1 or 2
   (1) 3 or 4
   (2) 5 or 6
   (3) 7, 8, or 9
   (4) 10 or more

3. How often do you have six or more drinks on one occasion?
   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

   Skip to Questions 9 and 10 if Total Score for Questions 2 and 3 = 0

4. How often during the last year have you found that you were not able to stop drinking once you had started?
   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

5. How often during the last year have you failed to do what was normally expected from you because of drinking?
   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?
   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

9. Have you or someone else been injured as a result of your drinking?
   (0) No
   (2) Yes, but not in the last year
   (4) Yes, during the last year

10. Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you cut down?
   (0) No
   (2) Yes, but not in the last year
   (4) Yes, during the last year

Record total of specific items here

If total is greater than recommended cut-off, consult User's Manual.

The Drug Abuse Screening Test

DAST-10 Questionnaire

I'm going to read you a list of questions concerning information about your potential involvement with drugs, excluding alcohol and tobacco, during the past 12 months.

When the words "drug abuse" are used, they mean the use of prescribed or over-the-counter medications/drugs in excess of the directions and any non-medical use of drugs. The various classes of drugs may include: cannabis (e.g., marijuana, hash), solvents, tranquilizers (e.g., Valium), barbiturates, cocaine, stimulants (e.g., speed), hallucinogens (e.g., LSD) or narcotics (e.g., heroin). Remember that the questions do not include alcohol or tobacco.

If you have difficulty with a statement, then choose the response that is mostly right.
You may choose to answer or not answer any of the questions in this section.

These questions refer to the past 12 months.	No	Yes
1. Have you used drugs other than those required for medical reasons?	0	1
2. Do you abuse more than one drug at a time?	0	1
3. Are you always able to stop using drugs when you want to? (If never use drugs, answer "Yes."	0	1
4. Have you had "blackouts" or "flashbacks" as a result of drug use?	0	1
5. Do you ever feel bad or guilty about your drug use? If never use drugs, choose "No."	0	1
6. Does your spouse (or parents) ever complain about your involvement with drugs?	0	1
7. Have you neglected your family because of your use of drugs?	0	1
8. Have you engaged in illegal activities in order to obtain drugs?	0	1
9. Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?	0	1
10. Have you had medical problems as a result of your drug use (e.g., memory loss, hepatitis, convulsions, bleeding, etc.)?	0	1

The Six-Item Cognitive Impairment Test

6CIT

Question	Score range	Weighting	Weighted score
What Year is it	0-1	x4	
What month is it	0-1	x3	
Give the memory phrase e.g. (John/Smith/42/West Street/Bedford)			
About what time is it (within 1 hour)	0-1	x3	
Count back from 20-1 1 point 1 error 2 point >1 error	0-2	x2	
Say months in reverse D N O S A J J M A M F J 1 point 1 error 2 point >1 error	0-2	x2	
Repeat the memory phrase 1 point 1 error 2 points 2 errors 3 points 3 errors 4 points 4 errors 5 points all errors	0-5	x2	
Total score for 6CIT	0-28		

Appendix P

Staff Information Sheet, Participant Invitation Letter and Information Sheet

An Exploratory Study of Executive Functioning in Older Offenders

Dear probation staff member

I am working within a team of psychologists and psychiatrists from the University of Oxford who are studying the thinking skills (executive functioning) of older males (aged 50+) on probation. We hope to use the findings from the study to help improve understanding, services and support for this group.

We are looking to recruit 30 men over the age of 50 years to participate in the study. Participants will be required to complete some psychological tests measuring thinking skills as well as answer some questions on health, occupation, and education.

We will be identifying cases who fit our criteria from centrally-held data and then directly contact the member of probation staff managing the case to invite the individual to participate. The assessment sessions will last approximately 1 hour and we will seek to arrange them as part of routine probation supervision appointments.

The study has been approved by the University of Oxford Central University Research Ethics Committee (ref: R47292/RE001) and NOMS (ref: 2016-290).

Thank you for taking the time to read this letter.

Yours sincerely,

Lucy Fitton
Trainee Clinical Psychologist
Supervised by Professor Seena Fazel

Invitation Letter
The University of Oxford
An Exploratory Study of Executive Functioning in Older Offenders

Dear Sir,

We are a team of psychologists and psychiatrists from the University of Oxford who are very interested in the thinking skills of older men on probation. I would like to invite you to take part in our research. We hope to use the findings from the study to help improve services and support for this group.

If you would like to take part in the study I will meet you at the probation office at a time that is good for you. This meeting will last approximately one hour. I will ask you to complete some tasks measuring the thinking skills we are interested in, and also ask you some background questions about your health, education, and work experience.

The information gathered in the assessment will be kept confidential except in the rare circumstances in which it is judged that you or someone else is at risk of serious harm or if you disclose illegal acts or behaviour against probation rules.

If you would like to find out more information about the study please let a member of the probation team know and I will arrange to meet you.

I have enclosed an information sheet that includes some further information.

Thank you for taking the time to read this letter.

Yours sincerely,

Lucy Fitton
Trainee Clinical Psychologist
Supervised by Professor Seena Fazel

Participant Information Sheet

An Exploratory Study of Executive Functioning in Older Offenders (R47292/RE001)

You are invited to take part in our research study. Before you decide if you want to participate we would like you to know why we are doing the research and what you would need to do if you take part. ***One of the team can go through this sheet with you and answer any questions you have.***

Why are we doing the study?

The aim of the study is to examine thinking skills (ability to organise and verbally respond to information) in older men on probation. We are interested to know more about the thinking skills in this group of people because we do not know much about this topic as little research has been conducted in this area.

Why have I been invited?

We are looking to recruit 30 older men on probation. You have been given this sheet because you meet these criteria.

What is involved in taking part?

A researcher will firstly ask you a couple of screening questions (to check your age and that your first language is English) to make sure that you meet the criteria to participate. If you meet these criteria an appointment will then be made for you to meet the researcher as part of your routine probation appointment. This meeting will be in a room at the probation office. You will need to sign a consent form to say that you are happy to participate and understand the study and what will happen to the results. After this
you will be asked to do some short tasks measuring thinking skills, and answer some additional questions on mental health (as this could influence performance on the tasks). The session is expected to last approximately one hour. Demographic information (such as type of sentence and conviction type) will be obtained from your probation record.

Do I have to take part?

It is up to you whether you decide to take part in the study. If you want to participate you will need to sign a consent form. You are free to refuse to answer individual questions or to withdraw from the study at any point and you do not need to give a reason. If you choose to do this it will not affect any support you are currently receiving from the probation service. We may still use the data we have collected up to the point of withdrawal.

What will happen to my information?

All the information you provide will be anonymised and kept in a safe place. Your individual information will only be seen by members of the research team and not the Probation Service. The Probation Service will be given a summary of the overall anonymous group data, but you will not be identifiable in this. This will be shared once the study has ended, and will provide them with information on different needs within the service, such as mental health.

Your data will be labelled with a number and will not have your name or personal information on it. We will keep your contact details separate from the data. These data will be stored for three years before they are destroyed.

All information will remain confidential (with the researchers) except in the rare circumstances in which it is judged that you or someone else is deemed to be at risk of serious harm or if there is a disclosure of illegal acts or behaviour against probation rules.

What are the advantages and disadvantages of taking part?

There is neither advantage nor disadvantage from your decision to take part in the research. This study may lead to a better understanding of thinking skills in men on probation and could lead to improvements in the support these people get. There are no risks with taking part, although you may be made aware of mental health difficulties through answering some questions asked. In cases of distress or anxiety we will direct you to support services such as MIND (0300 123 3393) and the Samaritans (116 123).

What will happen to the results?

We plan to publish the results in an academic journal; you will not be identified in this. These findings will also be made available to the probation service. If you want we can give you a summary of the study results. The research will be written up as part of a doctoral dissertation, no identifiable information will be included in this.

Who has approved this study?

This project has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee (ref: R47292/RE001) and it has been approved by the National Offender Management Service (ref: 2016-290)

Further information and contact details

If you would like further information about the study please contact your offender manager or local probation service who will get in touch with us.

Who do I contact if I have a concern about the study?

If you have a concern about any aspect of this project, please speak to your local community provider.

Thank you for taking the time to read this leaflet.

Appendix Q

Consent Form

Consent Form

An Exploratory Study of Executive Functioning in Older Offenders

Lucy Fitton (Trainee Clinical Psychologist)

The aim of the study is to examine thinking skills in older men on probation.

Research ID Number ________________
(please leave blank)

Please Initial

1. I confirm that I have read and understood the Information Sheet (dated 14/11/2016) for the above study and that I have had the opportunity to consider the information, ask questions and have these answered satisfactorily. ☐
2. I understand participation is voluntary and that I am free to withdraw at any point without giving reason, and without my support or care being affected. ☐
3. I understand that if I withdraw from the study the data collected up to that point may still be used in the future analyses. ☐
4. I understand that participant identifiable data will be destroyed as soon as the study has been completed (30/08/2017) and anonymised data will be stored for three years following this. After this it will also be destroyed. ☐
5. I understand that we plan to write the results of the study up for a doctoral dissertation and an academic journal, but that there will be no identifying information in this. ☐
6. I understand that researchers from the University of Oxford will have access to my probation records. ☐
7. I understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee, and received approval from the National Offender Management Service. ☐
8. I understand that all information will remain confidential (with the researchers) except in the rare circumstances in which it is judged that you or someone else is deemed to be at risk of serious harm or if there is a disclosure of illegal acts or behaviour against probation rules. ☐
9. I understand that anonymised individual data will not be provided to the Probation Service but they will be given information on the overall anonymised group data (that I cannot be identified in). ☐
10. I understand how to raise a concern or make a complaint. ☐
11. I agree to take part in the above study. ☐

________________________ ________ ________________
Name of Participant **Date** **Signature**

________________________ ________ ________________
Name of Researcher **Date** **Signature**

- W*hen completed: one copy for participant, original to be kept for researcher site file.*

If you would like a copy of the report once the project has been completed. Please provide contact details.

………………………………………………………………………………………

………………………………………………………………………………………

Appendix R

Data Collection Sheet

Data Collection Sheet

Participant number: ___________

Age	
Ethnicity	
Education & Occupational History (+retirement)	
Current Medication	
History of Psychiatric Conditions	
Head Injury (hospitalised)	
Neurological or cardiovascular disorders (stroke, cardiac arrest etc.)	
Probation information:	

Appendix S

Further Details on the Procedure

Development of Procedure

The study procedure was developed with two psychologists working within the probation service to ensure that the methods were appropriate and acceptable. A Consultant Forensic Clinical Neuropsychologist was also consulted during the development of the study proposal and provided guidance and recommendations.

Session Structure

Each session began with a discussion about the study, review of information sheet, opportunity to ask questions, and signing of the consent forms (one copy for the participant one for the study records). At this point participants could provide contact details if they wanted to receive a summary of the study findings once the research was completed.

The participants were then asked for information on:

- Educational and occupational background – age they left school, qualifications achieved, career history and current occupation.
- Current medication.
- If they have any psychiatric/mental health diagnoses.
- Whether they have ever been hospitalised for a head injury.
- Whether they have any neurological or cardiovascular disorders including high blood pressure.

The measures where then administered in the following order:

(1) Test of Premorbid Functioning

(2) Verbal Fluency tests

(3) Stroop test

(4) Mini Neuropsychiatric Interview

(5) Geriatric Depression Scale-Short form

(6) Alcohol Use Disorders Identification Test

(7) Drug Abuse Screening Test

(8) Six-Item Cognitive Impairment Test

The session ended with a debrief and acknowledgement of the sensitive nature of some of the questions. If the participant presented with scores indicating clinical difficulties this was managed as described in the ethical considerations section (Appendix V).

Appendix T

Variables Used to Predict Reoffending Risk on the OGRS3

- Copas rate (reconviction rate based on number of convictions and time between them)
- Current sanction type (whether this is a first caution with no conviction, second caution with no conviction, first conviction, another caution type, or any other conviction type)
- Age and sex
- Type of current offence

References

Howard, P., Francis, B. J., Soothill, K., Humphreys, L. (2009). *OGRS3: the revised offender group reconviction score.* London, England: Ministry of Justice

Appendix U

Research Approval

Approval from The Institute of Clinical Psychology Training

The Oxford Institute of Clinical Psychology Training

Oxford Doctoral Course in Clinical Psychology
An NHS Course validated by the University of Oxford

Isis Education Centre, Warneford Hospital, Oxford OX3 7JX
Tel: +44(0)1865 226431
Website: www.oxicpt.co.uk

15th August, 2016

Lucy Fitton
Trainee Clinical Psychologist
Oxford Doctoral Course in Clinical Psychology
Isis Education Centre
Warneford Hospital

Dear Lucy,

Thank you very much for your work in revising your project. You now have full approval from the Course Research Sub Committee.

We wish you all the best with your research.

Yours sincerely,

Dr Myra Cooper
Chair, Research Sub-Committee

c.c. Olivia Hewitt
Seena Fazel

Approval from CUREC

MEDICAL SCIENCES
INTER-DIVISIONAL RESEARCH ETHICS COMMITTEE

Research Services, University of Oxford, Wellington Square, Oxford, OX1 2JD
Tel: +44(0)1865 616577 Fax: +44(0)1865 280467
ethics@medsci.ox.ac.uk

CONFIDENTIAL

Ref: R47292/RE001

25th October 2016

Ms Lucy Fitton
Oxford Institute of Clinical Psychology Training
Isis Education Centre
Roosevelt Drive
Warneford Hospital
Oxford

Dear Lucy

Research Ethics Approval - CUREC 2

Project Title: An Exploratory Study of Executive Functioning in Older Offenders

The above application has been considered on behalf of the Medical Sciences Inter-divisional Research Ethics Committee (IDREC) in accordance with the procedures laid down by the University for Ethical Approval of all research involving human participants.

I am pleased to inform you that, on the basis of the information provided to the IDREC, the proposed research has been judged as meeting appropriate ethical standards, and approval has been granted for a period of **10 months**, commencing on **25th October 2016**. The reference number for this project is **R47292/RE001**.

This is **subject to:**

a) **it is your responsibility to comply with the requirements for administering any tests or questionnaires and if in doubt to contact the publisher of those tests or questionnaires.**

b) **if new staff are engaged in the programme MS IDREC should be informed of their names, status and ethics training**

Please may I remind you that your project may be reviewed at some stage during an annual audit of projects.

Amendments

Should there be any subsequent changes to the project, which raise ethical issues not covered in the original application, you should submit details to the IDREC for consideration and approval. If there are significant alterations then the committee will require a succinct letter explaining these.

Please do not hesitate to contact me if you have any queries.

Yours sincerely

H. Barnby-Porritt

Dr. Helen Barnby-Porritt
Research Ethics Manager, Medical Sciences

Conditional Approval from the National Offender Management Service

Mrs Lucy Fitton
Oxford Institute of Clinical Psyhcology Training
The Isis Education Centre
Roosevelt Drive
Warneford Hospital
Headington
Oxford
OX3 7JX

Lucy.Fitton@hmc.ox.ac.uk

National Offender Management Service
National Research Committee
Email: National.Research@noms.gsi.gov.uk

26th September 2016

REQUEST FOR FURTHER INFORMATION – NOMS RESEARCH

Ref: 2016-290
Title: An Exploratory Study of Executive Functioning in Older Offenders

Dear Lucy,

Further to your application to undertake research across NOMS, the National Research Committee (NRC) has considered the details provided, alongside the requirements set out in the NOMS research instruction (https://www.gov.uk/government/organisations/national-offender-management-service/about/research) and has requested the following further information.:

- Further information is required on how the offenders will be identified/sampled, including why the age group under examination is from age 50?
- Please could you clarify the reasoning behind the sample sizes. Are they likely to be sufficient for the statistical analysis? Have any power calculations been conducted?
- Please could you provide more information on the normative test data including what this data is and whether it is appropriate to conduct comparisons with this group of data?
- Why were these prison establishments/NPS divisions/CRC areas selected?
- Have the proposed assessment scales been validated in any way? Please could you also provide further clarification on why each of the measures is required for the project?
- Will the interview/questionnaire schedule be tested/piloted in the first instance to check ease of use, coverage of key issues and overall length (monitoring any respondent fatigue)?
- Would it be possible to give further consideration to the timing of the interviews and consider whether it would be more appropriate to conduct the interviews before a probation supervision for example?
- Please could you clarify why data needs to be stored for ten years? As set out in the NOMS Research Applications Instruction, data should be kept no longer than necessary (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/316480/NOMS_Research_Applications_Instruction_Final__May_14_.doc; para 3.44).

Please also note, as set out in the NOMS Research Applications Instruction, payments for participation should not be given to offenders while under prison or probation supervision. Payment will only be considered in very

exceptional circumstances – there will need to be strong evidence that response rates have become problematic in the approved study before seeking approval through the NRC for payments to be made.

Please send this further information (quoting your NRC Reference number) to the NRC (National.Research@noms.gsi.gov.uk) at your earliest convenience. Please note the research must not commence until the NRC has granted full approval, and a formal letter to that effect is provided.!

Yours sincerely,
National Research Committee

APPROVED SUBJECT TO MODIFICATIONS – NOMS RESEARCH

Mrs Lucy Fitton
Oxford Institute of Clinical Psyhcology Training
The Isis Education Centre
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OX3 7JX
Lucy.Fitton@hmc.ox.ac.uk

National Offender Management Service
National Research Committee
Email: National.Research@noms.gsi.gov.uk

13th October 2016

Ref: 2016-290
Title: An Exploratory Study of Executive Functioning in Older Offenders

Dear Lucy,

Further to your application to undertake research across NOMS, the National Research Committee (NRC) is pleased to grant approval in principle for your research. The Committee has requested the following modifications:

- The methodology should be adapted to gather OGRS score information on the identified sample. This will ensure that the sample selected is representative of the wider population under investigation to provide external validity.
- Consideration should also be given to whether it is possible to examine the experiences of older offenders under probation supervision with other protected characteristics, i.e. females, those from a black and minority ethnic background (BAME) or those who have a disability. We realise this may be beyond the scope of the PhD as it is an exploratory study, but this will provide greater value to NOMS if this were able to be examined. Please contact the research mailbox if you have any feedback regarding this.
- To ensure that the participant has the opportunity to discuss any issues of concern with their probation supervisor the interviews should be conducted as part of their routine appointments. This should also negate the need for travel reimbursements to be made.
- The following should be included in all participation information sheets/consent forms:
  - Participants should be informed that there will be neither advantage nor disadvantage as a result of their decision to participate or not participate in the research.
  - It must be made clear to research participants that they can refuse to answer individual questions or withdraw from the research until a designated point, and that this will not compromise them in any way.
  - Participants should be informed how their data will be used and for how long it will be held.
  - Access to any NOMS records for the participants should be explicitly covered.

- It needs to be clear that the following information has to be disclosed: behaviour that is against prison rules and can be adjudicated against, illegal acts, and behaviour that is potentially harmful to the research participant (e.g. intention to self-harm or complete suicide) or others.
- Potential avenues of support should be specified for those who are caused any distress or anxiety.
- The respondent should be asked to direct any requests for information, complaints and queries through their prison establishment/community provider. Direct contact details should not be provided.

- If any individuals are being approached due to their very specific roles, particular attention should be given to ensuring their anonymity. If anonymity cannot be guaranteed, respondents will need to be fully informed about this prior to providing their consent.
- For offenders under probation supervision, it should be ensured that the relevant community provider is aware of the follow-up contact with the location of follow-up meetings being agreed.
- As set out in the NOMS Research Applications Instruction, vouchers should not be given to offenders while under probation supervision. Payment will only be considered in very exceptional circumstances – there will need to be strong evidence that response rates have become problematic in the approved study before seeking approval through the NRC for payments to be made.
- The interview/questionnaire schedules should be tested/piloted in the first instance to check ease of use, coverage of key issues and overall length (monitoring any respondent fatigue).
- Research data should be kept no longer than necessary, e.g. when the research is to be published and the scientific journal requires the original data to be kept for a specified period
- In the final research reports, the limitations should be clearly set out (e.g. the samples may not be fully representative, comparisons with normative test data rather than a control group of others under probation supervision).

Before the research can commence you must agree formally by email to the NRC (National.Research@noms.gsi.gov.uk), confirming that you accept the modifications set out above and will comply with the terms and conditions outlined below and the expectations set out in the NOMS Research Instruction (https://www.gov.uk/government/organisations/national-offender-management-service/about/research).

Please note that unless the project is commissioned by MoJ/NOMS and signed off by Ministers, the decision to grant access to prison establishments, National Probation Service (NPS) divisions or Community Rehabilitation Company (CRC) areas (and the offenders and practitioners within these establishments/divisions/areas) ultimately lies with the Governing Governor/Director of the establishment or the Deputy Director/Chief Executive of the NPS division/CRC area concerned. If establishments/NPS divisions/CRC areas are to be approached as part of the research, a copy of this letter must be attached to the request to prove that the NRC has approved the study in principle. The decision to grant access to existing data lies with the Information Asset Owners (IAOs) for each data source and the researchers should abide by the data sharing conditions stipulated by each IAO.

Please quote your NRC reference number in all future correspondence.

Yours sincerely,
National Research Committee

National Research Committee - Terms and Conditions

All research

- **Changes to study -** Informing and updating the NRC promptly of any changes made to the planned methodology. ***This includes changes to the start and end date of the research***.
- **Dissemination of research** - The researcher will receive a research summary template and project review form template attached to the research approval email from NOMS. These two forms are for completion once the research project has ended (ideally within one month of the end date).The researcher should complete the research summary document for NOMS (approximately three pages; maximum of five pages) which (i) summaries the research aims and approach, (ii) highlights the key findings, and (iii) sets out the implications for NOMS decision-makers. The research summary should use language that an educated, but not research-trained person, would understand. It should be concise, well organised and self-contained. The conclusions should be impartial and adequately supported by the research findings. It should be submitted to the NRC alongside the completed project review form (which covers lessons learnt and asks for ratings on key questions). Provision of the research summary and project review form is essential if the research is to be of real use to NOMS.
- **Publications -** The NRC (National.Research@noms.gsi.gov.uk) receiving an electronic copy of any papers submitted for publication based on this research at the time of submission and at least one month in advance of the publication.
- **Data protection** - Researchers must comply with the requirements of the Data Protection Act 1998 and any other applicable legislation. Data protection guidance can be found on the Information Commissioner's Office website: http://ico.org.uk. Researchers should store all data securely and ensure that information is coded in a way that maintains the confidentiality and anonymity of research participants. The researchers should abide by any data sharing conditions stipulated by the relevant data controllers.
- **Research participants -** Consent must be given freely. It will be made clear to participants verbally and in writing that they may withdraw from the research at any point and that this will not have adverse impact on them. If research is undertaken with vulnerable people – such as young offenders, offenders with learning difficulties or those who are vulnerable due to psychological, mental disorder or medical circumstances - then researchers should put special precautions in place to ensure that the participants understand the scope of their research and the role that they are being asked to undertake. Consent will usually be required from a parent or other responsible adult for children to take part in the research.
- **Termination** - NOMS reserves the right to halt research at any time. It will not always be possible to provide an explanation, but NOMS will undertake where possible to provide the research institution/sponsor with a covering statement to clarify that the decision to stop the research does not reflect on their capability or behaviour.

Research requiring access to prison establishments, NPS divisions and/or CRCs

- **Access –** Approval from the Governing Governor/Director of the establishment or the Deputy Director/Chief Executive of the NPS division/CRC area you wish to research in. (Please note that NRC approval does not guarantee access to establishments, NPS divisions or CRC areas; access is at the discretion of the Governing Governor/Director or Deputy Director/Chief Executive and subject to local operational factors and pressures). This is subject to clearance of vetting procedures for each establishment/NPS division/CRC area.
- **Security** – Compliance with all security requirements.
- **Disclosure –** Researchers are under a duty to disclose certain information to prison establishments/probation provider. This includes behaviour that is against prison rules and can be adjudicated against, undisclosed illegal acts, and behaviour that is potentially harmful to the research participant (e.g. intention to self-harm or complete suicide) or others. Researchers should make research participants aware of this requirement. The Prison Rules can be accessed here and should be reviewed: http://www.justice.gov.uk/downloads/offenders/psipso/pso/PSO_0100_the_prison_rules_1999.doc

Email Approval from the National Offender Management Service

From: "Pike, Sarah (NOMS)" <Sarah.Pike@noms.gsi.gov.uk>
Subject: FW: NRC 2016-290 Application
Date: 15 November 2016 11:45:58 GMT
To: "'lucy.fitton@hmc.ox.ac.uk'" <lucy.fitton@hmc.ox.ac.uk>
Cc: "National Research [NOMS]" <National.Research@noms.gsi.gov.uk>

Hi Lucy,

Many thanks for your response. All the very best with your project – hope it goes well.
Sarah

Sarah Pike
Research & Evaluation Team
National Offender Management Service | 4th Floor | Clive House | 70 Petty France | London SW1H 9EX
Telephone: 0300 047 6497 | VPN: 7150 476497 **(Please note I very have limited access to my phone and answerphone messages at the moment)**
Email: Sarah.Pike@noms.gsi.gov.uk
For information on NOMS research applications:
https://www.gov.uk/government/organisations/national-offender-management-service/about/research
Please note my working week is Tuesday to Thursday.
This message is personal. The opinions expressed are in no way an official view of the Ministry of Justice; neither should they be considered an indication of Ministry of Justice policy.

Appendix V

Ethical Considerations

Informed Consent

Before providing informed consent participants were also advised that they had the right to withdraw from the study at any point. They were informed that any data collected prior to withdrawal would be retained and may be used in the final data analysis. Participants were made aware of the limits of confidentiality and that if they disclosed anything that indicated significant risk of harm to themselves or others then confidentiality would need to be broken to seek appropriate support. The readability of the invitation letter, consent form, and information sheet was estimated at age 14 years (via readability-score.com).

If a participant's capacity to provide informed consent was in question then a conversation about their understanding of the study and consent took place. This was guided by the Mental Capacity Act (The National Archives, 2005) where the participant's understanding on providing consent, their ability to retain and weigh information on this, together with their ability to communicate their decision to consent or not, was assessed. If a participant failed on one or more of these four areas they were deemed unable to participate. One participant was excluded for this reason, as they were not deemed to have capacity to provide informed consent.

Data Protection

Participants' data were kept in accordance with the Data Protection Act (The National Archives, 1998) and anonymised through the use of participant identification numbers. These numbers were recorded on documents used in the study and the electronic database. A separate document was used to record participants' names and dates of birth to allow identification of all who took part in the study. Data were stored at the Department of

Psychiatry and kept in a locked cabinet. The electronic database was stored on a password-protected laptop and did not include any participant identifiable data; at the end of the study these data were transferred to a USB and stored with the rest of the data at the Department of Psychiatry.

Only study staff had access to study documents. Participant identifiable data were transferred in a locked bag. Any errors made on the paper documents were ruled out (rather than amended with correction fluid), amended if required, initialled and dated. Data will be kept for a minimum of three years at the Department of Psychiatry, in accordance with CUREC guidelines, after which it will be destroyed. Once the study was completed any identifiable details on the participants (such as name, date of birth, telephone number, and address) were destroyed.

Risk Issues

If a participant's score on the clinical interview, mood screen, substance screens, or brief cognitive screen fell within ranges indicating clinically significant difficulties they were informed that help might be available for the difficulties they described and advised to speak with their general practitioner (GP) or probation officer about this. If the participant indicated a risk of suicide this was discussed with the participant in the session and their probation officer following the session.

There was the potential for the measures to induce anxiety or stress in the participant. If the participant did become acutely distressed then the session would have been drawn to a close. No participants raised immediate safety concerns (for example in a suicidal crisis), however if they had they would have been encouraged to seek immediate support from the emergency services. If the participant felt unable to do this then the researcher would have offered to do this for them, and stay with them until help arrived. In instances of acute distress support would have also been sought from a staff member of the probation service, in

the first instance, as these would be in the building. Contact (by telephone, if not person) would have been made to the supervising psychiatrist or a psychologist within the probation service for further supervision and guidance. In such cases a standard procedure would have been used to record the event on an incident form (developed following CUREC guidance, presented below). Any incidents would have been discussed with the researcher's supervisor.

Participants that presented with less severe or imminent suicidal ideation/risk were encouraged to contact their GP or a health professional (this was 16 participants in total) and given information on supporting organisations (MIND and the Samaritans). All of these participants consented for this information to be shared with their probation officers, who were contacted by the researcher following the session.

No participants presented with a risk of harm to others, for example through a disclosure of re-offending, but if this did occur confidentiality would be broken and this issue discussed immediately post-session with the probation staff and other relevant people and organisations, such as safeguarding services (as pre-stated on the consent form). In this instance a study incident form would be completed and supervision sought from the project supervisor or psychologists within the probation service.

Safety and personal security

The researcher always informed members of staff at the probation service when they arrived and followed the signing-in and signing-out procedures. Staff members indicated any concerns they may have had with the probationers due to participate and if there were any safety issues. Advice from probation staff on whether or not to involve participants in the study for safety reasons would have been followed, although no safety concerns were raised for any potential participants. The researcher informed staff members when and where they were interviewing a participant and the expected duration of this. The researcher dressed appropriately so as not to draw attention to themself and was aware of personal and

professional boundaries. If required the researcher would have made it clear that they were not in a position to offer therapeutic support.

No participants were inappropriate or made the researcher feel uncomfortable. If they had the assessment would have been ended in a calm manner. Probation staff would have been informed of any such incidents and an incident form written. If an emergency arose the researcher would have used the general alarm bell or personal alarm to notify staff.

Prior to the commencement of the study the researcher sought health and safety guidance from the probation service and acted in accordance to this. The researcher had completed mandatory PMVA (prevention and management of violence and aggression training) within Oxford Health NHS Foundation Trust as well as more intensive breakaway training within the West London Mental Health NHS Trust.

References

The National Archives. (1998). *Data protection act.* London, England: The Stationery Office.

The National Archives. (2005). *The mental capacity act.* London, England: The Stationery Office.

Incident Report Form

Participant ID number: ________________________

Date and time of incident: ______________________

Details of the incident and reasons for concern:

____
____
____
____
____
____
____

Action Taken (e.g. discussed with whom, who contacted, outcome, decisions):

____
____
____
____
____
____
____

Participant's General Practitioner Contacted by Researcher: Yes / No

If yes contact details of GP:

____
____
____
____

GP contacted by participant? Or other professionals contacted?

____
____
____
____

Letter sent to GP about contact? Yes / No

Letter attached? Yes / No

Name and Signature of psychologist   Date

_______________________________   _________________

Appendix W

Socio-economic Classifications

Socio-economic status was estimated using the Economic and Social Research Council social classifications that are determined by occupation (Rose & O'Reilly, 1998). For those who were retired this classification was based on their last occupation. This classification method has been used in other research on older forensic samples (Fazel, O'Donnell, Hope, Gulati, & Jacoby, 2007).

Table W.1. Socio-economic classifications of the sample

Class	%(*n*)
1 – Higher managerial and professional occupations	3.1 (1)
2 – Lower managerial and professional occupations	9.4 (3)
3 – Intermediate occupations	6.3 (2)
4 – Small employers and own account workers	3.1 (1)
5 – Lower supervisory, craft, and related occupations	6.3 (2)
6 – Semi-routine occupations	12.5 (4)
7 – Routine occupations	31.2 (10)
8 – Never worked and long-term unemployed	28.1 (9)

References

Fazel, S., O'Donnell, I., Hope, T., Gulati, G., & Jacoby, R. (2007). Frontal lobes and older sex offenders: a preliminary investigation. *International Journal of Geriatric Psychiatry, 22,* 87-89. doi: 10.1002/gps.1648

Rose, D., & O'Reilly, K. (1998). *The ESRC review of government social classifications.* London, England: Office for National Statistics.

Appendix X

List of Medications Participants Reported Currently Taking

Acitretin
Alendronic acid
Antiretrovirals**
Arrythmia medication e.g. Antiarrhythmics
Beta blockers - Propranolol, Alprenolol
Blood pressure (e.g. valsartan & amlodipine)
Bronchodialators
Calcium channel blockers e.g. diltiazem
Co-codamol
Furosemide
Insulin
Irbesartan
Lamotrigine*
Lansoprazole
Levothyroxine
Lithium**
Metformin
Methotrexate*
Olanzapine
Omeprazole
Paracetamol
Prednisolone
Quetiapine
Ranitidine
Selective Serotonin Reuptake Inhibitors - Citalopram, Sertraline, Fluoxitine*
Statins
Tricyclic antidepressants – Amitriptyline**
Unspecifed asthma medication
Unspecified allergy medication
Unspecified anti-fungal medication
Unspecified colitis medication
Unspecified shingles medication
Vitamins
Warfarin

* Evidence of some minimal impact on cognitive functioning (Biringer, Rongve, & Lund, 2009; Martin et al., 1999; Meade et al., 2012)

** Likely negative impact on cognitive functioning (Caporaso, 2013; Institute of Medicine of the National Academies, 2010; Pachet & Wisniewski, 2003).

References

Biringer, E., Rongve, A., Lund, A. (2009). A review of modern antidepressants' effect on neurocognitive function. *Current Psychiatry Reviews, 5,* 00-00. doi: 10.2174/157340009788971137

Caporaso, G. L. (2013). Medications and cognition in older adults. In L. D. Ravdin, & H. L. Katzen (Eds), *Handbook on the neuropsychology of aging and dementia* (pp. 89-108). New York, NY: Springer Science+Business Media.

Institute of Medicine of the National Academies. (2010). *HIV and disability: Updating the social security listings.* Washington, DC: The National Academies Press.

Martin, R., Kuzniecky, Ho, S., Hetherington, H, Pan, J., Sinclair, K., Gilliam, F., & Faught, E. (1999). Cognitive effects of topiramate, gabapentin, and lamotrigine in healthy young adults. *Neurology, 52,* 231. doi: 10. 1212/ WNL. 52. 2. 321

Meade, T., Cumming, S., Hallab, L., Spencer, D., Howe, G., & Manolios, N. (2012). A preliminary investigation of cognitive function in rheumatoid arthritis patients on long-term methotrexate treatment. *Journal of Health Psychology, 18,* 1353-1359. doi: 10.1177/1359105312461660.

Pachet, A. K., & Wisniewski, A. M. (2003). The effects of lithium on cognition: an updated review. *Pyshcopharmacology, 170,* 225-234. doi: 10.1007/s00213-003-1592-x

Appendix Y

Reflections

I approached this study with excitement and trepidation. Once the final research approval was granted I became increasingly aware of the tight deadline and range of obstacles to overcome to reach the point of submission. With six months to open and close recruitment I decided I would do everything in my power to reach the target and maintain optimism that probation officers I had never met would take time out of their stretched role to invite their clients. Equally, I decided to hold hope that probationers would dedicate their time to participate for free. In some ways the pressured deadline allowed me to sustain momentum despite the other challenges of clinical psychology training and life more generally.

I feel privileged to have had the opportunity to access the probation service and clients that would not routinely receive psychological input. I valued meetings with forensic psychologists within this service, this allowed me the opportunity to reflect upon the differences and similarities between forensic and clinical psychologists. It was fascinating to work with the specific client group of older probationers. My only other forensic experience at that point was a specialist placement in forensic mental health and this study afforded me insights into the diversity of the role of a psychologist when working with forensic populations.

While the stressors and challenges of developing and implementing the study were anticipated, one of the most difficult tasks was not being in a position to offer support or guidance for any identified mental health needs. Although I was able to encourage participants to speak to their GP or probation officer I was conscious of the limited psychological input into the probation service as well as the challenges of accessing mental

health services. Having worked in community mental health I was aware of how difficult it was for people to access these services if they had a forensic history or significant substance misuse difficulties. Furthermore, considering my current placement in forensic mental health I could see that many of the probationers would not meet the complexity threshold of required for many of these services. In supervision I was able to reflect on how this client group may 'fall through the cracks' and contemplate potential solutions to this problem. I was informed there are to be some trials of an IAPT style programme within the probation services, and I will be interested to see how this progresses.

I feel fortunate that I was able to complete a study in areas I am particularly interested in - forensics and neuropsychology. Prior to training a large proportion of my experience was spent working with older adults and I felt a focus on older probationers was also a good match for me. While only a small study I found it exciting to know I was addressing a new research area and providing information on a population little is known about. I have always been drawn to work within a forensic context and with people who may be regarded as on the fringes of society. As I embarked on this project Nelson Mandela's words on the criminal justice system were in my mind "A nation should not be judged by how it treats its highest citizens but its lowest ones". This rang particularly true for groups of older people who offend, where the literature indicates that their needs are not always met. This project sparked a further interest in understanding the psychological processes of people in all stages of the criminal justice system, particularly how these processes relate to risk and offending.