# YOUTH CRIME: AN INVESTIGATION INTO THE EFFECTIVENESS OF GENERAL RE-OFFENDING RISK ASSESSMENT TOOLS.

**BY**

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## ABSTRACT

This thesis examines the effectiveness of general re-offending risk assessment instruments for young people. The introductory chapter considers current trends in Scottish youth crime and provides an overview of the unique way in which children and adolescents are dealt with through the Children's Hearing System (Social Work Scotland Act, 1968). Chapter two presents a systematic literature review of the risk and protective factors associated with repeat offending and desistance in adolescent offending behaviour. A number of factors in the domains of individual, peer, family, school and community were identified which differentiate repeat offenders from those who desist from offending in adolescence and emerging adulthood. However, variations in the methodology adopted for each of the studies ($N$=9) limit the conclusions that can be drawn from this review and highlight the need for further research in this area. Specifically, research is required that is conducted outside the USA, includes females as a discrete offender group and uses methodology comparable to existing research in this field.

Chapter three provides a critical review of the 'Asset' (not an acronym) risk of general re-offending risk assessment measure, an instrument that has routinely been used for the past 13 years across the UK to identify community and custodial disposals for young people involved in criminal behaviour. Regrettably, only three research papers with a primary focus on predictive validity were identified. Further, the effectiveness of this tool varied depending on which measure of risk (e.g., 'Asset' dynamic or 'Asset' dynamic plus Offender Group Recidivism Scale-3) and outcome measure (e.g., re-conviction or re-offending) was selected. Findings from the use of 'Asset' must therefore be interpreted with caution and with an awareness of the limited information available in relation to its validity and reliability.

Chapter four comprises an empirical research study, which compares the predictive validity of 'Asset' with that of the Youth Level of Service-Case Management Inventory (YLS-CMI) in a sample of Scottish youths. Each instrument predicted repeat offending with moderate ('Asset' Area Under the Curve (AUC) =0.75) to large effect sizes (YLS-CMI AUC=0.81). Factors from the individual and community domains were significantly associated with repeat offending ($p<0.05$). Finally, chapter five summarises the findings from the previous chapters, considering potential implications for the development of policy and practice, and recommendations for future research.

**DEDICATION**

*To mum and dad, for encouraging me to believe that I could achieve anything I set my mind to. The greatest gift a parent could ever give their child.*

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planning but you have shown, by example, that it is possible to put the needs of the young people we work with first, despite often competing agendas and limited resources and services. I hope that I have the same passion, drive and clarity of thought, to do what is right for each young person I work with, after as many years service.

Finally, I would like to thank my Gran-Jacqui, my sisters Nadine and Cally, and my good friends Donna and Paul, Paul, Sharron, and Rozie and Chris, each of you have contributed in your own unique way to me achieving my goal. I literally could not have done this without you all and I will forever be grateful.

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# CHAPTER ONE: INTRODUCTION

Considerable attention continues to be given to youth crime (offences committed by youth aged 8-17 years) and identifying those individuals at risk of repeat offending (involved in offending on more than one separate occasion). This is despite a downward trend in the number of recorded offences that are committed by young offenders, and a reduction in the number of youth who are involved in these crimes. Indeed in 2012, 37,779 youth were involved in crime, a 30% reduction (*n*=16,167) since 2008 (*n*=53,956); and a 32 % reduction in overall crime rates during this four-year period (Scottish Police Performance Framework, 2012).

It is widely accepted that youth crime has significant implications for society in terms of the financial cost of crime, the failure of custodial sentences to act as a deterrent to crime, and the impact of crimes on victims, families and the general public (Kemshall, 2008). However, there has been less consensus regarding whether youth crime is a societal problem (Goldson, 2011; McAra & McVie, 2012; Smith, 2011) or a problem of the individual (e.g., psychological dysfunction and/or personality disorder; Eysenck & Eysenck, 1970; Rutter & Smith, 1995). Most do acknowledge, however, that no single risk factor has been identified as a cause for youth offending. Rather, youth crime is considered the result of the complex interaction of a number of risk factors (e.g., community, school, individual, and family factors), with the absence of important protective factors (e.g., attachment to parent, resilience, support network; Rutter, Giller, & Hagell, 1998).

While criminologists, sociologists and psychologists continue to provide varying accounts of the empirical explanation for youth crime, there appears to be an understanding that early childhood experiences (e.g., neglect, abuse, family maladjustment, trauma) and later

offending behaviour are closely intertwined, with few differences having been identified between the presentation and needs of the neglected child and that of the young offender (Muncie, 2011). As such, many countries have adopted a welfare approach to tackling youth crime (e.g., Belgium, Finland, Norway), whereby attempts to prevent further offending are embedded through consideration of offending behaviour as the symptom of unmet childhood needs (Crittenden, 1995).

**Age of criminal responsibility**

In 1932, Scottish law set the age of criminal responsibility (the capacity of an individual to engage in criminal conduct) at eight years. Following recommendations from The United Nations Committee Report for the Rights of a Child (2002) that a minimum age of criminal responsibility be set at 12 years, and recommendations from the Scottish Law Commission report (2002), changes to Scottish Legislation were introduced in the 2010 Criminal Justice and Licensing Bill. While the age of criminal responsibility remains at eight years, no child under the age of 12 can be prosecuted in an adult court in Scotland.

Scotland is perceived, internationally, as adopting a welfare approach to tackling youth crime; the Children's Hearings System was introduced in 1971. However, the low age of criminal responsibility was somewhat contradictory to this approach; in spite of this, increasing the age at which a child can be prosecuted in an adult court has brought current legislation more into line with Scotland's welfare approach to youth justice. This change in legislation also highlights, perhaps, a growing realisation that while a child between eight and 12 years may have the capacity to commit an offence, their developmental age prohibits them from comprehending and managing the full rigours of the Criminal Justice System (Arthur, 2004). It must be noted, however, that the age of criminal responsibility in Scotland is two

years younger than that of England and Wales (10 years); the country which is perceived as having the most punitive Youth Justice System in Europe (Goldson & Muncie, 2006).

**Measurement of crime in Scotland**

Official crime statistics in Scotland are derived from the number of crimes recorded across the eight police forces (Central, Dumfries & Galloway, Fife, Grampian, Lothian & Borders, Northern, Strathclyde and Tayside). The Association of Chief Police Officers in Scotland (ACPOS; an independent organisation which aims to provide better integrated police services for Scotland) works in partnership with the government to set strategic objectives for policing in Scotland. In 2004, ACPOS introduced the Scottish Crime Recording Standard (SCRS) with the view to encouraging a consistent approach to record crime across the eight-force police structure. As such, since 2004 all crimes are classified and recorded in Scotland in line with the SCRS, and in 2013 the previous eight force police structure merged to become a single force responsible for policing Scotland. Crimes and offences are recorded using the same approach, regardless of whether the offender is an adult (aged 18 or above) or youth (8-17 years; Table 1.1).

Table 1.1

*Classification of crimes and offences as stipulated by the Scottish Crime Recording Standard (SCRS, 2004).*

| **Crimes** | |
|---|---|
| **Group 1: Crimes of Violence** | • Murder<br>• Attempted murder<br>• Serious assault<br>• Robbery<br>• Assault with intent to rob<br>• Threats and extortion<br>• Cruelty to children |
| **Group 2: Sexual Offences** | • Rape<br>• Assault with intent to rape<br>• Indecent assault<br>• Sexual offences against children |
| **Group 3: Crimes of Dishonesty** | • Theft<br>• Housebreaking<br>• Opening Lockfast Places (OLP)<br>• Thefts of and from motor vehicles<br>• Fraud |
| **Group 4: Fire-raising, Vandalism** | • Vandalism<br>• Malicious mischief<br>• Fire-raising<br>• Reckless conduct |
| **Group 5: Drugs/ other Offences** | • Possession of drugs<br>• Possession with the intent to sell<br>• Possession of weapons<br>• Crimes against public justice |
| **Offences** | |
| **Group 6: Miscellaneous** | • 'Anti-social behaviour'-type offences<br>• Breach of the Peace (BOP)<br>• Common assault<br>• Alcohol-related offences |
| **Group 7: Road Traffic Offences** | • Speeding<br>• Seat belt offences<br>• Driving without a license<br>• Driving without insurance<br>• Motor vehicle defects |

Police forces submit crime statistics relating to their area and a final report is compiled with a breakdown of crime in each force, including an overall Scottish crime statistic for adults and youths; this information is available to the public in the form of an annual Scottish Policing Performance Framework (SPFF) report. However, reliance on official crime statistics (i.e., detected crime) is likely to result in an underestimation of the prevalence of crime (number of individuals who report being the victim of a crime in a given period or during their lifetime) and incidence of crime (number of incidents of a specific crime committed in a given timeframe) since consideration is not given to offences that remain unreported to the police. Similarly, official crime statistics are often affected by changes to police practice and police recording practice (e.g., the introduction of the SCRD in 2004), which may contribute to any variations in the incidence of recorded crime.

Information relating to the public's experience and perception of crime is obtained via The Scottish Crime and Justice Survey (previously known as The Scottish Crime and Victimisation Survey, 2004, 2006; and The Scottish Crime Survey, 1993, 1996, 2000, 2003), which provides an alternative and complementary measure of crime to the official police statistics. However, this social survey does not distinguish between offences committed by adults and youths. Only in three issues of the Scottish Crime and Justice Survey, published in 1993, 1996 and 2000, was a section dedicated to youth crime in Scotland whereby 12 to 15 year olds were asked to comment on their involvement in offending by means of self-report as opposed to their experience of being a victim of crime.

The Scottish Social Attitudes survey was introduced in 1999 to identify the public's perception of a range of national issues. However, regrettably, again there has not been a section dedicated to youth crime, nor has crime in general been discussed consistently. While the 2009 survey focused on the public's perception of anti-social behaviour, violence and

drugs, no distinction was made between those crimes committed by adults and those by youths. Although the 2004 survey included information on public attitudes towards young people and youth crime, young people were classified as individuals aged between 11 and 24 years of age, a problematic distinction given that official police statistics classify young offenders as between eight and seventeen due to the age of criminal responsibility.

It appears, therefore, that whilst Scotland has introduced strategies to ensure the consistency of police data recorded across the country, there is no consistent or comprehensive account of the public's attitudes and perception of youth crime, with information only being collected in 1993, 1996, 2000 and 2004. Furthermore, where data have been collected, little thought has been given to the methodology of the data collection of recorded crimes and offences, which has resulted in the data being non-comparable with official police statistics.

**Current trends in Scottish youth crime**

The youth crimes figures presented in this section are drawn from official police statistics (recorded crimes and offences). All reported statistics have been extracted from the Scottish Policing Framework annual reports dated 2008-2009 to 2011-2012 (SPFF, 2012). Statistics have been collated between the 1st April and 31st March of each year (personal communication with SPFF data analyst, May 2013). Data from the year 2009-2012 were selected as these dates correlate with the period of data collection of the research element of this thesis (see Chapter 4). Table 1.2 below outlines the number of recorded crimes and offences detected which were committed by youths in Scotland between 2008 and 2012.

Table 1.2

*Recorded crimes and offences detected which were committed by 8 to 17 year olds (taken from the annual SPFF reports, 2009; 2010; 2011; 2012).*

| Offence | Incidence 2008-2009 | Incidence 2009-2010 | Incidence 2010-2011 | Incidence 2011-2012 | Trend |
|---|---|---|---|---|---|
| **Violence** | 1215 | 1016 | 1029***** | 837 | 31% Decrease |
| **Sexual** | 768 | 754****** | 782 | 878 | 14% Increase |
| **Dishonesty** | 13,436 | 11,546 | 9, 478 | 8,575 | 36% Decrease |
| **Fire-raising, vandalism** | 13,888 | 11,574 | 8, 725 | 7,672 | 45% Decrease |
| **Drugs/other offences** | 9,996 | 8, 310 | 6, 971 | 6,683 | 33% Decrease |
| **Offences/Miscellaneous** | 36,419 | 34,174 | 27,662 | 27,672*** | 27% Decrease |
| **Overall Crime** | 75,722 | 67,374 | 54,647 | 51,317 | 32% Decrease |

*****An increase of 13 (1%) recorded crimes between 2009-2010 and 2010-2011
******A reduction of 14 (2%) recorded crimes between 2008-2009 and 2009-2010
*** An increase of 10 (4%) recorded offences between 2010-2011 and 2011-2012

Over the four-year time period there has been a decrease of 32% for overall crime (crime and offences) detected in Scotland. Indeed, there has been a decrease across all of the SCRS groups with the exception of Group 2 (sexual crimes), where a 14% increase is noted. Sexual crimes remain the least prevalent of all recorded offence types, a trend consistent with the literature partly because victims of sexual crimes are less likely to report offences than any other offence type due to a lack of faith in the legal system and a belief that their allegations will not be taken seriously (Sexual Abuse Victims of Crime, 2012). It is possible that increases in detected sexual crimes may be due to changes in the way in which sexual offences are classified. The introduction of the Sexual Offences (Scotland) Act (2009) saw re-classifications of a number of different sexual crimes. For example, the definition of rape was extended to include male victims, oral sex is now considered to be rape, and for the first time in Scotland 'consent' was defined by statute as 'free agreement'. The 2009 Act also created a number of new sexual offences including: coercion (forcing an individual to

observe a sexual offence/ sexual image), and engaging in indecent communications (via text, email, social network sites). The introduction of new sexual offences and an agreed definition of what consent is, are likely to have contributed to the increase in the number of sexual crimes since the Act came into force in December 2010.

More generally, it is promising that there is a decrease in overall crime and there are a number of possibilities for this decrease. It is possible that the new approach to recording crime introduced by ACPOS in 2004 has resulted in decreases due to the way in which crimes are recorded as opposed to actual reductions in crime. Alternatively, this could be due to the introduction of Concordat and Single Outcome Agreements in 2007 allowed Local Authorities (LAs) to target resources according to need. As such, there have been a number of local initiatives which have attempted to divert young offenders from prosecution, custody and the adult criminal justice system (e.g., Pre Referral Screening/ Early and Effective Intervention, the Whole Systems Approach).

Pre-Referral Screening (PRS; now referred to as Early and Effective Intervention) is a multi-agency (police, social work, health, education, youth offending service) initiative that came into practice in 2008. It provides an alternative to referring children and adolescents (under 16 years) who have committed offences but are not subject to a Supervision Requirement to the Children's Hearings System (CHS) by offering a direct link to community services. PRS appears to have had the largest impact on the reduction of crime rates. In 2008-2009, 11,805 referrals were made to the CHS and in 2011-2012, 5,604 referrals; indicating a 47% decrease in the number of youth referred to the CHS on offence grounds.

Similarly, the Whole Systems Approach (WSA) was introduced in 2010 and aims to divert offenders aged between 16 and 18 years from statutory measures, prosecution and custody by encouraging and supporting LAs to implement a whole systems approach to preventing and reducing offending. It therefore appears, that the actual number of crimes committed by youth in Scotland may not have reduced, rather it is the manner in which these crimes are processed (e.g., diversionary approaches) which is likely to have resulted in reduced crime rates.

**Youth justice**

Due to inherent differences in Youth Justice Systems across the UK, it is important to have an overview of the way in which young offenders are managed in Scotland. At an international level England and Wales have been viewed as having the most punitive European Youth Justice System (Goldson & Muncie, 2006), where young people are criminalised at an early age and considerable cost is incurred through subjecting young people to prison sentences as a consequence of their involvement in crime. In contrast, there is no Youth Justice System in Scotland; instead there are the Children's Hearings and Criminal Justice Systems. The unique way in which the CHS manages children and adolescents involved in criminal behaviour has led Scotland, to be viewed internationally, as adopting a welfare approach to tackling youth crime. The following section outlines key aspects of the development of the Kilbrandon Principles in Scotland, including an overview of referral routes into the Children's Hearings and Criminal Justice Systems.

**Overview of the Kilbrandon Principles: managing youth who offend in Scotland**

The Kilbrandon Committee was established in 1961, as a result of inconsistent approaches across Scotland regarding the way in which youth involved in criminal behaviour, or in need

of care and protection were dealt with by the courts. The committee found that young people who were involved in the judicial system, whether they engaged in offending behaviour or not, displayed challenging behaviour as a result of childhood adversity and difficulties emanating from their family unit (Whyte, 2009). The committee concluded that the 'needs' and not the 'deeds' of the young person should be considered when dealing with problematic behaviour and that children and adolescents should be considered in the context of the wider family. As such, the committee recommended the abolishment of the juvenile court system, and the introduction of a social education department to support the family unit. Interestingly, since the introduction of the Social Work (Scotland Act) (1968), including the establishment of the Children's Hearings System (CHS) in 1971, there have been few legal changes relating to young offenders until the Children's Hearings (Scotland) Act (2011; see Appendix A for salient policies, bills and legislation relating to the development of the Kilbrandon Principles).

The Children's Hearings System (CHS) is based on the Kilbrandon Philosophy and Principles and was introduced to ensure that children and adolescents involved in offending behaviour, and those in need of care and protection, were dealt with by the same system. The fundamental principle is that the welfare and needs of the child should inform any proposed intervention (e.g., support from agencies, monitoring and supervision) Thus the CHS aims to listen to, and take into consideration, the views of the child and their parent/ carer, when reaching decisions. Further, any compulsory measures which are considered must be deemed to be more beneficial to the individual than not assigning compulsory measures (the no order principle); minimum intervention is a key component of the Kilbrandon Principles (Scottish Executive, 2003).

Prior to 2007, youth crime in Scotland was underpinned by specific National Standards which all Local Authorities (LAs) adhered to. Since the new government in 2007 and the introduction of Concordat and Single Outcome Agreements, LAs have been accorded the freedom to develop individual service development plans based on local need. This has resulted in different approaches, budgets and targets in service delivery across Scotland and has led to variations in the extent and speed at which Scottish legislation has filtered down and become embedded in practice. However, the introduction of Getting It Right For Every Child (GIRFEC) in 2004 – the national framework for all services working with young people (education, health, social work and police) – aimed to promote a multi-agency approach and has encouraged and provided some uniformity nationally.

***Referral routes to the Children's Hearings System (CHS)***

Children may be referred to the CHS on either offence or non-offence (care and protection) grounds. However, it must be noted that there are certain caveats which may result in a young person coming into contact with the Criminal Justice System (CJS); and prevent the systems in Scotland, collectively, being considered a welfare approach.

All children under the age of 16 will be referred to the CHS unless the offence is of a serious nature whereby the young person will be referred to both the CHS and the CJS to decide which system is best suited to the case. Thus, it is possible that a young person's (under 16 years) offence will be processed in the CJS. If a young person is aged 16-18 years and currently the subject of a Supervision Requirement (compulsory measures of supervision), the case will automatically be jointly reported to both the Children's Reporter and the Procurator Fiscal (PF; a public prosecutor in the Sheriff Court who has the option not to prosecute and pursue alternatives to the Sheriff and Justice of the Peace Courts). Thus, for

individuals' who previously had a Supervision Requirement and this was terminated by the age of 16 and for those individuals who have never been the subject of such a requirement, their offences will not be processed through the CHS.

The Hearing is made up of three lay people that have been trained to sit on the panel and make decisions. A Children's Reporter (social work, mental health or legal professional) is also present to answer any legal queries but they are not able to make or influence the decisions of the panel. A number of options are available to the Children's Reporter following a referral to the CHS. The reporter is provided with information from the police, LA and educational settings, from which a decision is made as to whether to refer the young person to a Hearing or take no further action. If a Hearing is requested (for individuals currently the subject of a Supervision Requirement), or the reporter has made the decision to hold a Hearing (for new referrals) the grounds for referral (i.e., offence or care and protection grounds) and Statement of Fact (description of said events) are put to the young person and their parent/ guardian, who must accept these grounds before the Hearing can proceed.

If the grounds are not accepted the Hearing can either discharge the grounds (dispose of the referral) or request a proof Hearings from the Sheriff (a legal professional who sits in judgment in the Sheriff Court) to investigate whether there is evidence to proceed with the grounds. The outcome of the proof Hearing will determine whether the case will be returned to the Hearing or disposed. If returned to the Hearing, the panel will decide whether to discharge the grounds – often less serious offence grounds are discharged to allow concentration on more serious offences – or impose compulsory measures of supervision. For those individuals who are already the subject of a Supervision Requirement consideration

will be given as to whether the existing conditions are appropriate for the new referral or whether additional measures are required.

***Referral routes to the Criminal Justice Systems (CJS)***

Subsequent to receiving a police charge, a young person can be referred to the PF who bases their decision on how to proceed following receipt of the police report. There are a number of decisions open to the PF, who can decide not to take the case forward (no proceedings), issue a verbal or written fiscal warning (once a warning has been received the young person cannot be prosecuted for that offence), impose a fiscal fine (of £25-£100), refer to the children's reporter (if the child is under 16 or under 18 and the subject of a Supervision Requirement), or proceed against the young person and prosecute. If the PF decides to prosecute a Criminal Justice Social Work Report (pre-sentence report) will be requested to in order to identify the probability of future offending and to consider sentencing options (e.g., community, custodial).

There are a number of different courts in Scotland, however this section will focus on the two most routinely used courts in the Criminal Justice System (CJS), namely the Sheriff and High courts. The Sheriff Court provides a local criminal court service for specific jurisdictions in Scotland (e.g., Lothian, Strathclyde, Tayside). This court deals with solemn cases which are indictable offences (i.e., can only be tried on an indictment following a preliminary Hearings) and which require a trial and/or jury, and summary offences which can be proceeded without the right to a jury/trial or indictment. The High Court of Justiciary hears the most serious criminal cases, typically those cases that require a trial and are heard before a judge and 15 jurors. Following a court appearance, young people may either be remanded in custody or given court bail (typically with restrictions). Upon conclusion of the trial and determination

of a degree of guilt, court decisions are imposed which include custodial or community sentences or a fine.

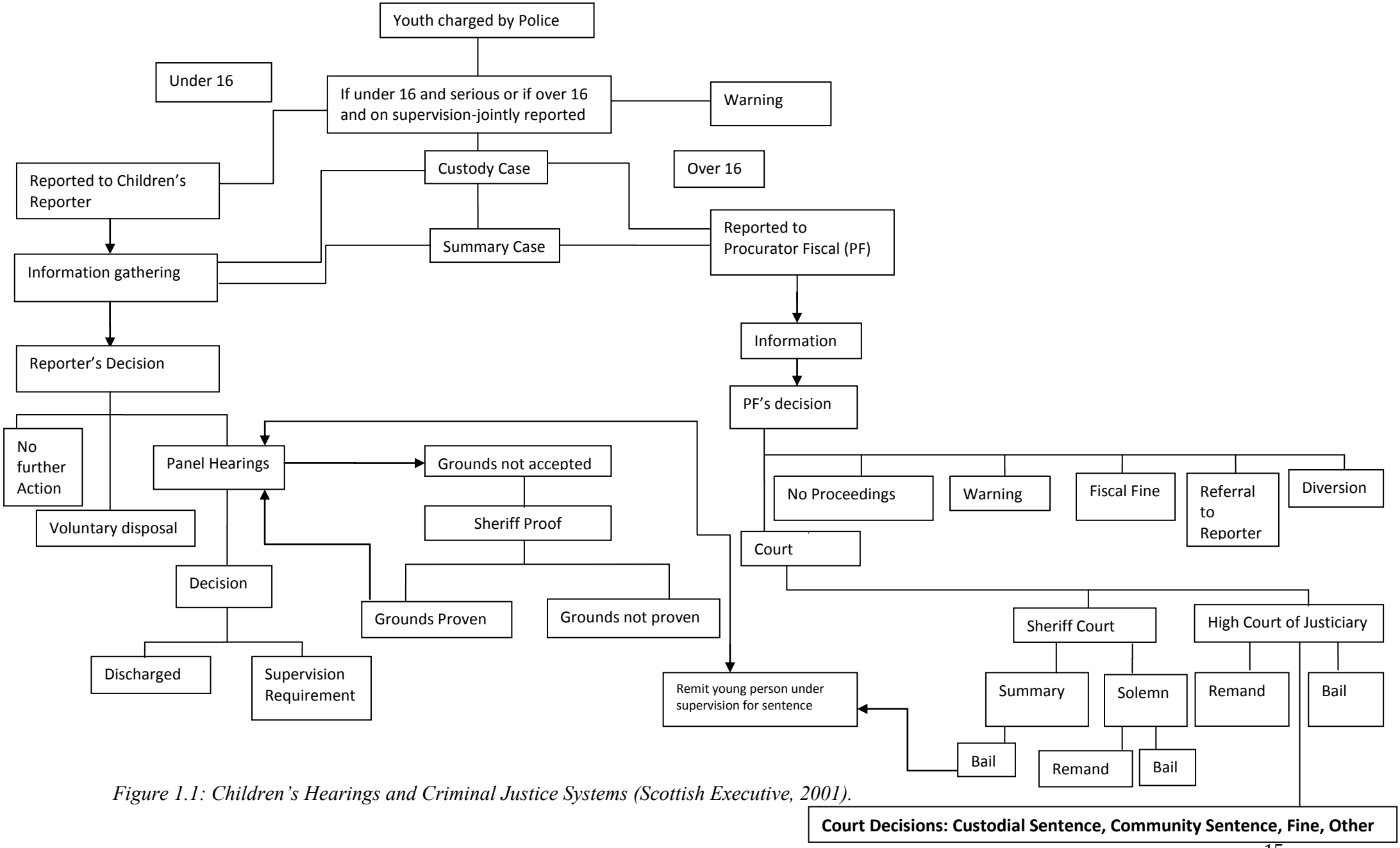



*Figure 1.1: Children's Hearings and Criminal Justice Systems (Scottish Executive, 2001).*

Currently, the biggest policy driver for youth justice in Scotland is to divert young people involved in offending behaviour from prosecution (CYCJ, 2013). It is therefore important that the instruments that are used to identify risk factors and formulate risk management plans are the most reliable measures available. Risk assessments of future offending behaviour are included in reports for the Children's Hearings and Criminal Justice Systems to assist in the decision making process and allocation of resources and/ or compulsory measures. National Youth Justice Standards (2006) recommend the use of either the 'Asset' or the Youth Level of Service – Case Management Inventory (YLS-CMI) when assessing the likelihood of future offending in youths.

**Assessments of repeat offending**

The assessment of offenders has seen a number of developments over the last three decades (Craig, Beech & Cortoni, 2013; see Chapter 4 of this thesis for an overview of how risk assessment approaches have evolved). The purpose of the risk assessment process is two-fold: to ensure public safety (e.g., determine risk management strategies: custodial sentences and monitoring and supervision in the community); and to rehabilitate the individual involved in offending behaviour (e.g., assessment of treatment need: identification of risk factors to be targeted in intervention). As such, risk assessments can be conducted after an offence has been committed with the purpose of identifying the likelihood of future offending and appropriate sanctions, and may also be used pre-and-post treatment to ascertain any changes in thinking and behaviour (see Appendix B for an overview of the most routinely used youth risk assessment measures).

There have been fewer adolescent risk assessment tools developed compared to adult measures of risk. As with the field of adult risk assessment, *sexual* risk assessment tools

have dominated the field and include both actuarial measures (e.g., Juvenile Sexual Offender Assessment Protocol (JSOAP-II; Prentky & Righthand, 2003)), and Structured Professional Judgement (SPJ) measures. The SPJ measures include: AIM-2 (Print et al., 2007); and the Multiplex Empirically Guided Inventory of Ecological Aggregates for Assessing Sexually Abusive Adolescents and Children (MEGA; Miccio-Fonseca, 2010)).

The JSOAP-II has the most established evidence base, however findings of the predictive accuracy of this tool are inconsistent; a recent meta-analysis conducted by Viljoen, Mordell and Benetaeu (2012) revealed Area Under the Curve (AUC) statistics ranging from 0.49 to 0.76. An AUC of 0.5 indicates the tool performs no better than chance; an AUC of 0.7 to 0.75 is considered moderate and an AUC greater than 0.75 is considered good (Douglas, Guy, & Weir, 2005). The evidence base for the AIM-2 is still in its infancy, however what research has been conducted in relation to the predictive validity of this tool is promising, with AUC statistics of 0.76 and 0.78 (Griffen & Vettor, 2012; Saraw, 2010). Similarly, the MEGA is the most recently developed sexual risk assessment measure, and the evidence base is yet to be established however, findings from the validation study indicated an AUC statistic of 0.71 for the risk scale (Miccio-Fonseca, 2011).

In terms of *violent offending*, there are no adolescent actuarial violence risk assessment measures available, but there is one SPJ tool. The Structured Assessment of Violence Risk in Youths (SAVRY; Borum, Bartel, & Forth, 2003) – is for youths aged 12 to 17 years and measures aggression and violence. The SAVRY has yielded relatively positive results, with AUC statistics ranging from 0.66 to 0.86 for violent recidivism (Lodewijcks, Doreleijers, de Ruiter, & Borum, 2008; McGowan, Horn, & Mellott, 2011; Meyers &

Schmidt, 2008; Scmidt, Campbell, & Houlding, 2011; Welsh, Schmidt, Mckinnon, & Myeres, 2008). Further, a recent systematic review and meta-regression of 68 research articles and nine risk assessment measures (adult and youth), indicated that the SAVRY was the most predictive of repeat offending (Sing, Grann, & Fazel, 2013).

Assessments of risk which focus on specific offence types are useful, however adolescence is a time of growth and development, and it is likely that the subset of adolescent offenders who will continue to offend in adulthood have not yet specialised in a specific offence type (i.e., violent or sexual; Mulvey, 2011). Thus, due to the variability of offending behaviour in adolescence, many professionals administer general re-offending risk assessment tools such as 'Asset' (Youth Justice Board (YJB), 2000) and the Youth Level of Service-Case Management Inventory (YLS-CMI; Hoge & Andrews, 2002).

Comparisons have been made with the YLS-CMI and violence re-offending risk instruments (Schmidt, Campbell & Houlding, 2010; Welsh, Schmidt, McKinnon, Cathha, & Meyers, 2008) plus sexual re-offending risk instruments (Meng Chu, Ng, Fong, & Teoh, 2011; Viljoen, Elkovitch, Scalora, & Ullman, 2009). This measure has also been compared with the Psychopathy Checklist-Youth Version (PCL-YV; Marshall, Egan, English & Jones, 2006), an individual assessment of psychopathy. Further, comparisons have been made between the PCLR-YV, SAVRY and the YLS-CMI with unstructured professional judgement (Hilterman, Nicholls, & Van Nieuwenhuizen, 2013; Olver, Stockdale, & Wormith, 2009). It is therefore surprising that there have been no comparisons between 'Asset' and YLS-CMI, and a limited amount of research has been conducted in the UK using both YLS-CMI and 'Asset' data (Baker, Jones, Roberts & Merrington, 2003; 2005; Marshall et al., 2006; Vaswani & Merone, 2013; Wilson & Hinks, 2011).

**Aim of thesis**

The aim of this thesis is to explore the effectiveness of general re-offending risk assessment tools by comparing two commonly used adolescent measures of risk of re-offending. To date there have been no studies which have compared the YLS-CMI and 'Asset', the only two risk assessment instruments available in the UK which measure general re-offending. This thesis therefore contributes to the literature by examining the effectiveness of general re-offending measures and making recommendations in relation to the way in which these tools are used.

Despite its widespread use in Scotland since 2001, there have been no validation studies of 'Asset' using a Scottish sample and only two studies using YLS-CMI (Marshall et al., 2006; Vaswani & Merone, 2013). The research element of this thesis therefore also contributes to building an evidence-base for best practice for Scottish youth. The specific aims of this thesis are:

- To identify which factors are associated with repeat offending and desistance from youth crime;
- To establish whether risk factors associated with repeat offending differ to those factors associated with the onset of offending;
- To evaluate the psychometric properties of the most widely used youth risk assessment measure in the UK;
- To explore the effectiveness of general risk assessment measures in a sample of Scottish youths;
- To compare the effectiveness of the 'Asset' and YLS-CMI risk assessment tools.

**Structure of thesis**

To achieve these aims, this thesis has five chapters. The introductory chapter has considered current trends in Scottish youth crime and provided an overview of the unique way in which children and adolescents are dealt with through the Children's Hearings System.

Chapter two provides a systematic review of the risk and protective factors identified in repeat offending in youths. To date, literature reviews have been limited to collating findings related to the onset of offending (Hawkins et al., 1998; Hawkins et al., 2000; Shader, 2002) and have neglected to synthesise findings which explore factors associated with repeat offending. This chapter provides the opportunity to identify factors (risk and protective) which contribute towards the re-occurrence of youth involvement in crime.

Chapter three critically evaluates a psychometric measure that is used to assess the level of risk a youth poses in relation to repeat general offending, namely the 'Asset' risk assessment tool. A critique of 'Asset' was deemed appropriate as it is the measure of risk used in chapter four. Consequently, careful consideration of the tool's development, its use in everyday practice, and the reliability and validity of this measure will have implications for the findings outlined in the research element of this thesis. Also, 'Asset' has now been superseded by 'Asset Plus', which was approved by the YJB in February 2013, and it has been estimated that the measure will be introduced in practice across England and Wales by 2015 (see YJB, 2013 for a full description of this measure). As yet, there has been no decision by LAs in Scotland as to whether 'Asset' will continue to be used or whether practitioners will be trained in either the use of 'Asset Plus' or the Youth Level of Service-

Case Management Inventory. A critique of 'Asset' therefore has implications for the development of Scottish Youth Justice Policy and Practice.

Chapter four consists of a research project comparing two general re-offending risk assessment tools which are routinely used in the United Kingdom. The predictive validity of 'Asset' with a sample of Scottish youths (*N*=138) referred to a Youth Offending Service in the city of Edinburgh was ascertained, and comparisons made between the findings of this tool and that of the YLS-CMI. Factors associated with repeat offending and those factors which differentiate repeat and non-repeat offenders were also identified.

The thesis concludes in chapter five with a discussion of the general findings of each of the chapters, with consideration of implications for clinical practice and future research.

# CHAPTER TWO: A SYSTEMATIC REVIEW OF THE RISK AND PROTECTIVE FACTORS IDENTIFIED IN REPEAT OFFENDING AND DESISTANCE IN YOUTHS


## ABSTRACT

*Background:* The majority of reviews with adolescent offenders have focused on drawing together research findings related to causal explanations of the onset of offending behaviour, and identifying factors present in cohorts of 'at risk' youths prior to offending occurring. Less attention has been given to collating findings from studies identifying factors that distinguish those who desist from offending in adolescence and emerging adulthood, and those who continue to offend during this period. The aim of this review is to supplement our existing knowledge by appraising the literature that identifies factors which differentiate repeat offenders from non-repeat offenders.

*Method:* Six electronic databases were searched according to specific inclusion and exclusion criteria. Experts were also contacted for published/ and unpublished articles and reference lists were screened, by hand, to identify relevant research. Studies which met a predefined inclusion criteria were selected for full text appraisal and quality assessed by two independent reviewers. Findings were synthesised using a narrative format.

*Results:* Overall, 8,177 possible titles and abstracts were searched electronically, 109 of which were deemed relevant to this review. A further two were identified through expert contact, 11 were identified through reference lists, and seven via an electronic alert system. In total, 129 articles were screened according to the inclusion criteria, nine of which were quality assessed and included in this review. Five articles explored both risk and protective or promotive factors and four articles explored risk factors only. All of the studies, with

the exception of one, found a number of factors that differentiate repeat offenders from non-repeat offenders.

*Conclusions:* Variations in the methodology adopted for each of the studies limit the conclusions that can be drawn from this review. Further research which supports the findings of this review is required, as are studies that categorise girls as a discrete subgroup of offenders, and samples that are drawn from outside of the USA.

## INTRODUCTION

Research concerned with identifying causal explanations of crime in Western society has been dominated by what is now commonly known as Risk Factor Research (RFR). The first developmental longitudinal risk factor study published by Glueck and Glueck (1930) can be traced back to the 1920s, and was revolutionary in shaping our understanding of pathways into offending by creating a systematic approach to identifying and measuring criminogenic factors (factors associated with offending), that could be used across offender groups and offence types. The unique way in which this study quantified behavioural observations and insights provided evidence for risk factors, which could then be replicated to obtain further support for the risk factor-offending relationship. Since this time, numerous retrospective and prospective studies have been conducted.

Perhaps the most significant study conducted in the UK is the Cambridge Study of Delinquent Development, which began in the 1960's (West & Farrington, 1973). It was the first prospective longitudinal research design to overcome the retrospective bias of using an existing sample of adult offenders, as it explored the development of delinquency in a sample of boys who were considered to be 'at risk' for involvement in future offending. Furthermore, factors which also appeared to protect against the influence of risk were examined in a later publication of the Cambridge Study (West & Farrington, 1982). Thus, findings from longitudinal developmental risk factor research have resulted in a large literature base of empirical knowledge relating to factors that have been found to be statistically associated with the onset of offending behaviour, and this has been instrumental in shaping the way in which offenders are identified and managed (Farrington, 2000).

Using the RFR approach, attention has also been given to identifying factors that are associated with repeat offending. This has resulted in the development of a number of risk assessment instruments that identify the level of risk that individuals in discrete offender groups (e.g., violent, sexual, general, young, adult, and intellectually disabled offenders) pose in relation to future offending in a given time period (e.g., 12 months, two years, five years). The knowledge that has been gained from RFR and the development of risk assessment measures has enabled the development of a common language amongst practitioners and researchers.

There appears to be agreement that risk factors fall broadly into two categories: static and dynamic risk factors. Static risk can be understood in terms of historical factors which are unchangeable (e.g., number of previous convictions, early onset of anti-social behaviour, age of first offence); whereas dynamic risk includes both stable and acute risk factors which are amenable to change (Beech & Craig, 2012). Factors which are relatively persistent over time but are amenable to change are known as stable dynamic risk factors (e.g., attitudes towards offending behaviour, motivation to change and coping style). In contrast, factors that have a tendency to fluctuate swiftly are regarded as acute dynamic risk factors (e.g., affect, substance misuse). When present, static and dynamic risk factors increase the likelihood that an individual will engage in criminal conduct. Further, the greater the number of risk factors present at any one time, the more likely it is that offending will occur (Mulvey, Schubert, & Chassin, 2010).

The majority of research that has been conducted to further our understanding of the causes of crime and to identify predictors of repeat offending appears to have disproportionately focused on risk factors (Case & Haines, 2009). This is also the case

with the associate treatment model – the Risk-Needs-Responsivity (RNR) model (Andrews, Bonta, & Hoge, 1990) – which, until recently, had been widely accepted as the most effective way of reducing re-offending (Andrews & Bonta, 2006; Andrews & Dowden, 2005; Dowden, 1998; Lipsey, 1992). The RNR model proposes that the level of Risk an offender poses should be matched to the amount of treatment they receive, that programmes primarily target dynamic risk factors (i.e., Need), and that programmes should be adaptive and accommodate individual learning style, ability and need (i.e., Responsivity).

Despite West and Farrington (1982) including an assessment of protective factors in one of their initial publications using the Cambridge Study data, it has not been until recent years that researchers and practitioners have begun to examine the role of protective factors in reducing the likelihood of criminal behaviour. The introduction of Ward's (2002) Good Lives Model (GLM) appears to have been a catalyst for the new-found interest in protective factors, as demonstrated by the increase in research in this area and their inclusion in more recent risk assessment instruments (Borum, Bartel, & Forth, 2002; Miccio-Fonseca, 2010; Print et al., 2007).

The GLM offers a strengths-based approach to understanding offending behaviour which extends beyond the identification of risk factors through the identification of individual strengths and by considering additional needs that might not be statistically associated with future offending. Furthermore, Ward (2002) recommends that the use of approach goals, an understanding of the role of context in rehabilitation and the development of pro-social alternative behaviours, all of which were neglected in the deficits based RNR model, are

essential to motivate offenders and promote change (McMurran & Ward, 2004; Thakker & Ward, 2010; Ward, 2010).

Consideration of strengths and protective factors has also prompted an interest in the processes involved in desistance from crime (Barry, 2004; Healy, 2010; King, 2012; Maruna & Lebel, 2003; McNeil, 2003; 2012; McNeil & Weaver, 2010). Studies of desistance have primarily focused on desistance from offending behaviour over an individual's lifespan and have found that most people who engage in criminal behaviour as a child and/or an adolescent desist from offending in adulthood. For example, the Dunedin Multidisciplinary Health and Development Study (Moffitt, 1993) aimed to identify pathways into and out of offending, by investigating childhood health and behavioural problems as predictors of involvement in anti-social behaviour across the lifespan (from three to 32 years).

The findings from this study resulted in the identification of two distinct categories of offenders based on an individual's involvement in offending behaviour over their life course, namely the adolescent-limited offender and the life-course persistent offender. As the name suggests, one group of offenders engage in anti-social and offending behaviour which is specific to the period of adolescence (offending peaks at age 17 and ceases by 21 years). Such behaviours are characterised by biological and social immaturity and are reinforced by the presence of anti-social role models (e.g., Social Learning Theory; Bandura, 1975).

In contrast, life-course persistent offenders, who constitute approximately 5% of the population (Rubins, 1985), continue to offend in adulthood. This subgroup of offenders

are distinct from adolescent-limited offenders as they have a greater number of neuropsychological deficits (e.g., in temperament, behavioural development, cognitive abilities), an earlier onset of offending behaviour in childhood, and meet the criteria for both mental health and/or personality disorders. Further, in a later study by Moffitt et al. (2002) the role of psychopathology as a predictor of offending behaviour was highlighted; one third of the sample of life-course persistent and adolescent-limited offenders obtained treatment for a mental health problem, compared to the non-offending control group.

Unfortunately, due to studies of desistance focusing on offending behaviour over the life-span there is little known about those youths who desist from crime during adolescence; neither is much known as to whether desistance is maintained or if there is a return to offending at a later stage (Stouthamer-Loeber, Loeber, & Masten 2004). As such, research is required which explores the role of risk and protective factors that influence desistance from offending during the adolescent period.

In contrast to the common language that underpins our understanding of risk factors, there appears to be less consensus when considering what constitutes a protective factor. As with risk factors, protective factors fall broadly into two categories: static factors (e.g., intelligence, secure attachment) and dynamic factors (e.g., coping style, self-control, and motivation to change). However, some argue that a protective factor is the absence of a risk factor, for example, when considering substance misuse (acute dynamic risk factor), a protective factor is deemed present when there is no evidence of the presence of this risk factor (Costa, Jesser, & Turbin, 1999). Similarly, it has been suggested that protective factors are the opposite of risk factors. For example, when considering impulsivity (an acute dynamic risk factor), the associated protective factor would be internal control

(Hawkins, Catalano & Miller, 1992; Webster, Martin, Brink, Nicholls, & Middleton, 2004). The latter implies that risk factors and protective factors operate at opposite ends of the same continuum.

Sameroff (1999) has proposed the use of the term 'promotive factor' when referring to the positive end of the risk continuum associated with better outcomes, regardless of the strength of the risk factor. However, not all researchers agree with these definitions. Ireland (2009) defines a protective factor as any factor which is present when an individual could have engaged in the problematic behaviour but did not. For example, if an individual with a history of violence encounters a situation in which they would typically respond with violence but desists from engaging in a violent act, those factors present which differentiated this instance from previous violent incidents, would be considered protective (e.g., daughter was present).

It has also been suggested that a protective factor may exist in the absence of a risk factor. For example, the presence of religious beliefs has been found to moderate the effects of delinquency; however, the absence of such beliefs would not constitute a risk factor (Pearce, Jones, Shwab-Stone, & Ruchkin, 2003). Although it is now widely accepted that protective factors moderate the effects of risk on offending behaviour (Farrington, Loeber, Jolliffe, & Pardini, 2008), the process through which this occurs (e.g., the interaction between risk and protective factors) remains unclear (Vres Robbie & De Vegal, 2013).

**Risk and protective factors associated with the onset of offending**

Previous reviews have employed meta-analytical procedures to identify risk factors relating to the onset of general delinquency (Simourd & Andrews, 1994), and the onset of

serious and violent offending in youths (Hawkins et al., 1998; Hawkins et al., 2000; Lipsey & Derzon, 1998). The most recent review of the onset of offending was conducted by Shader in 2002. It focused on identifying both risk and protective factors associated with the onset of general offending, as well as categorising risk factors in terms of age of onset. Table 2.3 presents an overview of the risk and protective factors identified by Shader (2002).

Notably, the findings from Shader's review are consistent with previous findings (Hawkins, et al., 1998; Hawkins et al., 2000; Lipsey & Derzon, 1998; Simourd & Andrews, 1994), and extend the work of Hawkins et al. (1998) to include general delinquency. It is promising that Shader also explored the role of protective factors in offending behaviour, an area previously neglected in adolescent reviews. However, Shader included general offending behaviour and anti-social behaviour (early and late onset) and crimes against the person (late onset) as risk factors for the onset of delinquency. It is not clear why the selected outcome variables (delinquent behaviour) were also included as predictor variables and there is no further mention of them in the main body of the review.

One possibility for the inclusion of these variables is that general offending and crimes against the person were found to be predictors of violent offending in youths in previous adolescent reviews (Hawkins, et al., 1998; Hawkins et al., 2000; Lipsey & Derzon, 1998). However, as Shader's (2002) review focused on general delinquency and there was no explanation for the inclusion these variables they have been excluded from this review (see Table 2.1).

It is also important to note that while Shader discussed the role of pre-natal and peri-natal complications and offending behaviour, highlighting the impact of these complications on healthy development and subsequent offending behaviour (Raine, Brennon & Mednick, 1994; McCord, Widom & Crowell, 2001), both pre- and peri-natal factors were neglected when collating risk factors in the individual domain. No consideration was given to the role of brain injury (either accidental (e.g., delivery by forceps) or intentional (e.g., physical abuse) and mental health diagnoses and/ or emerging personality disorder were also not included in the review. Further, there was only limited reference made to neuropsychological factors (e.g., IQ, hyperactivity, restlessness, concentration).

This is particularly concerning given the research which implicates the role of biological and neurological factors in the development of offending behaviour (Hampton, Drabick, & Steinberg, 2013; Raine, Moffitt, Caspi, Loeber, Stouthamer-Loeber & Lynam, 2005; Vizard, 2008). It is recognised that this is currently an underdeveloped research area however, a recent qualitative review by Portnoy, Chen and Raine (2013) investigated the role of biological protective factors for the onset of anti-social and criminal behaviour. This review provided a unique way of appraising the literature relating to youths who are deemed to be at 'high risk' of future offending as a result of social risk factors. Findings indicated that the presence of neuropsychological (e.g., IQ, executive function) and psychophysiological (e.g., resting heart rate, fear conditioning) protected against the influence of social risk factors (e.g., parental criminality, Social Economic Status (SES), childhood maltreatment).

Table 2.1

*Risk and protective factors, classified by age of onset, in the onset of offending behaviour: Shader 2002.*

| | Early Onset Risk Factors: 6 – 11 years | Late Onset Risk Factors: 12 – 14 years | Protective Factors |
|---|---|---|---|
| **INDIVIDUAL** | • *Male<br>• *Substance misuse<br>• *Low IQ<br>• *Anti-social attitudes and beliefs<br>• *Aggression<br>• Exposure to violence on the television<br>• Hyperactivity<br>• Dishonesty<br>• Medical problems | • Risk-taking behaviour<br>• Restlessness<br>• Poor concentration<br>• Physical violence | • Female<br>• High IQ<br>• Intolerant attitudes of deviant behaviour<br>• Good social interaction skills<br>• Understanding of sanctions for inappropriate behaviour |
| **PEER** | • *Anti-social and/or delinquent peers<br>• Poor social ties | • Gang membership | • Pro-social peers |
| **FAMILY** | • *Neglect<br>• *Abusive Parents<br>• *Anti-social parents<br>• *Low socio-economic status<br>• *Harsh, lax or inconsistent discipline<br>• *Broken home<br>• *Separation from parents<br>• *Poor parent-child relationship | • Family conflict<br>• Poor parental supervision | • Parental supervision<br>• Parental approval of peers<br>• Warm and supportive relationship with at least one significant adult |
| **COMMUNITY** | | • Neighbourhood disorganisation, crime and drug use | |
| **SCHOOL** | • *Poor attitude and/or school performance | • Academic failure | • Strong commitment to school<br>• Recognition for commitment |

* Factors also present at the late onset stage

Risk factors were characterised in the following domains: individual, peer, family, community and school (in terms of age of onset). Relatively few differences were noted between those factors present at age six to eleven, and those in the twelve to fourteen age range. This suggests that risk factors are present throughout an individual's development and that the age at which an individual is exposed to risk may not be an important factor when considering the onset of offending behaviour.

A number of protective factors were identified which were considered to moderate the effects of risk factors; none of which were characterised by age of onset. This suggests that the identified factors have a moderating effect throughout childhood to middle adolescence. Interestingly, no protective factors were identified in relation to the neighbourhood domain. This is an important finding given the influence that disadvantaged neighbourhoods and communities have on child development and the development of anti-social behaviours (Leventhal, & Brooks-Gunn, 2000; Ludwig, Duncan & Hirschfield, 2001; Sampson, Morenoff & Gannon-Rowley, 2002). Moreover, this has implications for social policy development when considering the causes and prevention of youth crime.

**Rationale for systematic literature review**

The aforementioned research would suggest that it is important to understand the risk factors associated with the onset of offending behaviour in order to understand the reasons why some individuals engage in this behaviour. As such, a number of markers implicated in the onset of offending have been identified, as have factors which appear to mitigate against the influence of risk. It may therefore be useful to identify which factors are associated with repeat offending and whether these differ to those factors associated with

the onset of criminal behaviour. Further, as the risk assessment instruments that practitioner's use are increasingly assessing protective factors, as opposed to risk factors in isolation, it may be useful to review the literature relating to both continued involvement, and desistance from offending

### Aim

Whilst those factors implicated in the onset of offending behaviour appear to be well established in the literature, research relating to factors which are associated with recidivism are less developed and warrant further attention. Therefore the aim of this review is to investigate the role of risk and protective factors in repeat offending and desistance in young offenders.

### Objectives

The following objectives will be addressed as part of this review**:**

1. To identify which factors (risk and protective) differentiate repeat offenders from non-repeat offenders.
2. To determine whether the factors which influence repeat offending are distinct from the factors involved in the onset of offending.

## METHOD

### Initial scoping review

An initial scoping search of the Cochrane Database of Systematic Reviews and the Database of Abstracts of Reviews of Effects (DARE) revealed that no similar systematic review had been conducted. Three meta-analytical reviews were identified, two of which focused on first-time and repeat offending while the other focused on juvenile recidivism.

Loeber and Dishion (1983) assessed 11 research articles between 1962 and 1980 that identified factors associated with the onset of juvenile delinquency and juvenile recidivism, and Simourd and Andrews (1994) conducted a similar review of studies identified between 1964 and 1994, but did not distinguish between first-time and repeat offenders. Continuing this work, Cottle, Lee and Hielbrum (2001) assessed 23 research articles between the years 1983 and 2001 with the sole focus of collating the research findings of articles which identified factors associated with repeat offenders. This is the only known meta-analysis which has been exclusive to repeat general re-offending in youths.

One systematic literature review was identified as part of an unpublished doctoral thesis (Vien, 2009); however, this review was a continuation of the work of Hawkins et al. (2000) and applied a violence risk factor model to general delinquency, while not distinguishing between the onset of offending and repeat offending. A qualitative overview of the research findings relating to chronic, persistent offending and recidivism in adolescent offenders was also identified (Kiriakidis, 2007); however, this review lacked a systematic approach to assessing the quality of each study design. Thus, using a systematic and qualitative approach, the current review will focus on recidivism studies from 2001 to the present, extending the work of Cottle et al. (2001).

**Literature search strategy**

The search for relevant literature included electronic database searches, accessing reference lists of relevant articles and contacting professionals in the field.

**Electronic databases**

Six databases were selected in order to incorporate a range of disciplines relating to the subject area including the biological, behavioural and social sciences. The following electronic databases were searched:

- **Applied Social Science Index and Abstract (ASSIA)** (1990 –Week 3 June, 2013) **–** 399 hits
- **Embase and Embase Classic** (1988-Week 3 June, 2013) – 539 hits
- **Psych INFO** (1806-Week 3 June, 2013) – 390 hits
- **Ovid Medline (R)** (1946-Week 3 June, 2013) – 387 hits
- **Psyc Articles and Journals @ Ovid (**1988- Week 3, 2013**) –** 6386 hits
- **Social Policy and Practice** (1989-Week 3, June 2013) **–** 76 hits

**Search terms**

The same general search strategy and keywords were applied to each of the six databases. Key words were separated by the 'OR' and 'AND' Boolean operator:

**Participant:** Youth or Young Adult or Adolesc* or Child or Teen or Minor or Juvenile

AND

**Exposure:** Risk or Protective or Resilien* or Prom* or Strength*

AND

**Comparator:** Desist*

AND

**Outcome:** Repeat or Recurr* or Serious or Persistent or Prolific or Chronic AND Offen* or Arrest or Re-arrest or Delinquen* or Criminal behaviour or Recidivis*

An alert system was activated on the ASSIA database, whereby the researcher was notified on a weekly basis, via email, of any new research articles relating to the search strategy which were added to the database following the date of the initial search. Initial search results were filtered by hand by reviewing the article title and abstract; studies which were not considered relevant to the current review and article duplicates were removed. The full research article was accessed when eligibility of the study could not be determined by the article title and abstract alone.

**Reference lists**

Reference lists of published articles relating to risk and/or protective factors in repeat offending in youths were screened. In addition, all of the reference lists of studies which met the criteria for quality assessment were screened, as were the reference lists for the reviews which were identified in the initial scoping phase.

**Expert contact**

Three professionals, who had published research in this subject area (three or more research papers), were contacted for published and un-published articles relating to the research questions.

**Study selection:**

One researcher retrieved and reviewed the articles in relation to the following inclusion and exclusion criteria (Appendix C):

- **Population:** Male and female children and adolescents aged between eight and seventeen years
- **Exposure:** Risk factor and/or protective factor

- **Comparator:** Desistance
- **Outcome:** Persistence
- **Study Design:** Experimental, quasi-experimental, cohort, cross sectional, retrospective, prospective or longitudinal.
- **Language:** No restrictions were set but only articles in English or translated into English were considered.

Studies that met at least one of the exclusion criteria were not considered eligible and were omitted from the next level of screening. The justification for the exclusion criteria can be found in Appendix D:

- Studies that involved adult samples (e.g., aged 18 and above)
- Studies where participants were older than 25 years of age at re-offence
- Studies that included participants who were diagnosed with an Intellectual Disability
- Studies that specifically focused on adolescent sexual offenders
- Studies that focused on risk factor research in relation to the onset of offending behaviour
- Studies that did not have a comparator group: repeat offenders versus non-repeat offenders
- Studies that adopted a single case study design
- Unpublished dissertations

**Quality assessment and data extraction**

In order to ascertain the quality of the articles included in this review and to interpret the findings of the studies using a consistent and methodological approach, a quality assessment protocol was designed. The checklist was based on the Critical Review Form

for Quantitative Studies (Law, Stewart, Pollock, Letts, Bosch, & Westmorland, 1998) and the Critical Appraisal Skills Programme (Bulers, 2000). Descriptive assessments of the following key variables were included in the quality assessment protocol: representativeness of the sample, study design, aims of the study, definition of risk and protective factors, quality of assessment measures, quality of the outcome measure and length of follow-up period, reliability of the findings, and appraisal of the study design (Appendix E).

Data was also extracted from each research article using a developed data extraction form (Appendix F). Information regarding the article title, authors, year of publication, source, country of origin and the means by which the article was identified were extracted for each study. In addition, the characteristics of the study (population, exposure, outcome and study selection) and the eligibility of the study (target population, inclusion and exclusion criteria) were documented. The quality assessment form detailed the remaining data required for the review, therefore duplication was not necessary. Where specific information was not available within the article, articles using the same participant sample were screened for the required data.

Each study was quality assessed using a quantitative approach that involved coding each item on a three-point scale (0= not present, 1=partially present, 2=present). An option of 'unknown' was provided where insufficient information was available to score the item. The total quality score was derived by summing the individual item scores, giving a total score ranging from 0-52 for studies which assessed both risk and protective factors and a total score ranging from 0-48 for studies which assessed risk factors only. Variations in the total score were the result of some articles assessing risk factors only (five studies) and

others assessing both risk and protective factors (four studies). Due to the recent increase in research exploring the role of protective factors in mitigating risk, and the need for research which does not focus solely on a deficit based model, studies which explored one or both of these factors were included in this review.

Two independent reviewers quality assessed each of the studies included; inter-rater reliability was assessed using an Intra-Class Correlation Coefficient (ICC), with a two-way fixed effects model for absolute agreements and single raters. The following critical values for single measure ICCs were adopted ICC>0.75=excellent; ICC 0.60 -0.74=good; ICC0.59-0.40=moderate; ICC<0.40=poor (Fleiss, 1986). Agreement between raters in relation to the total quality assessment score was good (ICC=0.63). Table 2.2 below outlines the quality assessment of the studies included in this review.

Table 2.2

*Quality of included studies*

| | Quality of study type for risk factors | | | | | Quality of study type for risk and protective factors | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Byrd et al. (2012)* | Domburgh et al. (2009)* | Katsiyannis et al. (2004) | Trulson et al. (2005) | White et al. (2005)* | Carr & Vandiver (2001) | Clingempeel & Henggeler (2003) | Gunnison & Mazerole (2007) | Loeber et al. (2007)* |
| **Study Purpose Explicitly Stated (Total score = 6)** | 4 | 4 | 5 | 4 | 4 | 6 | 4 | 4 | 4 |
| **Clear and Appropriate Study Design (Total score = 8)** | 8 | 8 | 6 | 8 | 8 | 8 | 8 | 8 | 8 |
| **Appropriate Sampling Selection and Consideration of Potential Biases (Total score = 12)** | 12 | 12 | 10 | 10 | 12 | 4 | 10 | 7 | 12 |
| **Precise Measurement Detection and Consideration of Potential Biases (Total score = 16)** | 12 | 12 | 7 | 8 | 12 | 12 | 14 | 7 | 16 |
| **Clear Conclusions Supported by Findings (Total score = 4)** | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| **Total Quality Assessment Score** | **44/48 91.7%** | **42/48 87.5%** | **38/48 79.2%** | **40/48 83.3%** | **46/48 95.8%** | **40/52 76.9%** | **46/52 86.8%** | **36/52 69.2%** | **50/52 96.2%** |

***Studies using samples derived from the Pittsburgh Youth studies***

## RESULTS

Initial searches of the six electronic databases yielded 8,177 research articles. The titles and abstracts were retrieved and screened according to the inclusion and exclusion criteria and duplicates were removed. This resulted in 109 research articles that required full-text appraisal to make a decision regarding inclusion (see Figure 2.1 for reasons for exclusion); six of which were eligible for the quality assessment phase.

Reference lists of relevant articles were screened and titles and abstracts retrieved and reviewed to determine eligibility for the review. Eleven full text articles were accessed and of these, one met the inclusion criteria. In addition, the alert system which had been activated revealed a further seven articles, two of which were deemed eligible for quality assessment. Contact with professionals in the field yielded two published research articles that had not been identified through electronic searches; neither of which met the inclusion criteria (Jimerson, Sharkey, O'Brien & Furlong, 2004a; Jimerson, Sharkey, O'Brien, & Furlong, 2004b).

The sample population for four of the articles included in the quality assessment phase was drawn from the Pittsburgh Youth Study (PYS; Loeber et al., 1989). Consideration was therefore given to grouping the findings from these studies into one quality assessment. However, research questions for each article were not duplicated (see the Recruitment Process and Study Aims section for a breakdown of the aim of each paper). The process of recruitment was the same across studies, however, discrete aims and hypotheses resulted in different assessment measures and cohorts of participants being selected. As such, each article was included individually in the quality assessment but the sample selection is taken

into account in the evaluation of the findings. There was no replication of sample populations in the remaining articles; nine articles were subjected to a quality assessment.

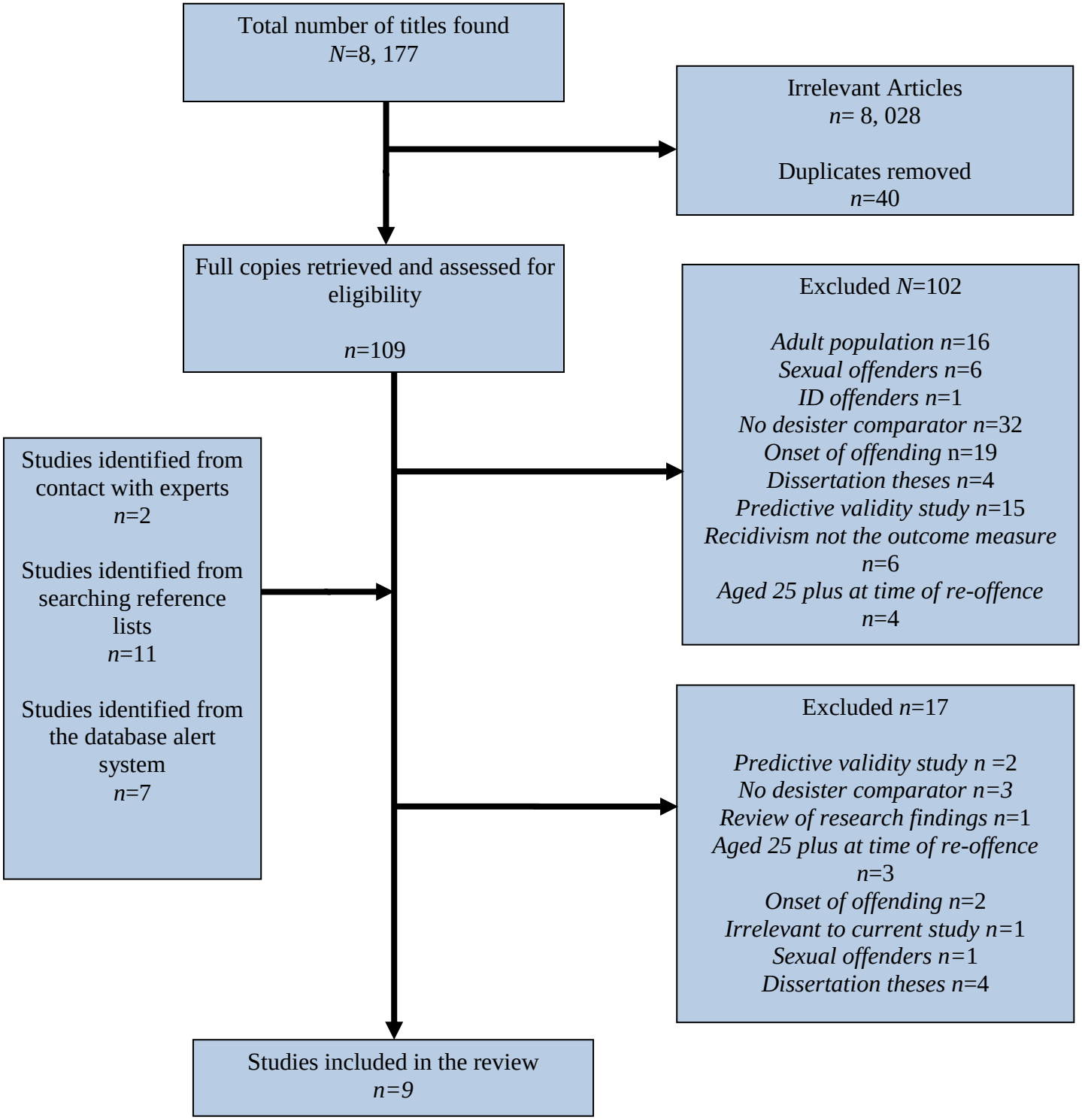



*Figure 2.1: Flowchart of the selection process for risk and protective factors associated with repeat offending in youths*

## Descriptive Data Synthesis

The objective of data synthesis is to organise and summarise the findings from the studies included in this review through a narrative account. All of the studies identified factors (risk and/or protective or promotive) that distinguished repeat offenders from non-repeat offenders. In addition to reporting factors which differentiated repeat from non-repeat offenders, four studies (Domburgh et al. 2009; Gunnison & Mazerolle, 2007; Katsiyannis et al., 2004, Loeber et al., 2007) also included predictive models to ascertain which factors were predictive of desistance or continued involvement in offending.

### *Overview of studies included in the review*

In relation to the country of origin, all nine studies were conducted in the United States of America, four of which utilised data from the Pittsburgh Youth Study (PYS; Loeber et al., 1989), four were not affiliated to any major longitudinal research project and the sample for one study was drawn from the National Youth Survey (Elliott, Huizinga & Menard, 1989). Six studies adopted a prospective longitudinal research design (Byrd et al., 2012; Clingempeel & Henggeler, 2003; Domburgh et al., 2009; Gunnison & Mazerolle, 2007; Loeber et al., 2007; White et al., 2012) and three studies employed a retrospective research design (Carr & Vandiver, 2001; Katsiyannis et al., 2004; Trulson et al., 2005). The total sample of this review comprised 4,428 participants. All of the studies with the exception of one (Gunnison & Mazerolle, 2007) reported the breakdown of gender in the final sample: males (*n*=3,562) females (*n*=194), and unknown n=672). In relation to ethnicity, 37% (*n*=1,659) of the total sample were African American, 37% were Caucasian (*n*=1,652), 25 percent were Hispanic (*n*=1,097), and less than 1% of participants' ethnicity was unknown (*n*=12), or Asian or Native American (*n*=6).

***Recruitment process and study aims***

In relation to the studies that used PYS data (Loeber et al., 1989), the researchers were provided with the names of 1st, 4th and 7th grade males enrolled in a selection of public schools in Pittsburgh, Pennsylvania, in 1987. Of these, 1,165 names were randomly selected by the researchers. Initial screening assessments based on information from mothers, teachers and self-report in relation to frequency of delinquent behaviour were conducted to derive a screening risk score. This score was used to select the top 30% of anti-social boys (*n*=250) and an equal number of boys were randomly selected from the remainder of the sample. Three of the four studies used data from the youngest cohort of the PYS (Byrd et al., 2012; Domburgh et al., 2009; Loeber et al., 2007) and one study used data from both the youngest and oldest cohorts of the PYS (White et al., 2012).

It is important to note that the data collected from the PYS are desistance data which are collected over an individual's lifespan. As such, the data includes non-offenders, adolescent-limited offenders and life-course persistent offenders. Only data comparing repeat and non-repeat offenders in adolescence are included in the current review. The focus of Byrd et al.'s study was to identify the role of childhood disruptive behaviour disorders in persistent offending. Domburgh et al. were concerned with identifying childhood characteristics which differentiated serious delinquency, general delinquency and desisters from offending. Only findings relating to general delinquency were included in this review. Finally, White et al. explored the link between alcohol use in adolescence and emerging adulthood and continued involvement in serious violent offending.

Clingempeel and Henggeler (2003) recruited their study sample from participants enrolled in a Randomised Control Trial (RCT) comparing the efficacy of Multi-Systemic Therapy

with community services (*N*=118). Participants were selected if they were aged between 12 and 17 years, had a diagnosis of substance misuse or dependence, a history of aggressive behaviour (at least one prior aggressive offence), and were subject to a probation order and living with at least one parent. The focus of this study was to identify risk and protective factors which distinguish repeat offenders from non-repeat offenders in relation to aggression and/or violence, and to identify group differences in terms of positive adjustment in emerging adulthood.

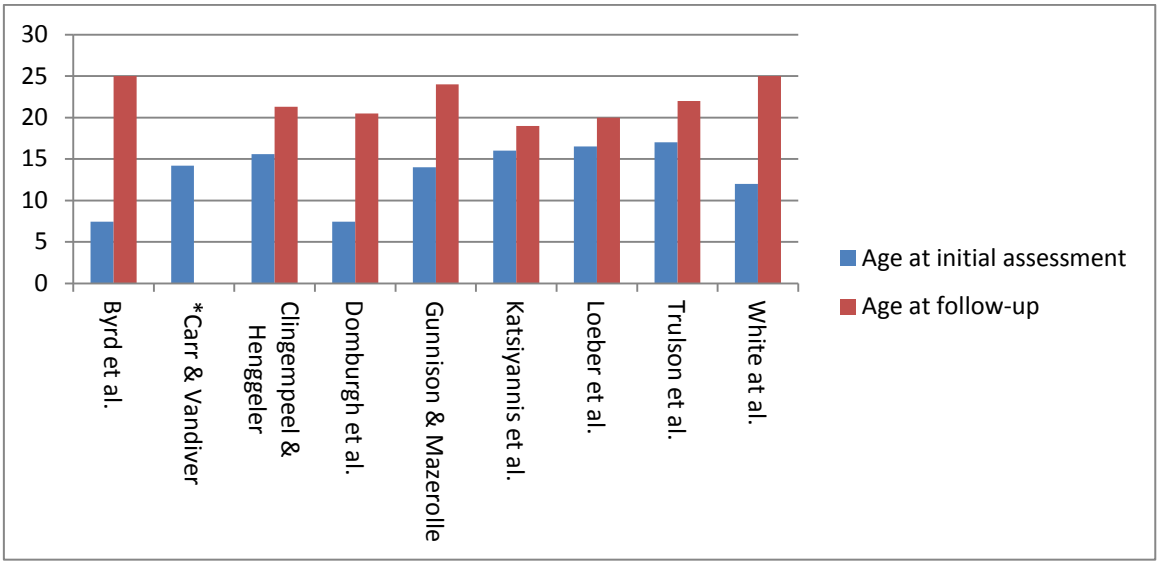
The Gunnison and Mazerolle (2007) sample was derived from the National Youth Survey (NYS; Elliott et al., 1989). In the NYS, 1,725 youths were recruited via area population sampling and nine waves of interviews were conducted between 1976 and 1993. The current study used data from the first seven waves of the NYS. It focused on identifying psychosocial variables that distinguish persisters from desisters in relation to general delinquency and serious crime. Only the findings that relate to general delinquency were considered in this review.

When considering the studies that used existing data, Carr and Vandiver (2001) selected the population for their study by reviewing all archived case file information for those individuals referred by the Juvenile Probation Department to a Voluntary Mentoring Agency over a four year period. This study explored the relationship between risk and protective factors and recidivism. Katsiyannis et al. (2004) collated the data for their study by reviewing archived initial assessments documents and measures which were administered to participants as part of their initial assessment on detention in the Youth Rehabilitation and Treatment Centre. This study explored the relationship between psychosocial variables and recidivism in detained adolescents. Similarly, in Trulson et

al.'s (2005) study, archived file information collected as part of routine practice in a juvenile custodial centre, including conduct whilst in custody, was provided to the researchers. This study compared youths who continued to offend on release from custody with those who did not. Findings were presented in relation to're-arrest' and 'felony arrest'. Only findings relating to're-arrest' are included in this review.

***Participant age***

Five studies provided information regarding the mean age of the sample at initial assessment and at the follow-up period (Byrd et al., 2012; Clingempeel & Henggeler, 2003; Domburgh et al., 2009; Gunnison & Mazerolle, 2007; Trulson et al., 2005). Carr and Vandiver (2001) were the only authors who provided the mean age at index offence but they did not specify the age at the follow-up period. One study provided the mean age at initial assessment and documented the oldest age at follow-up (Loeber et al., 2007), and one study provided the youngest age at initial assessment and the eldest age at follow-up (White et al., 2012). In the Katsiyannis et al. (2004) study, the mean age of their sample was documented in relation to the age of participants when they entered custody (16 years); since they reported a mean stay of 143 days with a three-year follow-up period, it was calculated that the mean age of the sample at follow-up was 19 years. Due to limited information it was not possible to calculate the mean age of participants at time of first assessment or at follow-up for all of the studies. Figure 2.2 below outlines the age of each sample at initial assessment and follow-up.




**Carr and Vandiver were the only authors who did not report the age at follow-up.*

*Figure 2.2: Ages at time of first assessment and at follow-up are provided for each of the studies*

***Sample size***

Seven of the studies had good sample sizes; however, two studies, both of which included females in their sample, were considered to be small, with 80 or fewer participants (Carr & Vandiver, 2001; Clingempeel & Henggeler, 2003). When the full samples were split into those who continued to offend and those who did not, this may have resulted in reductions in the statistical power to detect differences between the two groups of offenders. Despite four studies including females in their sample (Carr & Vandiver, 2001; Clingempeel & Henggeler, 2003; Katsiyannis et al., 2004; Trulson et al., 2005), only one study reported findings in relation to gender (Trulson et al., 2005). Table 2.3 below outlines the sample size included in each study and the breakdown of comparator groups. It must be noted that five studies also included a non-offender comparator group; therefore the sample sizes for repeat and non-repeat offenders do not correspond with the original sample size (Byrd et al., 2012; Domburgh et al., 2009; Gunnison & Mazerolle, 2007; Loeber et al., 2007).

Table 2.3

*Sample sizes and breakdown of the size of comparator groups at follow-up.*

| | **Original Sample Size** | **Repeat offenders** | **Non-repeat offenders** |
|---|---|---|---|
| Byrd et al. | 503 | 98 | 156 |
| Carr & Vandiver | 76 | 49 | 27 |
| Clingempeel & Henggeler * | 115 | 55 | 25 |
| **Domburgh et al. | 310 | 117 | 63 |
| ***Gunnison & Mazerolle | 1,224 | 444 | 228 |
| Katsiyannis et al. | 299 | 70 | 229 |
| Loeber et al. | 335 | 100 | 152 |
| ****Trulson et al. | 2,436 | 2,073 | 363 |
| Males | 2,293 | 1,986 | 307 |
| Females | 143 | 87 | 56 |
| White et al. | 179 | 103 | 76 |

**35 participants dropped out of the Clingempeel & Henggeler study*
***Domburgh et al.'s sample size are reported for general delinquency only*
****Gunnison and Mazerolle's sample size are reported for general delinquency only*
*****Trulson et al.'s sample sizes are reported for re-arrest only*

### *Offence type*

The population of seven studies were derived from community samples, and two studies used a sample of incarcerated young offenders. Five of the studies which used youths who were resident in the community were concerned with general delinquency (e.g., theft, substance misuse, violation of probation); some violent offences were apparent in this sample but the research questions were not specific to violence. The remaining two studies focused on serious offending, namely violent offending. A number of offences were present in the studies which utilised individuals who were incarcerated; due to the need to

restrict an individual's liberty, the seriousness and/ or frequency of these offences can be inferred. The offence type for each study is outlined in Table 2.4.

Table 2.4

*Offence type of included studies.*

| Incarcerated Offenders | Serious Violent Offenders | General Offenders |
|---|---|---|
| Trulson et al., 2005 | White et al., 2012* | Byrd et al., 2012* |
| Katsiyannis et al., 2004 | Clingempeel & Henggeler, 2003 | Carr & Vandiver, 2001 |
| | | Domburgh et al., 2009* |
| | | Gunnison & Mazerolle, 2007 |
| | | Loeber et al., 2007* |

**Studies which used a sample derived from the PYS*

***Assessment measures***

Five studies assessed both risk and protective factors (Carr & Vandiver, 2001; Clingempeel & Henggeler, 2003; Domburgh et al., 2009; Gunnison & Mazerolle, 2007; Loeber et al., 2007), and four studies measured risk factors only (Byrd et al. 2012; Katsiyannis et al., 2004; Trulson et al., 2005; White et al., 2012). Not all of the studies included measures of risk and/or protective factors which were validated or standardised (Carr & Vandiver, 2001; Gunnison & Mazerolle, 2007; Trulson et al., 2005); the reliability of the findings in those studies which did use standardised measures is likely to have been increased (Byrd et al., 2012; Clingempeel & Henggeler, 2003; Domburgh et al. 2009; Katsiyannis et al., 2004; Loeber et al, 2007; White et al., 2012).

Six studies relied solely on participants' responses to self-report questionnaires or collected data retrospectively, relying on file information (Carr & Vandiver, 2001; Katsiyannis et al., 2004; Trulson et al., 2005). In the Carr and Vandiver (2001) study, the presence or absence of a risk or protective factor was determined by the response to one question only. For example, when considering protective factors in the peer domain a yes/ no response was required for the following question '*I have many friends'.* It is therefore possible that the question was not representative of the variable being measured. Four studies used more than one source of data collection, gathering information from participants, their parents and teachers (Byrd et al., 2012; Clingempeel & Henggeler, 2003; Domburgh et al., 2009; Loeber et al., 2007), although this was specific to educational attainment and behaviour

As with any self-report assessment, findings must be interpreted with caution due to the ability of the respondent to distort the information provided, either by lack of insight into personal difficulties, in an attempt to over-exaggerate current difficulties or in an attempt to portray themselves in a more positive light (Gudjonsson & Howard, 1998), all of which may affect the reliability of the results and the generalizability of the overall findings. Clingempeel and Henggeler's (2003) study was the only one to include a behavioural observation whereby researchers (blind to the study design) observed a mother-child interaction related to problem solving. Researchers assessed the approach adopted by mother and child (e.g., positive, hostile) and whether the interaction resulted in an escalation or de-escalation of interpersonal conflict.

***Criminal recidivism and length of follow-up period***

Criminal recidivism has been conceptualised in this review in a number of different ways, including: re-arrest, re-conviction, breach of probation status, and re-entry into an institution. As such, the comparability of findings across studies may be limited to those studies which adopted the same outcome measure. Two studies used reconviction data only (Carr & Vandiver, 2001; Trulson et al., 2005); official reconviction data alone can result in a number of offences which have not been detected by statutory agencies being lost, thus actual rates of crime are not detected. Similarly, changes in recording and/or policy can affect reconviction rates (Friendship, Beech, & Browne, 2002). Thus, reliance on official crime statistics alone is likely to underestimate the prevalence of offending behaviour during a given time period**.**

In Katsiyannis et al.'s (2004) study, participants were considered to be repeat offenders if they returned to custody during the follow-up period. While all individuals released from custody were on parole, it is possible that they were involved in less serious offending and therefore did not return to custody during the follow-up period. Alternatively, repeat offenders may have been older at re-offence and on return to custody detained in an adult establishment; both of which may account for the low recidivism rate in this study (16%).

Gunnison and Mazerolle (2007) used self-reported involvement in offending only; participants may therefore have minimised their involvement in offending in an attempt to portray themselves in a more positive light. Further, in the White et al. (2012) study, annual self-reported involvement in offending was not available for a subset of the cohort and had to be collected retrospectively. This may have resulted in offending behaviour being underreported due to difficulties with recall. Five studies included in this review

(Byrd et al., 2012; Clingempeel & Henggeler, 2003; Domburgh et al., 2009; Loeber et al., 2007; White et al., 2012) adopted the method considered to be the most reliable estimate of recidivism rates of combining the use of official data with self-reported involvement in crime (Cottle et al., 2001). However, it was not clear how official statistics were combined with self-reported involvement in offending to create a single offence or outcome variable, or whether they were examined as separate outcome variables.

The duration of the follow-up period varied across studies ranging from two to five years. One study reported a two-year follow-up period (Domburgh et al, 2009), three studies adopted a three-year follow-up period (Loeber et al., 2007; Gunnison & Mazerolle, 2007; Katsiyannis et al., 2004) and four reported a five-year follow-up period (Byrd et al., 2012; Clingempeel & Henggeler, 2003; Trulson et al., 2005; White et al., 2012). Carr and Vandiver (2001) were the only authors who did not document the length of the follow-up period.

During the follow-up period consideration has to be given to, and adjustments made for, those individuals incarcerated during this period. Only three studies made reference to identifying and controlling for this confounding variable (Byrd et al., 2012; Loeber et al., 2007; White et al., 2012). This must be taken into consideration when interpreting the findings as any time spent in a custodial environment will limit an individual's opportunity to offend (offences committed in custody are generally dealt with via sanctions of the establishment), and therefore distort recidivism outcomes.

### *Main findings*

Factors which have been assessed in each of the studies have been categorised into Shader's (2002) domains relating to the onset of offending: individual, peer, family, community and school. Due to the number of factors included in each of the studies, only the main findings are reported and included in the discussion when considering the objectives of this review.

The focus of all nine studies appears to have been on individual factors, peer and school factors were assessed in seven of the studies, family factors were explored across six studies, and community factors were included in only four studies. In addition, one study categorised studies in relation to four theories of desistance (Gunnison & Mazerolle, 2007). Findings for this study are therefore presented in relation to desistance theories. Table 2.5 below presents risk and protective factors, categorised in accordance with the domains outlined in Shader's review and the main findings of each study.

Table 2.5

*Factors and the main findings from each study included in the review (N=9).*

| Authors | Factors Included in each Study | Main Findings |
|---|---|---|
| **Byrd et al. (2012)** | **Individual:** Childhood disorders (i.e., Attention Deficit Hyperactivity Disorder (ADHD), Disruptive Behaviour Disorder (DBD), Oppositional Defiance Disorder (ODD), Conduct Disorder (CD), Interpersonal Callousness (IC)).<br><br>**Control Variables:**<br>**Individual:** Age, race.<br><br>**Peer:** Exposure to delinquent peers.<br><br>**Family:** Socio-Economic Status (SES), use of physical punishment, parental supervision.<br><br>**Community:** Neighbourhood disadvantage (e.g., unemployment, crime rates, racial discord, unused property).<br><br>**School:** Academic achievement (e.g., reading, writing, spelling and maths). | 1. Individuals who continued to offend had greater levels of IC and CD symptoms in childhood than those who desisted from offending ($p$<0.01).<br><br>2. Lower levels of childhood ADHD symptoms were found in individuals who continued to offend compared with those who did not ($p$<0.05). These findings were maintained following control for significant individual, peer, family and community factors and co-occurrence of childhood disorders.<br><br>3. Persistent offenders had greater levels of ODD ($p$< 0.05), CD and IC ($p$<0.01) in adolescence than individuals who desisted from offending.<br><br>4. After controlling for significant individual, peer, family and community factors and co-occurrence of childhood disorders, only CD ($p$< 0.05) and IC ($p$< 0.01) differentiated repeat from non-repeat offenders. |
| **Carr & Vandiver (2001)** | **Individual:** Age at offence, offence history, personal characteristics (i.e., self-concept, self-esteem, attitude | 1. The summed score of protective factors significantly distinguished the two groups ($p$<0.05). Non-repeat offenders had more protective factors present that repeat offenders. |

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| | towards rules and authority, temperament, accepts/avoids support), use of alcohol and substances.<br><br>**Peer:** Affiliation with a gang, number of friends.<br><br>**Family:** Familial conditions (structure in the family home, support and guidance, number of siblings), family separation.<br><br>**Community:** Interests and hobbies, positive adult role models (e.g., teacher, coach), poverty.<br><br>**School:** School attendance, difficulties with specific subjects, overall performance, interest in subjects. | 2. Non-repeat offenders were significantly different to repeat offenders in relation to the following two protective factors: personal characteristics ($p$<0.01) and familial conditions ($p$<0.05).<br><br>3. In relation to personal characteristics: non- repeat offenders reported more positive attitudes towards the police, authority figures and schools than repeat offenders and were also more likely to describe themselves as getting on well with others and 'happy' than repeat offenders.<br><br>4. When considering protective familial conditions: non-repeat offenders had fewer siblings and greater rules and boundaries in the family home, including guidance and support from parents, than repeat offenders. |
| **Clingempeel & Henggeler (2003)** | **Individual:** Offence history, social skills, academic ability, substance use, alcohol use, psychopathology.<br><br>**Peer:** Peer relations (aggressive towards peers, perceived emotional support from peers), exposure to delinquent peers.<br><br>**Family:** Mother-adolescent relationship (warmth and hostility, strictness/setting boundaries), mother/child relationship increased/decreased conflict, global family | 1. The following individual factors in adolescence differentiated repeat from non-repeat offenders: greater involvement in aggressive and property crimes and greater involvement in more serious crimes (felony assaults, armed robberies) ($p$<0.05).<br><br>2. The following peer factors in adolescence differentiated repeat from non-repeat offenders: less perceived emotional support and greater aggression with peers ($p$<0.05). |

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| | relations (family cohesion, adaptability).<br><br>**School:** Reading, writing and arithmetic ability.<br><br>**Positive Adjustment in Emerging Adulthood:** Job satisfaction, general health, perceived emotional support from peers, quality of relationships with peers. | 3. The following individual factors in emerging adulthood differentiated repeat from non-repeat offenders: number of life time psychiatric diagnoses ($p<0.05$) and number of lifetime psychiatric symptoms ($p<0.01$).<br><br>4. The following positive adjustment factors in emerging adulthood differentiated repeat from non-repeat offenders: less perceived emotional support ($p<0.05$), poorer quality of relationships with peers ($p<0.01$) and less job satisfaction ($p<0.05$). |
| **Domburgh, et al. (2009)** | **Individual:** Frequency of offending, variation in offence type, childhood disorder (ADHD, depression, anxiety, and psychopathic traits), pre-natal injuries, sustained serious injuries, perception of anti-social behaviour, attitudes towards delinquency, perception of likelihood of being caught, running away, display of physical aggression.<br><br>**Peer:** Exposure to peer delinquency, quality of relationships with peers.<br><br>**Family:** Exposure to parental stress, level of parental supervision, experience of physical punishment, quality of relationship with siblings, number of siblings, young first-time mother, in receipt of welfare, family separation.<br><br>**Community:** Quality of housing. | 1. Two individual factors in childhood differentiated repeat from non-repeat offenders. Repeat offenders experienced no pre-natal birth problems ($p<0.01$) and sustained more serious injuries ($p<0.05$).<br><br>2. One peer factor differentiated repeat and non-repeat offenders in childhood. Non-repeat offenders reported greater quality relationships with their peers ($p<0.05$).<br><br>3. Seven family factors in childhood differentiated repeat from non-repeat offenders. Repeat offenders experienced lower levels of physical punishment, poorer quality housing and were more likely to be in receipt of welfare ($p<0.01$) than the comparison group. Non-repeat offenders reported better relationships with their siblings ($p<0.01$), better quality housing ($p<0.05$) and experienced lower levels of parental stress |

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|---|---|---|
| | **School:** Truancy. | ($p$<0.05) than individuals who continued to offend.<br>4. Only one factor in the school domain was associated with repeat offending. Individuals who continued to offend truanted more often in childhood than those who did not ($p$<0.01). |
| **Gunnison & Mazerolle (2007)** | **Individual:** Delinquent disposition, moral belief index and religious attachment (Self Control Theory, SCT), perception of likelihood of punishment and severity of punishment (Deterrence/Rational Choice Theory), drug and alcohol use, pregnancy (transitional life events), negative interactions with adults, and negative life events (Strain Theory).<br><br>**Peer:** Exposure to delinquent peers and peer attachment (Social Learning Theory, SLT).<br><br>**Family:** Family, child and partner attachment, marital status, lived with spouse/partner (SCT), parental negative life events (Strain Theory).<br><br>**Community:** Involvement in activities (SCT), neighbourhood problems (Strain Theory).<br><br>**School:** High school graduate, college graduate, employed and employment attachment (SCT). | 1. Non-repeat general offenders differed from repeat general offenders in relation to six individual factors: lower levels of predisposed delinquency, less use of substances, greater moral beliefs, and a greater attachment to a religion ($p$<0.05) (SCT). They also displayed a greater perceived likelihood of being caught and of the severity of the punishment ($p$<0.05) (Deterrence/RCT).<br><br>2. Differences were also evident in the community domain. Non-repeat offenders had had less exposure to neighbourhood problems (Strain Theory) and were more likely to be involved in activities ($p$<0.05) (SCT)**.**<br><br>3. Finally, differences were also detected in relation to the peer, family and school domains. Non-repeat offenders had fewer delinquent peers (SLT), were more likely to marry, and to have graduated from high school (SCT) than individuals who continued to offend ($p$<0.05). |

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|---|---|---|
| **Katsiyannis et al. (2004)** | **Individual:** Intelligence Quotient (IQ), alcohol use, experience of depression, personality patterns.<br><br>**Peer:** Attachment to peers.<br><br>**Family:** Attachment to family.<br><br>**School:** Reading and writing ability, performance in math. | 1. Individuals who continued to offend differed from non-repeat offenders in relation to two individual factors: they were younger at initial incarceration ($p$<0.01), and were less depressed than non-repeat offenders ($p$<0.05).<br><br>2. Repeat offenders also differed from non-repeat offenders in relation to one peer factor: they displayed less need for the support, love and sympathy of others (cognitive succorance) ($p$<0.01). |
| **Loeber et al. (2007)** | **Individual:** Cognitive factors (i.e., verbal IQ, spatial IQ, verbal memory, visual memory, continuous performance, attention, executive function), resting heart rate, alcohol use, substance use, cigarette use, runaway, IC, attitude towards delinquency, perceptions of the likelihood of being caught.<br><br>**Peer:** Exposure to delinquent peers.<br><br>**Family:** Exposure to positive parenting, parental discipline, parental supervision, parental stress.<br><br>**Community:** Quality of housing, perception of neighbourhood crime, actual neighbourhood crime.<br><br>**School:** Truancy. | 1. The following three individual factors in adolescence were associated with repeat offending: high tobacco use ($p$<0.05) and dealing drugs ($p$<0.05) and high levels of IC ($p$<0.05). These differentiated repeat offenders from the comparison group.<br><br>2. One peer factor was associated with repeat offending: exposure to peer delinquency in early adolescence ($p$<0.01).<br><br>3. In emerging adulthood, greater weekly consumption of alcohol ($p$<0.05), and being socially withdrawn ($p$<.001), differentiated non-repeat from repeat offenders.<br><br>4. Three individual factors in emerging adulthood differentiated the two groups: greater levels of anti-social personality problems, being incarcerated, and involvement in minor |

| | | |
|---|---|---|
| | | delinquency were associated with repeat offending ($p$<0.01). |
| **Trulson et al. (2005)** | **Individual:** History of abuse, medical history, age at first contact with juvenile justice system, offence history, length of incarceration, felony adjudications prior to incarceration, on probation at time of incarceration, mental health difficulties, suicidal tendencies, cognitive impairments, substance use, treatment required (sex offender, chemical dependency, capital offender), treatment received, behaviour in custody (violent towards staff, possession of drugs, possession of a weapon, restraint required by staff), age on release from incarceration.<br><br>**Peer:** Affiliation with a gang.<br><br>**Family:** Number of previous out-of-home placements, living in poverty, family separation, family member gang affiliation, youth violence towards family.<br><br>**School:** Special educational needs. | 1. When considering the full sample, seven individual factors, one peer and one family factor differentiated repeat from non-repeat offenders.<br><br>2. Youths who were older at first contact with the system and who were incarcerated for longer were less likely to be involved in repeat offending ($p$<0.05).<br><br>3. Youths with a higher number of offences prior to incarceration, who were on probation at the time they were incarcerated, who continued to display inappropriate behaviour in custody and who reported mental health difficulties were significantly more likely to be involved in repeat offending ($p$<0.05) than the comparison group.<br><br>4. Repeat offenders were more likely to report an affiliation with a gang than non-repeat offenders ($p$<0.05).<br><br>5. Repeat offenders were more likely to have lived in poverty than the non-repeat offenders ($p$<0.05).<br><br>6. When considering males, exactly the same factors differentiated male repeat from male non-repeat offenders as described in the full sample, with the exception of one item in the family domain: lived in poverty; and one individual factor: |

| | | |
|---|---|---|
| | | on probation at the time of incarceration.<br><br>7. In relation to females, only two factors were identified which differentiated repeat from non-repeat offenders. Female repeat offenders were more likely to continue to display inappropriate behaviour in custody and to have special education needs ($p$<0.05). |
| **White et al. (2012)** | **Individual:** Alcohol use, substance use. | 1. At 13 years of age, persisters showed significantly higher levels of alcohol use than all groups (non-violent, late on-setters, one time offenders), with the exception of desisters ($p$< 0.05).<br><br>2. Repeat offenders also did not differ from non-repeat offenders in terms of alcohol use in emerging adulthood (18 to 24/25 years; $p$<0.05). |

## DISCUSSION

This systematic review explored which risk and protective factors are associated with repeat offending and desistance in youths. Of the nine studies reviewed, six adopted a prospective longitudinal research design and three employed a retrospective research design. All of the studies were based in the USA; seven of which used data derived from community samples and two from incarcerated youths. The majority of participants were male (82%), were aged between seven and 17 years at initial assessment, and 17 and 25 at the follow-up period.

The sole focus of four studies was to identify risk factors associated with repeat offending (Byrd et al., 2012; Katsiyannis et al., 2004; Trulson et al., 2005; White et al., 2012). Three studies considered both risk and protective factors, one of which classified factors in relation to theories of desistance from offending (Carr & Vandiver, 2001; Gunnison & Mazerolle, 2007; Clingempeel & Henggeler, 2003), and two studies explored risk and promotive factors in relation to repeat offending (Domburgh et al., 2009; Loeber et al., 2007). The findings of the review indicated that the presence of a number of risk and protective factors differentiated repeat from non-repeat offenders. Due to the sheer number and lack of consistency of factors assessed across the nine studies, only the most frequent findings will be discussed in relation to the objectives of this review.

### To identify which factors differentiate repeat from non-repeat offenders.

*Individual domain – previous involvement in crime and attitudes to offending behaviour*

An understanding of historical variables associated with repeat offending may not be relevant to practitioners in relation to identifying treatment targets and developing intervention plans. However, they prove useful when identifying those youths who are most likely to continue offending and have been found to outperform dynamic factors

when included in predictive models (Cottle et al., 2001). In this review the number of previous offences was positively associated with repeat offending, as were greater variations in offence type, seriousness of offending and higher frequency of offending in adolescence, and being on probation at the time of incarceration (Domburgh et al., 2009; Clingempeel & Henggeler, 2003; Trulson et al., 2005). This is consistent with the literature (Dembo et al., 1998; Minor, Hartmann & Terry, 1997; Myner, Santman, Cappelletty, & Perlmutter, 1998).

When considering desistance from offending, the most consistent findings relate to individuals' perception of the likelihood of being caught. Two studies (Gunnison & Mazerolle, 2007; Domburgh et al., 2009) revealed that non-repeat offenders had stronger beliefs that they would be identified for their involvement in offending than repeat offenders. Typically, adolescents have difficulties with the appraisal of the costs and benefits of behaviour, forward planning, long-term consequences and impulsivity, all of which effect the decision making process (Patton, Stanford, & Barratt, 1995). This finding indicates that individuals who have the ability to engage in the aforementioned higher cognitive functions and who perceive the cost of offending (e.g. being caught) as outweighing the gains are more likely to desist from offending.

*Individual domain – mental health difficulties*

The findings from this review suggest that there is a positive association between repeat offending and mental health difficulties (e.g., Conduct Disorder (CD), Interpersonal Callousness (IC), depression, psychiatric diagnosis) in adolescence (Byrd et al., 2012; Domburgh et al., 2009; Loeber et al., 2007; Trulson et al., 2005) and in emerging adulthood (e.g., psychiatric diagnosis, anti-social personality disorder; Clingempeel &

Henggeler, 2003; Domburgh et al., 2009). This indicates that individuals who continue to offend reported greater mental health needs than those who did not, and is consistent with the literature where a diagnosis of CD (Abrantes, Hoffman & Anton, 2005; Andrade, Silva & Assumpcao, 2004; Robertson, Dill, Hussain & Undesser, 2004) and non-severe pathology such as stress, anxiety and depression (Cottle et al., 2001; McCabe, Lansing, Garland & Hough, 2002; Plizka, Sherman, Barrow & Irick, 2000) in adolescence, is associated with repeat offending. Further, one study identified a negative association in that repeat offenders were less depressed than their non-repeat counterparts but the direction of this finding is inconsistent with the literature (Abrantes et al., 2005; Piquero & Selock, 2004; Marcotte & Markowitz, 2011).

The studies which have identified a positive association with depression and repeat offending have utilised community samples and identified that depression was present prior to continued involvement in offending. The negative association was found in the sample who were residing in prison and may therefore reflect the fact that many factors typically associated with depression (e.g., homelessness, unemployment, relationship difficulties) are specific to living in the community and individuals are sheltered from these in prison. Thus, incarceration reduces exposure to these factors and may decrease individuals' experience of depression. It is therefore logical to conclude that, when released from custody, their exposure to factors associated with depression will increase, which in turn will increase their experience of depression and subsequently their involvement in offending. This would be consistent with the finding, through the use of community samples, that repeat offenders are more depressed than non-repeat offenders. In the Truslon et al. (2005) study mental illness and suicidal tendencies were examined, which represent more severe forms of psychopathology; however, more studies are

required which explore both less severe forms of psychopathology in incarcerated youths and differences in individuals' levels of depression dependant upon their environment (e.g., community and custodial).

*Individual domain – substance misuse*

Substance use has been identified as a factor associated with the onset of offending (Hawkins et al., 2000; Shader et al., 2002). Participants in the Clingempeel and Henggeler (2003) study had a diagnosis of substance abuse or dependence, both of which have been found to be predictors of recidivism (Cottle et al., 2001); all of the other studies explored substance use. The findings in this review were consistent in six out of seven studies and indicated that there were no differences between the groups in terms of alcohol and/or substance misuse in adolescence (Carr & Vandiver, 2001; Clingempeel & Henggeler, 2003; Domburgh et al., 2009; Katsiyannis et al., 2004; Loeber et al., 2007; White et al, 2012).

It is possible that, while substance misuse differentiates offenders from non-offenders, the inclusion of samples of existing offenders in studies of repeat offending results in a homogeneous population and difficulties in detecting differences due to substance use being prevalent both for those who continue to offend and for those who do not. The use of substances is often related to masking early traumatic childhood experiences, reducing the symptoms of mental health difficulties and as a coping response (Crittenden, 1995; Larm, Hodgins, Tengstrom & Larsson, 2010); it is therefore not surprising that the use of substances is prevalent in an offending population.

That said, Gunnison and Mazerolle (2007) reported that desisters from crime were less likely to have used alcohol and drugs compared with persisters. While it is possible that involvement in offending was to fund the use of substances, hence the increase in offending, this information was not documented in the studies. Interestingly, one study found that non-repeat offenders had higher levels of weekly alcohol consumption (Loeber et al., 2007), which indicates that alcohol use in emerging adulthood may defend against the influence of risk of repeat offending. The substance use and offending relationship is well established in the literature (McSweeny & Hough, 2005; Seddon, 2006); individuals who are substance dependent are more likely to commit crime to fund their substance use and typically prioritise the use of depressant and/ or sedative type substances over alcohol (Boyum & Klieman, 2001). It is therefore possible that the alcohol use of non-repeat offenders in the Loeber et al. (2007) study reflects the use of substances which is more in line with that of the general population.

*Peer domain*

It is likely that individuals involved in offending behaviour may gravitate towards peers who have had similar early life experiences. This may in part be due to shared characteristics. However, adolescence also signifies a period of autonomy during which individuals are more likely to experience less supervision from parents and find themselves in situations that increase their exposure to other offenders (e.g., involvement in the care system, alternative educational settings, youth groups designed for offenders; Cashmore, 2011). There were no significant differences between groups in terms of the quality of peer attachment (Gunnison & Mazerolle, 2007; Katsiyannis et al., 2004), however, findings indicated that repeat offenders reported less perceived emotional

support and lower levels of succorance (need for sympathy, love and protection of others) than non-repeat offenders (Clingempeel & Henggeler, 2003; Katsiyannis et al., 2004).

In late adolescence and emerging adulthood, repeat offenders were also more likely to be affiliated with a gang and have a higher number of delinquent peers (Trulson et al., 2005). It is possible that the sense of belonging that is often lacking from offenders' families and education settings is a need that is met through associating with other young offenders. With age, as adolescents' insight into their experience of inadequate socialisation increases (e.g., education failure, unstructured leisure time, lack of community and household resources), they become more aware of the differences between themselves and others (Thornberry, Ireland, & Smith, 2001). Furthermore, individuals who are not involved in offending are often encouraged by parents, teachers and professionals not to associate with this subgroup of individuals, which isolates individuals involved in offending behaviour even further from the general population.

All of these increase the likelihood of associations with other offenders, including gangs, where these needs can be met. Gang involvement results in group membership, a social identity, increased self-esteem and a shared understanding of how the world is viewed (e.g., perceived opportunities for achieving success are limited for the working class). Not surprisingly, having more friendships (Carr & Vandiver, 2001), good relationships with peers (Domburgh et al., 2009), and peers with lower levels of delinquency (Gunnison & Mazerolle, 2007) differentiated non-repeat offenders from those who continued to offend. These findings highlight the importance of offenders having opportunities to interact with pro-social peers.

*Family domain*

Findings from studies which adopt a systemic approach to treating youth offenders by focusing on parenting behaviours such as Family Functioning Therapy (FFT; Elliot & Sheldon, 1997; Sexton & Alexander, 2003; Sexton, Alexander, & Mease, 2003; Sexton & Turner, 2010; Waldron & Turner, 2008), and Multi-Systemic Therapy (MST; Curtis & Ronan, 2004; Henggeler, 1999; Ogden & Hagen, 2006; Schaeffer & Bourdin, 2005) have been promising, indicating that treatment targets relating to the family domain are useful in decreasing involvement in offending.

However, the majority of findings in this review revealed that there were no differences between groups in terms of parent-child relationship, supervision and punishment (Clingempeel & Henggeler, 2003; Domburgh et al., 2009; Katsiyannis et al., 2004). Only two studies reported significant findings: Domburgh et al. found that repeat offenders were exposed to higher levels of parental stress, came from larger families, were in receipt of welfare and had young, first time mothers, and Trulson et al. found that repeat offenders were more likely to be living in poverty than non-repeat offenders. As was found with substance use as a risk factor for repeat offending, it is possible that the homogeneity of including the sample from an offender comparison group resulted in the lack of significant findings, as factors relating to the family domain are prevalent for both repeat and non-repeat offenders.

In contrast, a number of factors were associated with desistance from crime; Carr and Vandiver (2001) found that structure in the family home, support and guidance, and fewer siblings differentiated non-repeat offenders from repeat offenders. Similarly, Domburgh et al. (2009) found that individuals involved in family activities who lived with both parents,

had fewer siblings, and good quality of housing were less likely to continue their involvement in offending. This suggests that risk factors in the family domain may not be specific to repeat offenders; however, the presence of protective factors is likely to play a role in decreasing involvement in further criminal behaviour.

Interestingly, Gunnison and Mazerolle (2007) identified that desisters were less likely to have an attachment to their family (perceived parental warmth and affection, encouragement and support), thus the findings were not as expected, since parental warmth and support have been found to decrease the likelihood of involvement in crime (Shader, 2002). However, it is widely accepted that young offenders' families are often characterised by parental criminality, anti-social attitudes and substance misuse (Petrosino, Derzon & Lavenberg, 2009). It would therefore follow that in order for young offenders to allow themselves the opportunity to lead a life free of crime, they would have to distance themselves from their families, if criminal.

*School domain*

Academic achievement and commitment to school are factors which have been found to moderate the influence of risk (Shader, 2002). However, the majority of studies in this review found no differences between groups with regard to special education needs, academic achievements, attitudes towards school, and school motivation (Domburgh et al., 2009; Katsyiannis et al., 2007; Loeber et al., 2007; Trulson et al., 2005). In relation to emerging adulthood, Gunnison and Mazerolle (2007) found that non-repeat offenders were more likely to be high school graduates than repeat offenders, and Clingempeel (2003) and Henggeler found that repeat offenders reported less job satisfaction than non-repeat offenders in emerging adulthood. This indicates that commitment to school and job

satisfaction may be protective factors. Further, Trulson et al. found that females with special education needs were more likely to re-offend, which suggests that females may follow a different offending trajectory than males.

*Community domain*

Only four studies included in this review measured risk factors in the community domain. The findings were consistent across studies in that there were no differences between the groups in terms of perception of neighbourhood disadvantage (Domburgh et al., 2009; Gunnison & Mazerolle, 2007), perceived levels of risk for community crime and actual levels of community crime (Domburgh et al., 2009; Loeber et al., 2007). All of these indicate that individuals from disadvantaged neighbourhoods and communities are overrepresented in offender populations (Hawkins et al., 2000). This is consistent with the literature whereby neighbourhood and community influences have been implicated in the development of anti-social attitudes and behaviours (Leventhal & Brooks-Gunn, 2000; Ludwig, Duncan, & Hirschfield, 2001; Sampson, Morenoff, & Gannon-Rowley, 2002).

While such anti-social tendencies are likely to cause difficulties for individuals in the general population, in both community and work settings, it is likely that pro-criminal beliefs are adaptive for individuals living in disadvantaged areas and enable them to survive in an environment which is characterised by poverty, violence, and a hatred of authority figures (e.g., police and social workers; Weisburd, Greenspan, Hamilton, Williams, & Bryant, 2000) Further, it is likely that such attitudes will be maintained and reinforced by the very communities in which the young offenders reside and with which they affiliate themselves. If attempts are made by professionals to restructure anti-social attitudes and introduce alternative behaviours, and these individuals also remain in their

communities or return there following a custodial sentence, it is likely that the young person will revert back to the strategies which are adaptive to them in this context since the pro-social alternatives would unlikely have the same effect in a disadvantaged neighbourhood.

This is consistent with the findings of one study in this review where less exposure to neighbourhood problems and involvement in community activities were associated with desistance from offending behaviour. However, it was not clear what measures were (or could be) taken to limit exposure to an adverse environment. Presumably increased contact with community services was a protective factor as those individuals with entrenched criminal attitudes and behaviour are the least likely to access community services, or are unable to maintain access (e.g., inconsistent attendance, negative interactions with others results in prohibition). Thus, youths who access community services, even those in socially disadvantaged areas, are likely to come into contact with more appropriate role models.

**Are factors which influence repeat offending distinct from those factors involved in the onset of offending?**

Due to the homogeneity of exploring risk and protective factors in offender populations, a number of domains identified in Shader's (2002) review were not replicated in this review (e.g., school, family, community). No protective factors were identified in Shader's review in the community domain; however, this review indicated that exposure to fewer neighbourhood problems and involvement with community resources defend against the influence of risk. This review also identified protective factors in the individual and peer domains which are similar to those factors implicated in the onset of offending, including:

perceptions of the likelihood of being caught and involvement with pro-social peers. Furthermore, additional factors were identified which included a lack of family attachment and higher levels of weekly drinking in emerging adulthood, both of which were associated with the desistance from crime.

The prevalence of mental health difficulties was also found to differentiate repeat from non-repeat offenders. However, as this individual factor was not measured in Shader's review, it is not clear whether mental health difficulties are also associated with the onset of offending or are specific to continued involvement in criminal behaviour. The articles in this review also appeared to neglect neuropsychological and biological markers for repeat offending**,** which is concerning given the research from brain imaging studies which highlight the impact early maltreatment has on the development of the brain (Chamberlain, 2009; Teicher, 2000). Data from the Dunedin study also suggest that both life course persistent and adolescent onset cases contribute significantly to the number of individuals developing adult Anti-Social Personality Disorder (ASPD; Moffitt, Caspi, Harrington & Milne, 2002).

Mental health professionals do not routinely assess personality in youths, partly because they do not want to 'label' young people, however personality disorder does not just appear on the day an individual turns 18 (and a diagnosis can be made), it emerges over the lifespan (Frick & Marsee, 2006). Due to the links between childhood temperament, later childhood personality patterns and offending behaviour (Glenn, Raine & Venables, 2007) it may be useful to assess personality in childhood. In order for a greater understanding of the similarities and differences in factors associated with the onset of offending and those associated with continued involvement in crime, more research is

required that considers neuropsychological and biological factors, and that assesses equivalent factors across the same domains.

**Implications for policy and practice**

The findings of this review may also have implications for public policy and practice. It was identified that mental health difficulties differentiated repeat from non-repeat offenders in adolescence and emerging adulthood. Consideration should therefore be given to routine mental health screening in both custodial and community settings to enable the identification and treatment of mental health needs. Further, the ways in which mental health services are commissioned and configured often make it difficult for young offenders to access these services.

Unfortunately, there can be up to a 12 week waiting list for a referral to a service and many mental health providers do not consider the level of support that is required for young people from socially disadvantaged areas to attend mental health appointments. Young offender's families are often characterised by mental health, substance misuse and relationship problems which prevents parents from providing consistent support (emotional and practical) for their children to attend mental health provisions. Often mental health providers are centrally located which adds another obstacle for young people to access these services as they are reliant on their family for the means to travel to appointments. Further, for those individuals who do engage with mental health services, the failure to attend three consecutive appointments often results in closure of the case. As such, despite a significant need, the use of mental health services for young offenders is low (Barret & Chitsabesan, 2006), with those contained in secure environments most likely to receive a service (due to accessibility).

This highlights a need for an alternative approach when working with young offenders who are managed in the community. One possibility is for joint working partnerships between mental health and youth justice services to ensure that mental health practitioners are aware of the challenges inherent in engaging this subset of the population, in addition to the introduction of flexibility in treatment approaches (e.g., home visits, lack of engagement not resulting in closure of the case) in order to ensure that all young people receive the health service to which they are entitled.

This review also highlighted that repeat offenders have little opportunity to interact with people who are not from disadvantaged backgrounds; yet, when they are exposed to pro-social peers, this can defend against the influence of risk. One potential way of overcoming this social disadvantage is the introduction of mentoring and be-friending initiatives. For example, Circles of Support and Accountability (CoSA), a community-based approach to reducing sexual offending, has been successful in the USA, Canada and England (Bates, Saunders, & Wilson, 2007; Nellis, 2009; Wilson, Picheca, & Prinzo, 2005). This initiative provides adult offenders with daily support from trained volunteers to assist their rehabilitation and reintegration into society (e.g., social inclusion, access to housing and employment opportunities). Further, a recent cost-benefit analysis of CoSA based on annual UK crime expenditure and implementing this approach indicated that CoSA is cost effective (Elliott & Beech, 2012).

Evaluations of youth mentoring initiatives introduced by the Office of Juvenile Justice and Delinquency prevention in the USA (1996) have also proved promising, with findings indicating that mentoring relationships which are maintained for at least two years are

associated with positive outcomes for youths (OJJDP, 2009). Similar initiatives have also been introduced by the Youth Justice Board in England and Wales (2005), providing offenders with the necessary situational environment to develop relationships with pro-social peers and adults with whom they would otherwise not have exposure. All of which support the conclusion that development of such initiatives is needed in order to increase social inclusion and rehabilitation.

**Limitations of the review**

There are a number of methodological limitations of this review. In spite of the fact that all the articles in the quality assessment phase were screened by a second reviewer, it is possible that an initial selection bias occurred as only one researcher searched for and screened the papers according to the inclusion criteria; a single rater can miss 8% of relevant articles (Centre for Reviews and Dissemination, 2009). Having two researchers conduct all aspects of screening from the initial search strategy would have decreased the likelihood of this bias.

All of the articles which were included in this review were peer-reviewed publications. Although attempts were made to contact professionals to identify any unpublished work in this area, this was unsuccessful. The findings of this review may therefore be limited by publication bias. Furthermore, the small number of studies ($N$=9) which were identified in this review limits the confidence in which risk, protective and promotive factors, even those studied more frequently, can be said to be an accurate representation of factors which are unique to repeat and non-repeat offenders.

Methodological differences across the studies are likely to account for the range of findings and inconsistencies of the results of this review. Differences were evident in the operational definitions of repeat and non-repeat offenders, offence type, age at initial assessment, outcome measures, the length of follow-up period, and the populations from which samples were drawn (community versus incarcerated), all of which resulted in difficulties in synthesising and comparing findings. Furthermore, the same risk and protective or promotive factors were not measured consistently across studies. Given the large number of assessment tools which were employed, a detailed understanding of each measure was not possible; therefore, even in studies which appear to be measuring the same variables, it is not clear to what extent each assessment measure was assessing the same construct.

All of the participants in this review were drawn from American samples, four of which were derived from the Pittsburgh Youth Study (PYS). This may therefore limit the extent to which these findings can be generalised to other nationalities and offenders involved in criminal behaviours that differ from those included in the PYS. It was disappointing that only 4% of the entire sample were female (*n*=194) and that only one study reported findings in relation to females as a discrete offending group (*n*=143). Females are responsible for 27% of youth crime in America (Department of Justice Statistics, 2007), and therefore the population used in Trulson et al.'s (2005) study may not be representative of the general female offending population. As such, future research should consider reporting findings separately for males and females.

## Conclusions and recommendations

The findings of this systematic review suggest that there are a number of risk and protective factors that differentiate repeat from non-repeat offenders in adolescence and emerging adulthood, some of which are distinct from those factors which are associated with the onset of offending behaviour. However, before one can generalise, further research which supports the findings of this review is required. Specifically, there is a need for consistency in the methodology adopted across studies which would allow factors which have been identified in the literature to be examined consistently. This would also enable comparisons between studies to be made and any inferences drawn to be stated with greater confidence. The inclusion of a study design which considers girls as a discrete offender group and research which is conducted outside of the USA would also make a positive contribution to the current literature base.

# CHAPTER 3:
# THE USE OF 'ASSET' RISK OF GENERAL RE-OFFENDING ASSESSMENT TOOL: A CRITIQUE


## ABSTRACT

'Asset' has dominated the field of Youth Justice in England and Wales for the past 13 years; the Youth Justice System has been established in accordance with the principles of the Risk-Need-Responsivity model (Andrews & Bonta, 1990) and 'Asset' scores are used to determine community and custodial sentences including the nature, intensity, frequency and duration of statutory interventions and supervision (Wilson & Hinks, 2011). It must be noted that a limited amount of research has been conducted with the use of 'Asset' data and the studies which are available have not been the subject of scientific scrutiny in the form of independent authors or peer-reviewed journals. However, the significance of the role that 'Asset' has played in shaping the Youth Justice System, and the subsequent implications for young people involved in offending behaviour, is such that a thorough understanding of the reliability and validity of this measure is a necessary requirement for practitioners and researchers alike.

## INTRODUCTION

The first report on Youth Justice Services (YJS) in England and Wales 'Misspent Youth: Young People and Crime' was published in 1996. The Audit Commission's findings indicated that the YJS was costly and ineffective at reducing crime rates (Audit Commission, 1996). Criticism was made of the amount of money that was lost through lengthy and ineffective court procedures and the focus on young offenders who already had extensive involvement with the Criminal Justice System, which resulted in little attention being paid to developing and implementing early intervention services to prevent the onset of offending behaviour (Audit Commission, 1996).

The central tenet of the paper was the need to prevent offending as opposed to intervening once the young person was embedded in criminal procedures. It was suggested that offending could be prevented by developing a set of agreed national standards, increasing the remit of Youth Offending Services and introducing diversion from court procedures into alternative resources (Audit Commission, 1996). The Audit Commission's report has been criticised however for giving little attention to the need to identify the causes of offending (Muncie, 2006); instead the report highlighted the need to identify risk conditions (e.g., factors which have been shown in the literature to be associated with offending). It appears that the recommendations of the YJS review were concerned with conditions which could be controlled and therefore appear to offer potential solutions to the identified problem (e.g., increasing youth crime rates), whilst omitting to consider the political and moral debates of the socio-structural causes of crime (e.g., social class, ethnicity; Pitts, 1992).

The review of Youth Justice Services was commissioned prior to the 1997 government election and a large proportion of New Labour's pre-election campaign centred on the need to 'be tough on crime and be tough on the causes of crime'. When the Labour government came into power in 1997, the White Paper 'No more excuses: A new approach to tackling crime in England and Wales' was published shortly after they were elected. The content of this document highlighted that it was possible to prevent offending and increase public protection whilst simultaneously protecting the welfare of the young offender.

The government refuted that any conflict existed between these two objectives. It was suggested that by being committed to preventing offending, the welfare of the young offender would automatically be protected since a reduction in offending promotes welfare (Home Office, 1997). Arthur (2010) suggested that the title of the White Paper implied that the government were about to embark on a punitive approach to prevent offending, and that the selection of the specific phrase "no more excuses" signified the need for more action in the field of Youth Justice. The title of the paper, alongside the belief that two conflicting aims could be achieved, may have been interpreted as an indicator of the bias towards particular tenets of the White Paper. What was clear, however, was the government's intention to make crime reduction a priority by restructuring the Youth Justice System.

As such, the Crime and Disorder Act was passed in 1998 which saw the introduction of Youth Offending Teams (YOTs) across England and Wales, which included representatives from probation, police, health, education and social services. Partnerships and a multi-agency approach were adopted to tackle offending behaviour and to encourage consistency between disciplines in order to bridge the gap between the Youth Justice

System and wider services (Home Office, 1998). Individuals from distinct services were drawn together with the vision of creating a team of professionals who shared a collective set of values and a common language, and an ability to work together to share information and decrease the likelihood of duplication of work (Home Office, 1998). Whereas previously Youth Justice Services were concerned primarily with diverting young offenders from court and custodial sentences, as these services were scrutinised for being unable to effectively achieve their stated aims (Audit Commission, 1996), the new remit of YOTs was to provide a service (assessment, intervention, supervision and monitoring) with greater scope to intervene in all aspects of youth anti-social and criminal behaviour.

At the same time, the Youth Justice Board (YJB) was introduced in order to monitor the way in which Youth Justice Services were being delivered across 154 Local Authorities (Home Office, 1998). The YJB offered advice to the government in relation to setting National Standards and was responsible for promoting best practice across England and Wales. As such, each YOT was operating in a system whereby guidelines and targets were stipulated by the YJB; the agenda of which was to reduce offending and ensure that individuals who were most 'at risk' of offending were involved with mainstream services (YJB, 2002). By the year 2000, each YOT had developed a Youth Justice Strategic Plan indicating how its service would be delivered and evaluated, how targets would be reached, and, of course, what the financial implications for the service would be (YJB, 2002).

In order to provide a common structured assessment of risk of offending across localities, 'Asset' was introduced by the Youth Justice Board in 2000. The Centre for Criminological Research at Oxford University was commissioned by the Youth Justice Board to design,

pilot and monitor, a structured risk assessment guide that identifies the probability of future general re-offending in youths aged between 10 and 17 years. 'Asset' was developed in accordance with a literature review of risk factors associated with offending behaviour, with research papers primarily drawn from the Risk Factor Research Paradigm (Farrington, 1986, 1992, 1996; Sampson & Laub, 1993; Thornberry, 1987, 1998), and discussions with professionals and academics involved in the field of Youth Justice.

This measure has been described as a third generation risk assessment tool, that is, a structured risk assessment tool which combines the identification of evidence based risk factors with professional judgement in relation to the classification of level of risk (Baker et al., 2003). The purpose of 'Asset' was to develop a unified approach to measuring risk and dealing with young offenders by providing practitioners with a 'live' document to inform sentence and intervention plans (community and custodial), and to assess individual (within) change during and following intervention (Wilson & Hinks, 2011).

While there is a number of accompanying documents to 'Asset' (including the 'bail Asset', 'final warning Asset' and the 'Asset mental health screening tool'), an overview of the full battery of 'Asset' documents is outside the scope of this chapter. It will focus, therefore, on providing a critique of the 'Asset' core profile assessment document.

## Overview of 'Asset'

### *'Asset' core profile*

The completion of 'Asset' is based on interview, case file review, and information gathered from multi-agency partnerships prior to the allocation of services (e.g., intervention, supervision and monitoring). The core profile includes four static variables

(offence type, age at first reprimand, age at first conviction and number of previous convictions) which can be summed to yield a total static score of 16. However, the main focus is on dynamic risk factors, for example, risk factors that research indicates are associated with offending behaviour and are amenable to change. 'Asset' is comprised of the following 12 dynamic factors: Living Arrangements, Family and Personal Relationships, Education, Training and Employment, Neighbourhood, Lifestyle, Substance Misuse, Physical Health, Emotional and Mental Health, Perception of Self and Others, Thinking and Behaviour, Attitudes to Offending, and Motivation to Change. Each item contains questions requiring a 'yes', 'no' or 'don't know' response and a section for a narrative account of the issues identified. Each risk factor is then given a scoring of 0 (not at all associated) through to 4 (very strongly associated), based on the extent to which each item is associated with the likelihood of further offending. Items are summed to yield a total 'Asset' dynamic score of 48.

*Positive factors, risk of vulnerability and indicators of risk of serious harm*

In addition to the static and dynamic risk sections of the core profile that do not require numerical weighting, practitioners who administer the tool are required to identify the presence of any positive factors. Nine statements relate to individual factors, three to family related issues, and five to community factors. Each statement is to be selected if it is currently considered to be a positive factor or it is likely to be present in the future (potential). Space is provided for the individual administering the measure to explain what influence each factor is likely to have on future offending and to identify any other positive factors which may not have been identified in this section of the 'Asset'.

The extent to which the young person may be the subject of harm (either by others or self-directed) is documented in the risk of vulnerability section. The individual administering this tool is required to respond 'yes', 'no', or 'don't know' to seven harm related questions, two of which are concerned with receiving a custodial sentence. Any item where 'don't know' is selected requires an explanation as to why this information is not available.

Individuals administering the tool are required to ascertain the likelihood of the young person causing serious harm to others. Serious harm is defined as 'death or injury (either physical or psychological) that is life threatening and/or traumatic and from which recovery is expected to be difficult, incomplete or impossible' (Asset Core Profile: YJB; 2003, *pp*.25). Five statements relating to risk of harm to others are provided, and if the response to any of these questions is 'yes', a full risk of serious harm document must be completed. A further three questions are provided and respondents are required to consider known offences and behaviour within the school, home and residential environments. If any of these questions receive a 'yes' response, the full risk of serious harm document must be completed. The full screening consists of seven questions which represent potential indicators of serious harm. Where a 'don't know' response is selected for any of the items, respondents are required to provide further information. All of the items in the serious risk of harm section are endorsed with a 'yes', 'no' or 'don't know' response.

*What do you think?*

In addition to the core profile, a self-assessment form is available for each young person to complete (with support, if required), providing them an opportunity to share their views in relation to their offending behaviour and current life circumstances. Young people's views

are documented in relation to the following seven areas: Your family and where you live; School, college and work; Your lifestyle and the area where you live; Smoking, drinking and drugs; Your health; How you think and behave; and What you think about crime and your future. All of these correspond to the items present in the core profile. Individuals respond to 50 items with 'not like me', 'a bit like me', 'quite like me' or 'just like me', and an additional ten questions are presented in a format that requires a written response.

It must be noted that the *What do you think?* form, alongside the positive factors, risk of vulnerability and risk of serious harm sections of the core profile, is not taken into consideration when aggregating the 'Asset' score or determining the subsequent level of risk banding.

**Scaled approach**

Prior to the introduction of the Scaled Approach Framework, resources and interventions prioritised areas of high risk, i.e., individuals who received scores of three or four on any of the 12 dynamic risk factor items (YJB, 2003, 2004, 2006). The Scaled Approach Framework was introduced by the Youth Justice Board in England and Wales in 2009; the primary objective of this approach was to improve the quality and consistency of practice across YOTs. Practitioners identify individuals at risk of future offending via their 'Asset' core profile, and monitor, supervise and deliver interventions according to this risk. Individuals are allocated to one of three groups based on their combined 'Asset' score (static and dynamic risk): standard (0-14), enhanced (15-32) and intensive (33-64). The intensity, frequency and duration of any intervention and/or supervision provided by the YOT are determined by the group to which an individual is allocated. Wilson and Hinks (2011) stated that the Scaled Approach cannot be used for individuals who are at the early

stages of their criminal careers. Therefore this approach is used for community and custodial disposals only and it is not used for individuals who are the subject of a Final Warning.

**The use of 'Asset' in Scotland**

The Criminal Justice Social Work Development Centre (CJSW; University of Strathclyde, previously University of Edinburgh) identified 'Asset' as a suitable general re-offending risk assessment tool for youths and have been instrumental in promoting and co-ordinating the use of this tool across Youth Justice Services in Scotland since 2001. Since this time, 'Asset' has been used in thirteen Local Authorities (Baker et al., 2005). As a result of differences in legislation and in the structure of Youth Justice Services in Scotland, amendments have been made to 'Asset' with regard to the terminology of certain items (e.g., criminal history, care history, and education).

Due to differences in the way in which police charges are processed in Scotland it is not possible to use the 'Asset' static component of the core profile, as involvement in previous offending is scored in relation to convictions. In Scotland police charges are typically dealt with through the Children's Hearing System (see chapter one of this thesis for an overview) which often results in young people never receiving convictions for their involvement in offending. Thus, only the 'Asset' dynamic component of the core profile is used in everyday practice in Scotland to assess risk of re-offending. The Scaled Approach Framework has not been adopted in Scotland, and as such, the frequency and duration of intervention supervision and monitoring is not dependent on the 'Asset' level of risk categories (standard, enhanced, intensive).

### Appropriate normative data

In England and Wales, the initial 'Asset' research study was normed on 3,395 youths aged between 10 and 18 years, 82% of which were male and 18% were female. Of the sample, 90% were White and 10% were identified as being an ethnic minority (Black or Black British: *n*=4%, Asian or Asian British: *n*=2%, Mixed Ethnicity: *n*=4%). The sample was drawn from 39 Youth Offending Teams across England and Wales, thus the sample can be considered representative of the youth offending population in that demographic area.

## THE USE OF PSYCHOMETRICS

### Psychometric properties

In order to be confident in the use of psychometric measures there are three principles which all tests should adhere to namely: unidimensionality, reliability and validity (Miller, 1996). Unidimensionality refers to the fact that a test measures only one trait (e.g., personality trait) or state (e.g., emotional state) at a time. Thus the concept being measured is not influenced by any other factor (e.g., social desirability, response bias; Field, 2009). A test can be considered reliable when there is accurate measurement such that there is little measurement error (i.e., the discrepancy between the response score and the actual score) influencing the results. Thus the measure will generate the same results, consistently, across different situations (Field, 2009). Finally, validity is concerned with whether the psychometric test measures what it claims to measure (i.e., a risk assessment tool measures the construct of risk; Miller, 1996). It is important to note that there will always be some level of error in each psychometric tool. However, to ensure that the level of measurement error is minimal, it is necessary to have a good understanding of the psychometric properties of the measure being used (Nunally, 1978).

**Reliability**

Cronbach's (1951) Alpha coefficient is commonly used when considering reliability, including internal consistency and test-retest reliability of a psychometric assessment. Nunnally (1978) reported that a test should only be used when it has an Alpha coefficient of at least 0.7, and that an Alpha coefficient of 0.9 is required when making important decisions about an individual, such as recommendations for treatment, supervision or monitoring, and referrals to special education.

*Internal consistency*

Internal consistency refers to the reliability of different items within an assessment tool that are intended to measure the same construct. Including a number of test items in an assessment tool that are believed to measure the same construct reduces the likelihood of the results being influenced by factors other than that being measured (Field, 2009). Thus, the more items included in a scale, the less likely it is that scores are the result of other factors. Internal consistency is measured by correlating a pair of test items. A large correlation indicates that the items are a good measure of the construct, and a lower correlation is suggestive of one or both items being influenced by factors beyond the construct under measurement (e.g., social desirability, ability, and other traits). Internal consistency does not appear to have been measured in any of the 'Asset' research papers (Baker et al., 2003; 2005; Wilson & Hinks, 2011).

*Inter-rater reliability*

Inter-rater reliability refers to the degree of agreement between independent raters, scoring the same psychometric measure. A good psychometric tool should yield the same results, regardless of the individual administering, scoring and interpreting the measure. Inter-rater reliability was assessed in two of the three 'Asset' research studies (Baker et al.,

2003, 2005). In the 2003 study, inter-rater reliability was assessed between professional groups (e.g., police, social services, health, probation and education), across YOTs (comparisons between nine teams in England and Wales), within individual YOTs, and between practitioners (those who had completed 10 'Assets' or more).

A static score was derived from an individual's offence history and divided by the total 'Asset' dynamic score; mean ratios were then compared between groups (see Raynor, Kynch, Roberts, & Merrington, 2000). While some consistencies were identified, the static score (low or high) did not necessarily correlate with the total 'Asset' scores (Baker et al., 2003). The authors therefore highlighted the limitations of using this approach to measure inter- rater reliability.

As such, subsequent assessments of inter-rater reliability were conducted using a case study design (practitioners rated a case study and raters' scores were compared; Baker et al., 2005). An Intra-Class Correlation coefficient (ICC) was used to measure the proportion of variation between individual assessors, and differences in ratings for individual items, as this is considered a more robust measure than Spearman's Rho. ICCs for average ratings were good: case study 1 = .97, case study 2 = .93 and case study 3 = .97. However, the ICCs for single item ratings were poor: .52, .21 and .57 respectively.

There are three possible reasons for the inconsistency between raters on single items: one is that the assessment tool is flawed (Cooper, 2002), the other is that practitioners may not have been administering and scoring the tool as it was intended to be used, which then may have resulted in inconsistencies between raters. Alternatively, it may be that the high correlations obtained for the average ratings for each of the three case studies were the

result of test items being paraphrases of each other, or that the same erroneous factors applied to the items, which then resulted in an inflated coefficient (Field, 2009).

*Test-retest reliability*

Test-retest reliability is the ability of the assessment tool to yield consistent results when administered on the same population more than once (Howell, 2002). Typically, tests are administered at least one month apart in order to avoid practice effects, but the interval is not so lengthy such that other factors (e.g., developmental changes, life events, learning) influence the results (Miller, 1996). Test-retest reliability is the correlation between the two sets of results: the score at time one and the score at time two (Field, 2009). There is no evidence that test-retest reliability has been measured in any of the 'Asset' validity and reliability studies (Baker et. al., 2003, 2005; Wilson & Hinks, 2011). It is therefore unclear to what extent the items on the 'Asset' core profile can confidently be said to measure each of the 12 key constructs in a consistent manner.

**Validity**

Reliability is necessary for a scale to be considered valid since low reliability is suggestive of the scale not measuring any single construct (Howell, 2002). Reliability in itself, however, is not sufficient given that a test can have a large Alpha coefficient for a number of reasons. In order to establish whether an assessment tool measures what it claims to measure, it is imperative that the assessment tool has been validated (Field, 2009).

*Face validity*

Face validity refers to whether the assessment in question is subjectively viewed as measuring what it is supposed to measure (Field, 2009). That is, individuals who are familiar with the tool are in agreement that it performs this function appropriately. Due to

the large-scale use of ‘Asset’ in Youth Justice Services across the United Kingdom it could be inferred that practitioners agree that ‘Asset’ measures risk factors which are believed to be associated with repeat offending. Alternatively, it is possible that practitioners are not in agreement but use this tool because it has been mandated by the government (YJB, 2002; RMA, 2013). Either way, it is not possible to determine what the scale measures from merely looking at test items, even if this appears to be obvious (Howell, 2002). Therefore, further statistical validity is required to determine the validity of ‘Asset’.

*Content validity*

Content validity refers to whether the assessment tool includes or relates to the construct being measured, that is, the items in the scale are appropriate (Field, 2009). A scale is considered to have high content validity if the test items cover all of the necessary factors and do not include other irrelevant variables. For example, when considering the measurement of depression, items would include information relating to both affect and behaviour, and would not include items deemed in the literature to be irrelevant to this construct.

‘Asset’ was developed using the extensive Risk Factor Research Paradigm literature base and, in accordance with this theoretical model, it appears to consider all aspects of dynamic risk; furthermore, the dynamic items have been combined with static risk factors to provide an integrated assessment of risk. However, it must be noted that content validity has not been assessed using an official measure of content validity such as Lawsche’s (1975) protocol, which quantifies the agreement among raters regarding the extent to which each item is essential.

*Predictive validity*

Psychometric assessments that are considered to have predictive validity are tests which have been proved to predict another outcome or measure (Field, 2009). Risk assessment predictive validity studies identify the ability of a measure to predict re-offending; typically a Receiver Operator Characteristic (ROC) analysis will be conducted on the total risk score, as the Area Under the Curve (AUC) reflects the likelihood that a randomly selected recidivist will have a higher score on the risk measure than a randomly selected non-recidivist. An AUC of 0.5 indicates that the model does not predict better than chance, while the model is considered perfect if the AUC is 1, good if the AUC is greater than 0.75 and moderate if the AUC is 0.7-0.75 (Douglas, Guy & Weir, 2005).

Only three predictive validity studies have been conducted to date (Baker et al., 2003, 2005; Wilson & Hinks, 2011). The initial study looked at 'Asset' findings from the first two years (*N*=1,347) and, using the total 'Asset' dynamic score (48), found a predictive accuracy rate of 67% (the sum of the correctly predicted non-convicted low scores and correctly predicted convicted high scores when the sample was split into low (0-12) and high (13-48); Baker et al., 2003). Thus, 33% of the sample were in the low group (0-12) and did not re-offend and 37% of the sample were in the high group (13-48) and did re-offend. One would expect that by having a small range (12 points) for non-repeat offending and a large range (35 points) for repeat offending, as opposed to using the level of risk banding categories (low, moderate, high), this should increase the likelihood that 'Asset' will correctly identify individuals who continue to offend and those who do not. However, in this sample 'Asset' incorrectly predicted the outcome for 1 in 3 youths.

It also appears that the AUC statistic was derived from the percentage of individuals correctly re-convicted, as opposed to the 'Asset' total scores (Baker et al., 2003, *pp*.59). While an AUC statistic of 0.71 was obtained, indicating a moderate level of predictive accuracy, caution must be taken when interpreting these findings due to the atypical statistical methods employed to obtain these figures. Using the same method 'Asset' was also found to be a good predictor of re-conviction across subgroups of offenders: with females there was an overall predictive accuracy of 66% (the measure accurately predicted 23.5% of those that were re-convicted and 42.5% of those who were nor re-convicted); an overall predictive accuracy of 65.4% for young offenders aged between 10 and 15 years (the measure accurately predicted 29.9% of those that were re-convicted and 35.5% of those who were not re-convicted) and an overall predictive accuracy of 66.5% for ethnic minorities (the measure accurately predicted 32% of those that were re-convicted and 34.5% of those who were not re-convicted. However, it is not clear whether ROC analyses were conducted on the different subgroups of offenders as AUC statistics were not reported.

Baker et al. (2005) repeated the study using the same methodology for a sample of 2,233 youths with a 24-month follow-up period. The overall predictive accuracy of 'Asset' was 69.4% (the measure accurately predicted 49.8% of individuals who were re-convicted and 19.6% of those who were not re-convicted), and findings revealed an AUC statistic of 0.73, over a 24 month period. Again, 'Asset' was also found to be predict re-conviction in females with an overall predictive accuracy of 65.4% (the measure correctly predicted 33.3% of those who were reconvicted and 32.1% of those who were not re-convicted); there was a 67.4% overall predictive accuracy for young offenders aged between 10 and 15 years (the measure correctly predicted 44.9% of those who were re-convicted and 22.5%

of those who were not re-convicted); and a 68.8% overall predictive accuracy for ethnic minorities (the measure correctly predicted 50.3% of those who were re-convicted and 18.5% of those who were not re-convicted).

In the most recent predictive validity study conducted by Wilson and Hinks (2011), a larger sample size was used (*N*=7,621) to detect the ability of 'Asset' to identify re-offending during a 12-month follow up period. Unlike the previous two studies, Wilson and Hinks used a number of different measures of risk to ascertain the predictive validity of these measures: the 'Asset' static score, 'Asset' dynamic score, combined static and dynamic score (64), Offender Group Reconviction Scale-3 (OGRS-3; Howard, Francis, Soothill, & Humphreys, 2009), and the combined OGRS-3 and 'Asset' dynamic scores. Unlike the 'Asset' static score which is a predictor of re-conviction the OGRS-3 is a measure of re-offending. While Wilson and Hinks (2011) do explicitly state how re-offending is defined in their study, the outcome variables for the OGRS-3 are conviction, caution, reprimand and final warning.

Findings indicated that the OGRS-3 combined with the 'Asset' dynamic scores was the most predictive of re-offending, with an AUC of 0.72, which demonstrates the predictive validity of 'Asset'. The AUC for all other measures of risk in this study were less than 0.71, the minimum requirement for a model to be considered to have 'moderate' predictive validity. The 'Asset' static score, as a standalone, had the least predictive accuracy with an AUC of 0.65. When the 'Asset' dynamic score (48) was assessed as the measure of risk in this study (this was used as the sole measure in the previous two predictive validity studies) an AUC of 0.68 was identified. See Table 3.1 below for an overview of the AUC statistics for each of the predictive validity studies.

Table 3.1

*Area Under the Curve (AUC) statistics for each of the predictive validity studies.*

| | Baker et al. (2003) | Baker et al. (2005) | Wilson & Hinks (2011) |
|---|---|---|---|
| Asset static | | | 0.65 |
| Asset dynamic | 0.71 | 0.73 | 0 .68 |
| OGRS plus Asset dynamic | | | 0.72 |

Only in the first two studies were the AUC statistics derived from the percentage of individuals who were reconvicted; in the Wilson and Hinks study the AUC statistic was calculated using the total risk scores. Variations in the predictive validity of the 'Asset' dynamic score between studies may therefore be the result of different statistical techniques being adopted in the most recent study. Alternatively, the outcome measure in the most recent study was re-offending whereas in the previous two studies it was re-conviction, which may also have influenced the predictive accuracy of the tool. This clearly has implications for the number of individuals whose 'Asset' dynamic score, which was based on the percentage reconvicted, resulted in the receipt of community or custodial disposals.

Further, it must be noted that in the first two 'Asset' predictive validity studies (Baker et. al, 2003 2005) despite using the AUC statistic, the authors did not specify what AUC values are considered to be moderate and good. In the Wilson and Hinks (2011) study, the authors cite Rice and Harris (2005) whereby an AUC value of 0.64 to 0.70 was considered moderate and an AUC value of 0.71 or above was considered good. As such, the findings

from their study indicated that the OGRS-3 combined with the 'Asset' dynamic profile was a good predictor of repeat offending, had the authors selected the AUC values outlined by Guy et al. (2005) this would have resulted in the tool being considered a moderate predictor of repeat offending.

*Concurrent validity*

Concurrent validity refers to the extent to which the test scores correlate with other validated tools measuring the same construct (Howell, 2002). Baker et al. (2003) compared the 67% accuracy score from their study with that of the Level of Service Inventory-Revised (LSI-R) (Andrews & Bonta, 1995), Assessment and Case management and Evaluation system (ACE) (Warwickshire Probation, 1997), and Offender Group Reconviction Scale (OGRS), where predictive accuracy scores of 65%, 62%, and 67% were obtained respectively (see Raynor et al., 2000).

It is not clear why Baker et al. (2003) opted to compare the predictive accuracy scores of 'Asset' with that of adult risk of re-offending tools; one possibility is that comparisons were drawn because the same method of predictive accuracy (i.e., the sum of the correctly predicted non-convicted low scores and convicted high scores) were adopted for the adult risk assessment measures outlined in the Home Office study by Raynor et al. (2000). Similarly, two of the authors in the Raynor et al. (2000) study were also authors in the Baker et al. (2003, 2005) studies, which may also account for their selection of statistical techniques.

In terms of youth measures, the Youth Level of Service-Case Management Inventory (YLS-CMI) was not published by Andrews and Bonta until 2002, and there are few youth

risk assessment measures available, which may have prevented the authors from selecting felicitous comparison measures in the initial publication of the use of 'Asset' in 2003. However, this does not explain why 'Asset' was not compared with a youth re-offending risk assessment tool in the subsequent 2005 and 2011 publications. Future validations of the 'Asset' should consider correlating this measure with other combined static and dynamic youth measures of risk of re-offending such as the YLS-CMI and the Structured Assessment of Risk of Violence in Youths (SAVRY; Borum, Bartel & Forth, 2003). While the YLS-CMI is a general re-offending measure and the SAVRY relates to violent re-offending only, both are risk of re-offending tools that have been validated on populations of young offenders, and could therefore be considered more appropriate, due to differences in base rates of offending, than comparisons with adult measures of risk of general re-offending (Singh, Grann, & Fazel, 2010).

*Factor analysis*

A factor analysis, that is, an examination of a set of test items which identifies how many discrete constructs they measure, was conducted in Baker et al.'s (2003) study. While the authors do not state whether the factor analysis was an exploratory or confirmatory analysis it appears that it was exploratory. The authors identified 95 'Asset' items which were grouped into seven blocks for factor analysis. Findings revealed 25 factors associated with re-conviction, the majority of which corresponded to the 12 'Asset' constructs. 'Living Arrangements' and 'Family and Personal Relationship' were the only two constructs that were found to overlap. Also, one new construct, 'school attachment', was identified. The authors concluded that the test items also measure separate constructs (i.e., construct validity is present). Recommendations in the report relating to the factor analysis outlined the need to consider removing those items that did not correlate with one of the 12

existing ‘Asset’ constructs and/or renaming some of the subheadings. However, there has been no indication that these recommendations have been fulfilled or any amendments made to the ‘Asset’ core profile.

## STRENGTHS AND LIMITATIONS OF ‘ASSET’

When considering the use of ‘Asset’ in everyday practice, there are a number of strengths of this measure. ‘Asset’ appears to offer practitioners a structured way in which to assess risk through the identification of risk factors and subsequent development of risk management and intervention plans (Haines & Case, 2012). Given the prescriptive way in which this process occurs, it could be argued that practitioners are provided with a simple way of managing repeat offenders. Furthermore, as it is compulsory for all young people involved in offending behaviour to have an ‘Asset’ completed on referral to a YOT (YJB, 2002), this should allow for consistency in the measurement of risk across localities and, presumably, will have resulted in a large database of ‘Asset’ information relating to youths involved in repeat offending. This in turn could provide data for a number of research studies to be conducted to enhance our understanding of recidivism in UK youths (currently an underdeveloped research area).

However, there are also a number of limitations to this measure. The ‘Asset’ core profile appears to be biased towards deficits (Case, 2007); although practitioners are asked to comment on positive factors and any identified vulnerabilities, this information is not included in the final risk score and risk banding level (Baker et al., 2003). Omitting to identify and make attempts to enhance strengths and protective factors is particularly concerning in view of the research which underlines that it is the number and strength of

protective factors which mitigate risk (Rennie & Dolan, 2010a). In addition, there is no guidance or encouragement for practitioners to complete a risk of re-offending formulation; descriptions of risk and protective factors are outlined but an understanding of what the offence means to the young person – what motivates them to offend, how risk factors interact to result in offending, what role protective factors have in buffering the influence of risk factors – is not mandatory.

It could be argued that the 'Asset' core profile at times does not require an individual's full concentration, as practitioners could complete this assessment (identify the total 'Asset' score and level of risk banding) without documenting any written evidence to explain their findings. Also, the time constraints imposed on professionals to complete this document (within 30 days of referral) could not only result in an assessment of risk becoming a 'tick box exercise', but could also lead to incorrect treatment targets and interventions being identified due to a lack of understanding of the function of the offending behaviour (Ireland, 2009).

'Asset' has also been criticised for the lack of clarity in relation to the purpose of the tool (Kemshall, 2003; Pitts, 2001; Smith, 2006). Baker (2005) states that 'Asset' is a multi-purpose tool – a clinical guide to aid decision making which requires considerable experience and professional judgement on the part of the practitioner – to identify risk factors, create intervention plans and ascertain the likelihood of further offending. However, Case and Haines (2009) report that 'Asset' is an actuarial risk assessment measure as a quantitative approach is adopted whereby the total 'Asset' score is derived by summing the individual item scores and a 'cut off' score is applied in order to determine the level of risk an individual poses. As such, they conclude, no clinical judgement is

required. Baker (2005) refutes the claim of Case and Haines stating that decisions based on the 'Asset' scores require professional judgment; she provides the following example in which professionals are tasked with identifying the extent to which each construct is associated with the likelihood of future offending as evidence of this measure not being an actuarial tool. Baker et al. (2003) have therefore described 'Asset' as a third generation Structured Professional Judgment tool (SPJ), a view shared by the Scottish Risk Management Authority (RMA, 2013).

This is disappointing given Baker and her colleagues' pretence of the inclusion of narratives to justify the selection of scores as akin to clinical judgment and the exclusion of information relating to positive factors, risk of vulnerability and risk of serious harm when aggregating the 'Asset' total score and subsequent level of risk banding. In addition, there is no guidance or encouragement to complete risk of re-offending formulations; it is therefore difficult to understand why 'Asset' would be considered an SPJ tool. Furthermore, it is also not clear whether 'Asset' is a measure of re-conviction or re-offending as both have been used as an outcome measure in predictive validity studies (Baker et al., 2003, 2005; Wilson & Hinks, 2011). This suggests that the authors of the studies consider the risk factors for re-conviction to mirror that of re-offending.

When considering the reliability and validity of 'Asset' there is limited information available in relation to the psychometric properties of the tool, and where this information has been recorded, there have been flaws in the methodology which has been adopted (e.g., inter-rater reliability, concurrent validity) and discrepancies in findings depending on which measure of risk (e.g., 'Asset' dynamic or 'Asset' dynamic plus OGRS-3) and outcome measure (e.g., re-conviction or re-offending) was selected. Perhaps the most

pertinent issue is the lack of any independent or peer-reviewed research being conducted in relation to the psychometric properties of 'Asset'.

A recent systematic literature review and meta-analysis by Singh, Grann, and Fazel (2013) identified an authorship bias in violence risk assessment tools where predictive validity findings were approximately twice as high in studies conducted by the authors of the tool compared with independent authors. While the authors of the 'Asset' predictive validity studies are not authors of 'Asset', they are employed by the public body who commissioned the development and use of this tool. As such, one might expect a conflict of interest statement to be included in the publication; yet, only in the most recent report was a disclaimer included stating that the views of the authors were not necessarily that of the Ministry of Justice (MOJ) and/or in line with government policy.

Arguably one of the most difficult aspects of a youth offending practitioner's role is to identify available resources, particularly in recent years where resources and funding have been cut as the result of the current economic climate (House of Commons Justice Committee, 2013). Sutherland (2009) has criticised the Scaled Approach in England and Wales for presuming that when young people are being managed in the community there are relevant resources available to meet their needs as identified by 'Asset', and that the young person is able to access these services when required; that is, there is no consideration of waiting lists, limited places, any support required to attend appointments or service policies which stipulate that a set number of failed appointments results in closure of the case. Furthermore, managing a young person in the community requires an understanding of the environmental factors (e.g., dysfunctional family relationships, disorganised neighbourhoods, adverse peer influences, and low incomes) which often

threaten the stability of the young person's life and are likely to have an impact on a young person's ability to engage with services. Practitioners have highlighted the difficulties with which they are faced when attempting to allocate resources relating to living arrangements, neighbourhood, and family and personal relationships (Wilson & Hinks, 2011), thus recognising the difficulties inherent in manipulating any socio-cultural influences of criminal behaviour.

It is likely that the majority of young people will have a number of risk factors present when assessed. However, in terms of intervention planning, 'Asset' appears to offer no guidance as to which risk factors are the most critical, what interventions to include or how many to include. Neither do they offer guidance with regard to the sequencing of interventions (Sutherland, 2009). This is potentially of considerable concern in light of the number of risk factors typically present and the complex ways in which they interact to result in offending behaviour (Rutter, Giller, & Hagel, 1998). The Scaled Approach has also been criticised for being risk led, in that intervention is allocated dependent on the level of risk (i.e., the higher the risk, the higher the intervention; Haines & Case, 2012). Sutherland argues that young people who are classified as lower risk are likely to be left to their own devices until something significant occurs before they are classified as high risk and are eligible for the associated intervention, this despite early warning signs being present and the recognised need for early intervention (Audit Commission, 1996; YJB, 2002).

In order to understand 'Asset', it must be considered within the political context in which it was commissioned and introduced. As outlined in the introduction of this chapter, it was created in an era which required visible action in the face of the ever increasing crime rates

(Audit Commission, 1996). One of the aims of the YJB was to prevent offending, however, this aim was misleading as it implied a need to prevent the onset of offending (e.g., identify causes and early intervention strategies). Similarly, two of the key requirements of 'Asset' were to 'identify the key factors contributing to offending by young people and provide a prediction of re-conviction' (Baker et al., 2003, *pp*.9). However, what 'Asset' actually measures is key factors which are (said to be) associated with repeat offending. 'Asset' can only be administered if the young person has been involved in offending behaviour, therefore it is not a measure of what factors contribute to the onset of offending. Furthermore, the government of the time claimed to be committed to reducing offending (again it is not clear whether this refers to the onset of offending, repeat offending or both) and promoting child welfare. However, a concurrent commitment to child welfare and prevention of offending neglected to take into consideration the statutory measures that are typically adopted to punish youths involved in criminal behaviour (Arthur, 2010). Failure to acknowledge the role and subsequent impact of detention and punishment (e.g., stigmatizing, labelling, self-fulfilling prophecy) on a child's welfare raises the question whether a child's welfare can ever be prioritised.

It is therefore not surprising that England and Wales have been criticised for their punitive approach to tackling youth crime (Goldson & Muncie, 2006). The Every Child Matters agenda (2003), in accordance with the ethos of the United Nations Committee on the Rights of a Child (2002), was a welcome introduction to promote child welfare and encourage practitioners to consistently put the child's needs first. Unfortunately, the theoretical underpinnings of this agenda do not appear to be reflected in the use of 'Asset' and the Scaled Approach.

Finally, there are a number of critics of the Risk Factor Research Paradigm (the theoretical model from which 'Asset' was derived), such as Case (2007), Case and Haines (2009), Kemshall (2003), Pitts (2001) and Sutherland (2009). One of the most concerning critiques of 'Asset' relates to the use of developmental risk factors for the onset of offending behaviour as indicators of repeat offending (Case & Haines, 2009). Case and Haines assert that the risk factors included in 'Asset' were primarily identified from the findings of the Cambridge Study of Delinquent Behaviour (West & Farrington, 1973), which looked at risk factors that were found to be statistically associated with (but not predictive of) the onset of offending in children aged between 8 and 10 years. Due to differences in homogeneity between the groups (first-time offenders and repeat offenders), it is not feasible to make assumptions about predictors of re-offending based on predictors associated with first-time offending (Cottle, Lee, & Heilbrun, 2001). Hence, Case and Haines argue that the evidence base from which 'Asset' has been developed is inherently flawed. 'Asset' measures current risk factors for individuals typically aged between 14 and 17 years (designed for use with those aged 10 to 17) who have been re-convicted, thus the risk factors that were used in the development of this tool do not correspond with what 'Asset' measures.

Furthermore, even if risk factors indicative of the onset of offending were the same indicators of repeat offending, Case and Haines (2009) state that risk factor research conducted in the 1960s on which this tool is based is outdated and therefore not reliable as the primary source of identified risk factors for a tool developed in the late 1990's. As such, the extent to which the theoretical underpinnings of 'Asset' have been based on current research – the outcome measure of interest (repeat offending as opposed to the onset of offending) using age-appropriate samples – has been questioned.

## CONCLUSIONS

Despite the widespread use of 'Asset' across the United Kingdom and its domination of the field of Youth Justice over the past 13 years, there appears to be a number of limitations inherent in the use of this risk assessment measure. Given the role that 'Asset' has played in shaping the Youth Justice System in England and Wales and the reliance of professionals on the identification of 'Asset' scores and risk bandings to determine the nature, intensity, frequency and duration of statutory measures (e.g., community and custodial sentences, intervention, supervision and monitoring), it is surprising that there is a limited amount of research available in relation to the psychometric properties of this tool. Given that there have only been three research papers (all with a primary focus on predictive validity) in thirteen years that have analysed this psychological measure, this begs the question as to whether further appraisals should be conducted. This is especially the case since it is responsible for assigning statutory measures, with potentially damaging consequences, for those young people involved in offending behaviour during a critical period of their development.

It is important to note that the findings of this critique highlight the lack of research which has been conducted using 'Asset' and a failure to fully evaluate its psychometric properties. Furthermore, the research that has been published has been conducted by authors who were employed by the public body that commissioned the development of this tool. This highlights a need for independent, peer-reviewed research on 'Asset' (and the new tool: 'Asset Plus'), with a focus on all aspects of the measure's validity and reliability. Findings from the use of 'Asset' must also be interpreted with caution and with an awareness of the limited information available in relation to its validity and reliability.

Finally, it should be borne in mind that ‘Asset’ was developed following the ‘be tough on crime and be tough on the causes of crime’ political mantra, an approach that neglected to view young people who were involved in crime as children first and foremost, and which has been heavily criticised at an international level as both condemning and punitive (Arthur, 2010; Goldson & Muncie, 2006). Subsequent to this, the principles of the Every Child Matters agenda (2003) in England and Wales have become increasingly embedded in practitioners’ work with children and adolescents. Therefore any youth risk of re-offending tool should also incorporate the theoretical underpinnings of this approach in the management of young people involved in repeat offending.

# CHAPTER FOUR:
# A COMPARATIVE ANALYSIS OF THE 'ASSET' AND YOUTH LEVEL OF SERVICE-CASE MANAGEMENT INVENTORY (YLS-CMI), IN YOUNG OFFENDERS, A FOUR YEAR FOLLOW-UP STUDY.

## ABSTRACT

This study compared the predictive validity of repeat offending for 'Asset' and the Youth Level of Service-Case Management Inventory (YLS-CMI), in a Scottish sample of 138 youths (116 male, 22 female), who were referred to a community Youth Offending Service (YOS). Youths were followed up to four years post-initial assessment (mean follow-up period = 26.5 months); outcome data were based on official police charges (SCRS, 2004). Each instrument predicted repeat offending with moderate ('Asset' Area Under the Curve (AUC) =0.75) to large effect sizes (YLS-CMI AUC=0.81). The implications of these findings are discussed in relation to the assessment and management of young people involved in offending behaviour.

## INTRODUCTION

Youth involvement in offending has significant implications for society in terms of the financial cost of crime, the failure of custodial sentences to act as a deterrent to crime, and the impact of crimes on victims, families and the general public (Kemshall, 2008). In England and Wales, since 2008-2009, there has been a reduction in the number of youths entering the Youth Justice System (54%), fewer youths in custody (32%) and less offences committed by under eighteens (14%; Youth Justice Board (YJB); 2012). Similarly, in Scotland since 2008-2009 there has been a 32% and 27% decrease in recorded crimes and offences, respectively; there has also been a decrease in the number of youths involved in offending since this time (30%; SPFF, 2012). In 2011-2012, there were only 534 sentenced young offenders in Scotland, a 7% decrease from the previous year (Berman & Dahr, 2013). However, despite reductions in youth crime in the UK, considerable attention continues to be given to identifying those individuals most at risk of repeat offending in order to protect the public, prevent youths entering the adult criminal justice system, and to reintegrate youths into society.

The way in which repeat offenders and the level of risk that they pose to the general public is assessed has evolved considerably over the past thirty years. There appears to be agreement that identifying those individuals who are likely to continue to offend, on its own, is not enough and that consideration should be given to how to manage offenders in both community and custodial settings and on how best to promote change. This is in keeping with the shift in the way that prison is perceived, where previously it was considered to be a punishment and/ or deterrent to crime, whereas now it is now more commonly viewed as an opportunity for rehabilitation (Ward, 2002). It must be borne in mind however, that despite this shift strengths based approaches to dealing with offending

behaviour are yet to be embedded consistently in practice. This is perhaps due to the impact that certain offences (e.g., violent and sexual) have on victims, which may prevent rehabilitative, as opposed to punitive approaches, being accepted as the most appropriate way to manage offenders (Reynolds, 2000).

### *Approaches to risk assessment*

#### *Clinical assessment*

Clinical approaches to risk assessment involve unstructured professional judgement whereby information relating to the individual involved in offending behaviour is collected by a trained clinician who classifies the level of risk as either low, moderate or high (Bonta & Wormith, 2013). There are no set guidelines on what information should not be included in the assessment, nor are there guidelines as to which risk factors to consider, or the weighting of included factors. As a result, this approach has been criticised for providing no transparency in the decision making process (Dawes, Faust, & Meehl, 1989).

Further, there appears to be an absence of empirically grounded theory, a lack of standardised risk factors and a lack of consideration of how the combination of certain risk factors increases risk (Grove & Meehl, 1996). An unstructured approach can also result in inconsistencies between assessors as the subjective nature of classifying risk is open to professional bias (e.g., the feelings and prejudices of the assessor; Garb, 1998). Indeed, research suggests that clinical approaches at estimating risk levels seldom perform better than chance (Craig & Beech, 2010; Lavoie & Douglas, 2008).

*Actuarial assessment*

Actuarial risk assessment involves the use of static (e.g., historical, unchangeable) indicators of future offending to assess the level of risk an offender poses over a specific time period (e.g., two, five or ten years). Actuarial approaches are considered to be evidenced based as only static factors which have been found to be empirically related to future offending are included in these measures (Beech & Craig, 2013). A quantitative approach to classifying risk is used whereby the sum of risk items produces an overall risk score, which is then translated into a level of risk category (e.g., low, moderate or high).

Strengths of an actuarial approach include: its ease of use (e.g., simplicity, short administration time); the inclusion of an operational definition of risk factors; a large evidence base supporting its predictive accuracy; specific coding instructions; and transparency in the decision making process (Dawes, Faust, & Meehl, 1989; Hart, 1998; Melton, Petrila, Poythress, & Slobogin, 1997). Limitations of this approach include: the applicability of data collected on group norms to produce risk levels for individual cases (Cooke & Michie, 2010); and the inability, based on static risk factors alone, to identify treatment targets and risk management and intervention plans (Litwack, 2001; Otto, 2000). Similarly, there are considerable constraints when using this approach with first time offenders due to the lack of historical offending data. Further, as a result of its overreliance on static factors, actuarial approaches have also been criticised for their insensitivity to changes in the level of risk an individual poses over time (Douglas & Reeves, 2007; Hart, Michie, & Cooke, 2007).

*Structured Professional Judgement (SPJ)*

SPJ approaches to risk assessment were developed to maintain the strengths and overcome the shortcomings of the earlier clinical and actuarial approaches (Hart & Logan, 2011). Pertinent to the use of this approach are distinct guidelines which are empirically and theoretically driven, and a set number of operationally defined risk factors which are considered in every case. Items are scored as either present, partially present or absent, and the assessor uses their professional judgement to arrive at an overall risk classification (e.g., low, moderate or high).

In addition to the identification of risk factors and classification of risk, a formulation of the problematic behaviour (e.g., offence) is developed and hypotheses regarding the development and maintenance of the behaviour are generated (Douglas, Blanchard, & Henry, 2013). The formulation includes an outline of the problematic behaviour, followed by a description of the risk factors, including the number of risk factors present, and how the risk factors combine to result in risk. Risk management strategies (e.g., what increases the risk, what reduces the risk, what risk management strategies can be incorporated to manage the risk) and recommendations for treatment are also outlined in the formulation (Moore, 1996). When considering future behaviour, risk planning scenarios outlining the possible ways in which the problematic behaviour may present itself in the future are included. Typically scenarios are planned in relation to repeat behaviour (e.g., continuation of past offences) and escalation of behaviour, whereby the serious of the offence and the impact of harm increases (Hart & Logan, 2011).

Strengths of the SPJ approach include the use of empirical and theoretical risk factors which limits the possibility of reliance on irrelevant risk factors or neglect of important

risk factors, and increases the likelihood of consistency across assessors (Johnstone, 2012). As such, the structured element provides transparency in the decision making process (Douglas & Kropp, 2002). The unstructured element of this approach also requires clinical judgement throughout the assessment (e.g., identification of critical risk factors, judgment of overall classification of risk and identification of intervention and risk management strategies). Thus, the SPJ model is both structured and individualised (Douglas & Skeem, 2005).

Actuarial measures appear to be most commonly used in prison and criminal justice settings (Cunningham, 2006; Dolan, 2010; Fazel, 2012), this is perhaps due to the relative ease in which these instruments can be administered and interpreted, and the historic need to punish offenders as opposed to identify ways in which to assist them to change (McNeill, 2003; McNeill & Whyte, 2007). Since the shift in practice to rehabilitate the offender SPJ approaches are becoming increasingly more widely used, particularly in forensic mental health settings, and aid practitioners in identifying ways of reducing levels of risk. There are a number of actuarial and SPJ measures in the adult field of offending (particularly the sexual offending field) and previously young offenders were often assessed using measures which were normed on adult populations (Laws, Hudson, & Ward, 2000; Hanson, 2009). This has prompted the development of youth risk assessment instruments (Augimeri, Koegl, Webster, & Levene, 2001; Borum, Bartel, & Forth, 2003; Miccio-Fonseca, 2010; Prentky & Righthand, 2003; Print et al., 2007; Worling & Curwen, 2001).

**'Asset'**

'Asset' is a youth general re-offending risk assessment measure which is used to inform sentence planning, intervention and supervision, in both community and custodial settings, (see method for full description of this measure) and is currently used across the UK. It is said to combine both actuarial and SPJ approaches in the assessment of young offenders. To date, there have been three studies which have looked at the predictive validity of 'Asset' in England and Wales (Baker, Jones, Roberts, & Merrington, 2003; Baker et al., 2005; Wilson & Hinks, 2011). Each of these three studies found 'Asset' to be a *moderate* predictor (67% and 69% accuracy rate) of re-offending at follow-up periods of one and two years. In Wilson and Hinks' (2011) study 'Asset' was combined with the Offender Group Reconviction Scale 3 (OGRS 3; Howard, Francis, Soothill, & Humphreys, 2009) a short risk assessment tool based on static factors only (age, gender and criminal history); findings indicated that 'Asset' combined with the OGRS 3, was a better predictor of re-offending at one year follow-up than 'Asset' alone. Despite being mandated as one of only two youth risk of general re-offending assessments by the Risk Management Authority (2013) and its widespread use in Scotland – it is estimated that at least 13 Local Authorities use this assessment measure (Baker et al., 2005) – there has been no research which has explored the predictive validity of 'Asset' with Scottish youths.

**Youth Level of Service-Case Management Inventory**

The YLS-CMI is currently in use in America, Australia, Canada, England and Wales, Ireland and Scotland (Youth Justice Board, 2008), and is used to inform sentence planning, intervention and case management. It is an actuarial risk assessment whereby items are summed to yield a total score which corresponds to a specific risk classification (low, moderate, high, very high). There is also a professional override facility whereby the

assessor may use their clinical judgement to change the overall risk classification; however, the total score remains the same (see the method section for a description of this measure). The development of interventions and risk management strategies as part of this assessment highlights the significance of combining actuarial and SPJ approaches.

There is an extensive amount of research which has been conducted internationally with the use of YLS-CMI data for youths in both community and custodial settings. A number of studies have provided evidence for this measure being a moderate predictor of future general re-offending, with reported AUC statistics ranging from 0.60 to 0.75 (Thompson & Pope, 2005; Upperton & Thompson, 2007; Viera et al., 2009). The YLS-CMI has also been found to have good inter-rater reliability (Catchpole & Gretton, 2003; Schmidt, Campbell, & Golmes 2005; Onifade et al., 2008) which indicates that the measure is reliable across assessors.

To date, two meta-analytical procedures have been conducted regarding the YLS-CMI; the first examined 11 studies (Schwalbe et al., 2007) and found a mean AUC for the YLS-CMI of 0.64. Using Vincent and Guy's (2012) cut-offs for interpreting AUC values, the mean AUC from this meta-analysis would suggest that the YLS-CMI is a *poor* predictor of future offending. The second meta-analysis compared three risk assessment measures (*N*=49), 22 of which included YLS-CMI data; findings indicated that this measure significantly predicted general, violent and non-violent offending. Findings from the use of the YLS-CMI with females indicate that this tool is a *poor* predictor of offending, with results demonstrating AUCs ranging from 0.53 to 0.68 for general re-offending compared with 0.72 to 0.73 for males. The latter, according to the cut-offs adopted by Vincent and Guy (2012), would indicate that the YLS-CMI is a *moderate* predictor for repeat offending

in males (Ilacqua, Coulson, Lombardo, & Nutbrown, 1999; Marshall et al., 2006; Onifade et al., 2008; Welsh et al., 2008).

In addition to general offending, the ability of the YLS-CMI to predict violent re-offending has also been examined (Catchpole & Gretton, 2003; Hilterman, Nicholls, Van Nieuwenhuizen, 2013; Marshall, Egan, English & Jones, 2006; Olver, Stockdale, & Wong, 2012; Rennie & Dolan, 2010; Schmidt, Campbell, & Holding, 2010; Welsh, Schmidt, McKinnon, Chatta, & Meyers, 2008; Vaswani & Merone, 2013), with authors reporting AUC statistics of 0.59 to 0.70; thus indicating that the YLS-CMI is a *poor* to *moderate* predictor of violent re-offending based on the AUC cut-offs suggested by Guy and Vincent (2012).

Only three studies have found this measure to be a better predictor of violent than general offences (Hilterman et al., 2013; Olver et al., 2012; Welsh et al., 2008), which is not surprising given that the YLS-CMI was designed and is intended for use with individuals involved in general offending. As such, when this instrument has been compared with specific risk assessments of violence, such as the Structured Assessment of Violence Risk In Youths (SAVRY; Borum, Bartel & Forth, 2003), it was found to be less powerful at detecting violent offences (Hilterman et al., 2013; Schmidt et al., 2010; Welsh et al., 2008).

The variations in the predictive power of this instrument are likely to be due to differences in the outcome measure of choice (self-report, police charges, police re-convictions), offence type (violent, non-violent, general), gender, and the dependent variable of choice (total score, risk classification, professional override). Nevertheless, overall findings from

YLS-CMI research provide support for the use of this tool with young offenders and as such it is widely recognised as one of the most reliable measures of general offending available (Le Blanc, 1998).

There have, however, been no studies that compare the YLS-CMI and 'Asset' risk assessment tools, which is surprising given the widespread use of these measures with young offenders in the UK. It therefore appears that the selection of the type of general risk assessment used in practice may be based on governmental policy (e.g., 'Asset' in England and Wales) and not on the effectiveness of the tool.

Further, there are only three research studies which have been conducted on the YLS-CMI in the UK, one of which used incarcerated offenders in England and Wales (Rennie & Dolan, 2010), and one which used incarcerated offenders in Scotland, with violence as the outcome measure (Marshall et al., 2006). There has also only been one study conducted in the UK, in Scotland, which assessed general re-offending in a sample of community youths (Vaswani & Merone, 2013). Thus highlighting the need for a study which compares the YLS-CMI with 'Asset' and which contributes to the limited UK literature on the predictive validity of these tools.

**The present study**

This study provided a comparison of 'Asset' and YLS-CMI, the two most routinely used youth risk of general re-offending assessment tools used in Youth Offending Teams/Services, across the UK. The findings from this research addressed a gap in the current literature base of risk assessment in young offenders by comparing the two measures, and ascertaining the predictive validity of 'Asset' with a sample of Scottish

young offenders. It also added to the UK literature on the use of the YLS-CMI by using a community sample.

This study had three specific research questions:

1) Which of the two risk assessment tools had the greatest predictive validity?;
2) How accurate were the risk assessment measures in determining the time taken to re-offend?;
3) Which risk factors were associated with repeat offending?

## METHOD

### *Design*

This study assessed the predictive accuracy of two risk assessment measures ('Asset' and YLS-CMI). There were three independent variables: the scores for individual items on each risk assessment measure, the total score for each risk assessment instrument, and the level of risk banding for each risk assessment measure. The dependent variable was re-offending as defined by a new police charge. In addition, comparisons were made between groups (repeat offenders versus non-repeat offenders) in relation to the scores for individual items on each risk assessment measure, the total score for each risk assessment instrument, and the level of risk banding for each risk assessment measure. In these tests, group was the independent variable with the scores and risk bandings being the dependent variables.

***Participants***

Young people who were aged 10-17 years, who were involved in offending behaviour, and were referred to the Edinburgh Youth Offending Service between June 2009 and December 2012 participated in this study.

Since 'Asset' was introduced in the Edinburgh Youth Offending service in 2009, 737 'Asset' assessments have been completed, of which 375 (50.8%) were updated assessments and were therefore excluded. The 362 initial 'Asset' assessments were screened to identify which had written justification of the numerical score that was assigned. A total of 167 'Asset' measures with full narrative evidence for the scoring of each item and overall risk score had been completed between June 2009 and December 2012. Sixteen were excluded as the participants were under the age of ten ($n$=2) or were eighteen years old ($n$=14), when the assessment was completed; 'Asset' is for use with 10-17 year olds.

The police were therefore provided with a dataset of 151 names of youths referred to the Youth Offending Service, to collect information regarding their continued involvement in offending behaviour. Following the collation of the re-offence data, three datasets were excluded as the police were unable to find a history of offending behaviour and a further ten data sets were excluded due to the participants being incarcerated for more than six months during the follow-up period. Thus the final sample was 138 young people who represented 38% of the initial 'Asset' assessments and 83% of those with full narrative evidence.

Of the full sample of 138 young people, 16 % were female (*n*=22) and 84% were male (*n*=116). The mean age was 15 years (*SD*=1.55). In relation to ethnicity, 93% were White Scottish (*n*=129) and 7% were Asian (*n*=9) which is consistent with the ethnicity trends for youths in Scotland (SPFF, 2012) There are three possible referral routes to the Edinburgh Youth Offending Service, 17% (*n*=24) were referred via the Pre-Referral Screening scheme (early and effective diversion from the Children's Hearings System (CHS), 43% (*n*=59) had an 'Asset completed as part of their Social Background Report (report for the CHS) and 40% (*n*=55) had an 'Asset' completed as part of their Criminal Justice Social Work Report (report for the Court).

In relation to their index offence, 48% of participants (*n*=66) committed a Group 1 offence (crimes of violence), 6% of participants (*n*=8) committed a Group 2 offence (sexual offence), 17% of participants (*n*=23) committed a Group 3 offence (crimes of dishonesty), 10% (*n*=14) a Group 4 offence (fire-setting/ vandalism), 8% (*n*=11) a Group 5 offence (Drugs/ other offences), 6% (*n*=9) a Group 6 offence (miscellaneous), and 5% (*n*=7) a Group 7 offence (road traffic offences). It is important to note that in Scotland 'common assault' is defined as "To direct an attack to take effect physically on the person of another, whether or not actual injury is inflicted" (Sentencing Guidelines Council, 2008, p. 24), and is recorded in Group 6: miscellaneous offences, as opposed to Group 1: crimes of violence (SCRS, 2004). In this sample 30% (*n*=20) of those crimes recorded as Group 1 offences were accurately recorded. The remaining 70% (*n*=46) were assault charges, however due to differences in the way in which offences are recorded by Youth Offending Service staff and the police national recording standards, it was not clear whether these were common assault charges and should therefore have been recorded in the Group 6 category.

### *Ethics*

Ethical approval was obtained for this study from the Children and Families Research Governance Board, Edinburgh City Council and the University of Birmingham Science, Technology, Engineering and Mathematics Ethical Review Committee (ERN_13-0130). The data in this study was collected as part of everyday practice and used in adherence with Schedule 3 of The Data Protection Act (1998), where explicit consent is not required when data are used for research, historical or statistical purposes and crime prevention, and where there are no additional consequences for the participants.

### *Procedure*

Each young person referred to the Edinburgh Youth Offending Service has an 'Asset' risk of general re-offending measure completed as part of their initial assessment, and six months thereafter, or whenever there is a significant change in circumstances. 'Asset' was scored by social workers or social work students (supervised by a social worker), trained in the use of this tool, as part of their usual practice. Consistency between raters was measured in a subset of the completed 'Assets', 10% of the full sample ($n$=14) was scored by a Chartered Forensic Psychologist and trainer for 'Asset' who was blind to the 'Asset' subscale totals, total risk score and level of risk.

Case file documentation was screened by a Forensic Psychologist in Training to identify demographic and offence history information to score the YLS-CMI static items. This information was not available in the completed 'Asset' core profile as this document focuses on dynamic factors only. The remaining items on the YLS-CMI were coded using the documented information available from the 'Asset' core profile only. This approach was selected in order to limit variations in scoring methods, such as additional information

being obtained from archival case file documentation being considered in the scoring of the YLS-CMI which was not identified when coding 'Asset'. A Forensic Psychologist in Training, who was blind to the 'Asset' total risk score and level of risk, coded each YLS-CMI. The same process which was used to measure consistency between raters with 'Asset' was adopted with the YLS-CMI (*n*=14).

***Measures***

*'Asset' (Youth Justice Board, 2000).* 'Asset' is a structured risk assessment guide which identifies the probability of future general re-offending, in youths aged 10-17 years and comprises both static and dynamic components. The 'Asset' static profile is an actuarial predictor of general re-offending (based on static/ historical items which are not amenable to change). It is comprised of the following items: offence type, age at first reprimand, age at first conviction and number of previous convictions, which are summed to yield a total static score of 16. The 'Asset' static profile was not used in the current study due to the inability to determine offence history based on the number of previous convictions and age at first conviction. In Scotland, offences are typically dealt with through the Children's Hearings System (see introductory chapter for an overview) which results in young people involved in offending behaviour often not receiving convictions for their offences. As such, the static element of the 'Asset' risk assessment could not be scored; this study therefore focuses on the predictive validity of the 'Asset' dynamic profile. This does, however, reflect how 'Asset' is used in practice in Scotland.

The 'Asset' dynamic profile is based on dynamic risk factors (e.g., risk factors which research indicates are associated with offending behaviour, and are amenable to change). It is comprised of the following 12 risk factors: Living Arrangements, Family and Personal

Relationships, Education, Training and Employment, Neighbourhood, Lifestyle, Substance Use, Physical Health, Emotional and Mental Health, Perception of Self and Others, Thinking and Behaviour, Attitudes to Offending, and Motivation to Change. Completion of 'Asset' is based on interview, case file review, and information gathered from multi-agency partnerships. Each item is given a scoring of 0 (not at all associated), through to 4 (very strongly associated), based on the extent to which each item is associated with the likelihood of further offending. Items are summed to yield a total 'Asset' score of 48. Based on the 'Asset' score and professional judgement, youths are categorised into one of three risk categories of level of risk: *low* (0-9), *moderate* (10-24), and *high* (25-48). The 'Asset' scores used in this study are inconsistent to the scores described in the critique chapter of this thesis, where the scores used for the Scaled Approach (standard (0-14), enhanced (15-32) and intensive (33-64), which is adopted in England and Wales were presented. As 'Asset' is not used in Scotland in accordance with the Scaled Approach the current 'Asset' scores correspond to scores outlined in the Baker et al. (2003) study, prior to the introduction of the Scaled Approach and its associated scores in 2009.

*YLS-CMI (Hoge & Andrews, 2002).* Completion of the YLS/CMI is based on clinical interview, case file review, and shared information from multi-agency partnerships. Part I of the YLS-CMI is a 42 item checklist of risk factors developed according to the Risk-Need-Responsivity model of criminal behaviour and is designed to assess the risk of general recidivism in 12–17 year olds. The YLS-CMI encompasses the following eight subscales: Offence History, Family Circumstances/ Parenting, Education, Peer Relations, Substance Abuse, Leisure/ Recreation, Personality/ Behaviour, and Attitudes/ Orientation. Items are coded as present or absent with a possible score range of 0-42. Part II of the assessment uses cut off scores to categorise youths into one of four categories of level of

risk: *low* (0-8), *moderate* (9-22), *high* (23-34), *very high* (35-42). The current study did not use Part III (assessment of other needs/ special considerations) and Part IV (overall assessment of youths' general risk/ need level) of the measure. The total YLS-CMI score for only one individual fell into the '*very high'* range therefore for the purpose of this study the 'high' (23-34) and '*very high'* ranges were merged into a '*high'* (23-42) category.

Consideration was given to using the Offender Group Reconviction Scale-3 (OGRS-3; Howard, Francis, Soothill, & Humphreys, 2009); an actuarial predictor of general re-offending based on static/ historical items which are not amenable to change. This was because this measure was used in Wilson and Hinks (2011) 'Asset' predictive validity study, and when combined with the 'Asset' dynamic score, was found to be the most predictive measure of re-offending in a 12 month follow-up period. Also, this tool is scored in relation to involvement in offending (e.g., police reprimand, caution, charge) as opposed to convictions. This tool would therefore be suitable for use in Scotland given the way in which involvement in offending is processed through the Children's Hearings System (police charges). Unfortunately it was not possible to access this assessment measure within the timeframes of the current research project (personal communication NOMS; 2013).

***Recidivism***

Recidivism was defined in this study as any police charge for offending behaviour during the follow-up period. Re-offence data were collected from Amethyst Police from the date of the initial 'Asset' assessment until June 30th 2013 (range from 8 months–4 years). Information related to police charges in the Edinburgh area only, warnings, reprimands

and convictions were not documented, nor were charges relating to offences committed outside of Edinburgh. There were no restrictions in terms of age at recidivism; offences committed by those youths greater than 18 years of age were available when collating the data set.

Re-offence data were coded as re-offended (yes/no), number of offences, date of offence and type of offence committed. Due to the number of offences committed by youths in the follow-up period (range from 2-96) it was not feasible to record the date and type of offence for each new police charge. As such, only the date and the type of first offence following the initial assessment and the date and the type of the most recent offence were recorded. Offence type was documented in accordance with the Scottish Crime Recording Standard (2004) the official police recording standard as outlined in the introductory chapter of this thesis. The most serious offence type of the two offences recorded (i.e., first offence and most recent offence) was included in the statistical analysis when considering offence type (i.e., violent or general offence) as the predictor variable.

***Data analysis***

Inter-rater reliability was assessed using an Intra-Class Correlation Coefficient (ICC), with a two-way fixed effects model for absolute agreements and single raters, to measure the proportion of variation that was the result of individual assessors, and differences in ratings for individual items. The following critical values for single measure ICCs were adopted ICC>0.75=excellent; ICC 0.60-0.74=good; ICC 0.59-0.40=moderate; ICC<0.40=poor (Fleiss, 1986). As information relating to prior involvement in offending was required to complete the YLS-CMI offence history scale, and this information was not

recorded in the 'Asset' core profile, it was not possible to conduct reliability assessments on this item.

Tests of normality were conducted using re-offence as a comparator group. Results indicated that the 'Asset' and YLS-CMI total scores and the subscales included in each assessment tool were normally distributed. The results of the Kolmogorov-Smirnov (K-S) are presented in Appendix G. Results from the Levene's test showed that the 'Asset' total score and eight of the subscales were significant (Living Arrangements, Education, Training and Employment, Neighbourhood, Lifestyle, Substance Use, Physical Health, Perception of self and Others and Motivation to Change) and thus violated the assumption of homogeneity of variance. See Appendix H for the results of the Levene's test.

Similarly, when this statistic was conducted on the YLS-CMI total score and subscales, the assumption of homogeneity of variance was violated on the total score and six subscales (Family, Education, Peers, Leisure/Recreation and Attitudes/Orientation), indicating that the variances between the two groups (repeat offender and non-repeat offender) were significantly different. Findings are presented in Appendix H. Independent t-tests were conducted on the 'Asset' and YLS-CMI total scores subscales to test for differences in the presence of risk factors between groups (repeat versus non-repeat offenders and males versus females). Where homogeneity of variance was not assumed findings were reported accordingly. Due to the number of analyses computed and the possibility of Type I errors, Bonferroni adjustments were applied to the data for each of the risk assessment measures.

Predictive validity was assessed using Receiver Operation Characteristic Curve (ROC) analyses, and the associated Area Under the Curve (AUC) co-efficient. This statistic was

selected because it is typically used in risk assessment research because of its insensitivity to variations in base rates or selection ratios (Vincent & Guy, 2012). The AUC reflects the likelihood that, when selected at random, an individual who engages in repeat offending will have higher score than an individual who does not. An AUC of 0.5 indicates that the model does not predict better than chance, while the model is considered perfect if the AUC is 1, good if the AUC is greater than 0.75 and moderate if the AUC is 0.70-0.75 (Douglas, Guy, Reeves, & Weir, 2008).

Binary logistic regressions were conducted using 'Asset' and YLS-CMI predictor variables that had AUC values greater than 0.70. The criterion variable being predicted was the dichotomous outcomes (yes/no) of re-offending. The same analyses were conducted on the 'Asset' and 'YLS-CMI total scores to identify the ability of each instrument to predict the percentage of correctly identified repeat and non-repeat offenders and the overall success rate of each model.

Survival analyses, based on the Kaplan-Meier statistic were conducted to evaluate the ability of each of the measures to distinguish between low, moderate and high risk cases, in relation to time spent in the community free of re-offending. All statistical analyses were conducted using SPSS version 22.

## RESULTS

### *Inter-rater reliability*

Inter-rater reliability results for the 'Asset' total score were excellent (ICC= 0.87). Similarly, there was excellent agreement between raters in relation to seven of the individual subscales: Family and Personal Relationships (ICC=0.82), Neighbourhood (ICC=0.93), Substance Use (ICC=0.87), Emotional and Mental Health (ICC=0.85), Perception of Self and Others (ICC=0.89), Attitudes Towards Offending (ICC=0.92), and Motivation to Change (ICC=0.82), and good agreement between raters in relation to three subscales: Living Arrangements (ICC=0.60) Lifestyle (ICC=0.62), Thinking and Behaviour (ICC=0.63). The subscale with the least agreement between raters was the Education Employment and Training Opportunities subscale (ICC=0.19), and there was also little agreement between raters in relation to the level of risk banding categories (e.g., low, moderate, high) assigned to each individual (ICC=0.30). It is not clear why there was poor agreement between raters in relation to the Education, Employment and Training subscale; however, it is likely that the ability of this scale to predict offending will be low. One possibility for the low agreement between raters in relation to the level of risk bandings is that individuals administering the tool did not use the risk category (e.g., low, moderate or high) corresponding to the total 'Asset' score and instead determined level of risk by professional judgment.

Inter-rater reliability results for the YLS-CMI indicated that there was excellent agreement in relation to the YLS-CMI total score (ICC=0.88), the level of risk banding (ICC=0.78), and the Personality and Behaviour individual subscale (ICC=0.83). Good agreement between raters was also obtained for the following five individual subscales: Family Circumstances/ Parenting (ICC=0.66), Education (ICC=0.70), Peer Relations (ICC=0.74),

Substance Abuse (ICC=0.72), and Attitudes/ Orientation (ICC=0.65). Only one subscale was considered to have moderate agreement between raters namely the Leisure/ Recreation subscale (ICC=0.46). It is promising that all scales demonstrated good to excellent agreement between raters and that the lowest subscale: Leisure / Recreation demonstrated moderate agreement. While the reasons for this are not clear it is possible that this subscale will be the least predictive of repeat offending in this sample.

***Recidivism data***

Youth were followed between eight months and four years, excluding time spent in a custodial environment; with an average follow-up period of 26. 5 months. During the follow up period 74.6% of youths received a police charge at least once (*n*=103), of these 9% were female (*n*=9) and 91% were male (*n*=94), and did so within 19.07 weeks (*SD*=2.71) of their initial 'Asset' assessment. The mean age at first recidivism was 15.75 years (*SD*=1.81). The majority of youths (88%; *n*=91) re-offended on more than one occasion with a range of 2-96 charges per youth (*M*= 14.28; *SD* =22.19; Median=10). The most common type of re-offence were Group 6: miscellaneous offences (38%; *n*=40), and Group 1: crimes of violence (22%; *n*=23). Sexual offences and road traffic offences were the least common type of re-offence with 3% (*n*=3) and 2% (*n*=2) of the sample involved in each these offences, respectively. In this sample 90% of the offences recorded in Group 6: Miscellaneous offences were common assaults (*n*=36). Figure 4.1 outlines the number of offences classified in accordance with the Scottish Crime Recording Standard (SCRS, 2004).

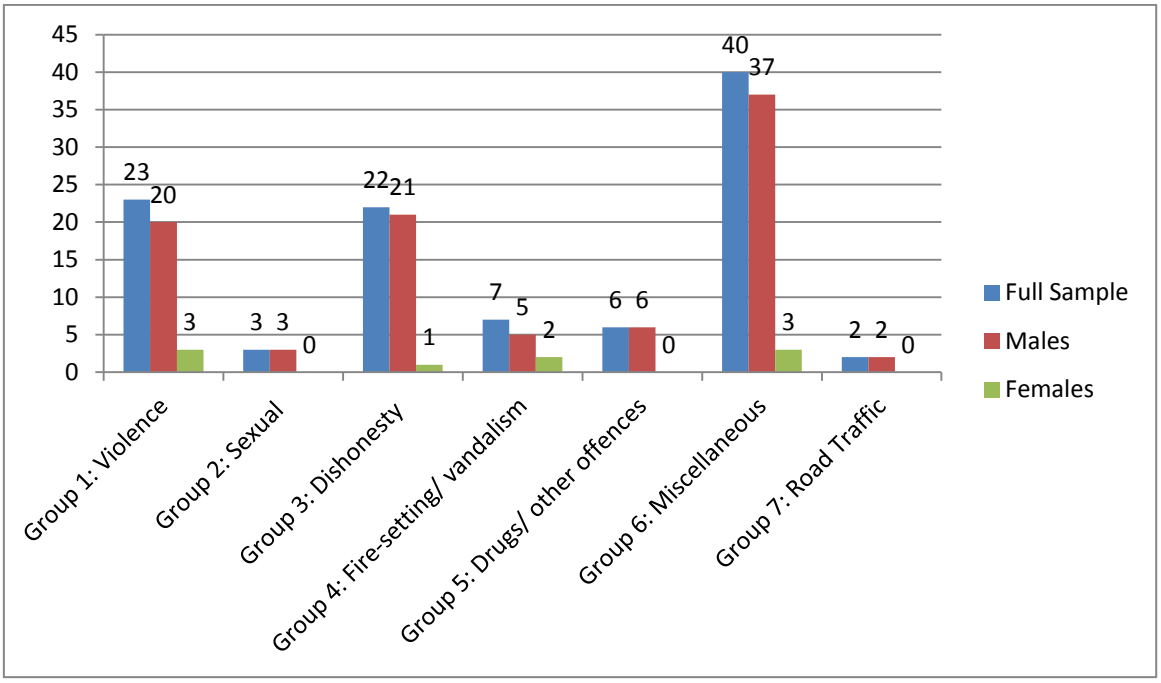


*Figure 4.1: Percentage of crimes and offences in accordance with the Scottish Crime Recording Standard (SCRS, 2004.)*

**Descriptive Statistics**

The mean 'Asset' total score was 11.2 (*SD*=7.1) and fell in the '*moderate risk'* banding category. When considering the 'Asset' risk banding levels 51% of the sample were rated '*low risk'* (n=71), 44% were rated '*moderate risk'* (*n*=60) and 5% were rated '*high risk'* (*n*=7). The total YLS-CMI score for only one individual fell into the '*very high'* range therefore for the purpose of this study the 'high' (23-34) and '*very high'* ranges were merged into a '*high'* (23-42) category. The mean YLS-CMI total score was 14.4 (*SD*=7.6) and also fell in the '*moderate risk'* banding category. When considering the YLS-CMI risk banding level, 29% of the sample were rated '*low risk'* (*n*=40), 57% were rated '*moderate risk'* (*n*=78) and 14% were rated '*high risk'* (*n*=20). See Table 4.1 for the breakdown of level of risk banding by gender.

Table 4.1

*Percentage of males and females in relation to the level of risk banding for each of the risk assessment measures.*

| Risk Assessment and Banding | Full Sample % (n) | Females % (n) | Males % (n) |
|---|---|---|---|
| **'Asset' low** | 51 (*n*=71) | 91 (*n*=20) | 44 (*n*=51) |
| **'Asset' moderate** | 44 (*n*=60) | 9 (*n*=2) | 50 (*n*=58) |
| **'Asset' high** | 5 (*n*=7) | 0 (*n*=0) | 6 (*n*=7) |
| **YLS-CMI low** | 29 (*n*=40) | 36 (*n*=8) | 28 (*n*=32) |
| **YLS-CMI moderate** | 57 (*n*=78) | 59 (*n*=13) | 56 (*n*=65) |
| **YLS-CMI high** | 14 (*n*=20) | 5 (*n*=1) | 16 (*n*=19) |

It is evident that there are considerable differences within each gender in the way in which the two measures categorise offenders by risk, particularly in relation to the low and moderate risk bandings. Ninety-one percent of females were considered to be *low* risk in accordance with the 'Asset' level of risk bandings (*n*=20), yet only 36% of females received the same risk banding on the YLS-CMI (*n*=8). This will potentially have implications for the service they are offered because in line with the Risk- Need-Responsivity Model (Andres, Bonta, & Hoge, 1900), resources and offence focused programmes are typically provided to offenders with the highest need. Therefore, the likelihood of a female receiving a service in this sample would vary drastically depending on which risk assessment measure was used.

Table 4.2

*Descriptive statistics for the 'Asset' and YLS-CMI risk assessment measures.*

| | | ***M (SD)*** | |
|---|---|---|---|
| **Risk Instrument** | **Full Sample** | **Repeat** | **Non-repeat** |
| Asset Total | 11.22 (7.14) | 12.65 (7.35) | 7.03 (4.08) |
| Female | 7.64 (4.63) | 11.00 (5.00) | 5.31 (2.87) |
| Male | 11.91 (7.33 | 12.81 (7.54) | 8.05 (4.83) |
| Asset Living Arrangements | 0.49 (0.85) | 0.54 (0.87) | 0.31(0.76) |
| Female | 0.36 (0.67) | 0.56 (0.72) | 0.23 (0.60) |
| Male | 0.51 (0.88) | 0.54 (0.89) | 0.36 (0.85) |
| Asset Family and Personal Relationships | 1.14 (1.14) | 1.22 (1.13) | 0.89 (1.16) |
| Female | 0.82 (1.00) | 1.00 (1.00) | 0.69 (1.03) |
| Male | 1.20 (1.16) | 1.24 (1.14) | 1.00 (1.23) |
| Asset Education, Training, Employment | 0.71 (0.94) | 0.84 (0.97) | 0.31 (0.72) |
| Female | 0.23 (0.53) | 0.44 (0.73) | 0.08 (0.28) |
| Male | 0.80 (0.97) | 0.88 (0.98) | 0.45 (0.86) |
| Asset Neighbourhood | 1.15 (1.30) | 1.27 (1.31) | 0.26 (0.56) |
| Female | 0.32 (0.57) | 0.67 (0.70) | 0.08 (0.28) |
| Male | 1.15 (1.30) | 1.33 (1.35) | 0.36 (0.66) |
| Asset Lifestyle | 1.52 (1.27) | 1.78 (1.27) | 0.77 (0.94) |
| Female | 1.05 (1.21) | 1.33 (1.22) | 0.85 (1.21) |
| Male | 1.61 (1.26) | 1.82 (1.87) | 0.73 (0.77) |
| Asset Substance Use | 0.87 (1.19) | 1.07 (1.25) | 0.29 (0.67) |
| Female | 0.82 (1.33) | 1.67 (1.65) | 0.23 (0.60) |
| Male | 0.88 (1.16) | 1.01 (1.02) | 0.32 (0.72) |
| Asset Physical Health | 0.03 (0.21) | 0.01 (0.09) | 0.09 (0.34) |
| Female | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) |
| Male | 0.03 (0.23) | 0.01 (0.10) | 0.14 (0.47) |
| Asset Emotional and Mental Health | 0.57 (0.95) | 0.60 (0.93) | 0.46 (0.98) |
| Female | 0.36 (0.79) | 0.67 (1.00) | 0.15 (0.55) |
| Male | 0.60 (0.98) | 0.60 (0.94) | 0.64 (1.14) |
| Asset Perception of Self and Others | 0.70 (0.92) | 0.79 (0.97) | 0.43 (0.69) |
| Female | 0.41 (0.85) | 0.67 (1.12) | 0.23 (0.60) |
| Male | 0.75 (0.93) | 0.80 (0.97) | 0.55 (0.74) |
| Asset Thinking and Behaviour | 2.16 (1.15) | 2.20 (1.16) | 2.03 (1.12) |
| Female | 1.86 (0.99) | 1.67 (1.12) | 2.00 (0.91) |
| Male | 2.22 (1.18) | 2.26 (1.15) | 2.05 (1.25) |
| Asset Attitudes Towards Offending | 1.22 (1.56) | 1.39 (1.16) | 0.71 (0.98) |
| Female | 0.91 (0.97) | 1.56 (0.89) | 0.46 (0.78) |
| Male | 1.28 (1.19) | 1.37 (1.19) | 0.86 (1.08) |
| Asset Motivation to Change | 0.78 (1.02) | 0.90 (1.05) | 0.40 (0.85) |
| Female | 0.41 (0.73) | 0.78 (0.83) | 0.15 (0.55) |
| Male | 0.84 (1.06) | 0.91 (1.07) | 0.55 (0.96) |
| YLS-CMI Total Score | 14.0 (7.60) | 16.35 (7.39) | 8.66 (4.88) |
| Female | 10.77 (6.24) | 15.89 (5.53) | 7.23 (3.83) |
| Male | 15.09 (7.67) | 16.39 (7.56) | 9.50 (5.30) |
| YLS-CMI Offence History | 1.26 (1.98) | 1.50 (1.19) | 0.54 (0.89) |
| Female | 0.64 (0.73) | 1.22 (0.67) | 0.23 (0.44) |

| | | | |
|---|---|---|---|
| Male | 1.38 (1.23) | 1.53 (1.23) | 0.73 (1.03) |
| YLS-CMI Family Circumstances/ Parenting | 2.28 (2.04) | 2.58 (1.23) | 1.40 (1.50) |
| Female | 2.29 (2.2) | 3.11 (2.37) | 1.38 (1.85) |
| Male | 2.32 (2.02) | 2.53 (2.11) | 1.41 (1.30) |
| YLS-CMI Education | 1.97 (1.65) | 2.27 (1.70) | 1.09 (1.07) |
| Female | 1.36 (1.18) | 1.89 (1.36) | 1.00 (0.91) |
| Male | 2.09 (1.70) | 2.31 (1.73) | 1.14 (1.17) |
| YLS-CMI Peer Relations | 1.92 (1.64) | 2.24 (1.65) | 0.97 (1.22) |
| Female | 1.09 (1.48) | 1.78 (1.86) | 0.62 (0.96) |
| Male | 2.08 (1.63) | 2.29 (1.64) | 1.18 (1.33) |
| YLS-CMI Substance Abuse | 1.42 (1.05) | 1.52 (1.04) | 0.75 (1.05) |
| Female | 1.05 (0.78) | 1.22 (0.97) | 0.92 (0.64) |
| Male | 1.49 (1.08) | 1.55 (1.04) | 1.23 (1.23) |
| YLS-CMI Leisure/ Recreation | 2.13 (1.27) | 2.25 (1.21) | 1.77 (1.40) |
| Female | 2.14 (1.28) | 2.44 (1.13) | 1.92 (1.38) |
| Male | 2.13 (1.07) | 2.23 (1.22) | 1.68 (1.43) |
| YLS-CMI Personality/ Behaviour | 2.39 (1.76) | 2.66 (1.74) | 1.60 (1.59) |
| Female | 1.73 (1.75) | 2.78 (1.64) | 1.00 (1.48) |
| Male | 2.52 (1.74) | 2.65 (1.76) | 1.95 (1.59) |
| YLS-CMI Attitudes/ Orientation | 1.05 (1.50) | 1.33 (1.61) | 0.23 (0.60) |
| Female | 0.77 (1.34) | 1.67 (1.66) | 0.15 (0.55) |
| Male | 1.10 (1.52) | 1.30 (1.61) | 0.27 (0.63) |

*Differences in risk factors between groups (full sample: repeat versus non-repeat offenders)*

The assumptions of normality were met for all of the 'Asset' items, as such independent-samples t-tests were conducted (see appendix G). When the assumptions of variance were violated findings are reported accordingly (see appendix H). Due to the increased probability of Type I error, a Bonferroni adjustment was carried out which produced a revised alpha level of .003. There were significant differences between groups in relation to the 'Asset' total score and five of the subscales (Education, Training and Employment Opportunities, Neighbourhood, Lifestyle, Substance Use and Motivation to Change). There were no significant differences detected between groups on the remaining seen subscales. Table 4.3 outlines the results from the independent samples t-test.

Table 4.3

*Findings from the independent samples t test: comparisons between repeat (n=103) and non-repeat offenders (n=35) for scores on 'Asset'*

| | ***t*** | **df** | ***p*** |
|---|---|---|---|
| Asset Total* | -5.43 | 136 | **.001** |
| Asset Living Arrangements* | -1.48 | 136 | .142 |
| Asset Family and Personal Relationships | -1.52 | 136 | .131 |
| Asset Education, Training, Employment* | -3.35 | 136 | **.001** |
| Asset Neighbourhood* | -4.42 | 136 | **.001** |
| Asset Lifestyle* | -4.30 | 136 | **.001** |
| Asset Substance Use* | -3.52 | 136 | **.001** |
| Asset Physical Health* | 1.89 | 136 | .061 |
| Asset Emotional and Mental Health* | -0.78 | 136 | .044 |
| Asset Perception of Self and Others* | -1.99 | 136 | .048 |
| Asset Thinking and Behaviour | -0.79 | 136 | .043 |
| Asset Attitudes Towards Offending | -3.33 | 136 | **.001** |
| Asset Motivation to Change* | -2.84 | 136 | .006 |

*variances are significantly different between groups

The YLS-CMI total score and subscales also met the assumptions of normality (see appendix G). However, six subscales violated the homogeneity of variance and as such results are reported accordingly. Due to the increased probability of Type I errors, a Bonferroni adjustment was carried out which produced a revised alpha level of .004. Findings from the independent-samples t-test indicated that there were significant differences between groups on all of the items with the exception of two, the Substance

Use scale and the Leisure and Recreation scale. This indicates that repeat and non-repeat offenders were experiencing similar difficulties in relation to using substances and leisure and recreational pursuits.

There was only one discrepancy between measures, the 'Asset' Substance Use scale was found to be significantly different between groups whereas when Substance Use was measured by the YLS-CMI there were no differences between groups. Table 4.4 below outlines the comparisons between repeat and non-repeat offenders in relation to the YLS-CMI total score and subscales.

Table 4.4

*Findings from the independent samples t test: comparisons between repeat (n=103) and non-repeat offenders (n=35) for scores on YLS-CMI.*

| | ***t*** | **df** | ***p*** |
|---|---|---|---|
| YLSCMI Total* | -4.37 | 136 | **.001** |
| YLS-CMI Offence History | -5.74 | 136 | **.001** |
| YLS-CMI Family Circumstances/ Parenting* | -3.04 | 136 | **.003** |
| YLS-CMI Education* | -3.86 | 136 | **.001** |
| YLS-CMI Peer Relations* | -4.17 | 136 | **.001** |
| YLS-CMI Substance Abuse | -2.00 | 136 | .050 |
| YLS-CMI Leisure/ Recreation* | -9.53 | 136 | .053 |
| YLS-CMI Personality/ Behaviour | -3.32 | 136 | **.002** |
| YLS-CMI Attitudes/ Orientation* | -3.94 | 136 | **.001** |

**variances between groups were significantly different*

*Gender differences*

Independent t-tests were also conducted for the 'Asset' total score and 12 subscales; a Bonferroni adjustment was carried out and a revised alpha level of .003 was produced. No differences were detected across gender in relation to the total score or any of the subscales. The same analyses were conducted for the YLS-CMI risk assessment instrument. A Bonferroni adjustment was carried out which yielded a revised alpha level of .004; no significant differences were detected. Table 4.5 below outlines the comparisons between gender in relation to the 'Asset' and the independent samples t-test relating to gender for YLS-CMI can be found in Table 4.6.

Table 4.5

*Findings from the independent samples t- test: comparisons between males (n=116) and females (n=22) for scores on the 'Asset'***.**

| | **t** | **df** | **Sig** |
|---|---|---|---|
| Asset Total* | 1.30 | 136 | .227 |
| Asset Living Arrangements* | 1.23 | 136 | .196 |
| Asset Family and Personal Relationships | .740 | 136 | .461 |
| Asset Education, Training, Employment* | -.121 | 136 | .904 |
| Asset Neighbourhood* | .767 | 136 | .445 |
| Asset Lifestyle* | .245 | 136 | .807 |
| Asset Substance Use* | -.244 | 136 | .808 |
| Asset Physical Health* | 1.00 | 136 | .322 |
| Asset Emotional and Mental Health* | 1.93 | 136 | .056 |
| Asset Perception of Self and Others* | 1.49 | 136 | .138 |
| Asset Thinking and Behaviour | .797 | 136 | .427 |
| Asset Attitudes Towards Offending | 1.14 | 136 | .296 |
| Asset Motivation to Change* | 1.06 | 136 | .282 |

Table 4.6

*Findings from the independent samples t- test: comparisons between males (n=116) and females (n=22) for scores on the YLS-CMI.*

| | t | df | sig |
|---|---|---|---|
| YLSCMI Total* | .860 | 136 | .392 |
| YLS-CMI Offence History | -.344 | 136 | .732 |
| YLS-CMI Family Circumstances/ Parenting* | .224 | 136 | **.823** |
| YLS-CMI Education* | 1.32 | 136 | .188 |
| YLS-CMI Peer Relations* | 1.28 | 136 | .204 |
| YLS-CMI Substance Abuse | -.539 | 136 | .591 |
| YLS-CMI Leisure/ Recreation* | -.260 | 136 | .795 |
| YLS-CMI Personality/ Behaviour | 1.11 | 136 | .268 |
| YLS-CMI Attitudes/ Orientation* | .307 | 136 | .759 |

**variances between groups is significantly different*

*Predictive Validity*

ROC analyses were conducted to determine the predictive accuracy of 'Asset' in differentiating individuals who continued to offend (repeat offenders) and those who did not (non-repeat offenders). In relation to sample size, it has been suggested that meaningful conclusions can be drawn from ROC experiments performed with a total of approximately 100 participants (Metz, 1978). Therefore, the sample size in this study (*N*=138) is considered adequate for detecting the predictive accuracy of the risk assessment measures. Unfortunately, the small sample size for females (*n*=22) prevented the ROC analysis from being conducted in relation to gender.

Outcomes for the ROC analysis 'Asset' and YLS-CMI total scores and the subscales for each measure are presented in Table 4.5. The Asset total score demonstrated moderate predictive accuracy, with an AUC of 0.75 (see Figure 4.2). When considering the 'Asset' subscales, the highest AUCs were observed for the Neighbourhood and Lifestyle subscales, both of which were considered moderate (0.73; 0.72). The remaining ten subscales were below the 0.70 cut off to be considered a moderate effect; the 'Asset' Risk Banding demonstrated an AUC of 0.68.

The YLS-CMI total score was the highest AUC observed in each of the assessment measures with an AUC of 0.81 (see Figure 4.3); the YLS-CMI Risk Banding was moderate, with an AUC of 0.70. The YLS-CMI offence history subscale demonstrated a good predictive accuracy, with an AUC of 0.76. The Peer Relations and Attitudes and Orientation subscales both demonstrated moderate predictive accuracy with an AUC of 0.71 and 0.72, respectively. The remaining five subscales were below the 0.70 cut off to be considered a moderate effect. There were also a number of wide confidence intervals which indicates that the results may not generalise to other samples. Table 4.7 below outlines the ROC analyses for each of the measures.

Table 4.7

*Receiver Operator Characteristic Analysis and Area Under the Curve statistic for the 'Asset' and 'YLS-CMI risk of repeat offending instruments.*

| | | | | 95 % CI | |
|---|---|---|---|---|---|
| **Risk Instrument** | **AUC** | ***p*** | **SE** | **LL** | **UL** |
| Asset Total | **0.75*** | .000 | 0.45 | 0.66 | 0.83 |
| Asset Risk Banding | 0.68 | .002 | 0.49 | 0.58 | 0.78 |
| Asset Living Arrangements | 0.57 | .206 | 0.54 | 0.47 | 0.68 |
| Asset Family Personal Relationships | 0.59 | .115 | 0.57 | 0.48 | 0.70 |
| Asset Education, Training, Employment | 0.67 | .003 | 0.52 | 0.57 | 0.77 |
| Asset Neighbourhood | **0.73*** | .000 | 0.44 | 0.64 | 0.81 |
| Asset Lifestyle | **0.72*** | .000 | 0.46 | 0.63 | 0.81 |
| Asset Substance Use | 0.68 | .002 | 0.48 | 0.54 | 0.77 |
| Asset Physical Health | 0.48 | .674 | 0.58 | 0.36 | 0.59 |
| Asset Emotional and Mental Health | 0.56 | .281 | 0.56 | 0.45 | 0.67 |
| Asset Perception of Self and Others | 0.60 | .088 | 0.53 | 0.49 | 0.70 |
| Asset Thinking and Behaviour | 0.55 | .432 | 0.55 | 0.47 | 0.66 |
| Asset Attitudes Towards Offending | 0.67 | .003 | 0.52 | 0.57 | 0.77 |
| Asset Motivation to Change | 0.65 | .010 | 0.52 | 0.54 | 0.75 |
| YLS-CMI Total Score | **0.81**** | .000 | 0.39 | 0.73 | 0.88 |
| YLS-CMI Risk Banding | **0.70*** | .000 | 0.49 | 0.60 | 0.79 |
| YLS-CMI Offence History | **0.76**** | .000 | 0.48 | 0.67 | 0.86 |
| YLS-CMI Family Circumstances/ Parenting | 0.65 | .007 | 0.49 | 0.56 | 0.75 |
| YLS-CMI Education | 0.67 | .000 | 0.46 | 0.60 | 0.79 |
| YLS-CMI Peer Relations | **0.71*** | .000 | 0.46 | 0.61 | 0.80 |
| YLS-CMI Substance Abuse | 0.61 | .049 | 0.56 | 0.50 | 0.70 |
| YLS-CMI Leisure/ Recreation | 0.59 | .112 | 0.57 | 0.48 | 0.70 |
| YLS-CMI Personality/ Behaviour | 0.67 | .002 | 0.52 | 0.57 | 0.77 |
| YLS-CMI Attitudes/ Orientation | **0.72*** | .000 | 0.45 | 0.63 | 0.80 |

CI=confidence interval; LL=lower limit; UL=upper limit, *moderate effect size, ** good effect size

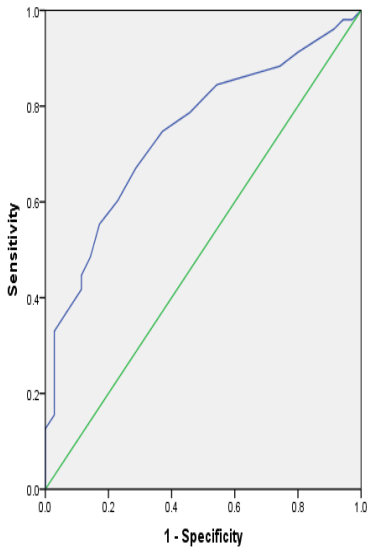


*Figure 4.2: The AUC statistic for 'Asset' total score (AUC=0.75)*

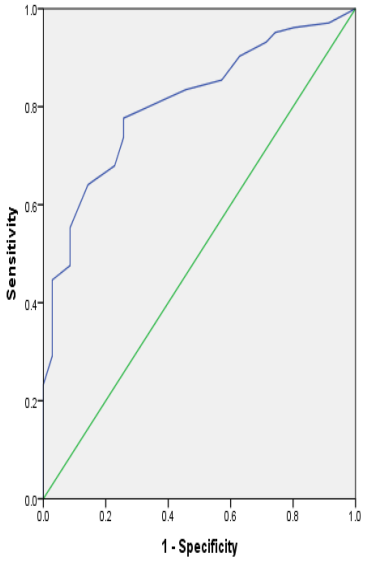


*Figure 4.3: The AUC statistic for YLS-CMI total score (AUC=0.81)*

*Offence type*

Despite the YLS-CMI not being designed to distinguish between types of offending behaviour, as previous research has investigated its ability to detect violent offending (e.g., Marshall, Egan, English & Jones, 2006; Rennie & Dolan, 2010; Vaswani & Merone, 2013) ROC analyses were also conducted for each risk assessment measure in relation to offence type. Group 1 offences (crimes of violence) were combined with the common assault charges (*n*=36) in Group 6 (miscellaneous offences) to create the violent group (*n*=56). Ideally, a sexual offence group would have been created but due to the small sample size (*n*=3) this was not possible; sexual offences were therefore excluded from the sample. The general re-offending group comprised the remaining offences (*n*=44).

As would be expected, despite the 'Asset' total score and two of the subscales (Lifestyle and Neighbourhood) demonstrating predictive accuracy for overall offending, when the full sample was split into type of offending (general versus violent), the tool did not perform better than chance. The same finding was observed for the YLS-CMI; previously the total score, level of risk banding and three individual subscales (Offence History, Peer Relations, Attitudes/ Orientation), were found to have *moderate* to good *predictive* accuracy. However, when considering type of offence as the predictor variable this tool did not perform better than chance. Table 4.8 outlines the AUC statistics for each of the risk assessment measures in relation to type of offence.

Table 4.8

*Predicting violent and general re-offending: AUC statistics for the 'Asset' and YLS-CMI risk assessments.*

| | Violent Re-offending (*n*=56 ) | | | | | General Re-offending (*n*=44) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 95% CI | | | | | 95% CI | |
| **Risk Instrument** | **AUC** | ***p*** | **SE** | **LL** | **UL** | **AUC** | ***p*** | **SE** | **LL** | **UL** |
| Asset Total | 0.55 | .363 | 0.06 | 0.44 | 0.67 | 0.44 | .311 | 0.06 | 0.33 | 0.55 |
| Asset Risk Banding | 0.53 | .557 | 0.06 | 0.42 | 0.65 | 0.46 | .478 | 0.06 | 0.34 | 0.57 |
| Asset Living Arrangements | 0.56 | .306 | 0.06 | 0.45 | 0.67 | 0.43 | .231 | 0.06 | 0.32 | 0.54 |
| Asset Family Personal Relationships | 0.51 | .811 | 0.06 | 0.40 | 0.63 | 0.48 | .694 | 0.06 | 0.36 | 0.59 |
| Asset Education, Training, Employment | 0.51 | .890 | 0.06 | 0.39 | 0.62 | 0.50 | .958 | 0.06 | 0.39 | 0.62 |
| Asset Neighbourhood | 0.52 | .752 | 0.06 | 0.40 | 0.63 | 0.47 | .656 | 0.06 | 0.36 | 0.58 |
| Asset Lifestyle | 0.52 | .747 | 0.06 | 0.40 | 0.63 | 0.49 | .848 | 0.06 | 0.37 | 0.60 |
| Asset Substance Use | 0.50 | .978 | 0.06 | 0.38 | 0.61 | 0.49 | .889 | 0.06 | 0.37 | 0.60 |
| Asset Physical Health | 0.51 | .879 | 0.06 | 0.40 | 0.62 | 0.49 | .881 | 0.06 | 0.38 | 0.60 |
| Asset Emotional and Mental Health | 0.60 | .083 | 0.06 | 0.49 | 0.71 | 0.40 | .106 | 0.06 | 0.29 | 0.51 |
| Asset Perception of Self and Others | 0.58 | .170 | 0.06 | 0.47 | 0.69 | 0.43 | .228 | 0.06 | 0.32 | 0.54 |
| Asset Thinking and Behaviour | 0.55 | .423 | 0.06 | 0.43 | 0.66 | 0.45 | .463 | 0.06 | 0.34 | 0.57 |
| Asset Attitudes Towards Offending | 0.56 | .321 | 0.06 | 0.44 | 0.67 | 0.43 | .264 | 0.06 | 0.32 | 0.55 |
| Asset Motivation to Change | 0.55 | .405 | 0.06 | 0.43 | 0.66 | 0.45 | .367 | 0.06 | 0.33 | 0.56 |
| YLS-CMI Total Score | 0.55 | .372 | 0.06 | 0.44 | 0.67 | 0.44 | .292 | 0.06 | 0.32 | 0.55 |
| YLS-CMI Risk Banding | 0.54 | .481 | 0.06 | 0.43 | 0.65 | 0.46 | .478 | 0.06 | 0.34 | 0.57 |
| YLS-CMI Offence History | 0.48 | .755 | 0.06 | 0.37 | 0.59 | 0.51 | .876 | 0.06 | 0.40 | 0.62 |
| YLS-CMI Family Circumstances Parenting | 0.51 | .868 | 0.06 | 0.40 | 0.62 | 0.49 | .898 | 0.06 | 0.38 | 0.60 |
| YLS-CMI Education | 0.58 | .165 | 0.06 | 0.47 | 0.69 | 0.42 | .171 | 0.06 | 0.30 | 0.53 |
| YLS-CMI Peer Relations | 0.56 | .312 | 0.06 | 0.44 | 0.67 | 0.43 | .229 | 0.06 | 0.31 | 0.54 |
| YLS-CMI Substance Abuse | 0.45 | .395 | 0.06 | 0.34 | 0.56 | 0.53 | .609 | 0.06 | 0.41 | 0.64 |
| YLS-CMI Leisure/ Recreation | 0.47 | .627 | 0.06 | 0.36 | 0.59 | 0.52 | .704 | 0.06 | 0.41 | 0.64 |
| YLS-CMI Personality/ Behaviour | 0.57 | .230 | 0.06 | 0.46 | 0.68 | 0.43 | .223 | 0.06 | 0.31 | 0.54 |
| YLS-CMI Attitudes/ Orientation | 0.50 | .961 | 0.06 | 0.38 | 0.61 | 0.50 | .992 | 0.06 | 0.39 | 0.61 |

CI=confidence interval; LL=lower limit; UL=upper limit, *moderate effect size, **good effect size

*Logistic regression*

A binary logistic regression analysis was conducted to ascertain whether specific variables predicted whether an individual re-offended. Consideration was given to entering all of the subscales in the logistic regression as this is how the measure is used in practice. However, only two 'Asset' and three 'YLS-CMI' subscales were found to have good predictive accuracy (see Table 4.5). Also, Peduzzi, Concato, Kemper, Holford and Feinstein (1996) recommend one predictor variable per 10 cases in the smallest group being predicted. Only 35 youth did not re-offend in this sample, therefore, it was decided to only enter the variables where good effects had been found. As such, the 'Asset' Neighbourhood and Lifestyle variables were entered; the model was significant $x^2$ (2), ($N$=138) = 28.68, $p$=.001, and the Hosmer and Lemeshow test indicated a good fit $x^2$ (2) = 4.44, $p$ =. 0.617. The model was also able to correctly classify 81.6% of individuals who re-offended and 42.9% of individuals who did not, with an overall success rate of 71.1%. The logistic regression coefficient, odds ratios and confidence intervals for each of the predictors are presented in Table 4.9.

Table 4.9

*Logistic regression for the prediction of repeat offending using 'Asset'.*

| | | | | | 95 % CI | |
|---|---|---|---|---|---|---|
| **Risk Factor Scale** | **B** | **SE** | ***p*** | **Exp (B)** | **LL** | **UL** |
| Asset Neighbourhood | 0.90 | 0.32 | **.005*** | 2.47 | 1.30 | 4.68 |
| Asset Lifestyle | 0.48 | 0.21 | **.020*** | 1.61 | 1.08 | 2.42 |

**Significant at 0.05 alpha level*

The binary logistic regression analysis was repeated with the three YLS-CMI subscales which were found to have the greatest AUC values: Offence History, Peer Relations and Attitudes and Orientation. Findings indicated the model was significant $x^2$ (2), ($N$=138) =

36.07, $p$=.001, and the Hosmer and Lemeshow test indicated a good fit $x^2$ (2) =4.40 $p$ =. 819. The model was also able to correctly classify 91.3% of individuals who re-offended and 31.4% of individuals who did not, with an overall success rate of 76.1%. The logistic regression coefficient, odds ratios and confidence intervals for each of the predictors are presented in Table 4.10.

Table 4.10.

*Logistic regression for the prediction of repeat offending using the YLS-CMI.*

| | | | | | **95 % CI** | |
|---|---|---|---|---|---|---|
| **Risk Factor Scale** | **B** | **SE** | ***P*** | **Exp (B)** | **LL** | **UL** |
| YLS-CMI Offence History | 0.83 | 0.31 | **.008*** | 2.29 | 1.24 | 4.24 |
| YLS-CMI Peer Relations | 0.26 | 0.17 | .131 | 1.29 | 0.93 | 1.79 |
| YLS-CMI Attitudes/ Orientation | 0.72 | 0.32 | **.025*** | 2.05 | 1.09 | 3.83 |

**Significant at 0.05 alpha level*

A binary logistic regression was also conducted to predict repeat offending based on the total 'Asset' scores, not the subscales, to ascertain the ability of the model to predict the percentage of correctly identified repeat and non-repeat offenders, and the overall success rate of the model. The Hosmer and Lesmeshow test indicated a good fit $x^2$ (8) =4.13, $p$=.845; the model was significant $x^2$ (1), $N$=138= 20.43, $p$=.001. The model was also able to correctly classify 96.1% of individuals who re-offended and 8.6% of individuals who did not, with an overall success rate of 73.9%. See Table 4.11 below.

Table 4.11

*Logistic regression for the prediction of repeat offending using the 'Asset' total score***.**

| | | | | | 95 % CI | |
|---|---|---|---|---|---|---|
| **Risk Factor Scale** | **B** | **SE** | ***p*** | **Exp (B)** | **LL** | **UL** |
| Asset Total score | .165 | 0.44 | **.001*** | 1.18 | 1.08 | 1.28 |

The same analysis was repeated for the YLS-CMI total score and the Hosmer and Lemeshow test indicated a good fit $x^2$ (8) =9.47, $p$ = 0.221; and the model was significant $x^2$ (1), $N$=138= 32.24, $p$=.001. Further, the model correctly identified 91.3% of individuals who did re-offend and 34.3% of individuals who did not re-offend and the percentage of overall cases correctly classified was 76.8%; see Table 4.12 below.

Table 4.12

*Logistic regression for the prediction of repeat offending using the 'YLS-CMI total score***.**

| | | | | | 95 % CI | |
|---|---|---|---|---|---|---|
| **Risk Factor Scale** | **B** | **SE** | ***p*** | **Exp (B)** | **LL** | **UL** |
| YLS-CMI total score | .190 | 0.41 | **.001*** | 1.21 | 1.12 | 1.31 |

*Survival Analysis*

The Kaplan-Meier survival statistic was selected to account for variations in the length of follow-up period. One participant was removed due to being in a secure environment for longer than 6 months ($n$=102). Time to re-offence ranged from one week to 154 weeks ($M$= 19.07, $SE$=2.71), the median number of weeks to re-offence was 10. Three survival curves were plotted to detect differences in level of risk banding (i.e., low, moderate and high) and time until first re-offence for each of the risk assessment measures. The three

curves are shown in Figure 4.4 for the 'Asset' level of risk banding; the analysis was repeated for the YLS-CMI level of risk banding and the findings are outlined in Figure 4.5.

In accordance with the 'Asset' level of risk banding 43% (*n*=44) of repeat offenders were classified as '*low*' risk, 50% (*n*=51) were classified as '*moderate*' risk and 7% (*n*=7) were classified as '*high*' risk. The mean time in weeks to re-offence for individuals classified as '*low*' risk was 30.57 (*SE*=5.60), for those classified as '*moderate*' risk it was 10.47 weeks (*SE*=1.52), and for those classified as '*high*' risk it was 9.42 weeks (*SE*=2.75). The mean overall time in weeks to re-offence was 19.07 (*SE*=2.71).

When considering the YLS-CMI risk assessment measure, of the 102 participants who reoffended, 22% (*n*= 22) were classified as '*low'* risk, 60% (*n*=61) as '*moderate*' risk and 18% (*n*=19) as '*high*' risk. The mean time in weeks to re-offence for individuals classified as '*low*' risk was 32.73 (*SE*=8.3), for those classified as '*moderate*' risk it was 14.36 weeks (*SE*=2.10), and for those classified as '*high*' risk it was 18.37 weeks (*SE*=8.10). The mean overall time in weeks to re-offence was 19.07 (*SE*=2.71).

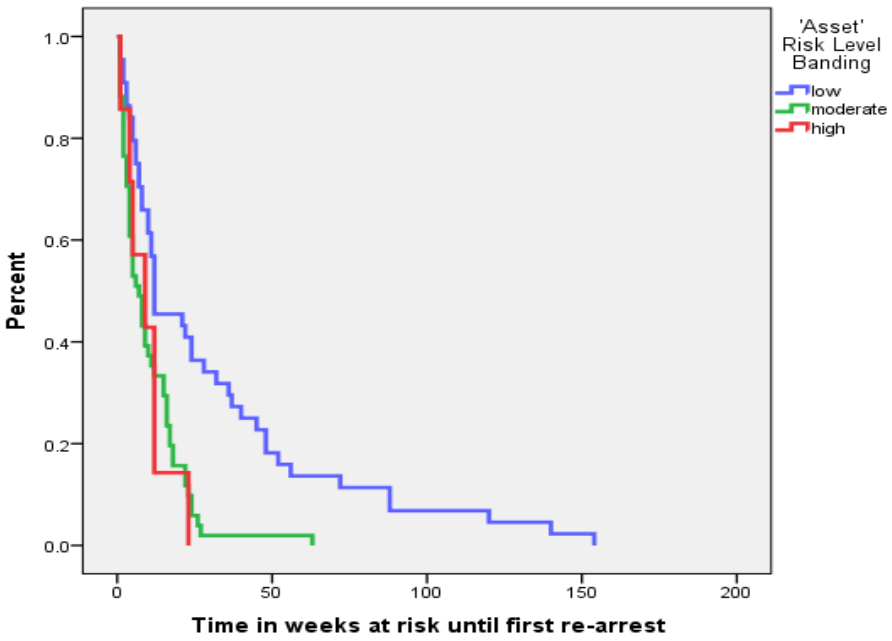


*Figure 4.4: Kaplan-Meier survival plot for time in weeks to re-offence using the 'Asset' risk instrument*

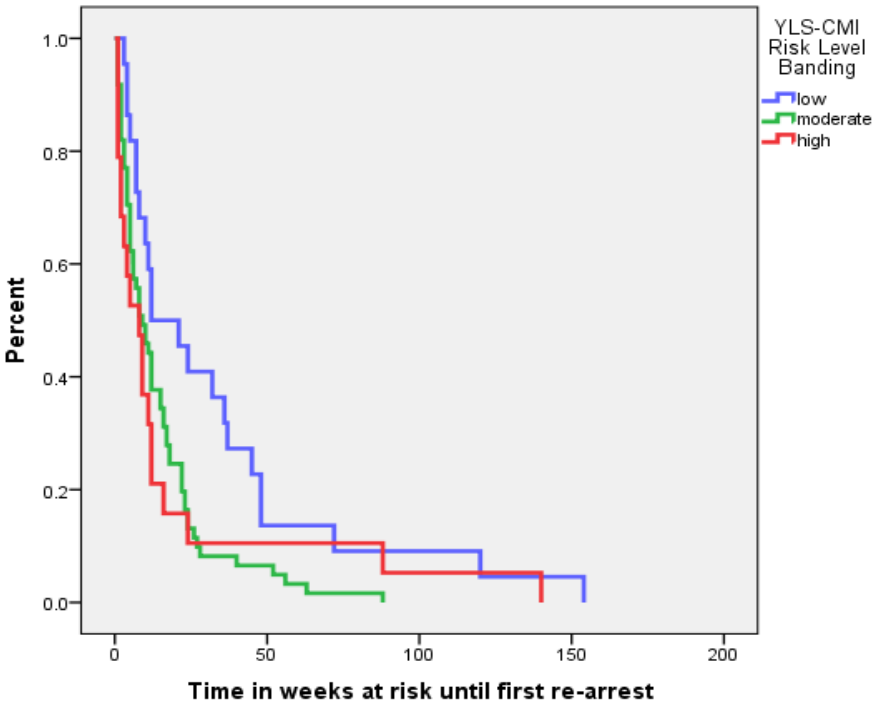


*Figure 4.5: Kaplan-Meier survival plot for time in weeks to re-offence using the YLS-CMI risk instrument.*

## DISCUSSION

This study examined the predictive validity of the two most widely used youth risk assessment instruments in the UK, for general re-offending, in a sample of 138 youths referred to a Scottish community Youth Offending Service, who re-offended (*n*=103). This is the first study to compare the 'Asset' and YLS-CMI general re-offending risk assessment instruments and to validate the use of 'Asset' with a sample of Scottish youths. This study also contributed further evidence to the growing research on the validity of the YLS-CMI with a UK population (Marshall, Egan, English, & Jones, 2006; Rennie & Dolan, 2010b; Vaswani & Merone, 2013).

### *Which of the two risk assessment tools had the greatest predictive validity?*

The findings from this study demonstrated that the ROC analysis for the YLS-CMI total score was a *good* predictor of repeat offending for this sample, as defined by official police charges. Findings from previous studies have reported the predictive validity of this measure as ranging from 0.50 to 0.75 (see Olver et al., 2009 for the most recent meta-analysis) which indicates that, to date, the current study has yielded the largest AUC for the YLS-CMI total score (see Figure 4.3). It is likely that differences in methodology (e.g., follow-up period, outcome measure, characteristics of the sample) have resulted in variations in findings across studies.

Further, the findings from this study indicate that the YLS-CMI total score outperformed that of the 'Asset' dynamic total score which was identified as a *moderate* predictor (AUC=0.75) of repeat offending (see Figure 4.2). This is consistent with previous 'Asset' predictive validity studies where the predictive accuracy of this measure has ranged from

0.68 to 0.73 (Baker et al., 2003, 2005; Wilson & Hinks, 2011; see Table 3.1). As would be expected, when type of offence (general versus violent) was the predictor variable, neither the 'Asset' nor the YLS-CMI demonstrated predictive accuracy. For each measure, the total risk score, level of risk classification (low, moderate, high) and each of the individual subscales did not perform better than chance (see Table 4.8). However, as neither of these tools were designed to differentiate between types of offence this result is not surprising.

It must be borne in mind that the YLS-CMI incorporates a static item in the tool which assesses previous involvement in offending behaviour; whereas the focus of the 'Asset' core profile is on dynamic risk. The ability of the YLS-CMI total score to outperform that of 'Asset' may therefore be due to the inclusion of a static item. It is important to note that in England and Wales the 'Asset' static and 'Asset' dynamic scores are combined to determine the level of risk an individual poses, and the associated level of intervention, whereas in Scotland, the 'Asset' core profile (dynamic items) is the sole measure of risk. Therefore, comparisons between the YLS-CMI and the 'Asset' core profile in this study reflect how these tools are used in everyday practice in Scotland. This study also examined risk classifications and findings indicated a lower AUC score for the level of risk banding (low, moderate, high) than that of the AUC total risk score for both the YLS-CMI (AUC=0.70) and 'Asset' (AUC=0.68). This indicates that the 'Asset' and YLS-CMI total scores outperform the level of risk banding category in the prediction of repeat offending (see Table 4.7). This is consistent with research where risk categories have been found to be less predictive of repeat offending when the professional override facility was used (Vaswani & Merone, 2013).

This study also examined the predictive ability of the individual 'Asset' and YLS-CMI subscales (see Table 4.7). The 'Asset' Neighbourhood and Lifestyle scales and the YLS-CMI Offence History, Peer Relations and Attitudes/ Orientation scales were most predictive of offending, with the YLS-CMI Offence history being the best predictor of repeat offending (AUC=0.76). The predictive power of previous involvement in offending is well established in the literature (Andrews & Bonta 2006; Cottle et al, 2001; Viera, Skilling, & Peterson-Badali, 2009). However, when identifying treatment targets and developing risk management plans, static variables are not useful to practitioners due to the inability to manipulate these variables. In accordance with the Risk-Need-Responsivity model (Andrews, Bonta, & Hoge, 1990), a practitioner would identify criminogenic need (e.g., neighbourhood, lifestyle, peers, attitude/ orientation) and target these factors in treatment, the aim of which being to reduce the criminogenic need and the overall level of risk and subsequent involvement in offending.

The 'Asset' Neighbourhood, Lifestyle and YLS-CMI Peer Relations individual subscales are considered socio-cultural causes of crime and whilst they are dynamic in nature and thus open to change, they are perhaps the most difficult factors to target (Wilson & Hinks, 2011). Initiatives which provide youths with opportunities to engage with pro-social peers are increasingly becoming more widely used (OJJDP, 2009; YJB, 2005). However, the possibility of manipulating the area in which one lives is restricted due to low income and poor housing opportunities (e.g., availability, previous involvement in anti-social behaviour), all of which reduce the likelihood that a family could be relocated to an area which is not characterised by social disadvantage. It could also be argued that one's lifestyle is linked to their socioeconomic status, which further limits the possibility of targeting these areas of identified criminogenic need. It therefore appears that the YLS-

CMI Attitudes/ Orientation subscale may be of most use to the practitioner and youths in terms of identifying treatment goals and having something tangible to work with – where core beliefs and pro-criminal attitudes could be restructured – when completing 'offence focused work'.

However, it must be noted that there were a number of wide confidence intervals obtained for the ROC analyses for both the 'Asset' (range 17-23) and the YLS-CMI (range 15-22) risk assessment instruments, which may limit the generalisability of these results to other samples (Table 4.7). In Vaswani and Merone's (2013) YLS-CMI study the confidence intervals for the YLS-CMI total score and level of risk banding for any recidivism were smaller (total score:0.69-0.76; risk banding: 0.65-0.72), as they they did not conduct ROC analyses on individual subscales comparison cannot be made with the findings from this study.

The reason for the differences in the confidence intervals may be due to the sample size; in Vaswani and Merone's study 1,138 participants were included, whereas in the current study the sample size was 138. The findings from this study are comparable to that of Rennie and Dolan (2010) who also had a small sample size (*n*=111); they assessed YLS-CMI total score, level of risk banding and individual subscales and the confidence intervals ranged from 19-22. The confidence intervals for the YLS-CMI total score was 0.48 – 0.70, in this study it was 0.73-0.88. Similarly, they obtained the following confidence intervals for the level of risk banding in their study: 0.49-0.71, compared to the 0.60- 0.79 confidence intervals in this study. Thus, indicating that the sample size may have contributed to the findings.

When the predictor variables (Neighbourhood, Lifestyle) that had an AUC value equal to or greater than 0.70 were entered into a binary logistic regression analysis for 'Asset', this model correctly classified 81.6% of individuals who re-offended and 42.9% of individuals who did not, with an overall success rate of 71.1%. Indicating that the sensitivity (ability to predict positive outcomes) of this model out performs its specificity (ability to accurately predict negative outcomes). Further, when the analysis was repeated for the 'Asset' total score the overall success rate of the model increased to 73.9%; its ability to predict repeat offending also increased (96.1%) however its ability to predict non-repeat offending decreased considerably (8.6%); this indicates that the specificity of the 'Asset' total score is very poor.

Similarly, when this analysis was repeated with the three predictor variables for YLS-CMI (Offence History, Peer Relations, Attitudes and Orientation) the model was able to correctly classify 91.3% of individuals who re-offended and 31.4% of individuals who did not, with an overall success rate of 76.1%. In relation to the YLS-CMI total score, the model correctly predicted correctly classify 91.3% of individuals who re-offended and 34.3% of individuals who did not, with an overall success rate of 76.8%. The predictive accuracy of the YLS-CMI total score is similar to that of the individual subscales.

***How accurate were the risk assessment measures in determining the time taken to re-offend?***

The time from initial assessment to the first repeat offence was also examined in relation to the classification of risk and indicated, as would be expected, that individuals who were classified as moderate or high risk based on the 'Asset' re-offended sooner than those classified as low risk (see Figure 4.4). When the same analysis was conducted for the

YLS-CMI risk classifications, the duration from the initial assessment to first re-offence was largest for youths who were classified as low risk, and those youths who were classified as moderate risk re-offended in a shorter time frame. However, interestingly, the mean time for individuals who were classified as high risk to re-offend was greater than those who were classified as moderate (see Figure 4.5). When classified in relation to the 'Asset' level of risk bandings only seven youths were classified as high risk. Whereas, twenty youths were classified as high risk in relation to the YLS-CMI assessment measure; this may account for the increased time to first offence for those classified as high risk as determined by the YLS-CMI risk bandings.

There was also an unexpectedly high rate of repeat offending for individuals who were classified as low risk for both the 'Asset' and YLS-CMI measures. This finding is similar to that of Vaswani and Merone (2013) whereby 54% of individuals classified as low risk re-offended in the 12 month follow-up period. However, other researchers have found lower recidivism rates for this sub group of offenders: 11% (Onifade et al., 2008) and 25% (Rennie & Dolan, 2010b). However, it is important to note that Vaswani and Merone also used a sample of Scottish youth with police charges as the outcome measure. Therefore, police charges (the outcome measure which was used in the current study) may be more representative of the prevalence of actual crime, than the police conviction outcome measure used in the studies which obtained lower levels of recidivism; indicating that the YLS-CMI may be more sensitive to re-conviction as opposed to re-offending rates.

***Which risk factors were associated with repeat offending?***

When considering differences between repeat offenders and non-repeat offenders in relation to the 'Asset' individual subscales there were a number of significant differences

present. Repeat offenders were more likely to live in disadvantaged neighbourhoods (e.g., high levels of drug use, anti-social and offending behaviour, and a lack of age-appropriate facilities) and have a lifestyle which is characterised by lack of age-appropriate peers, a peer group which is predominantly involved in offending, an inadequate personal income and involvement in few activities (see Table 4.3). This is consistent with the literature whereby neighbourhood and community influences have been implicated in the development of anti-social attitudes and behaviours (Leventhal & Brooks-Gunn, 2000; Ludwig, Duncan, & Hirschfield, 2001; Sampson, Morenoff, & Gannon-Rowley, 2002).

Similarly, repeat offenders were less likely to be involved in education, training or employment and had a number of attitudes which promoted involvement in offending (see Table 4.3). The number of youths involved in offending behaviour who have been excluded from school, are on part-time timetables or who are classed as non-attendees, is high (Yoshikawa, 1994). It is therefore logical to conclude that individuals who have little structure to their day and few means for financial income are more likely to be involved in offending behaviour.

The link between pro-criminal attitudes and offending behaviour is also well established in the literature (Backstrom & Bjorkland, 2008; Holsinger, 1999; Loser, 2003; Mills & Kroner, 1999; Simourd, 1997; 1999). As such, many offending behaviour programmes target offence-justifying beliefs as part of their session content. However, change is not an all or nothing entity, rather it is a process which occurs over time, during which a return to previous behaviour often occurs (Miller & Rollnick, 1991). Regardless of what the target behaviour is, an individual must be motivated to want to change and even for those individuals where motivation is present considerable effort and support is required to

sustain that change. Motivation to change is therefore an important factor for practitioners when developing treatment plans and the sequencing of interventions. There is little point in trying to manipulate other identified risk factors and allocating resources, prior to identifying short- and long-term goals and ascertaining levels of motivation to change and individual motivating factors (Miller & Rollnick, 2012).

Repeat offenders were also found to have greater levels of substance use compared to non-repeat offenders (see Table 4.3). This would suggest that for youths in this sample, substance use appears to be a factor in continued involvement in crime – either committing crime to fund substance use, committing crime under the influence of substances, or both – and as such could be a useful treatment target when tailoring intervention and risk management plans. Individuals may be referred to substance misuse services, however consideration should be given to allocating abstinence based treatment programmes. Substance use is often the symptom of early traumatic childhood experiences and serves the function of alleviating negative affect (Crittenden, 1995). Targeting the symptom and not the cause may result in lower success rates (Stoolmiller & Blechman, 2005). However, it is important to note that when substance use was measured using the YLS-CMI there were no differences between groups (see Table 4.4). This indicates that substance use was likely to be a problem for both subsets of offenders (repeat and non-repeat) and supports the findings from a previous meta-analytical procedure conducted by Cottle et al. (2001).

Findings indicated that there were no differences between groups in relation to living arrangements, family and personal relationships, physical health, emotional and mental health, thinking and behaviour or perception of self and others (see Table 4.3). This is not to say that aforementioned factors do not contribute towards continued involvement in

offending behaviour. One possibility is that these behaviours are present for individuals who are already involved in offending behaviour and this therefore reduces the likelihood of detecting any differences between groups. Alternatively, it may be that these are risk factors for first time offenders but are not useful when considering why individuals continue their involvement with offending.

Comparisons between groups in relation to the YLS-CMI subscales revealed differences between groups on all individual subscales with the exception of two: substance use and leisure and recreation (see Table 4.4). As was previously mentioned with substance use, this indicates that repeat and non-repeat offenders have similar levels of involvement in activities and leisure pursuits. However, this was also the item that had the least agreement between raters when inter-rater reliability was assessed; this finding may therefore be due to problems in the way in which involvement in leisure pursuits were scored.

Repeat offenders were also more likely to have greater levels of family dysfunction, more involvement with criminal peers, have attitudes which support involvement in offending behaviour, experienced greater problems relating to their personality and behaviour and were less likely to be involved with education, training and employment than non-repeat offenders (see Table 4.4). All of these identified risk factors require different types of interventions such as family work (i.e., Multi-Systemic Therapy, Functional Family Therapy), youth mentoring and befriending initiatives (increased opportunity to interact with pro-social peers), and offence focused work (restructure pro-criminal beliefs, increase insight into personality patterns and the link between affect and behaviour).

Similarly, youths who are not involved in education, training or employment opportunities are often overrepresented in offending populations (Yoshikawa, 1994). Consideration must therefore be given as to why youths do not engage with these resources (e.g., limited social skills, poor frustration tolerance, poor reading and writing ability), particularly given that commitment to school has been identified as a protective factor (Rennie & Dolan, 2010a). Once practitioners have identified the reasons for poor engagement and commitment, the overall treatment target of increased engagement with education, training or employment opportunities can be broken down to target the identified area of need.

**Implications for the assessment and management of young offenders in the community**

The findings from this study have implications for the ways in which young people are assessed and managed in a community service. The overall findings indicate that the YLS-CMI is a better predictor of repeat offending than the 'Asset' risk assessment measure. Not only did the YLS-CMI total risk score and risk classifications outperform that of the 'Asset' but it appears that the YLS-CMI was more sensitive to detecting differences between groups (repeat versus non-repeat offenders) in individual subscales. Differences were detected between groups on five of the 'Asset' subscales and the 'Asset' total score, compared to differences between groups on six subscales of the YLS-CMI subscales and the total score; it is important to note that there are 12 subscales included in 'Asset' and 8 in the YLS-CMI.

The variation in sensitivity between the tools to detect differences between repeat and non-repeat offenders is of particular relevance to practitioners when identifying treatment targets and risk management strategies. It is widely accepted that a number of risk factors

interact to result in repeat offending (Rutter, Giller, & Hagell, 1998), and it is important that relevant risk factors are identified in order to target interventions at factors which have been found to be implicated in continued involvement in crime (Andrews & Bonta, & Hoge, 1990). The critique chapter of this thesis (see chapter three) highlighted concerns relating to the selection of risk factors in the 'Asset' risk assessment (related to the onset of offending and not repeat offending) and the findings from this chapter provide support for this view and revealed that the YLS-CMI may be a more appropriate measure for identifying factors related to repeat offending.

The 'Asset' also classified 91% (*n*=20) of females as *low risk* compared to 36% (*n*=8) when measured by the YLS-CMI. If 'Asset' is the risk assessment used by practitioners this could result in females not receiving a service due to the need for treatment to be proportionate to the level of risk (Andrews, Bonta, & Hoge, 1990). However, it is also possible that the YLS-CMI inflates risk in females; there is now an updated version of YLS-CMI (YLS-CMI- 2; Hoge & Andrews, n.d) which includes norms for females and specific risk markers for female offenders.

**Future research directions**

To date, there have been relatively few studies conducted with 'Asset' (Baker et al, 2003; 2005; Wilson & Hinks, 2011) and YLS-CMI data (Marshall et al, 2006; Rennie & Dolan, 2010b; Vaswani & Merone, 2013) using a UK population, the majority of which have used samples of youths referred to a community Youth Offending Service (Baker et al, 2003; Wilson & Hinks, 2011; Vaswani & Merone, 2013). There has only been one study using a Scottish sample of incarcerated youths (Marshall et al., 2006) with violence as the outcome measure. Consideration should therefore be given to the use of youth risk assessments with

incarcerated offenders to include general re-offending, similar to that of the UK study by Rennie and Dolan (2010b).

It is widely accepted that the 'Asset' and YLS-CMI are not merely measures which ascertain the probability of the likelihood of future offending but are intended to be comprehensive assessments which are used to formulate problematic behaviour and inform treatment targets and case management. It is therefore surprising that there are no known studies with 'Asset' or YLS-CMI data which have explored the impact of intervention on subsequent offending behaviour. Future research which uses risk assessment measures pre- and post-treatment, using a waiting list RCT design, would therefore contribute to the current UK literature base. Presumably, the inclusion of incarcerated offenders – who are often referred to and attend group offending behaviour programmes whilst in custody – may increase the feasibility of conducting a study of this kind.

There are a number of variations in the methodology and characteristics of the samples included in the studies which have explored the predictive validity of the 'Asset' and YLS-CMI which include: age, gender, setting (community, custody), outcome measure (police charge, police conviction), type of offence (violent, sexual, and general) and study design (retrospective, prospective). The variation which appears to have the most influence over how these measures are regarded is the different ways in which AUC values are interpreted. The ROC analysis and associated AUC statistic selected for the measurement of predictive accuracy is widely used in risk assessment research because of its insensitivity to variations in base rates or selection ratios (Vincent & Guy, 2012). However, it is apparent that there are variations across authors in relation to what constitutes moderate and good predictors of re-offending.

In the first two 'Asset' predictive validity studies (Baker et al, 2003, 2005) and the first YLS-CMI predictive validity study with Scottish youths (Marshall et. al, 2006), despite using the AUC statistic, the authors did not specify what AUC values are considered to be moderate and good. However in the Wilson and Hinks (2011) 'Asset' predictive validity study, the authors cite Rice and Harris (2005) whereby an AUC value of 0.64 to 0.70 was considered moderate and an AUC value of 0.71 or above was considered good. In Vaswani and Merone's (2013) YLS-CMI predictive validity study, like Wilson and Hinks, they also cited Rice and Harris but referenced an earlier publication (1995), whereby an AUC value of 0.60 was considered moderate and an AUC value of 0.66 considered good. This is in contrast to the first UK validation of the YLS-CMI conducted by Rennie and Dolan (2010b), where greater AUC values were required to achieve the same classifications. The authors cited Douglas, Guy, and Weir (2005) whereby an AUC of 0.70 was considered moderate and an AUC value greater than 0.75 was considered good; the AUC values which were selected for the current study. Variations in the ways in which AUC values are interpreted, will result in differences in the understanding of the predictive power of the assessment measure. It may therefore be beneficial for future research to use the same AUC values, which would prevent the risk assessment measure from being considered to have greater predictive power than it actually has.

The 'Asset' core profile includes a section whereby assessors are asked to comment on any positive factors present in a young persons' life; these can either be current or potential (it is likely that they will be present in the near future). While these factors are not taken into consideration when aggregating the 'Asset' score or determining the subsequent level of risk banding, they are routinely assessed and documented as part of the 'Asset' assessment.

There has been an increased interest in protective factors and strengths (Carr & Vandiver, 2001; Lodewijks, Ruiter, & Doreleijers, 2010; Rennie & Dolan, 2010a), and the ways in which protective factors interact with risk factors to reduce the likelihood of further involvement in crime. Future research may therefore consider including positive factors in the 'Asset' core profile and strengths in the YLS-CMI analyses; to contribute to existing findings relating to protective factors and continued involvement in youth crime.

A number of risk factors relating to the individual domain were identified in this study which differentiate repeat from non-repeat offenders and which could potentially be treatment targets for Youth Offending Services interventions. However, a number of factors which relate to the community or environmental domain were also identified; manipulating these risk factors has proved more difficult for practitioners (Wilson & Hinks, 2011). Future research which considers the way in which practitioners identify and allocate resources may prove useful. Particularly, which treatment targets are given priority, how interventions are sequenced, and how risk factors identified in the community domain are targeted.

**Strengths and limitations**

There are a number of strengths and limitations of this study which may have influenced the overall findings. 'Asset' data was included in this study which was collated by social work practitioners, thus providing information relating to how this tool is used in everyday practice, as opposed to a researcher retrospectively coding this assessment measure. Further, the YLS-CMI was coded using the narrative which is included in the 'Asset' core profile as a justification for scoring individual items and the total 'Asset' score and risk classification; in order to prevent archived information being used to score this measure

which was not included in the initial 'Asset' assessment. The YLS-CMI was coded prior to receiving the repeat offending outcome data and the assessors were blind to the 'Asset' total scores and risk classifications.

Inter-rater reliability was assessed in two previous 'Asset' studies (Baker et al, 2003, 2005), however the methodology they employed was not the most appropriate measure of agreement between raters (e.g., case study design or comparing mean ratios (static score divided by total 'Asset' dynamic score)). In the present study inter-rater reliability was assessed whereby two researchers scored a subset of the original sample for each of the measures ($n$=14). Thus, providing a more comprehensive measurement of consistency between raters as the use of the original 'Asset' assessments in this study is likely to increase our understanding of the reliability of this measure. While inter-rater reliability has been assessed in some YLS-CMI studies (Marczyk, Heilburn, Lander, & Dematteo, 2003, 2005; Rennie & Dolan, 2010b), it has not been assessed in either of the studies which have used a Scottish sample of youths (Marshall et al, 2006; Vaswani & Merone, 2013). The current study is therefore the first of its kind to assess the inter-rater reliability of this measure with Scottish youths.

It was concerning that only 46% of completed 'Asset' documents in a three and a half year period (June 2009-December 2012) had full narratives to justify the total 'Asset' score and level of risk banding assigned to each young person, particularly given that each young person has this assessment completed on referral to the Edinburgh Youth Offending Service. A number of 'Asset' documents included in this study were completed by social work students; presumably they have smaller case loads, more time to complete assessments and may be more eager to complete work to a high standard (due to the need

to pass the placement), which allowed them to complete the 'Asset' assessment with full narrative. Students are typically given less complex people to work with due to their limited experience. The sample in this study may therefore not be representative of the individuals typically referred to this service and highlights a need for practitioners to complete risk assessments with full written text.

The sample size in this study was relatively small ($N$=138) and there were a limited number of females ($n$=22) included in the analysis which prevented females being considered as a discrete offender group. The findings from this study may therefore not generalise to female youth offenders. The sample also consisted of predominantly white youths ($n$=129) which prevented comparisons in relation to ethnicity and limits its generalisability; however it is important to note that this proportion of Edinburgh youths reflects those youths involved in offending across Scotland (SPFF, 2012).

It is estimated that 'Asset' is used in at least 13 Local Authorities in Scotland (Baker et al., 2005) as the standard youth re-offending risk assessment measure. However, the current sample was based on data collected from one Local Authority only. As such, the findings from this study may be limited to youths who share similar demographics to youths who reside in the Edinburgh area.

This study used one outcome measure only, namely official police charges, which may have underestimated the actual prevalence of crimes committed in Edinburgh. The use of self-report data combined with official police re-conviction data is considered the most reliable estimate of recidivism (Cottle et al., 2001). Unfortunately, due to the frequency of involvement in offending behaviour in the follow-up period it was not possible to record

the date and type of offence of all new offences. This prevented file information being screened for offences which may have been reported to professionals but that, did not come to the attention of the police. That being said, the use of police charges as opposed to police convictions is likely to have increased the reliability of the prevalence of actual crimes. This is consistent with previous YLS-CMI research where the AUC for police charges (0.75) was greater than that for police convictions (0.70; Gossner & Wormith, 2007). It is promising that the police have a national approach to recording crimes and offences, however there needs to be consistency across services in order for research to be conducted with the most accuracy. Youth Offending Services should therefore consider recording offences in line with the Scottish Crime Recording Standard (SCRS, 2004).

Edinburgh City Council has a diversionary policy (Pre-Referral Screening (PRS)) whereby low-level offenders are often diverted from more formal measures to prevent entry into the Children's Hearings System. This may have resulted in a number of youths who were beginning to get involved in offending behaviour or who were involved in low-level offences not being referred to the Youth Offending Service for an initial 'Asset' assessment and as such, were not included in this study. However, this sample did include some youths ($n$=24) who were referred via the PRS route for an 'Asset' assessment.

Repeat offending was recorded in this study in terms of a dichotomous yes/ no variable. The type and level of intervention which was recommended following the 'Asset' assessment was not documented. Therefore, consideration of what intervention may have contributed to any changes in level of risk and subsequent offending was not available for statistical analysis.

## CONCLUSIONS

This study compared the predictive validity of the 'Asset' and YLS-CMI risk of general re-offending risk instruments. The YLS-CMI was found to outperform the 'Asset' in relation to total risk score and risk classification. A number of risk factors were identified which differentiate repeat from non-repeat offenders in both the individual and community domains; the YLS-CMI appeared to be more sensitive than 'Asset' in detecting differences between the groups. Future research should consider including the 'Asset' measure of positive factors and the YLS-CMI strengths factors in the statistical analyses, to determine the way in which risk and protective factors interact to mitigate the influence of risk. Similarly, studies which consider the way in which treatment targets are identified (e.g., significance, sequencing) and resources are allocated, particularly interventions relating to the community domain, alongside research which investigates the impact of intervention on subsequent offending would contribute to the current youth risk assessment literature base.

# CHAPTER FIVE: GENERAL DISCUSSION

Despite decreases in the number of young people involved in criminal activity and the amount of offences that are committed by this subgroup of the population, considerable attention continues to be given to youth crime (SPFF, 2012; YJB, 2012). In particular, practitioners are interested in identifying those individuals who are most likely to continue to offend. Given the demands that are placed on youth and criminal justice services to assess young people involved in offending behaviour, identify appropriate interventions and resources, and manage, often high risk, youths in the community, it is not surprising that practitioners want to feel confident that the assessment measures they use are reliable.

The aim of this thesis was therefore to examine the effectiveness of youth general re-offending risk assessment measures, there were five specific aims:

- To identify which factors are associated with repeat offending and desistance from youth crime;
- To establish whether risk factors associated with repeat offending differ to those factors associated with the onset of offending;
- To evaluate the psychometric properties of the most widely used youth risk assessment measure in the UK;
- To explore the effectiveness of general risk assessment measures in a sample of Scottish youths;
- To compare the effectiveness of the 'Asset' and YLS-CMI risk assessment tools.

This was achieved via three pieces of work: a systematic review of the literature, a critique of a risk assessment instrument and an empirical research paper. A summary of each of the

chapters is provided alongside a discussion outlining how this thesis has contributed to the existing literature in the field of youth offending.

**Summary of findings**

The introduction to this thesis provided the background and context for the preceding chapters by outlining the way in the Scottish Youth Justice System has developed. In particular it focused on the way in which crimes and offences are recorded and the referral routes into the Children's Hearing and Criminal Justice Systems. The introduction also highlighted the increase in number of adolescent risk assessment measures available and the importance of these assessments when considering community and custodial disposals.

Chapter two provided a systematic literature review of risk and protective factors which have been identified in the literature as being associated with continued offending, in adolescence and emerging adulthood, or desistance from crime during this period. The introduction to this chapter highlighted the significance of the role that the Risk Factor Research Paradigm model has played in shaping the way in which offenders are identified and managed. The development of a model which is used to quantify behavioural observations has encouraged the development of a common language amongst researchers and practitioners when considering the concept of risk.

Whilst protective factors have been assessed since the first UK prospective longitudinal research study (West & Farrington, 1982), it is only been in recent years that protective factors have been routinely included in the assessment of risk (Borum, Bartel, & Forth, 2002; Miccio-Fonseca, 2010; Print et al., 2007). This resulted in the associated treatment model – the Risk-Need-Responsivity model (R-N-R; Andrews & Bonta, 1990) –

disproportionally focusing on risk and in more recent years, being considered a deficit based model. The introduction of the Good Lives Model of Offending behaviour (GLM; Ward, 2002) has overcome the shortcomings of the R-N-R model, by offering a strengths based approach to dealing with offending behaviour. While this treatment approach was originally devised for use with adult sex offenders it is increasingly being used with different subgroups of offenders (Purvis, Ward, & Willis, 2006; Ward, 2007). The introduction of this chapter also provided an overview of the findings from research which assessed risk and protective factors associated with the onset of offending behaviour, and highlighted the need to also consider those factors which are implicated in continued involvement in crime.

Nine studies were included in the systematic review; five articles explored both risk and protective or promotive factors and four articles explored risk factors only. All of the studies, with the exception of one, found a number of factors which differentiate repeat from non-repeat offenders. Differences were evident in the operational definitions of repeat and non-repeat offenders, offence type, age at initial assessment, outcome measures, the length of follow-up period, and the populations from which samples were drawn (community versus incarcerated), all of which resulted in difficulties in synthesising and comparing findings. The same risk and protective or promotive factors were also not measured consistently across studies.

Risk and protective factors in this review were categorised into the domains of the individual, peer, family, school and community (Shader, 2002). Consistent with the literature, the extent to which individuals were involved in previous offending (e.g., number of offences, variations in offence type, frequency and seriousness of offences) was positively associated with further involvement in crime (Dembo et al., 1998; Minor,

Hartmann, & Terry, 1997; Myner, Santman, Cappelletty & Perlmutter, 1998), and those individuals who desisted from crime regarded the likelihood of being caught as an influential factor. This may indicate that non-repeat offenders felt more included by society and thus had more to lose (Smith, 2006). Mental health difficulties were also found to be more prevalent in repeat offenders (Byrd et al. 2012; Domburgh et al., 2009; Loeber et al., 2007; Trulson et al., 2005).

Interestingly, one study of incarcerated offenders reported a negative association between depression and offending whereby repeat offenders were less depressed than those who desisted from offending (Katsiyannis et al., 2004). However, in contrast to the other studies, this was a prison sample and it is possible that the prison environment sheltered individuals from factors in their life which are typically associated with low mood (e.g., housing difficulties, relationships problems, low financial income), which was then reflected in their scores on the depression measures in a custodial environment.

There were relatively few differences between groups in relation to substance misuse, education and family. This could be due to the homogeneity of using a group of existing offenders and thus, problems being present for both repeat and non-repeat offenders, making it difficult to detect differences between the groups. The community domain was the least researched of all of the domains. No differences were detected between groups in terms of risk factors, however; less exposure to neighbourhood problems and involvement in community activities were associated with desistance from offending behaviour. This has implications for the way in which individual treatment need is targeted, particularly when considering socio-cultural causes of crime which are invariably more difficult to manipulate (Wilson & Hinks, 2011). As such, recommendations for future research included the need for consistency in study methodology and sample characteristics

alongside research which is conducted outside of the USA and which considers girls as a discrete sub-group.

Chapter three reviewed and critiqued the 'Asset' risk of repeat offending instrument for youths; the risk assessment measure which was used in chapter four of this thesis. The development of this risk assessment instrument was considered in relation to the political era in which it was commissioned. This critique highlighted a number of shortcomings of this measure, for example, weaknesses in the methodology applied to assess consistency in assessor's ratings of 'Asset'. The present study overcame these weaknesses by assessing two independent raters' scores on a subset of the original assessment measures ($n$=14). There was also a lack of information available relating to the psychometric properties of the tool (e.g., test re-test validity, content validity); only three predictive validity studies with the use of 'Asset' data were identified; which is surprising given the widespread use of this tool across the UK. Findings indicated that 'Asset' is a *poor* to *moderate* predictor of reoffending with Area Under the Curve (AUC) statistics ranging from 0.68 to 0.71. However, the predictive power of this tool varied depending on which assessment ('Asset' dynamic, 'Asset' Static. OGRS-3 plus 'Asset dynamic') and outcome measures (offending versus convictions) were selected (Baker et al., 2003, 2005; Wilson & Hinks, 2011).

Criticism of this measure also included the bias towards deficits despite a section relating to positive factors being included as part of the assessment, and the lack of encouragement to develop a risk formulation, or guidance in relation to prioritising, sequencing and allocating interventions and resources. The most concerning criticism of this assessment instrument has been expressed by Case and Haines (2009) who assert that the risk factors which are included in this measure are factors which have been found to be associated with the onset of offending as opposed to repeat offending. As such, they state that the tool is

inherently flawed. If the risk factors included in this measure assess the likelihood of someone getting involved in offending for the first time, but are used to assess individuals who are already involved in offending behaviour, it would be logical to conclude that 'Asset' may be limited in its ability to detect differences between repeat and non-repeat offenders. A finding that is supported in the research element of this thesis (see Table 4.3). The 'Asset' risk assessment tool should therefore be used with an understanding of its limitations and biases.

Chapter four explored the predictive validity of the two most widely used youth risk assessment measures in the UK with a Scottish population. This research paper contributed to the existing literature relating to the predictive power of the Youth Level of Service-Case Management Inventory (Hoge & Andrews, 2002) and the inter-rater reliability of this measure with a UK sample; it is the only study to date which has explored the consistency among raters using a Scottish sample. Research findings revealed that, to date, the current study has yielded the largest AUC for the YLS-CMI total score (AUC=0.81) and that this tool was found to be sensitive to differences between repeat and non-repeat offenders in terms of the individual subscales. Inter-rater reliability, as assessed by Intra-Class Correlation Coefficients (ICC), was similar to that of previous studies (Catchpole & Gretton, 2003; Schmidt, Campbell, & Golmes, 2005; Onifade et al., 2008).

This is also the first study to explore the use of 'Asset' with Scottish youths and to assess the inter-rater reliability of this measure using a subset of the original assessments in a UK sample. Findings revealed that the 'Asset' dynamic score is a *moderate* predictor of repeat offending (AUC=0.75). 'Asset' proved to be less sensitive at detecting differences between groups when examining individual subscales. This has important implications for practice particularly for practitioners when identifying risk factors, based on 'Asset

'assessments, to be targeted in treatment. The assessment of inter-rater reliability indicated that there was excellent agreement between raters in relation to the 'Asset' total score (ICC= .87) and good to excellent agreement in relation to ten of the individual subscales. Only the level of risk banding categories (e.g., low, moderate, high) assigned to each individual (ICC=.30) and the Education Employment and Training Opportunities subscale (ICC= .19), demonstrated poor agreement between raters. It is possible that when practitioners deviate from using the numerical scoring and cut-off points and instead use their professional judgement to arrive at a level of risk banding, this results in differences in opinion and reduces the reliability of the measure (see Table 4.7). A number of areas were identified for future research including, the inclusion of 'Asset' positive factors and YLS-CMI strengths to determine the influence these factors have on risk, and studies which explore the impact of intervention on future offending rates.

**Implications for practice**

The current systematic review revealed that mental health difficulties differentiate repeat and non-repeat offenders. Consideration should therefore be given to routine mental health screening in both custodial and community settings to enable the identification and treatment of mental health needs. It is likely that the ways in which mental health services are commissioned and configured often make it difficult for young offenders to access these services, despite there being a need for this service. Collaborations between mental health and youth justice services are therefore required to ensure that young people involved in offending behaviour receive the appropriate service to which they are entitled.

The importance of pro-social peers was also a factor which was identified in the review which was found to be associated with desistance from offending. The significance of

relationships in the therapeutic alliance is well established in the literature (Keijsers, Schaap, & Hoogduin, 2000; Lingiardi, Filippucci, & Baiocco, 2005). It would be unwise to underestimate the importance of having a significant relationship which is unconditional; unfortunately the majority of young people who are involved in offending behaviour may never have experienced a positive reciprocal relationship, and as such expect everyone they encounter to behave in a similar way to what they have experienced. Further, when they do encounter positive relationships they often are unable to internalise any positives and may even sabotage the relationship because they feel unworthy of it (Crittenden, 2000). Initiatives that increase the opportunities for youths involved in crime to have positive and meaningful relationships, which are not time-bound, are likely to assist in developing strengths and protective factors.

Identifying youths who are at risk for continued involvement in offending behaviour is a challenging task for practitioners. Unstructured risk assessments rarely perform better than chance (Beech & Craig, 2012) and actuarial measures prove most effective when considering the predictive power of risk instruments to correctly classify repeat offenders (Cottle, Lee, & Heilbrum, 2001). Structured professional approaches are most useful when formulating problem behaviour and developing interventions and case management plans (Douglas, Blanchard, & Hendry, 2013; Hart & Logan, 2013). Consideration should therefore be given to using combined actuarial and SPJ approaches for the most comprehensive risk assessment.

Completing formulations of risk is an essential component of risk assessment. A thorough understanding of what factors increase and decrease risk is necessary to identify appropriate interventions and resources. Consideration must also be given to the role of protective factors and identifying ways in which to maintain these factors, and

opportunities for protective factors to be developed. This is in keeping with a strengths-based approach as opposed to working from a deficit based model. Practitioners need a working hypothesis to enable them to identify treatment targets, of course, no hypothesis is absolute, however in order to test whether what is believed to be, is true, and to make revisions accordingly, at the very least practitioners require a starting point. If the risk assessment measure selected does not promote the use of formulation then service managers could still encourage practitioners to develop formulations as part of the overall risk assessment and this should be considered routine practice.

Consideration must also be given to the role of protective factors and identifying ways in which to maintain these factors, and opportunities for protective factors to be developed. This is in keeping with a strengths-based approach as opposed to working from a deficit based model.

**Limitations of the thesis**

It is important to view these implications in the context of the limitations within the corresponding chapters. Care must be taken when generalising the findings from the systematic literature review as variations in the methodology and sample characteristics of included studies, limits the confidence in which risk, protective and promotive factors, even those studied more frequently, can be said to be an accurate representation of factors which are unique to repeat and non-repeat offenders. Although the review sought to consider all research on risk and protective factors in repeat offending in youths, only articles with American samples met the inclusion criteria. Further, only one study explored girls as a discrete offender group, and only two papers related to incarcerated offenders. This limits the external validity of the findings making it difficult to generalise beyond American, male, youths who are managed in community services.

Similarly, although the findings from chapter four indicate that the risk assessment measures provided *moderate* to *good* predictive accuracy in identifying repeat offenders, the research study used a relatively small sample size (*N*=138). Further, there were a low number of females (*n*=22) in the sample which prevented them from being considered as a discrete offending group. Data were also only collected from one Local Authority and the sample were predominantly White (*n*=129), therefore the findings from this study may not generalise to other populations.

**Future research**

Risk factors associated with the onset of offending have regularly been explored in both the adult and youth offending field. Factors associated with repeat offending appear to be less established in the literature, and inconsistencies in study methodology and sample characteristics limit the conclusions that can be drawn. Future research could therefore consider a consistency in approach when identifying risk and protective factors and the associated assessment measures, offence type, length of follow-up period and the interpretation of AUC values. Research which is conducted in this country would also further our understanding from a UK perspective.

An understanding of which risk and protective factors are associated with repeat offending in youths provides practitioners with the relevant knowledge to identify treatment needs for the development of intervention plans. To date, there have been no studies which have explored the influence of intervention on classifications of risk and subsequent offending. Future research could therefore consider using the individual subscales of a risk assessment measure to ascertain any differences pre-and post-treatment. There have also

been no studies which have explored how practitioners make decisions about allocating resources or which risk factors are prioritised and how they are sequenced in treatment. Research which considers the link between the findings of the risk measures and identified interventions, particularly interventions targeted at the community domain, is likely to increase our understanding of internal and external factors which contribute to continued involvement in crime.

There has been increased attention given to strengths and protective factors, as evidenced by the inclusion of these factors in more recent risk assessment tools (Borum, Bartel & Forth, 2002; Miccio-Fonseca, 2010; Print et al., 2007). However, despite the inclusion of positive factors in the 'Asset' profile and strengths in the YLS-CMI there appears to be no research which has explored the impact of protective factors on risk classification and subsequent offending. Future research could therefore consider the role of protective factors in desistance from offending.

Finally, there are few youth risk of general re-offending assessments available, which limits choice for practitioners and service managers when selecting appropriate measures of risk. It is therefore not surprising that when 'Asset' was introduced in England and Wales, Scotland followed suit and introduced the use of this tool. However, the critique element of this thesis highlighted the lack of research on the psychometric properties of this tool. It may therefore be beneficial to also carefully critique the YLS-CMI risk assessment measure to allow a full understanding of the advantages and disadvantages of using this tool before decisions are made in relation to which assessment measure should continue to be used Scotland.

# CONCLUSIONS

Youth crime can have devastating consequences for society for both the offender and the victims of crime. Consequently, the demand for youth and criminal justice services to identify individuals who are most likely to continue offending, and develop interventions and risk management strategies, is high. Fortunately, the majority of youths who engage in offending behaviour during one of the most critical periods of their development do not continue to offend in adulthood (Liberman, 2007; Moffit, 1993; Moffit et al., 2002). However, given the reliance on risk assessment instruments to inform statutory responses, it is imperative that the measures which are used to identify repeat offenders during childhood and adolescence are the most reliable and valid instruments available.

Our understanding of risk and protective factors for youth repeat offenders remains in its infancy. However, it is promising that over the past 15 years attempts have been made to shift from the deficit based model of 'punishment' whereby the sole focus was on risk and how to minimise that risk, to that of 'rehabilitation' and the need to recognise strengths and protective factors and how these factors mitigate the influence of risk. An understanding of the role that risk and protective factors have in repeat offending is fundamental for reducing recidivism and appropriate investments are needed to develop an adequate evidence base in the UK.

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# APPENDICES

## APPENDIX A

**Table A: Important dates in the development of the Kilbrandon Principles in Scotland**

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| **1937** | **The Children and Young Person (Scotland) Act:** This legislation provided the statutory basis for protecting children from cruelty and accorded parents the right to punish their child. |
| **1953** | **The European Convention on Human Rights (ECHR):** An international agreement comprising 18 articles relating to human rights. This was not incorporated into Scottish legislation which resulted in referrals to ECHR courts. |
| **1956** | **Police Juvenile Liaison Officers (JLOs)**: An initiative to divert young people involved in crime away from the court system. Those individuals who had not previously come to the attention of the police were given a 'warning' and/or were supervised by a JLO who acted as a be-friender and encouraged active participation in the community. |
| **1961** | **The Kilbrandon Committee:** The remit of this working party was to discuss ways in which Scot's law dealt with young people involved in offending behaviour. |
| **1964** | **Recommendations from the Kilbrandon Committee:** The working party proposed that the criminal age of responsibility of eight years be abandoned and that children should be removed from the adult prosecution system. |
| **1968** | **The Social Work Scotland Act:** This legislation promotes social welfare in Scotland, whereby the care and needs of children and young people are protected by restricting the prosecution of children for offences. Children's Panels were established to provide children's Hearings in the cases of children requiring compulsory measures of care and of those involved in offending behaviour. |
| **1971** | **Introduction of the Children's Hearings System**: The institutional framework for supporting children and their families was introduced on the 15th April 1971. Children's Hearings replaced the adult court system for the majority of individuals under the age of 16 who had committed offences and/or were in need of care and protection. |
| **1990** | **United Nations Convention on the Rights of the Child (UNCC):** The convention outlines 45 articles and came into force in the UK in 1992 .The convention stipulates that each child has the right to be healthy, treated fairly, heard, educated and has the right to a childhood. |
| **1995** | **The Children (Scotland) Act:** This legislation stipulates that every child under 16 years of age is regarded as a child; this increases to 18 years when the child is looked after and 19 years when the child suffers from a disability. This |

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| | legislation defines parental responsibilities and the role of Local Authorities in relation to looked after children. It highlights the need for professionals to intervene should any child's welfare be at risk. |
| **1998** | **The Human Rights Act:** This legislation legally enforces, in the United Kingdom, the articles outlined in the 1950 European Convention of Human Rights. |
| **1999** | **The establishment of the Scottish Government:** the government is the executive branch of the devolved government of Scotland. It is responsible for all issues in Scotland which are not specific to the United Kingdom Parliament at Westminster. |
| **1999** | **The Commission of an Advisory Group on Youth Crime:** The remit of this group was to assess the extent and effectiveness of options available to Children's Hearings and Courts in relation to persistent offenders, and to identify ways to improve the range and availability of resources for persistent offenders |
| **2000** | **The review and recommendations of the Youth Crime Advisory Group were published:** ***It's a Criminal Waste: Stop Youth Crime Now***. Recommendations included the need for a national framework to tackle youth crime, increased community-based services for persistent offenders and the expansion of diversions from prosecution and supervision schemes for 16 and 17 year olds. |
| **2000** | **The review of the Criminal Justice System in Scotland was published by the Scottish Consortium:** ***Rethinking Criminal Justice in Scotland*****:** Recommendations included the need for a greater understanding of what works at reducing re-offending, a need for restorative justice approaches and a review of the criminal age of responsibility. |
| **2002** | **Review of Scotland's Youth Justice System:** ***Dealing with Offending by Young People*****:** Recommendations of this review included increasing community offending behaviour programmes for young people, developing a set of national guidelines on effective programmes, developing a national system for accreditation of offending behaviour programmes, and local and national data collection and evaluation of offending behaviour programmes. |
| **2002** | **Improving the Effectiveness of the Youth Justice System Group: tackling youth crime and disorder:** The remit of this group was to develop a set of national standards for youth justice services with the aim of reducing persistent offending at a national level by the year 2006. |
| **2002** | **National Standards for Youth Justice Services:** Publication of the national standards for youth justice advisory groups and youth justice practitioners, to improve service delivery. The target group was young people in the CHS only. |

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| **2002** | **Introduction of Youth Offending Teams/Services:** Youth offending teams/ services were introduced following the agreement of the national standards. Each Local Authority held the responsibility for meeting the national standards in their area, identifying and commissioning appropriate services, and providing annual updates in relation to progress, characteristics of offenders and patterns of crime. |
| **2003/2004** | **Pilot youth courts for 16 and 17 year olds established in Hamilton Sheriff Court and Airdrie Sheriff Court:** Despite a positive evaluation of the pilot youth court systems, they have never been rolled out nationally and it is not clear why. |
| **2004** | **Anti-Social Behaviour (Scotland) Act:** this act provided local communities and agencies with new means to tackle anti-social behaviour including, Anti-Social Behaviour Contracts (ABCs), Anti-Social Behaviour Orders (ASBOS) and the power to include a Movement Restriction Curfew (MRC) as part of a Supervision Requirement. |
| **2004** | **Getting It Right For Every Child (GIRFEC):** The introduction of a national framework for all services (education, health, social work and police) working with young people to ensure a multi-agency approach with a single Child's Plan. GIRFEC guidance for practitioners was published by the Scottish Government in 2008. |
| **2004** | ***National Objectives and Standards for Social Work Services in the Criminal Justice System*:** The framework for social work services including targets and objectives and expectations of offenders subject to community orders. |
| **2004** | **NCH Action for Children published the recommendations from the *where is Kilbrandon now, inquiry:*** Recommendations included the need for independent reviews of the CHS, an increase in community resource to caring for looked after children as opposed to institutions and operational police decisions to be informed by the 'what works' literature. |
| **2005** | **Review of the Colyn Evans Case:** Publication of the serious incident review in relation to a 17 year old youth, who sexually assaulted and killed a 16 year old girl. Colyn was previously subject to a Supervision Order and was subject to Through Care and After Care support. Recommendations included the need for increased supervision and information sharing for youths' transition into the adult system, a national strategy to deal with sexually problematic or violent behaviour, and consistency in the assessment, intervention and management of 'high risk' youths across Scotland. |
| **2006** | **National Youth Justice Advisory Group (NYJAG):** Introduced to provide a co-ordinated approach to planning and monitoring the delivery of offender services in relation to the National Standards. |
| **2007** | **Introduction of Multi-Disciplinary Risk Management Meetings:** Multi-disciplinary risk management meetings were introduced for 'high risk' |

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| | offenders in order to identify which services were involved with the young person and develop a coherent risk management plan to ensure collaborative working. |
| **2007** | **Multi-Agency Public Protection Arrangements (MAPPA):** Introduced to provide consistency across Local Authorities and police forces in relation to the management of sexual offenders, including individuals under 18 being dealt within the Children's Hearings System. |
| **2007** | **Concordat and Single Outcome Agreements:** Following the change of Scottish government, policy in relation to youth justice services was directed by way of Single Outcome Agreements. This resulted in each of the 32 Local Authorities being given the responsibility for service development in their own area (dependent on need) and the termination of national standards and annual reporting. |
| **2008** | **Findings from the report of the Scottish Prison Commission were published: *Scotland's Choice*:** Recommendations indicated the need to separate 16-17 year olds from those individuals aged 18 plus in the prison establishment. That custodial sentences should only be considered after all other avenues have been exhausted and that reintegration back into society should be carefully planned and managed. |
| **2008** | ***Preventing Offending by Young People: A Framework for Action*:** Publication of the national strategy document which outlines ways in which local and national agencies should identify, access and manage youth offending behaviour, all of which are underpinned by the national multi-agency framework GIRFEC. Five key themes were identified: prevention, early and effective intervention, managing 'high risk' victims and community confidence in the systems that managed young offenders, and planning and performance improvement. |
| **2008** | ***These are our bairns: looked after children and young people, we can and must do better*:** Scottish government publication outlining guidelines for community planning partnerships on being a good corporate parent |
| **2008** | **Pre-Referral Screening:** A multi-agency (police, social work, health, education, youth offending service) initiative which provides an alternative to referring children and adolescents (under 16 years) who have committed offences and are not subject to a Supervision Requirement to the Children's Reporter by offering a direct link to community services. Now referred to as Early and Effective Intervention. |
| **2009** | **Sexual Offences (Scotland) Act:** Changes include: the definition of rape to include males as victims, consent defined as 'free agreement', new legislation relating to sexual offences via electronic communication (e.g., text, email) and the legislation extend its jurisdiction to sexual offences which are committed outside of the UK. |

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| **2010** | **The Criminal Justice and Licensing (Scotland) Act:** The age that a child could be prosecuted in an adult court was raised from eight years to 12. |
| **2010** | **The Youth Justice National Development Team (NDT):** A Scottish Government funded initiative which aims to provide support to practitioners and managers, nationally, in terms of youth justice practice. |
| **2010** | **Whole Systems Approach (WSA):** A pilot programme was introduced in Aberdeen whereby offenders aged between 16 and 18 years were diverted from statutory measures, prosecution and custody by early intervention and community support. Following its success this initiative is to be rolled out across the country. |
| **2011** | **Carloway Review:** Publication of the findings of the Scottish Criminal Law and Practice Review. Recommendations included that for the purpose of arrest, detention and questioning, a child is defined as anyone less than 18 years of age. The right to access to a parent, carer or responsible person, and have access to a lawyer (for those aged under 16). Those aged 16-17 years must be provided with access to a lawyer but can turn down the offer to have parent, carer or responsible person present. |
| **2011** | ***Publication of the Framework for Risk Assessment, Management and Evaluation (FRAME):*** "The aim of FRAME is to provide a consistent and shared framework that promotes defensible and ethical risk assessment and management practice that is proportionate to risk, legitimate to role, appropriate for the task in hand and is communicated meaningfully between agencies and practitioners". |
| **2011** | **The Children's Hearings (Scotland) Act**: This legislation was introduced to increase consistency in the Children's Hearings System across Scotland, and to ensure adherence with the European Convention of Human Rights. |
| **2012** | ***Preventing Offending by Young People: A Framework for Action 2008-20011, Next Steps*****:** Publication of the YJS progress report in relation to the five key themes identified in the initial 2008 framework report. Future service development recommendations include the rollout of the WSA and development of reintegration and transitions for looked-after and accommodated children, and for those individuals leaving the care of the local authority, including secure accommodation and custody. |
| **2013** | **Police Service of Scotland:** the previous eight force police structure merged in 2013, to become a single force responsible for policing Scotland. |

**Appendix B: Characteristics of youth risk assessment measures**

| Tool | Authors | Assessment Approach | Assessment Design | Age | Number of Items | Offence Type | Subscales |
|---|---|---|---|---|---|---|---|
| AIM-2 | Print et al., 2007 | SPJ | Designed to be used with males and females, with an emphasis on strengths and a holistic approach to assessment. Inclusion of a level of supervision matrix for intervention and supervision planning. | 12 – 18 | 75 items<br><br>Static concerns: 26 items<br><br>Dynamic concerns:25 items<br><br>Static strengths: 6<br><br>Dynamic strengths: 18 | Sexual | 1. Offence details<br>2. Development<br>3. Family<br>4. Environment |
| ASSET | Youth Justice Board (YJB; 2000). | Actuarial | Designed to assess the likelihood of general re-offending in males and females. | 12 – 17 | 16 items<br>4 static<br>12 dynamic | General | 1. Previous involvement in offending<br>2. Living arrangements<br>3. Family and personal relationships<br>4. Education, training and employment<br>5. Neighbourhood<br>6. Lifestyle<br>7. Substance use<br>8. Physical health |

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| | | | | | | | 9. Emotional and mental health<br>10. Perception of self and others<br>11. Thinking and behaviour<br>12. Attitudes to offending<br>13. Motivation to change |
| ERASOR | Worling & Curwen, (2001). | Checklist | Designed to assess sexual re-offence risk up to one year. A checklist which has been devised based on the adolescent sex offender literature. | 12 –18 | 25 items<br>9 static<br>16 dynamic | Sexual | 1. Sexual interests, attitudes and behaviours<br>2. Historical sexual assaults<br>3. Psychosocial functioning<br>4. Family/ environmental functioning<br>5. Treatment |
| JSOAP-II | Prentky & Righthand, (2003). | Checklist | Sexual re-offence risk for individuals who have been convicted or who have a history of sexually coercive behaviour. | 12 – 18 | 23 items | Sexual | 1. Static risk<br>2. Sexual drive/ pre-occupation<br>3. Impulsive/ anti-social behaviour<br>4. Dynamic risk<br>5. Intervention<br>6. Community stability/ adjustment |
| MEGA | Miccio-Fonseca, (2010). | Structured assessment tool | Designed to assess sexually abusive | 4 – 19 | 75 items | Sexual | 1. Risk Scale<br>2. Protective Scale<br>3. Estrangement Scale |

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| | | | behaviour in males and females using an ecological framework. | | | | 4. Persistent Sexual Deviancy Scale |
| PCL-YV | Forth, Kosson, & Hare (2003). | Checklist, diagnostic tool | Designed to diagnose psychopathy in males and females. | 12 – 21 | 20 items | n/a * | 1. Interpersonal<br>2. Affective<br>3. Lifestyle<br>4. Antisocial |
| SAVRY | Borum, Bartel, & Forth, (2003). | SPJ | Designed to assess risk of future violence in males and females. | 12 – 18 | 24 items | Violent | 1. Historical risk factors<br>2. Social/ contextual risk factors<br>3. Individual/ clinical risk factors<br>4. Protective factors |
| YLS-CMI | Hoge & Andrews, 2002 | Actuarial | Designed to assess the likelihood of general re-offending risk in males and females. Also, to aid professionals in the decision making process, case | 12–17 | 42 items | General | 1. Offence history<br>2. Family circumstances/ parenting<br>3. Education<br>4. Peer relations<br>5. Substance use<br>6. Leisure/ recreation<br>7. Personality/ behaviour<br>8. Attitudes/ orientation |

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| | | | management and level of supervision and treatment required. | | | | |

## APPENDIX C: INCLUSION AND EXCLUSION CRITERIA CHECKLIST

**Table C1: Inclusion Criteria**

| | | Criteria Met |
|---|---|---|
| **Population** | Male and female children and adolescents aged between eight and seventeen years. | |
| **Comparator** | Desistance. | |
| **Exposure** | Risk factor(s) and/or protective factor(s). | |
| **Outcome** | Recurrence: self-reported involvement in crime, police arrest, police charge, conviction, violation of court order. | |
| **Study Design** | Experimental, quasi-experimental, cohort, cross sectional, retrospective, prospective or longitudinal. | |
| **Language** | No restrictions imposed. | |

**Table C2: Exclusion Criteria**

| | | Criteria Met |
|---|---|---|
| **Population** | Studies that involved adult samples (e.g., aged 18 years or above) that are not longitudinal in nature.<br>Studies that included participants who were diagnosed with an Intellectual Disability.<br>Studies which specifically focused on juvenile sex offenders. | |

| | | |
|---|---|---|
| **Comparator** | Studies which had no comparator. | |
| **Exposure** | Studies which focused on risk factor research in relation to the onset of offending behaviour. | |
| **Outcome** | Studies with no outcome measure. | |
| **Study Design** | Studies which adopted a single case study design. | |
| **Language** | Studies which were unable to be translated into the English language. | |

## APPENDIX D: JUSTIFICATION OF EXCLUSION CRITERIA

Studies that included adult participants (18 years or above) were excluded from the current review as the research questions were concerned with factors that are associated with repeat offending in young offenders. Studies that included adults over the age of 18 years but where involvement in offending was present during adolescence and/or childhood, and where participants were assessed during this period and were not older than 25 years at the time of re-offence, were included in the review. This age range was selected as adolescence has been defined by the World Health Organisation (WHO; 2013) as the period between 11 and 18 years of age and emerging adulthood has been defined as the 19 to 25 age range.

Studies that focused specifically on adolescents with a diagnosis of Intellectual Disability (ID) or adolescent sex offenders were excluded from the current review due to the unique characteristics of these subgroups of offenders. Any attempts to understand which factors maintain offending behaviour in ID offenders requires consideration of the intellectual and adaptive and social functioning impairments inherent in this cohort of offenders (Murphy & Mason, 1999). Similarly, the developmental pathways of sexual offenders differs to that of general delinquency (Seto & Lalumiere, 2010), and sexual offences tend to have a lower base rate than other offences which can effect recidivism rates (Van Marl, Hempel & Buck, 2010). Each of these subgroups of adolescent offenders should therefore be considered separately and not as part of larger general offending cohorts.

A number of studies have examined the onset of offending behaviour and have identified risk factors prior to offending behaviour taking place, which are said to be causal (determine or cause offending behaviour) or predictive (increase the statistical likelihood)

of offending (West, 1969; 1982; West & Farrington, 1973; 1977). These studies were excluded from the current review in order to ascertain whether there are differences in risk and protective factors relating to the onset of offending and those identified in repeat offending.

Studies that did not include a comparator were excluded as the aim of this review is to identify risk and protective factors which distinguish repeat offenders from non-repeat offenders. Risk assessment predictive validity studies identify the ability of a measure to predict re-offending; typically a ROC analysis will be conducted on the total risk score, as the AUC reflects the likelihood that a randomly selected recidivist will have a higher score on the risk measure than a randomly selected non-recidivist. This does not indicate which factors are most likely to be present in repeat offenders compared with non-repeat offenders. Therefore, samples which did not include individual factor comparisons between these groups were not included in this review.

Studies adopting a single case study design were excluded from the review as the findings may not generalise to larger groups of offenders. Unpublished dissertation papers were excluded due to the difficulty in accessing these articles.

## APPENDIX E: QUALITY ASSESSMENT CRITICAL REVIEW FORM

Adapted from Critical Appraisal Skills Programme (CASP) and the Critical Review Form for quantitative studies (Law et al., 1998)

| Question<br>**Study Purpose Explicitly Stated** | Yes | Partially | No | Unknown | Comments |
|---|---|---|---|---|---|
| Were the aims of the study clearly stated?<br>Are the hypotheses clearly stated?<br>Is the relationship to previous research explicit? | | | | | |
| **Clear and Appropriate Study Design** | | | | | |
| Has the study design been comprehensively outlined?<br>Is the study design appropriate to the research question(s)?<br>Has the research question been adequately addressed?<br>Are the limitations of the study clearly stated? | | | | | |
| **Appropriate Sampling Selection and Consideration of Potential Biases** | | | | | |
| Was the sample selected in an un-biased manner?<br>Is the sample representative of the defined population?<br>Was a sufficient sample size used?<br><br>Is there a clear description of the participants used in the study (e.g., demographic and background factors: gender, age, SES, ethnicity)?<br>Have all confounding factors been identified?<br>Did the authors adjust for the effects of confounding variables in the study design/analysis? | | | | | |
| **Precise Measurement Detection and Consideration of Potential Biases** | | | | | |
| Has the definition of risk factor(s) been clearly outlined?<br>Were the assessment instruments (e.g., psychometrics, | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| questionnaires) used to identify risk factors appropriate?<br>Has the definition of protective factor(s) been clearly outlined?<br>Were the assessment instruments (e.g., psychometrics, questionnaires) used to identify protective factors appropriate?<br>Have the outcome measures for re-offending (e.g., self-report, violation of court order, police arrest, police charge, conviction) and desistance been clearly defined?<br>Were the outcome measures reliable?<br>Was the length of time prior to the outcome measure documented (e.g., 12 months, 2 years, 5 years)?<br>Has time at risk been accounted for in the study? | | | | | |
| **Appropriate Analyses and Clear Results** | | | | | |
| Were the analysis method(s) appropriate?<br>Were the analyses used correctly?<br>Are the results unbiased? | | | | | |
| **Clear Conclusions Supported by Findings** | | | | | |
| Were the conclusions clearly stated?<br>Are the conclusions supported by the results of the study? | | | | | |
| **Total Quality Assessment Score** | | | | | |
| | | | | | |

## APPENDIX F

**Data Extraction Sheet**

| | |
|---|---|
| **Article Title:** | |
| **Author:** | |
| **Year:** | |
| **Source:** | |
| **Volume/Pages:** | |
| **Country of Origin:** | |
| **How was the article identified:** | |

**Specific Information**

| ***Study Characteristics*** | |
|---|---|
| **Participants:** | |
| **Exposure:** | |
| **Outcome:** | |
| **Study Selection:** | |
| ***Study Eligibility*** | |
| **Target Population:** | |
| **Inclusion Criteria:** | |
| **Exclusion Criteria:** | |

## APPENDIX G

**Table G1: K-S scores for the 'Asset' total score and subscales**

| ASSET Scale | Sample | K-S | df | Sig |
|---|---|---|---|---|
| **Asset Total Score** | Non-repeat offender: | 0.14 | 35 | .001 |
| | Repeat offender: | 0.10 | 103 | .000 |
| **Living Arrangements** | Non-repeat offender: | 0.49 | 35 | .000 |
| | Repeat offender: | 0.41 | 103 | .000 |
| **Family and Personal Relationships** | Non-repeat offender: | 0.32 | 35 | .000 |
| | Repeat offender: | 0.22 | 103 | .000 |
| **Education, Training, Employment** | Non-repeat offender: | 0.50 | 35 | .000 |
| | Repeat offender: | 0.27 | 103 | .000 |
| **Neighbourhood** | Non-repeat offender: | 0.48 | 35 | .000 |
| | Repeat offender: | 0.23 | 103 | .000 |
| **Lifestyle** | Non-repeat offender: | 0.31 | 35 | .000 |
| | Repeat offender: | 0.19 | 103 | .000 |
| **Substance Use** | Non-repeat offender: | 0.47 | 35 | .000 |
| | Repeat offender: | 0.29 | 103 | .000 |
| **Physical Health** | Non-repeat offender: | 0.53 | 35 | .000 |
| | Repeat offender: | 0.53 | 103 | .000 |
| **Emotional and Mental Health** | Non-repeat offender: | 0.48 | 35 | .000 |
| | Repeat offender: | 0.39 | 103 | .000 |
| **Perception of Self and Others** | Non-repeat offender: | 0.42 | 35 | .000 |
| | Repeat offender: | 0.30 | 103 | .000 |
| **Thinking and Behaviour** | Non-repeat offender: | 0.21 | 35 | .000 |
| | Repeat offender: | 0.22 | 103 | .000 |
| **Attitudes Towards Offending** | Non-repeat offender: | 0.34 | 35 | .000 |
| | Repeat offender: | 0.19 | 103 | .000 |

**Table G2: K-S scores for the YLS-CMI subscales**

| YLS-CMI Scale | Sample | K-S | df | Sig |
|---|---|---|---|---|
| **Total Score** | Non-repeat offender: | 0.13 | 35 | .000 |
| | Repeat offender: | 0.07 | 103 | .000 |
| **Offence History** | Non-repeat offender: | 0.36 | 35 | .000 |
| | Repeat offender: | 0.27 | 103 | .000 |
| **Family** | Non-repeat offender: | 0.24 | 35 | .000 |
| | Repeat offender: | 0.16 | 103 | .000 |
| **Education** | Non-repeat offender: | 0.24 | 35 | .000 |
| | Repeat offender: | 0.16 | 103 | .000 |
| **Peers** | Non-repeat offender: | 0.36 | 35 | .000 |
| | Repeat offender: | 0.26 | 103 | .000 |
| **Substance Abuse** | Non-repeat offender: | 0.23 | 35 | .000 |
| | Repeat offender: | 0.20 | 103 | .000 |
| **Leisure/ Recreation** | Non-repeat offender: | 0.32 | 35 | .000 |
| | Repeat offender: | 0.41 | 103 | .000 |
| **Personality** | Non-repeat offender: | 0.24 | 35 | .000 |
| | Repeat offender: | 0.17 | 103 | .000 |
| **Attitudes/ Orientation** | Non-repeat offender: | 0.50 | 35 | .000 |
| | Repeat offender: | 0.26 | 103 | .000 |

## APPENDIX H

**Table H1: The Levene's test of homogeneity of variance for the 'Asset' total score and subscales**

| ASSET Scale | F | df | Sig |
|---|---|---|---|
| **Asset Total Score** | 11.05 | 136 | 0.001* |
| **Living Arrangements** | 5.39 | 136 | 0.022* |
| **Family and Personal Relationships** | 0.02 | 136 | 0.880 |
| **Education, Training, Employment** | 6.34 | 136 | 0.013* |
| **Neighbourhood** | 39.64 | 136 | 0.000* |
| **Lifestyle** | 5.23 | 136 | 0.024* |
| **Substance Use** | 24.89 | 136 | 0.000* |
| **Physical Health** | 15.07 | 136 | 0.000* |
| **Emotional and Mental Health** | 6.23 | 136 | 0.025* |
| **Perception of Self and Others** | 5.08 | 136 | 0.026* |
| **Thinking and Behaviour** | 0.25 | 136 | 0.616 |
| **Attitudes Towards Offending** | 2.67 | 136 | 0.105 |
| **Motivation to Change** | 4.32 | 136 | 0.039* |

** Variances are significantly different between groups*

**Table H2: The Levene's test of homogeneity of variance for the YLS-CMI total score and subscales**

| YLS-CMI Scale | F | df | Sig |
|---|---|---|---|
| **Total Score** | 7.79 | 136 | 0.006* |
| **Offence History** | 3.19 | 136 | 0.076 |
| **Family** | 14.48 | 136 | 0.000* |
| **Education** | 10.58 | 136 | 0.001* |
| **Peers** | 4.92 | 136 | 0.028* |
| **Substance Abuse** | 0.17 | 136 | 0.679 |
| **Leisure/ Recreation** | 0.59 | 136 | 0.017* |
| **Personality/Behaviour** | 0.10 | 136 | 0.751 |
| **Attitudes/ Orientation** | 37.24 | 136 | 0.000* |

**Variances are significantly different between groups*