

Rape Perpetration: A Review

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Executive Summary

Rape can have an enduring impact on the lives, and health of victims, their families and communities. Both men and women perpetrate sexual violence (Sikweyiya Y and Jewkes 2009), however the majority of sexual offences are committed by men (Steffensmeier D, Zhong H et al. 2006). Research on what drives perpetration of rape and other forms of sexual violence is needed to inform prevention programmes – for this it is necessary to study men. This review summarises research on risk factors for sexual violence perpetration, the methodologies used to identify these risk factors and discusses the implications of this research for rape prevention strategies. Most of the literature reviewed focused on perpetration of sexual violence by men against women and girls. For the purposes of this review, risk factors are factors that increase the risk (likelihood) of a person perpetrating sexual violence.

Review methodology

The review provides an overview of current discussions in the research literature around the main factors associated with rape perpetration, it does not follow the approach of systematic review, although the authors sought to identify all published papers on rape perpetration. In identifying this literature an internet search was conducted for published papers or reports with empirical research on rape perpetration from 1990 onwards. In so doing, 3,325 abstracts were identified; yielding 293 papers of interest for the study. The review includes qualitative and quantitative studies along with studies that discussed the origins, risk factors or frameworks for thinking about perpetration. Only English language databases were searched.

Key findings – an overview

For many years theoretical understandings of rape perpetration have largely been based on clinical observations, and research with North American college students and convicted rapists. Yet in the last decade there has emerged substantial research from Africa, including the first large longitudinal study, important systematic reviews of the field and research in biomedicine. On the one hand these constitute substantial advances, but overall empirically based understandings of rape perpetration are still at a fairly early stage.

Notwithstanding the limitations of the evidence base, developments over the last decade suggest that there is a need to move beyond some of the models that have dominated the field, including the four factor model of paedophilia of Finkelhor and Araji (Finkelhor D and Araji 1986) and the Confluence Model (Malamuth, Sockloskie et al. 1991; Malamuth, Linz et al. 1995; Malamuth 2003). Other theoretical perspectives need to be embraced including the contribution of genetics, gender theory and developmental psychopathology. This paper stops short of proposing an alternative model, out of a desire to emphasise the complexity and interrelatedness of risk factors for rape. However, we do conclude that in addition to genetic influences there is strong evidence that five groups of potentially amenable risk factors are important in rape perpetration: adverse childhood exposures; attachment and personality disorders; social learning and delinquency; gender inequitable masculinities; and substance abuse and firearms.

There is considerable interconnectedness between these groups of factors and indeed between them and other factors where direct impact on rape perpetration has yet to be demonstrated. It is important to note that not all people exposed to these factors will engage in the act being studied, and not everyone doing the latter will have the risk factor. For example, not all sex offenders have been victimised in childhood, and the majority of those who have been victimised as a child do not go on to become offenders. The question about what makes a person who has a risk factor vulnerable to become sexually coercive is of great importance in understanding rape prevention.

Implications for rape prevention: comprehensive intervention strategies

Interventions to prevent rape perpetration are needed for different age groups. Given that some risk factors for raping start from birth, it is essential that programmes to prevent rape perpetration include interventions directed at the first five years of life. The goal of these interventions is to strengthen care giver child attachment, reduce use of physical punishment, and enhance parenting. Parenting interventions must address gender issues given the importance of witnessing intimate partner violence (IPV) and the social learning component of gender-based violence (GBV). Effective interventions need to be implemented with adaptation for new settings where appropriate.

Delinquency is also an important risk factor in settings where rape perpetration is common in dating relationships or against non-partners. In these circumstances many men who will ever rape do so for the first time as teenagers. Rape perpetration interventions are needed to target boys before they rape and so must span all of the teenage years and focus on high risk youth, as well as youth who are not part of gangs or identified as delinquent. There is an increasing move to include gender based violence prevention in school curriculum and this seems a very valuable way of reaching a wide range of young men and boys. In recognition of the importance of challenging the 'taken for grantedness' of gender inequitable masculinities by women, it is important that girls and young women are also included in these programmes.

The contribution of interventions to reduce alcohol consumption, drug use and small gun ownership to rape prevention is uncertain. For alcohol and drugs the chief activities of risk are binge drinking and social drug use, rather than addiction. It seems likely that interventions that are of value for rape perpetration prevention will address the use of alcohol and drugs in a gendered, frequently peer, context in which sexual coercion may be encouraged and supported. Gun ownership similarly does not cause rape, but reducing societal levels of small firearm ownership reduces the numbers available for use in any form of crime.

High quality services for victims of rape although not the focus of this review are very important in rape prevention because they send a message to society that rape is serious and will not be tolerated. Similarly, part of the environmental frame of rape perpetration at a societal level is a country's laws and policies. Strong legislation, with good definitions of crimes, is an essential part of prevention. Overall we must strengthen the legal framework of gender equity in all areas of social life, including transforming gender dynamics in daily interactions, for example, through implementing effective policies in workplaces and by transforming the many aspects of education to promote gender equity in schools and school curriculum. In many settings these require legislation backed by systems-wide interventions.

Conclusions and recommendations for future research

Rape perpetration is preventable. This review suggests that the predominant underlying factors for rape perpetration are environmental, and central among them are gender attitudes and childhood experiences of violence. Although there is a genetic contribution that cannot be changed, it is possible to change the environmental exposures that influence expression of the genes involved. All of the groups of risk factors identified as underlying rape perpetration are potentially preventable. It is essential that policies and interventions for rape prevention include both a thorough understanding of risk factors for rape perpetration and a theoretical grounding for interventions and strategies. Understanding masculinities is of vital importance for rape prevention as rape is predominantly a practice of men. The implications of this review are that complex interventions are needed that work at multiple levels, particularly addressing environmental and structural factors as well as those working on individual level factors, such as gender attitudes. As a critically important structural factor, gender issues need to be addressed in a cross-cutting manner through rape prevention interventions.

To further strengthen the field of rape prevention, the follow key areas for research are proposed:

- **Broadening the geographical base of knowledge:** There is a great need for research on rape perpetration from a much wider range of countries and particularly low and middle income countries.
- **Deepening understanding of risk factors for perpetration of different types of rape:** There is a need for research from a range of settings that is able to compare risk factors for intimate partner rape, non-partner rape, gang rape and child rape and sexual abuse
- **Stronger research designs:** There is a need for research to have stronger designs so that there is sufficient power to distinguish rape and other sexually coercive practices, comparison groups who have never been sexually violent (or never raped), valid measures of sexual violence, a comprehensive assessment of risk factors and confounders and more longitudinal research.
- **Multi-disciplinary research:** New generations of research are needed that combine perspectives from multiple disciplines, including developmental psychopathology, psychology, criminology, epidemiology, gender studies, genetics and neuroimaging.
- **Intervention research:** Mixed methods intervention research is needed both to develop interventions that are effective in reducing sexual violence perpetration. They can also deepen our understanding of sexual violence perpetration through examining which men change, what are the processes of change, and are barriers to change in the face of different types of intervention.
- **Understanding patterns of susceptibility:** Research is needed to understand why some men who have particular risk factors become perpetrators and others do not.

1. Introduction

Rape has an enduring impact on the lives, health and happiness of victims. The WHO multi-country study on women's health and domestic violence found that 10 – 27% of women and girls have reported experiencing sexual abuse in their lifetime (Garcia-Moreno, Hansen et al. 2005). Men and boys are also victims. Whilst sexual violence can take many forms, the most widespread severe form is contact sexual violence, and particularly rape with oral, anal or vaginal penetration.

For many years the predominant response to rape has centred on medical and legal services for victim/survivors and research on rape more commonly interviewed women victim/survivors or women about victimisation. This work is very important, however rape prevention is the central challenge. A review published by the World Health Organisation on factors associated with being a female victim identified these as being young, poverty, physical disability, mental vulnerability, substance abuse, prior victimisation and coming from a dysfunctional home (World Health Organisation/London School of Hygiene and Tropical Medicine 2010). Although these are markers of vulnerability, they provide very little information on what drives rape perpetration. For this, it is necessary to study men.

Evidence-based rape prevention strategies need to be based on an understanding of men who commit rape and the risk factors for and drivers of perpetration. This paper reviews published research on risk factors for sexual violence perpetration and discusses the implications of this empirical research for our understanding of strategies for rape prevention as well as future research directions.

1.1. Prevalence of rape globally

The global literature on the prevalence of rape perpetration is rather fragmented as most countries lack population prevalence data on perpetration of sexual violence against partners and non-partners, including children.

Estimates from high income countries raise the possibility that perpetration of rape is lower than in low and middle income countries, but there is insufficient data to draw valid conclusions about this. In a small population-based study Abbey and colleagues found 24.5% of American men reporting an act that would meet legal definitions of rape or attempted rape (Abbey A, Parkhill MR et al. 2006). On the other hand a national survey of men in college in the United States found 7.7% reported having engaged in behaviour that met the legal definition of rape or attempted rape (Koss, Gidycz et al. 1987) and in a large national survey of adolescents 5.6% had sexually coerced a romantic partner (Casey, Beadnell et al. 2009). These are very similar to the prevalence of rape and attempted rape (5.2%) disclosed by Spanish college men (Fuentes Martin, Ramos Vergeles et al. 2005). Further it has been supported by the findings of more recent research with men in college (White and Smith 2004).

Research from some middle income countries points to a higher prevalence of completed rape. Substantial amount of rape research has been conducted in South Africa, which shows a much higher prevalence of sexual intimate partner violence. For example, a large community-based study in South Africa found 28% of adult men had perpetrated a completed act of rape (Jewkes, Sikweyiya et al. 2011) and in another it was 37% (Machisa, Jewkes et al. 2011). Both of these were higher than the prevalence found among adolescent men (Jewkes, Dunkle et al. 2006), underscoring the substantial amount of perpetration that occurs for the first time post-adolescence, notwithstanding the fact that in both the USA and South Africa about 75% of men who rape do so for the first time as teenagers (White and Smith 2004; Jewkes, Sikweyiya et al. 2011).

South Africa is not unique. The IMAGES study found that 24% of all men (and 36% of married men) in India and 9% in Chile and Rwanda disclosed having ever been sexually violent (Barker G, Contreras JM et al. 2011). In Bangladesh 10% of urban men, interviewed in Dhaka, and 15% of rural men had ever forced their partners into sex (Naved R T, Huque H et al. 2011). In this setting, as in India, almost all sexual violence occurred with marriage (Barker G, Contreras JM et al. 2011; Change Project 2011). Understanding the drivers and the contexts of men's raping behaviour is important for informing prevention efforts.

Sexual violence against boys is highly prevalent in many countries, for example the IMAGES study surveys, found rates of child sexual abuse against boys ranged, for example, from between 3% in Croatia, 8% in Chile, to 17% in Rwanda and 21% in India (Contreras, Heilman et al. 2012). Population-based research with adult men in South Africa found that 9.6% of men reported male-on-male sexual violence victimization and 3.0% reported perpetration; 3.3% had been raped by another man, and 1.2% perpetrated male-on-male rape. MSM were over four times more likely than non-MSM to disclose sexual violence victimization (34.4% versus 8.1%), and over nine times more likely to have been raped (21.3% versus 2.3%) (Dunkle KL, Jewkes R et al. under review). A similar rate of 4% experiencing forced sex within their intimate relationships was reported by MSM in a study undertaken in the US (Stephenson, Khosropour et al. 2010).

These studies have all been conducted in countries during peace time. Rape is used widely as a weapon of war and there has been a little research on the specific contexts of rape perpetration during war (Rowley E, Garcia-Moreno C et al. 2012). Discussing this literature and directions for research and intervention to prevent rape in conflict is beyond the scope of the review.

2. Methods and methodologies

2.1. Methods of the review

The review provides an overview of current discussions in the research literature around the main factors associated with rape perpetration, it does not follow the approach of systematic review, although the authors sought to identify all published papers on rape perpetration. The decision not to do a systematic review reflected the weakness of the literature, notably the relative lack of population-based research, but also a desire to include perspectives from qualitative research and relevant work on psychopathy and anti-social behaviour that did not focus just on rape. It also took into account the fact that fairly recent systematic reviews of some areas exist. Two notable papers include Whitaker and colleagues (2008) and Seto and Lalumiere (2010). Whitaker et al reviewed 89 studies published between 1990 and April 2003 on child sexual abuse perpetration. Four of the papers had cross-sectional studies. He compared findings related to risk factors among those having perpetrated a sexual offence against children, with those having perpetrated an offence against adults, non-sex offenders and a group who had no history of sexual behaviour problems or engagement in crime (Whitaker DJ, Le B et al. 2008). Seto and Lalumiere undertook a systematic review of adolescent sex offenders (Seto and Lalumiere 2010).

In identifying this literature an internet literature search was conducted for published papers or reports with empirical research on rape perpetration from 1990 onwards. The following search terms were used: rape; sexual violence; child sexual abuse; sexual assault; sexual aggression; sexual coercion. These terms were then used alongside: perpetration; offender; etiology; aetiology; risk factors; aggression. In addition the following terms were used: paedophile and pedophile. Both qualitative and quantitative studies were included in the search along with studies that discussed the origins, risk factors or frameworks for thinking about perpetration. Studies that looked at men as perpetrators were also included. Only English language databases were searched. Excluded from the search were papers on homicide, interventions with offenders, domestic violence (excluding sexual IPV), prevention trials, research with victims only, research just interviewing women and studies on the ethics of working with offenders. Also excluded is research on sexual violence perpetration and risk factors in conflict and emergency settings.

Both men and women perpetrate sexual violence, however the majority of sexual offences are committed by men (Steffensmeier D, Zhong H et al. 2006; Sikweyiya Y and Jewkes 2009; Deering 2010). Most papers focus on men as perpetrators rather than including women. Due to the small literature on female perpetrators, and still poorly understood nature of their coercion of men, this review focuses on men as perpetrators.

Where it was appropriate, the review focused on papers that had suitable comparisons groups, ideally non sexual offenders for offender studies, and for community studies, the preferred comparison group was other community men. 3,325 abstracts were identified, yielding 293 papers of interest for the study. Among these were four systematic reviews (Whitaker DJ, Le B et al. 2008; Maniglio 2009; Maniglio 2010; Seto and Lalumiere 2010).

2.2. Methods used in the studies reviewed

The evidence base reviewed for this report is highly fragmented. Public health measures to prevent rape perpetration among the general population need to be based on population research on risk factors, yet there have been few published studies of these in the general population. There is only one large population-based study of risk factors for rape perpetration (n=1738), and this is from South Africa (Jewkes R, Sikweyiya Y et al. 2011). Other work is in

progress, especially in the Asia Pacific Region. North American population-based research is relatively recent and the studies have been very small. These have been conducted in Canada (n=195) and the United States (n=163) (Senn CY, Desmarais S et al. 2000; Abbey A, Parkhill MR et al. 2006). There is one population-based study of perpetration from Botswana and Swaziland (Tsai AC, Leiter K et al. 2011).

Until methodological developments showed that rape could be studied in population-based samples of men, the strongest research drew on randomly selected samples from other settings. For example, a study in South Africa interviewed men who were randomly selected from Cape Town public sector workplaces (Abrahams, Jewkes et al. 2004). Many studies of rape perpetration have been conducted in North America among college and school students. The strongest of these include national samples of college men (Koss, Gidycz et al. 1987) and a random sample of 33,980 students drawn from schools in Minnesota in Grades 9 and 12 (Borowsky IW, Hogan M et al. 1997). There have also been two large surveys of American naval recruits, focusing predominantly on prevalence (Merrill LL, Thomsen CJ et al. 2001; Stander VA, Merrill LL et al. 2008). There are also many papers studying sex offenders identified through the criminal justice system.

In understanding causality, longitudinal research is essential as it is important to have confidence in the temporal sequence of outcome and risk factor exposure. Very little longitudinal research has been done. White and Smith conducted a longitudinal study of college men, following 851 men over a four year period. Unfortunately the study experienced substantial attrition (losing 78%) and so the findings are liable to bias (White JW and Smith 2009). Loh and Gidycz conducted a longitudinal study of men in college but only had three months of follow up, during which just 9 men raped (Loh C and Gidycz 2006). The study therefore lacked power for risk factor analysis. There is one study from South Africa reporting a longitudinal study of rape and attempted rape perpetration with two years follow up among 1147 young adult men (loss to follow up 16%) (Jewkes, Nduna et al. 2012).

In a reference to antisocial behaviour research, Moffat (2005) suggests that this field is stuck in the risk factor stage. Research on rape perpetration is at a similar stage. We need to move beyond risk factors and correlations and design research studies that help us to understand causality. In sum, therefore, to develop effective prevention models for sexual aggression we require cross-sectional and longitudinal studies to measure both genetic predisposition and environmental factors and how these interact on risk of perpetration of sexual violence (Knight and Sims-Knight 2009).

2.3. Terms, definitions and measures

The research literature on sex offending or sexual violence perpetration is heterogeneous in respect of the act being studied. There seem to be three groups of studies: 1) Studies with incarcerated sex offenders; 2) studies with naval recruits and college men, and; 3) a small number of community based studies. Very few of the papers on incarcerated sex offenders provide information on their sex offences; however these do often include both contact and non-contact sexual offences, especially when children are victims. Whilst it is possible to assume that men are more likely to be imprisoned for rape and violent sexual assaults, and it is well-recognised that imprisonment is an uncommon punishment even for men who rape (Vetten, Jewkes R et al. 2008), sex offender populations do not only include rapists. This is a particular problem in the child sex offender literature, as contact sexual abuse is much less common than non-contact sexual abuse (such as flashing) and or not penetrative contact abuse (Maniglio 2010).

There is also a body of research from North America that has interviewed men in college, Naval recruits and a small number of community based studies. These authors almost always use the Sexual Experiences Survey (Koss MP and Oros 1982) to assess sexual aggression. This is a self-administered instrument designed for use by adults and adolescents. It has a series of questions that ask about sexual acts on a gradation of severity from forced sexual contact (without penetration), to verbally coercive strategies to obtain sex, and finally the use of physical force or intoxicants to obtain oral, anal, or vaginal sex (attempted or completed rape). When authors report their findings they commonly report the prevalence of sexual coercion overall, and many report the prevalence forcing physical contact, using verbally coercive strategies and attempting or completing rape. However, in assessing correlates of perpetration they rarely distinguish between these groups. Thus the question as to whether men who rape differ from men who have used other forms of coercion is left unanswered.

Where researchers have explored this difference the studies have important limitations, and most have very small sub-groups of men. One study with a population of incarcerated offenders had a much larger sample than most [DeGue S, DiLillo D et al. 2010]. This found men who had raped differed from those who coerced sex through verbal pressure or manipulation only in their degree of hostility towards women. This difference however might be explained by legal processes related to incarceration for sex offences, which could have resulted in accentuating hostility as part of blame externalisation (DeGue S, DiLillo D et al. 2010). Given that the majority of men who disclose sexual aggression in North American non-offender studies have not raped or attempted rape (Koss and Dinero 1988), it is very important to understand whether the findings from this research are similar to those that arise from research that includes large samples of men who have completed or attempted rape.

Studies from low and middle income countries have more commonly focused on rape perpetration where sex was physically forced or forced when women were intoxicated (Barker G, Contreras JM et al. 2011; Jewkes R, Sikweyiya Y et al. 2011). This outcome is quite different from studies that mostly rely on the Sexual Experiences Survey (SES).

2.3.1. Distinguishing offender groups based on victim age

Sexual offenders against children, child abusers, and child molesters are all labels used to refer to perpetrators of a sexual offence committed against a child under 18 years (Whitaker DJ, Le B et al. 2008). This definition applies irrespective of the age of the offender. Thus it will include instances where there is a substantial age difference between the offender and the child, for example where offenders against children are elderly, as well as acts committed by peers. There are weaknesses in this approach as it may be argued that acts of sexual abuse where the age difference between perpetrator and victim is great versus acts where the age difference is similar are plausibly different. Furthermore these categorisations fail to distinguish men who offend against children of different ages. It is arguably somewhat arbitrary to suggest there may be substantial differences in men who offend against 17 and 18 year olds, whereas it seems quite likely that the context and motivations for sexual abuse of a 1 or 2 year old child would differ from those of a 17 year old. These categories also fail to separate men who offend against both children and adults from those who solely have sexual relations with children. In future large enough studies are needed to be able to examine whether a failure to address these weaknesses in definition of child offenders are masking important differences in child offender sub-groups.

To date there has been considerable interest in whether and how men who commit sexual offences against children differ from those offending against adults and non-offenders. A systematic review did not establish a difference between men who have sexually offended against children and adults, except in the area of externalising behaviour which was lower among those offending against children (Whitaker DJ, Le B et al. 2008). This finding has important methodological implications as it gives greater confidence to those analyses that have not established the age of the victim and distinguished offenders on this basis.

2.3.2. Research on incarcerated populations

There has been a considerable body of research on incarcerated sex offenders, for reasons of convenience and cost. This research raises the question of what the most appropriate comparison group is for this research. There is widespread agreement that it is important to compare incarcerated sex offenders with incarcerated non-sex offenders. This view on comparison groups accords with mainstream epidemiological theory on case control study design (Rothman KJ and Greenland 1998). Men who are incarcerated differ in many ways from the general non-incarcerated population and so if this comparison is not made, attributes of difference may be those explaining incarceration in general and not incarceration for sex offending. Thus findings from studies that do not use an incarcerated comparison group need to be treated with caution.

It does mean, however, that offender research often does not provide information on how sex offenders differ from non-offenders. Further there may be bias in this research if the non-sex offender comparison group is selected based on the offences for which they are currently serving a sentence, which is very common. Only research that has independently assesses the sexual violence history of the control offender population can be considered to be relatively free of bias. This is rather uncommon.

2.3.3. Age and sex offending

There is a tremendous emphasis in rape research on younger offenders or samples of men in college in the United States. In the research literature, sexual offenders who are aged under 18 years are generally referred to as adolescent sexual offenders, juvenile sexual offenders or youth sexual offenders with the terms used interchangeably (Seto and Lalumiere 2010). The focus on young men has some logic as men are more likely to rape when younger than older. Further there is evidence from community-based research in South Africa and US college samples that most men who will ever rape, or sexually coerce, do so for the first time as adolescents (White and Smith 2004; Jewkes R, Sikweyiya Y et al. 2011).

However the elderly offender population is relatively large and it is possible that men who start offending later in life or continue offending for a longer period of their lives differ from other men. In the United Kingdom half of male sentenced prisoners over age 59 are sex offenders and 15% of referrals to community treatment in England are elderly sex offenders (Fazel S, Hope T et al. 2002). Only one study found looked specifically at elderly offenders [Fazel S, Hope T et al. 2002].

2.3.4. Male or female victims

Most of the literature on sex offences describes men who have raped women or girls and community-based studies predominantly assess sexual violence directed at women and girls. However, many articles on sex offenders do not specify whether the offence was against women/girls or men/boys. Research so far suggests that this may not be a critical limitation. Research in South Africa that asked about perpetration against both sexes found that one in

ten men who have raped women or girls had also raped a man or boy (Jewkes R, Sikweyiya Y et al. 2011). Those men who rape both men and women were particularly aggressive. A very small study of US incarcerated offenders found no difference on preliminary investigation of social, demographic and personality measures between those who abused male children and those abusing females (Kalichman 1991).

2.3.5. Serial rape and recidivism

There is discussion of serial rape, recidivism and factors associated with it in the literature. Most of this literature is based on research with offenders. Serial rapists have usually been charged with multiple offences, whilst where recidivism is defined as sexual re-offence in adolescence or adulthood measured by subsequent arrests, charges or conviction. In the majority of studies rates of recidivism of under 10-20% are reported (Langstrom 2002; Parks and Bard 2006). This approach and the findings yielded contrast starkly with the rate of repeat offence found in college of community samples, which is closer to 50% (White and Smith 2004; Jewkes R, Sikweyiya Y et al. 2011). This suggests that serial raping is close to normative and that the standard measures of recidivism may be a poor reflection of true recidivism rates. It seems likely that the small proportion of men who rape who ever experience legal sanctions and the impact of being apprehended on strengthening men's determination not to be apprehended again, may influence measured recidivism.

2.3.6. Multiple perpetrator versus single perpetrator rape

Another area that has been under-explored in rape literature is the question of whether men who engage in multiple perpetrator rape differ from those who engage in single perpetrator rape. Most studies have mixed samples and do not distinguish in risk factor analyses, between men who have engaged in multiple perpetrator rape versus those perpetrating single perpetrator rape. Nor do they consider whether leaders and followers in multiple perpetrator rape may differ.

3. Factors associated with rape perpetration

The following section discusses factors that have been proposed by researchers as potentially causing men to perpetrate rape. For some, there is strong evidence that they are part of causal pathways for sexual violence perpetration. For others, the evidence is on balance suggestive that they are risk factors. Other factors which are discussed have been proposed as causative and subject to research, but evidence is inconclusive, or evidence suggests that they are not risk factors. In this section we consider risk factors to be those that are more commonly found among men who have been sexually violent and are plausibly causal. Table 1 summarises the main findings presented in this section.

The factors discussed include factors operating at individual, family, community, and societal levels and span biological factors such as genotype, androgen levels and neurological deficits; childhood experiences and exposure to violence; poverty and social disadvantage; mental health and IQ; substance abuse and use; firearms; social groups and peers; emphasised heterosexuality; gender inequity: attitudes and relationships, as well as sexuality: arousal and fantasy factors.

3.1. Biology

3.1.1. Role of genotype

There has been very little research on genes and the role they may play in sexual coercion in humans (Johansson A, Santtila P et al. 2008). There is some evidence that genes may be important in the development of aggression and that there may be important gene x environment interactions, particularly with the expression of aggression in genetically susceptible individuals after exposure to a harsh environment, or else a person with anti-social tendencies might be more likely to be drawn to situations and settings where anti-social behaviour is more common or more possible (Johansson A, Santtila P et al. 2008). However the evidence is still relatively limited, and predominantly focused on non-sexual aggression. There seems to be broad agreement that there is a heritable element to aggression, but less agreement and evidence on the genes involved and nature of gene environment interactions.

In the basic medical sciences, research is often conducted on animals, with possible inferences drawn for humans. Mice studies do suggest links between genetics and aggression. There are genetic variants of mice that are very aggressive. Further, these mice are also sexually aggressive, suggesting that both general aggression and sexual aggression have a heritable element (Canastar A and Maxson 2003).

In humans, there is one study from Finland that initially contacted about 5000 male twins, but was able to use data for its analysis from 91 monozygotic (identical) twins and 110 dizygotic (non-identical) twins. It found that those who were genetically identical, were more likely to both have been sexually coercive, whereas the non-identical twins were not. The same, but stronger findings pertained for psychopathy. The authors concluded that 28% of sexual coercion was explained by genetic factors and 72% by environmental factors. They commented that this proportion was low in comparison to some other social behaviours (such as alcoholism). The authors concluded that, as in mice, the findings point towards a general heritable tendency to anti-social behaviour, of which sexual coercion is one form. The genes involved were not described (Johansson A, Santtila P et al. 2008).

One gene that has been identified as impacting on a heritable tendency for anti-social behaviour is the monoamine oxidase A (MAOA) gene. This encodes the MAOA enzyme, which metabolises neurotransmitters such as norepinephrine (NE), serotonin (5-HT) and dopamine (DA) and thus inactivates them (Shih JC, Chen M et al. 1999). It is very rare for the gene encoding MAOA to have been deleted, although this is found associated with heritable aggression in humans and mice (Rowe 2001). More common are functional polymorphisms

Table 1: Summary of the review of possible rape risk factors

Possible risk factor	Evidence	Good research, inconsistent findings	Currently not supported by research	Not important at a population level
Key: +++ consistent ++ some + one good study				
Biological factors				
Genetic	+			
Androgens			+	
Neurological deficits				+
Childhood exposures				
Sexual abuse	+++			
Physical punishment		+		
Emotional abuse / neglect			+	
Parental separation, absence & out of home placements			+	
Parental IPV	+++			
Poverty & social disadvantage		+		
Mental health and personality				
Attachment disorders: child and adult	+++			
Psychological problems		+		
Low self-esteem		+		
Low empathy		+		
Psychopathic traits	+++			
Personality disorders in sex offender against children	+++			
Intelligence			+	
Social learning and delinquency				
Social learning	++			
Delinquent behaviour	+++			
Gender inequitable masculinities				
Gender inequitable attitudes	+++			
Physical intimate partner violence	+++			
Sexual entitlement	+++			
Early sexual initiation	+++			
Multiple sexual partners	+++			
Transactional sex	+++			
Sexual fantasies				
Deviant sexual fantasies			+	
Deviant sexual arousal			+	
Pornography			+	
Substance use and firearms				
Alcohol	+++			
Drugs	+++			
Firearms	+			

that result in lower activity of the MAOA enzyme (Caspi A, McClay J et al. 2002). A prospective study conducted in New Zealand has shown that child maltreatment has a much stronger association with subsequent anti-social behaviour in males with low MAOA activity, than those with higher activity (Caspi A, McClay J et al. 2002). In this study, 11% of violent convictions were attributable to the gene. Anti-social behaviour was assessed with four measures which may have included sexual violence but did not specifically focus on this. Subsequently, some authors have had consistent findings, for example showing an association in youth who had experienced physical punishment as young children between the MAOA gene and delinquency (Edwards AC, Dodge KA et al. 2010). Whilst other have failed to replicate them (Reif A, Rosler M et al. 2007; Prichard Z, Mackinnon A et al. 2008). None of this research has specifically focused on sexual aggression.

The role of genetics in sexual aggression is clearly an important area for further work but the state of current knowledge is suggestive but limited.

Androgen levels

Some research has shown a relationship between physiological androgen levels and male sexual behaviour (Christiansen 1998) although it is unclear whether differences in blood testosterone levels and levels of sex drive or sexual behaviour can be linked (Rubinow DR and Schmidt 1996; Meston C and Frohlich 2000). A positive relationship between testosterone and self-reported aggressiveness has been reported for men and women (Christiansen K and Knusmann 1987), but this has not been confirmed by all authors (Campbell A, Muncer S et al. 1997). Several researchers have investigated links between blood testosterone levels and sexual or other aggression in prison populations, but their findings have been mixed (Giotakis O, Markianos M et al. 2003). This is no evidence that testosterone levels influence the likelihood of sex offending, any more than general violent offending (Giotakis O, Markianos M et al. 2003).

3.1.2. Neurological deficits

The role of brain damage in sexual offending has been the subject of research, and some authors have asserted that it is found in a relatively high proportion of paedophiles (Langevin R and Watson 1996). Yet the overall conclusion of a recent review of the literature is that the evidence is extremely weak (Fabian 2012). Evidence predominantly consists of papers presenting case studies of one or two individuals, showing sexual disinhibition and hypersexuality associated, for example, with dysfunction of the striatum or thalamic nuclei, or lesions of the septal nuclei or temporal lobes (Gorman D and Cummings 1992; Mendez MF, Chow T et al. 2000; Mendez M, O'Connor S et al. 2004; Fabian 2012). There are very few studies with comparison groups, and even here the sample size is small and it is unclear what measures have been taken to ensure outcome assessment is repeatable and assessors are blinded to the research participants' exposure status. One of the few controlled studies compared 22 paedophiles and 22 non-sex offending controls and subjected them to neuropsychological assessment and a sub-group of 14 to PET scans to examine brain glucose metabolism. No differences were found on the neuropsychological measures or the PET scans (Cohen LJ, Nikiforov K et al. 2002). Whilst brain trauma may be important in some individuals, there is currently no evidence that brain damage makes an important contribution to sex offending at a population level.

3.2. Childhood and families

Traumatic events in childhood are the most commonly reported and best documented risk factors for sex offending (Maniglio 2010; Seto and Lalumiere 2010). The strongest evidence is for childhood sexual abuse, but physical and emotional abuse are also risk factors. There is also evidence that childhood exposure to domestic violence, removal from the family, family disruption and parental loss due to death or divorce may be risk factors for perpetration (Maniglio 2010).

3.2.1. Child sexual abuse victimisation

The evidence of childhood sexual abuse as a risk factor for subsequent perpetration is very extensive and probably has been the most comprehensively investigated of all risk factors for perpetration. In a meta-analysis, a history of child sexual abuse was five times more common among adolescent sexual offenders than among adolescent non-sexual offenders (Seto and Lalumiere 2010). Further, sexual offenders against children are much more likely to have sexual abuse victimisation histories than non-offenders or non-sexual offenders (Whitaker DJ, Le B et al. 2008). Several large national studies of US adolescents and men in college have found that those who had sexually assaulted a partner were significantly more likely to have experienced sexual abuse themselves (Malamuth, Sockloskie et al. 1991; Malamuth, Linz et al. 1995; Borowsky IW, Hogan M et al. 1997; Casey, Beadnell et al. 2009).

A meta-analysis shows all types of sex offenders have an elevated risk of exposure to sexual victimisation in childhood (Whitaker DJ, Le B et al. 2008), with some authors having found higher rates of child sexual abuse among sexual offenders against children than those among sexual offenders against adults (Seghorn TK, Prentky RA et al. 1987; Overholser JC and Beck 1989).

3.2.2. Experience of physical and emotional abuse and neglect

The evidence for exposure to physical abuse and emotional abuse and neglect as risk factors for sexual abuse perpetration is less clear. A meta-analysis of research on sexual offenders against children found them to be much more likely to have physical abuse victimisation histories than non-offenders or non-sexual offenders (Whitaker DJ, Le B et al. 2008). However, another systematic review on adolescent sexual offenders found them to not differ from non-sexual offenders in exposure to non-sexual violence in childhood (Seto and Lalumiere 2010), although the findings were inconsistent. One study of juvenile sexual (n=243) and non-sexual offenders (n=109) did find that juvenile sexual offenders are more likely to have experienced physical abuse (Leibowitz GS, Laser JA et al. 2011).

Inconsistent findings have been found among studies with adolescent non-offenders in the US. One large national study of US adolescents found that those who had been sexually violent to a partner were significantly more likely to have experienced physical abuse themselves, but not emotional neglect (Casey, Beadnell et al. 2009). Whilst the Minnesota schools survey did not find sexually violent youth to be more likely to have experienced physical violence (Borowsky IW, Hogan M et al. 1997).

In a general population sample of adult men from South Africa, men's score on the Childhood Trauma Scale (capturing sexual, emotional and physical abuse and emotional and physical neglect) and having been raped as a man was significantly related to both lifetime raping and having done so in the past year (Jewkes R, Sikweyiya Y et al. 2011). Further, in a large non-random sample of adolescent men from South Africa, the score on the Childhood Trauma Scale was also significantly associated with rape perpetration (Jewkes, Dunkle et al. 2006). Neither paper presented associations with disaggregated childhood trauma exposure.

3.2.3. Parental separation and out of home placements

The evidence for the importance of parental separation, absence and out of home placements is inconclusive. A study in New Zealand of sexually abusive children and adolescents, compared with other offending children and adolescents, found that both groups experienced dysfunctional parenting and disturbed family histories, but the sexual offenders were much more likely to have had a lack of stable care-giving. This was often due to maternal post-natal depression, or parental IPV which resulted in out of home placements with either grandparents or foster care (Lightfoot S and Evans 2000). Sexual offenders frequently report severe disruption or changes to family structure during childhood. In a review of 20 years of cases, 78% of sex offenders came from single parent households (Graves RB, Openshaw DK et al. 1996). Further a national study of sex offenders in the United States showed that 34% had lost parental figures due to out of home placements (Ryan G, Miyoshi TJ et al. 1996). However, this is commonly found among all offenders, not just sex offenders. A meta-analysis has found these to be risk factors for general offending, but not specifically for sex offending (Seto and Lalumiere 2010).

The Minnesota Student Survey found no difference between adolescents who had been sexually violent and others raised by a single parent, or between the groups in terms of their perceptions of family closeness, nor in whether there was a drug or alcohol problem in the family (Borowsky IW, Hogan M et al. 1997). In South Africa, in a general sample of adult men from the community, there was a bi-variable association between raping, parental absence from the childhood home and perceiving mothers and fathers to be less kind than other men (Jewkes R, Sikweyiya Y et al. 2011). However, associations were not found to persist in the multi-variable analysis.

3.2.4. Parental intimate partner violence (IPV)

There is some evidence that men who rape are more likely to have witnessed IPV at home as children. This has been shown in two large samples of North American youth. The Minnesota Student Survey found that sexually violent adolescents were significantly more likely than others to have witnessed parental IPV (Borowsky IW, Hogan M et al. 1997). The national survey of men in US colleges found witnessing parental IPV to be associated with sexual aggression (Malamuth, Sockloskie et al. 1991; Malamuth, Linz et al. 1995). A similar finding has been made for incarcerated adolescents (Morris RE, Anderson MM et al. 2002).

3.2.5. Poverty and social disadvantage

Research findings are inconsistent on the role of poverty and social disadvantage in rape perpetration. Overall, there is very little evidence on the role of poverty and social advantage or disadvantage in risk of rape perpetration, largely because measures of socio-economic status have either not been collected by researchers or they have been used as 'control variables' and their findings not reported. Research that is available suggests that the relationship is not a simple, or linear one, and may be very closely linked to the social conditions of life, in particular income brackets and the opportunities and expectations that are thus entailed (Bourgois 1996; Jewkes R, Sikweyiya Y et al. 2011). Gang membership is a common feature of youth delinquency and is strongly associated with sexual violence and is very largely confined to life in low income areas.

Two studies in South Africa have shown that among the poor, it is the slightly less poor who are more likely to rape. In a volunteer sample of rural adolescents, who would generally be regarded as mostly poor or very poor, more socio-economic advantage was associated with a greater likelihood of raping a non-partner (Jewkes, Dunkle et al. 2006). This finding was supported by a large sample of adult men from the South African general population whose risk of rape was highest among those who had low income, as opposed to those not earning at all, or those in higher income brackets (Jewkes R, Sikweyiya Y et al. 2011). However, the prospective study of rape perpetration in South Africa did not show socio-economic status to be associated with an elevated incidence of rape perpetration (Jewkes, Nduna et al. 2012) .

A second indicator in South Africa of relative social advantage is mother's education. Higher maternal education was also associated with having ever raped in the general population sample of men from South Africa (Jewkes R, Sikweyiya Y et al. 2011). In the adolescent volunteer sample, having a more educated mother was associated with raping a non-partner, but only associated with partner rape before adjusting for sexual behaviour and other violence (Jewkes, Dunkle et al. 2006). The authors argued that a sense of entitlement stemmed from this relative advantage, and played out in a perverse way in a context in which few or none would be able to attain objectively high levels of material 'success' (Jewkes R, Sikweyiya Y et al. 2011). Thus, it could be compared to observations that in conditions of poverty young men form gangs and rape in a quest for gendered power in a context where traditional routes of attainment, such as, through fulfilling provider roles, are unattainable (Bourgois 1996; Wood and Jewkes R 2001; Wood, Lambert et al. 2007). This finding, however, was not confirmed by the prospective study of rape perpetration from the same data set (Jewkes, Nduna et al. 2012) .

3.3. Mental health and IQ

3.3.1. Psychological problems in sexual offenders

Sex offenders generally report more psychological problems than non-offenders and non-sex offenders, but the findings are inconclusive. Research on the psychiatric characteristics of sex offenders has been hampered by study designs which lack an appropriate non-sexual offender comparison group and assessment practices, particularly the limited use of clinical diagnostic interviews. Almost all research focuses on assessment of symptomatology (Fazel S, Hope T et al. 2002). In research that used clinical interviews with elderly incarcerated British (mostly child) sex offenders, there were no differences between them and non-sexual offenders in diagnoses of psychotic illness, major depression or organic brain disease (dementia) (Fazel S, Hope T et al. 2002). A meta-analysis has shown that child sex offenders have no difference in the likelihood of diagnosis of major mental illness from adult sex offenders, but they are more likely to be diagnosed with a mental illness than non-sex offenders (Whitaker DJ, Le B et al. 2008).

A great deal of the research has assessed general emotional distress or symptomatology among sex offenders. This has generally found that men and adolescents who are sexually aggressive have poorer mental health. The Minnesota Student Survey found that adolescents who had been sexually violent were more likely to have poorer emotional health, a higher suicide risk score, and to perceive themselves to be less connected to their communities (Borowsky IW, Hogan M et al. 1997).

A meta-analysis of research with adolescent sex offenders showed they had significantly more anxiety than non-sex offenders (Seto and Lalumiere 2010). A similar systematic review showed sex offenders against children had significantly more anxiety and depression than adult sex offenders or non-offenders (Whitaker DJ, Le B et al. 2008). Negative affect, even without a formal diagnosis of major depressive disorder, has been frequently found in sexual offenders (Maniglio 2010). These studies have assessed mental disorders and symptomatology occurring at varying, and usually unspecified, times after the sexual offence,

thus the temporal sequence of mental health problems is unclear. A South African study of adolescent men found that those men with high levels of depressive symptomatology were significantly more likely to have ever raped a non-partner and been sexually violent to a partner, but a prospective analysis found no greater likelihood of sexual violence over one year of follow up among depressed men (Nduna M, Jewkes R et al. 2010). This at least suggests the need for caution in drawing conclusions from cross-sectional studies.

3.3.2. Personality

Available evidence supports the view that sex offending is more related to personality factors than acute mental illness or organic brain disease (Fazel S, Hope T et al. 2002). Associations between rape perpetration and a range of psychological and personality problems have been asserted for many years, particularly in relation to men who abuse children. Finkelhor and Araji's review that led to their multifactorial model, concluded that men who sexually molest children are socially and emotionally immature, have poor social skills, low levels of self-esteem, poor impulse control and more signs of psychotic thinking (Finkelhor D and Araji 1986).

Self-esteem

The evidence on self-esteem and sexual aggression, however, is inconclusive. The Minnesota Student Survey found that adolescents who had been sexually violent did not have lower self-esteem (Borowsky IW, Hogan M et al. 1997). Meta-analyses show that there is evidence of significantly lower self-esteem among adolescent sex offenders and child sex offenders when compared to adult sex offenders, non-sex offenders or non-offenders (Whitaker DJ, Le B et al. 2008; Seto and Lalumiere 2010).

Empathy

It has been postulated that empathy may act as an inhibiting factor that operates to prevent sexual violence perpetration by men. The research on this is inconclusive. Abbey, in research with a community-based sample of adult men in the United States, found higher levels of empathy to be an important deterrent of rape perpetration (Abbey A, Parkhill MR et al. 2006). However, a large South African study found that men who have raped have lower levels of empathy than those who have not, but that empathy per se was not important after adjustment for psychopathy dimensions (Jewkes R, Sikweyiya Y et al. 2011). In their meta-analysis, Whitaker et al found that sex offenders against children did not demonstrate more general empathy deficits, or more specific deficits in emotional or cognitive empathy, than those offending against adults, non-sex offenders or non-offenders (Whitaker DJ, Le B et al. 2008).

Psychopathic traits

Whilst a range of personality disorders have been linked to rape perpetration, psychopathy has been the most extensively discussed in the literature. Psychopathy is a constellation of personality traits and socially deviant behaviours, spanning affective, interpersonal and behavioural traits. Hare has proposed that the characteristics of psychopathy include egocentricity, lack of remorse and empathy, pathological lying, manipulativeness, and the persistent violation of social norms (Hare 1996). These traits enable psychopaths to treat others as objects and feel no guilt nor remorse. Psychopaths have been described as having an inability to connect sexual behaviour with emotional feelings, such as warmth and tenderness, and a hedonistically-orientated lack of impulse control (Cleckley 1988). There is evidence of a heritable component in psychopathy (Larsson H, Andershed H et al. 2006; Johansson A, Santtila P et al. 2008).

In the US general population the prevalence of psychopathy is usually estimated at 1%, but the prevalence of psychopathic traits without a full clinical diagnosis is higher (Lilienfeld 2005). Individuals with heightened levels of some of the characteristics of psychopathy have been described as subclinical and nonclinical psychopaths (LeBreton JM, Binning JF et al. 2006).

The prevalence of psychopathy as a diagnosis is dependent on assessment measure scores. Research on Canadian incarcerated sex offenders shows that a relatively small difference in cut point (25 versus 30) on the PCL-R (Hare Psychopathy Checklist-Revised) (Hare 2003) resulted in twice as many offenders being diagnosed as psychopathic (29% versus 13%) (Olver ME and Wong 2006). This suggests that the presence of psychopathic traits may be important in understanding rape perpetration at sub-clinical levels and indeed this has been suggested by research in South Africa where two traits measured, Machiavellian egocentricity and blame externalisation, were significantly higher among men who had raped in both past year and lifetime (Jewkes R, Sikweyiya Y et al. 2011). There are similar findings from US college students, among whom sub-clinical scores on psychopathic traits have been associated with rape perpetration (Quimette 1997; DeGue S and DiLillo 2004; Abbey A, Jacques-Tiura AJ et al. 2011).

Measures of psychopathy have been found to be similar in offenders against adolescents and adults (Kalichman 1991). Using the Minnesota Multiphasic Personality Inventory (MMPI) (which has 10 scales), Kalichman found adult and adolescent offenders scored significantly higher on hypochondriasis, hysteria, psychasthenia, schizophrenia, social introversion and paranoia. Thus they had greater degrees of psychopathology. Whereas men who rape have been shown to have higher levels of psychopathy than child molesters (Serin RC, Malcolm PB et al. 1994).

Personality disorders of child sex offenders

Sex offenders against children show significantly more Cluster A, Cluster B personality disorders and anti-social personality disorders than non-offenders, but were not different from adult sex offenders or non-sex offenders (Whitaker DJ, Le B et al. 2008). As already noted, psychopathy does not appear more prevalent among child sex offenders than adult sex offenders (Marshall 1997), but it does appear more common among more violent child sex offenders (Rosenberg AD, Abell SC et al. 2005). This has been supported by research with elderly sex offenders, who were mainly child sex offenders, among whom the penetrative sex offenders were much more likely to have personality disorders. Elderly non-sex offenders with personality disorders were mainly anti-social, whilst sex offenders were more likely to be diagnosed with avoidant, schizoid and obsessive-compulsive personality disorders (Fazel S, Hope T et al. 2002). Schizoid personality features include social detachment and restricted emotionality and avoidant features include social inhibition and inadequacy. Both of which would interfere with the development of normal peer relationships (Fazel S, Hope T et al. 2002).

Kalichman also found that child offenders scored significantly higher on trait anxiety and trait anger (measured on the State Trait Personality Inventory) and lower on self-esteem constructs. He concluded that child sex offenders had higher emotional disturbance (Kalichman 1991). These findings have been supported by research from others (Meyer 1989). Emotional disturbance of this nature results in child sex offenders having considerable difficulty in developing interpersonal relationships and experiencing social alienation and inadequacy, as well as immaturity in a variety of behavioural settings and unusual sexual ideations (Duckworth J and Anderson 1987; Meyer 1989).

Finkelhor and Araji described 'emotional congruence' between child abuse perpetrators and the children they associate with as a way of explaining why an adult would find it emotionally satisfying to relate sexually to a child (Finkelhor D and Araji 1986). The psychoanalytic explanations include immaturity (arrested development), and low self-esteem, with inadequacy in peer social relationships. Relating to children provides a sense of power and control and opportunity for dominance not available to them in adult relationships. (Finkelhor D and Araji 1986).

3.3.3. Attachment

There is considerable evidence that men who are sexually violent fail to form secure attachment bonds in childhood and have insecure attachment and relationship difficulties as adults. One of the critical pathways through which the childhood home environment, particularly in early childhood, is understood to impact upon psychological development is through attachment to primary caregivers, usually mothers (Bowlby 1969; Bowlby 1973; Bowlby 1980). If attachment bonds between the child and their primary caregiver are secure, children acquire the necessary skills to establish close relationships and grow to desire the intimacy of others. If these bonds are insecure, children do not acquire the necessary skills to establish close relationships, may grow to fear intimacy with other individuals, exhibit hostility or aggression within their relationships, or to seek intimacy in maladaptive ways (Bowlby 1969; Bowlby 1973). The failure to form secure attachment bonds is suggested to be due to poor socialisation experiences, such as violent parenting (Marshall WL and Barbaree 1990). Sex offenders, when compared with non-sex offenders, are more likely to have failed to form secure attachment bonds in childhood, resulting in a failure to learn interpersonal and other skills necessary to achieve intimacy as adults (Marshall 1989; Stirpe, Abracen et al. 2006). Individuals with disorganised attachment are much more aggressive, distrustful and less empathetic when older (Fonagy and Target 2003).

There has been a great deal of research on attachment theory (Stirpe, Abracen et al. 2006). When compared to normative samples, all types of sex offenders are less secure (Stirpe, Abracen et al. 2006). Bowlby has argued that insecure attachments are marked by an expectation that what is needed will not be given, and as a result coercion is often used to get it (Bowlby 1969; Bowlby 1973; Bowlby 1980). In the arena of relationships, insecurity may result in more dismissive and hostile attitudes towards women and a tendency to perceive partners negatively, both of which have been observed in rapists (Stirpe, Abracen et al. 2006). This results in devaluing the importance of intimacy, and a drive to maintain a sense of autonomy (distance) from emotionally based relationships (Ward, Hudson et al. 1997).

In a meta-analysis, all sex offenders were found to be more likely to report insecure attachment bonds with caregivers, to be lonely and lack social skills when compared to non-offenders (Whitaker DJ, Le B et al. 2008). These characteristics have been found not to be specific features of child molesters, as has been suggested by some authors (Marshall, Barbaree et al. 1995; Stirpe, Abracen et al. 2006).

There is some evidence of difficulty with adult relationships among men who rape. In US college students, social isolation has been found to be more common among sexually coercive college men than others (Malamuth, Sockloskie et al. 1991; Malamuth, Linz et al. 1995). Whereas, in a community-based sample, adult attachment was significantly poorer among those who rape (Abbey A, Parkhill MR et al. 2007). However, the very strong bonds found in street or criminal gangs suggest that there may be a need for more nuance in interpreting available evidence on adult attachment. A systematic review found difficulty with intimate relationships to be similarly prevalent among both child and adult offenders, and much more common than among non-sex offenders and non-offenders (Whitaker DJ, Le B et al. 2008).

3.3.4. Intelligence and sex offending

It has been suggested that sex offenders may have lower intelligence than other men, but the evidence on IQ and rape does not support low IQ generally being associated with rape perpetration. In the Netherlands, research on apprehended juvenile sex offenders who had been involved in gang rapes found them to have below average IQ scores (Hart-Kerkhoffs LA, Vermeiren RRJM et al. 2010). This was not the finding of a large study in Canada, neither did they find learning disorders overly represented among sex offenders (Langevin R and Cunroe 2008). Further community-based studies, do not support this. Research from South Africa and Botswana shows that men who have raped have at least an equal chance of school completion as men who have not raped (Jewkes, Dunkle et al. 2006; Jewkes R, Sikweyiya Y et al. 2011; Tsai AC, Leiter K et al. 2011). In prospective research, incidence of male rape was higher among men with higher educational attainment (Jewkes, Nduna et al. 2012). In Minnesota, the grade point average of students who had been sexually violent was not different from other adolescent (Borowsky IW, Hogan M et al. 1997).

There is a similar lack of evidence for elderly offenders. The estimated IQ of incarcerated elderly sex offenders was within normal range, both for penetrative and non-penetrative offenders, even if it was significantly lower than that of non-sex offenders (Fazel S, Hope T et al. 2002). Further the prevalence of dementia was the same as the UK general population of the same age.

3.4. Peer pressure and delinquency

3.4.1. Social learning and peer pressure

Social learning around the acceptability of sexual violence within sub-cultural contexts is important in rape perpetration. Research has shown that, in a whole range of areas, friends are similar in their characteristics (McPherson M, Smith-Lovin L et al. 2001). Aggression is no exception. There has been considerable debate about whether aggressive young people choose each other as friends or whether as friends they become more similar in regard to aggression (Snyder J, Horsch E et al. 1997; Steglich CEG, Snijders TAB et al. 2010). There has been limited longitudinal research, but one study from Chile has shown that children do not select friends based on their levels of aggression. It is more likely that similarity among friends is a product of the friendship, although it is also possible that aggressive male youth may be forced to choose each other as friends as non-aggressive peers reject them (Steglich CEG, Snijders TAB et al. 2010). This partly explains the strong connection between gang membership and rape perpetration that has been described in many settings e.g. (Bourgois 1996; Jewkes, Dunkle et al. 2006; Jewkes R, Sikweyiya Y et al. 2011). See following section.

A study of incarcerated American adolescents showed that sexual assault perpetrators were nearly four times as likely as non-perpetrators to know a perpetrator of sexual assault (Morris RE, Anderson MM et al. 2002). Among a community-based sample of men, perceived peer approval of coercing sex was much higher among men who rape (Abbey A, Parkhill MR et al. 2007). In a further example of social support for related activities, this study also found the parents of perpetrators, when compared with parents of non-perpetrators, were much more likely to have encouraged gang membership (Morris RE, Anderson MM et al. 2002).

A further aspect of social learning is reflected in the perpetration of sexual abuse by those who have themselves been sexually abused in childhood. Research from New Zealand provides an additional perspective on this, as sexually abusive adolescents and children were found to have been more likely to have had contact with adults who were known paedophiles or suspected to have engaged in sexual abuse of other children, even when they did not have confirmed sexual abuse victimisation themselves (Lightfoot S and Evans 2000). These children may have experienced abnormal sexualisation through exposure to inappropriate sexual experiences (e.g. pornography exposure or verbal experiences) (Lightfoot S and Evans 2000).

3.4.2. Delinquent behaviour

Delinquency in adolescence has been linked to sexual aggression in numerous studies of American incarcerated rapists, college students and community samples (Ageton 1983; Malamuth, Sockloskie et al. 1991; Calhoun KS, Bernat JA et al. 1997; Knight and Sims-Knight 2003). Research with a nationally representative sample of US adolescents has shown that in its relationship with adult partner sexual violence, experience of physical abuse in childhood is completely mediated by involvement in delinquent behaviour (Casey, Beadnell et al. 2009).

Delinquency is an area where multiple rape risk factors intersect. There may be genetic roots in some young men, as research has shown that men with genetically determined low MAOA activity and exposure to harsh punishment in early childhood are more likely to become delinquent (Edwards AC, Dodge KA et al. 2010). Further, it is strongly related to personality traits of psychopathy, which themselves may be genetically determined (Abbey A, Jacques-Tiura AJ et al. 2011). Delinquency is also socially modelled and much more common among youth who have themselves experienced physical aggression (Malamuth, Linz et al. 1995; Casey, Beadnell et al. 2009).

The Minnesota Student Survey found that sexually violent adolescents were significantly more likely than others to have currently or previously been in a gang (Borowsky IW, Hogan M et al. 1997). They also disclosed having a significantly larger number of hours spent 'hanging out' per week (over 40) (Borowsky IW, Hogan M et al. 1997). These findings are highly resonant of those from South Africa where a population-based study of adult men showed that men who had raped are much more likely to have been a member of a gang (Jewkes R, Sikweyiya Y et al. 2011). They were also much more likely to have been involved in other interpersonal crime or theft, to have raped a man (as well as a woman), have a weapon and have had an illegal gun (Jewkes R, Sikweyiya Y et al. 2011). They were also more likely to have bullied more at school. Furthermore, in another large volunteer sample of adolescents, men who had raped a non-partner were much more likely than other men to be susceptible to peer pressure, be a gang member and use drugs (Jewkes, Dunkle et al. 2006).

The importance of delinquency was further highlighted by longitudinal research from South Africa where authors concluded that 25% of rape could have been prevented if men had been gainfully employed in work or recreation and not hanging out with delinquent peers (Jewkes R, Sikweyiya Y et al. 2011).

School bullying is one manifestation of delinquent behaviour, and often a precursor of anti-social behaviour in adulthood (Bender D and F. 2011). South African research has shown perpetration of school sexual bullying to be strongly associated with subsequent rape perpetration (Jewkes R, Sikweyiya Y et al. 2011).

There is some evidence that the role of delinquency in sexual violence may be limited to certain types of sexual violence and not others. Whitaker et al found men who committed sexual offences against children were significantly less likely to engage in externalising behaviours (e.g. aggression, non-compliance, poor impulse control), than men who offended against adults or a general non-sex offender sample (Whitaker DJ, Le B et al. 2008). In this respect they did not differ from non-offending men. Similarly one study from South Africa showed that delinquency was associated with non-partner rape but not date rape perpetration (Jewkes, Dunkle et al. 2006). This highlights the importance of considering perpetration of sexual violence as a more complex category and has prevention implications.

3.5. Gender inequitable masculinities: Ideas and practices

Rape is inherently a highly gendered behaviour. The great majority of those who are sexually violent are men and the great majority of their victims are women. In the light of this, it is remarkable that gender as a notion is often not discussed in the empirical literature on perpetration. Researchers on rape have, for the most part, shied away from any discussion of gender inequity or patriarchy, whilst referring with frequency to attitudes which are rooted in, and express, considerable gender conservatism. As a result, there has often been a failure to suggest that these attitudes may stem from a unifying underlying social ideology and value system, and equally a failure to posit that such a system may need to be changed if great strides are to be made in reducing rape perpetration.

In contrast to this, there is a body of theoretical work on rape that discusses what Gavey calls the 'cultural scaffolding' that enables men to reconfigure sexually coercive behaviour, especially with dates, girlfriends or wives as 'not rape' (Gavey 2005). The scaffolding includes an array of rape myths that place the blame for rape at the feet of women and enable a cognitive justification for coercive behaviour, ideas of sexual entitlement within marriage (conjugal rights) and the positioning of women as worthy objects of male sexual conquest. This scaffolding is argued to stem from a framework of patriarchy where by men are positioned as hierarchically superior to women and accorded greater social value.

3.5.1. Gender attitudes

Part of a 'cultural scaffolding' of rape is a framework of attitudes that stem from, and support, patriarchy and provide ideational space and justification for rape. Authors have observed that sexually aggressive men from diverse settings have greater hostility towards women, stronger sexual dominance desires, more traditional attitudes towards gender roles and sexual relationships and greater acceptance of rape myths (Koss and Dinero 1988; Malamuth, Sockloskie et al. 1991; Malamuth, Linz et al. 1995; Abbey A, Jacques-Tiura AJ et al. 2011; Jewkes, Sikweyiya et al. 2011). Rape myths are more strongly endorsed by men who have raped than other men (DeGue S, DiLillo D et al. 2010). The current body of largely cross-sectional research does not enable us to distinguish the temporal ordering of attitudes that support rape. It seems likely that they may be both reinforced by behaviour that is sexually coercing, as well as held prior to rape.

The importance of different dimensions of rape supportive attitudes varies between studies. A general population study of adult men in South Africa showed that men who have raped score significantly higher on a scale measuring gender inequitable attitudes than men who have not raped. Whilst they also scored higher on rape myths, hostility to women and adversarial sexual beliefs, the multivariable model showed that gender attitudes were more important as a unifying concept (Jewkes R, Sikweyiya Y et al. 2011). It was the latter that was significantly associated with rape perpetration after adjusting for behaviours. Other authors have not always included a general measure of gender inequitable attitudes, but have found that the key rape supportive attitudes of rape myth endorsement and hostility towards women have often not been significantly related to sexual aggression after adjusting for other factors, including other gendered behaviours (Casey, Beadnell et al. 2009) (Calhoun KS, Bernat JA et al. 1997;

Carr JL and van Duesen 2004; Abbey A, Parkhill MR et al. 2007; Jewkes R, Sikweyiya Y et al. 2011). Indeed, attitude variables have generally been shown to be more important in college samples than in community-based samples of men (Malamuth, Sockloskie et al. 1991; Malamuth, Linz et al. 1995; Calhoun KS, Bernat JA et al. 1997; Senn CY, Desmarais S et al. 2000; Abbey A, Parkhill MR et al. 2007). However it is quite possible for attitudes to play an important role in the overall environment in which rape is perpetrated, to act as enabling factors for rape perpetration in general, without them operating specifically to differentiate men who have and have not raped.

3.5.2. Intimate partner violence

Sexual intimate partner violence is particularly common in settings ranging from Bangladeshi marriages to date rape in US college dorms. It is not surprising that sexual intimate partner violence and rape of non-partners have been found to be more common among men who are physically violent towards partners (Malamuth, Sockloskie et al. 1991; Malamuth, Linz et al. 1995; Jewkes, Dunkle et al. 2006; Jewkes, Sikweyiya et al. 2011). Kalichman et al found that men in South Africa who had raped were seven times as likely to have been physically violent towards a partner (Kalichman, Simbayi et al. 2007). Further, they regarded their use of physical violence against a partner as legitimate as they were significantly more likely to endorse attitudes accepting of violence against women after adjusting for other gender attitudes. Supporting this, a general population study of adult men in South Africa showed that men who have raped both in their lifetime and the past year are more likely to have been physically violent towards a woman, with more frequent violence associated with a higher likelihood of having raped (Jewkes R, Sikweyiya Y et al. 2011). The same findings were reported from a large volunteer sample of South African adolescents (Jewkes, Dunkle et al. 2006).

It seems likely that a system of patriarchy and gender hierarchy that legitimates the use of physical violence by men to assert dominance in a relationship and 'correct' behaviour of wives and girlfriends would also find expression in sexual violence, as well as other forms of violence, such as verbal. There is also some evidence that verbal violence against women is more common among sexually coercive men in United States colleges and among South African working men (Malamuth, Sockloskie et al. 1991; Malamuth, Linz et al. 1995; Abrahams, Jewkes et al. 2004). Furthermore, Abrahams et al found that men who had more frequent conflict with their partner, particularly when they perceived their authority was being undermined and sex refused, were more likely to be sexually violent (Abrahams, Jewkes et al. 2004). This finding provides further evidence of the importance of the connection between sexual violence perpetration and ideas of gender hierarchy and sexual entitlement.

3.5.3. Sexual entitlement

Evidence for the importance of patriarchy, gender inequity and ensuing ideas of male sexual entitlement comes very powerfully from research on men's motivations for rape. Research in South Africa, Bangladesh and China has shown reasons stemming from ideas of sexual entitlement to be the most commonly endorsed ones by men in each of these diverse settings. In South Africa and Bangladesh, about 70% and 80% of men respectively who had raped gave these as explanations for their having raped (Change Project 2011; Jewkes R, Sikweyiya Y et al. 2011). The findings from China are as yet unpublished but are very similar. Furthermore, perceiving the rape as 'fun' motivated nearly two-thirds of men in Bangladesh and nearly half of South African men (Change Project 2011; Jewkes R, Sikweyiya Y et al. 2011). The idea of rape as entertainment was also seen in endorsement of statements that showed boredom

to be a motivation for rape by about a third of men in South Africa (Jewkes R, Sikweyiya Y et al. 2011). One dimension of understanding rape as 'entertainment' is in the arena of deviant sexual fantasies (discussed below). However, it is not clear that this was not the predominant idea in settings where sex itself is seen as entertainment and sexual conquest is viewed as 'sport' (Wood and Jewkes R 2001; Wood, Lambert et al. 2007).

Rape as punishment was seen in a substantial sub-group of men. In about a third of those who had raped in Bangladesh said they had done so because they were angry with the woman or wanted to punish her (Change Project 2011). A further indication of the degree to which the practice was seen as congruent with perceived social norms is that just under half of men in Bangladesh and 45% of South African men who had raped neither experienced any consequences nor even themselves felt guilty about it (Change Project 2011; Jewkes R, Sikweyiya Y et al. 2011).

3.5.4. Emphasised heterosexuality

There is strong evidence that men who are sexually aggressive are more likely than other men to engage in a range of behaviours that display an emphasised heterosexuality. These include early sexual initiation, having multiple partners, more casual sex and having transactional sex.

Whilst some authors have explained this in terms of having a higher sex drive (Whitaker DJ, Le B et al. 2008), an alternative explanation considers social pressure to adopt an emphasised heterosexual masculinity that brings with it peer status rewards and self-esteem. In the latter explanation, men who valorise ideals of masculinity that emphasise heterosexual performance are more likely to view sexual partnering in terms of conquest and short term sex-seeking strategies over forming loving and nurturing attachments (Malamuth, Sockloskie et al. 1991; Jewkes, Dunkle et al. 2006; Jewkes R, Sikweyiya Y et al. 2011). With self-esteem so closely tied to sexual success, coercion is likely to be used to secure sexual partners. With limited biological evidence for a higher sex drive, available data seems to better fit this explanation based on social learning and reward.

3.5.5. Early sexual initiation

Researchers inquiring about age at sexual initiation have found that among college students and in a nationally representative sample of US adolescents, those who are sexually coercive have earlier sexual initiation (Malamuth, Sockloskie et al. 1991; Malamuth, Linz et al. 1995; Casey, Beadnell et al. 2009). This association is partly explained by sexual abuse in childhood, which is associated with early (consensual) sexual initiation (Malamuth, Sockloskie et al. 1991; Casey, Beadnell et al. 2009).

Having multiple partners

Sexual assault and rape perpetrators from a range of countries, including the United States, South Africa, Botswana and Swaziland, have more dating and consensual partners and more casual sex than other men, although they may not have more frequent sex as they have less emotionally engaged relationships with partners (Koss and Dinero 1988; Malamuth, Sockloskie et al. 1991; Malamuth, Linz et al. 1995; Abbey A, Parkhill MR et al. 2006; Jewkes, Dunkle et al. 2006; Kalichman, Simbayi et al. 2007; DeGue S, DiLillo D et al. 2010; Jewkes, Sikweyiya et al. 2011; Tsai AC, Leiter K et al. 2011).

Research in Swaziland has shown that men from the general population who disclose having raped were more likely to have had sex with a girl 10 or more years younger (Tsai AC, Leiter K et al. 2011). In Sub-Saharan Africa many men view having younger partners as a sign of heterosexual prowess (Barker and Ricardo 2005) and so the connection between this and coercing sex further suggests the importance of this explanation for coercive men's behaviour.

Transactional sex

Researchers in South Africa have shown in different populations of adolescent and adult men that those who rape are much more likely to have engaged in transactional sex and had sex with a woman in prostitution (Jewkes, Dunkle et al. 2006; Kalichman, Simbayi et al. 2007; Jewkes, Sikweyiya et al. 2011). Transactional sex is often interpreted as an act that epitomises emotionally disengaged sex that is sought by men seeking an opportunity for sexual performance outside nurturing relationships. It has also been described by some men as being linked to a conservative provider role, particularly when the relationship with a main partner is identified as transactional. Thus, it has been observed that men who hold cynical views on women's motivations for relationships may be more likely to attribute these to their seeking material reward from their partner rather than emotional attachment, and more likely to perceive their relationships as having been predicated on material benefit. In turn, such men are more likely to perceive themselves as entitled to sex in exchange for acts of material provision (Jewkes R, Morrell R et al. in press).

3.6. Sexuality: Fantasy and arousal

3.6.1. Deviant sexual fantasies

Many authors have reflected on the importance of deviant sexual fantasy in rape perpetration, but the literature is almost exclusively from research with incarcerated offenders. Many men fantasise about being sexually or physically violent to women during masturbation and interpersonal sexual acts in order to intensify sexual arousal (Leitenberg H and Henning 1995). Most have no intention of ever putting these into practice. There has been extensive research into how and why some men cross the boundaries between fantasy and practice (Leitenberg H and Henning 1995). Serial sexual murderers have the highest rates of deviant sexual fantasies with estimates of prevalence ranging from 70 to over 80%, and these are believed to be more important in their offences than those of other sexual offenders (Maniglio 2010).

Deviant sexual fantasies are said to be used as a coping strategy by some sexual offenders in the face of psychiatric disorders or negative mental states that result from their own abuse experience (Maniglio 2011). A systematic review of their role in serial sexual homicide concludes that adverse experiences in childhood may result in feelings of hopelessness, low self-esteem and lack of psychosocial skills which may lead to a man taking refuge in an imaginary world of deviant sexual fantasy (Maniglio 2010). These fantasies may be acted out in their offences. There is some evidence that, in so doing, offenders gain short term feelings of calm and escape from their problems although thereafter their mental distress increases, potentially setting in place a cycle of offending (Looman 1995; Maniglio 2011).

The evidence for the importance of sexual fantasy in offending in other groups of sexual offenders is much less robust. A meta-analysis has shown that sexual offending adolescents have more atypical sexual fantasies than non-sexual offending adolescents (Seto and Lalumiere 2010). However, juvenile sexual offenders have been shown in two studies to make less use of sex as a coping strategy than non-sex offending peers (Hastings T, Anderson SJ et al. 1997; Page EO, Tourigny M et al. 2010; Maniglio 2011).

Evidence related to perpetration of sexual offences against children is also unclear. A meta-analysis of risk factors showed that there was no evidence that offenders (versus non offenders) had more deviant sexual fantasies (Whitaker DJ, Le B et al. 2008). Yet it did show evidence of there being a greater likelihood of sexualised coping (Whitaker DJ, Le B et al. 2008).

3.6.2. Deviant sexual arousal

Deviant sexual arousal has been studied by measuring changes in penile circumference in response to audio/visual stimuli measured with an Indium-Gallium strain gauge. This research suggests that a much higher proportion of child molesters have deviant sexual arousal in response to images of children, than incest perpetrators or men who actually rape (Firestone P, Bradford JM et al. 2000). Both incest perpetrators and rapists are commonly more sexually aroused by consensual sex than forced sex (Baxter DJ, Barbaree HE et al. 1986; Hall 1989; Firestone P, Bradford JM et al. 2000).

3.6.3. Pornography

There has been considerable debate about whether exposure to pornography, or violent pornography, is a risk factor for rape perpetration (Malamuth N, Addison T et al. 2000) and some authors have asserted pornography *per se* to be a form of sexual violence (Dworkin 1981). The debate has been more heated by a lack of consensus about the conditions in which this can be studied, the study population, appropriate exposure, response measures and the duration of impact. Whilst some authors have attempted to investigate this experimentally, it would not be ethical to do this in a way that can answer the question with any real confidence. Studies have mostly been conducted with incarcerated offenders, but given prison conditions there is little confidence that findings among them could be generalised to the general population. College student research is inconclusive, (Boeringer 1994; Crossman 1995; Malamuth N, Addison T et al. 2000), and its cross-sectional nature renders it impossible to know whether raping and pornography use are coexisting sexual preferences or have a causal relationship.

3.7. Substance abuse and firearms

3.7.1. Alcohol use

Alcohol use is often associated with sexual aggression and there are complex cultural beliefs about, and meanings given to, the relationship between alcohol and sexual behaviour. Alcohol is often found in situations conducive to sexual aggression, and in some settings, notably college campuses in the United States, alcohol consumption by the victim and perpetrator is a feature of between 30-75% of rapes (Lackie and de Man 1997; Abbey 2011). One study found that 81% of men who had raped or attempted rape had been drinking before the incident (Krebs, Lindquist et al. 2007). Many cultures (or sub-cultures) link alcohol consumption to disinhibition, sexual desire and performance, perceive it to give courage to make advances that men may be reticent to make when sober and as mitigating anti-social or aggressive behaviour (McDonald 1994; Abbey, Zawacki et al. 2001). Many men believe that women who are drinking will be more open to sexual advances, less able to resist and if they did so, less likely to persuade others to take them seriously (Norris 1994; Kosson DS, Kelly JC et al. 1997; Abbey A, McAuslan P et al. 1999; Abbey 2011). At high levels of intoxication, cognitive and motor impairments are such that men are unable to rape (Carey KB and Hustad 2005). There is no evidence that alcohol causes a man to become sexually aggressive if he is otherwise not so inclined (Seto and Barbaree 1995).

By reducing inhibitions, limited experimental evidence suggests that drinking may heighten aggression in men who were more irritable, prone to anger and had low levels of anger control (Parrott DJ and Giancola 2004). There is some experimental research that suggests that alcohol consumption may elevate men's sense of sexual entitlement and reduce their sensitivity to, and concern about, women's sexual resistance (Marx BP, Gross AM et al. 1999; Gross AM, Bennett T et al. 2001; Abbey A, Buck PO et al. 2003). However, there has been limited research exploring placebo effects and findings from available studies are mixed (Abbey 2011). Whether research adequately distinguishes the pharmacological effects of alcohol on aggression from social meanings attached to alcohol consumption has been questioned.

Survey research on sexual coercion suggests that men who are sexually coercive often have a history that includes binge drinking (Kalichman, Simbayi et al. 2007) and general heavy alcohol use (Koss and Dinero 1988; Jewkes, Dunkle et al. 2006; Jewkes R, Sikweyiya Y et al. 2011; Tsai AC, Leiter K et al. 2011). Similar findings pertain in adolescents (Borowsky IW, Hogan M et al. 1997). However, measures of alcohol consumption are usually not associated with rape perpetration after adjustment for other factors (Jewkes, Dunkle et al. 2006; Jewkes R, Sikweyiya Y et al. 2011). This suggests that alcohol may be important in particular situations, and there may be indirect connections for example through a common latent variable, but alcohol problems per se are not (Casey, Beadnell et al. 2009). Indeed at least one study has found that sexual offenders may be less likely to have alcohol problems than other offender groups (Fazel S, Hope T et al. 2002) and a meta-analysis found that alcohol problems were similarly common among child sex offenders, adult sex offenders and other offender groups (Whitaker DJ, Le B et al. 2008). Thus an explanation is that sexual coercion of women is one practice of a masculinity that valorises heavy alcohol consumption (Jewkes and Morrell 2010). This is not to undermine the role that alcohol may play in specific acts of rape, but it is recognised that alcohol is not always a feature of rapes. An important finding from a national sample of US adolescents was that alcohol did not mediate the relationship between childhood victimisation and sexual coercion, as has previously been thought (Casey, Beadnell et al. 2009).

A further question that has been asked is whether rapes with alcohol are more violent. Evidence here is inconclusive because there is a very limited body of appropriately designed research. One small study supports this argument at low to moderate levels of alcohol consumption (Abbey A, Clinton-Sherrod AM et al. 2003). Research on perpetrator alcohol use has shown that when he is drunk and the victim sober there was a greater likelihood of rape completion and victim injury than when they had both been drinking (Brecklin and Ullman 2002).

Research suggests that alcohol is a situational factor in many acts of sexual aggression, but not a factor that causes men who would otherwise do so to be sexually coercive. However, given the psychological effects of alcohol and cultural meanings, it is impossible to conclude that alcohol is not important in sexual violence perpetration. The evidence suggests that reducing levels of drinking overall would have a beneficial impact on vulnerability to rape perpetration and victimisation, but that this should be undertaken in conjunction with interventions to change the social meaning of alcohol consumption, particularly addressing links between men's sexual entitlement and alcohol.

3.7.2. Drug use

There has been relatively little research on the relationship between drug use and sexual aggression (Fals-Stewart, Golden et al. 2003). Research on substance abuse has generally failed to establish a relationship between marijuana use, other drug use and sexual aggression. A longitudinal study of men in college in the United States has shown that drug use immediately prior to a sexual encounter was associated with greater severity of sexual aggression, after adjusting for alcohol use (Swartout and White 2010). Furthermore men who had raped and attempted rape were more likely to have ever used marijuana, but not other drugs. The authors argue that this finding should not be interpreted as indicating that marijuana has a pharmacological action that promoted sexual aggression, as deviant settings conducive to substance abuse may also be conducive to sexual coercion (Kilpatrick, Acierno et al. 1997; Swartout and White 2010). There is no other evidence of a pharmacological effect (Swartout and White 2010).

Among adolescents in the US, illicit drug use has been shown to be associated with sexual coercion, as has use of anabolic steroids (Borowsky IW, Hogan M et al. 1997). A prospective study from South Africa has shown that the incidence of rape perpetration is elevated among men who have ever used drugs, indeed 24% of all rapes would have been prevented if drug use had not occurred (Jewkes, Nduna et al. 2012). The great majority of the drug use reported was marijuana use, but the authors also argued that rather than the effects being pharmacological, it was an indicator for engagement in a sub-cultural peer context of drug use where rape was seen as 'normal' (Jewkes, Nduna et al. 2012). Other research from South Africa does not suggest drug use to be important, in a large study men who had raped in the past year were not more likely to have used drugs in the past year (Jewkes R, Sikweyiya Y et al. 2011). Men in Cape Town who had raped had no more drug use, including no more methamphetamine use, than those who had not (Kalichman, Simbayi et al. 2007). This lends further weight to the argument that the association between drug use and rape is not causal, but explained by a third factor which encompasses the propensity for both practices.

3.7.3. Firearms

In some settings weapons are commonly used to facilitate rape, especially rape of adult women and adolescents, but it's unclear if gun ownership creates possibilities for a man to rape who is otherwise not so inclined. Research from South Africa which examined a random sample of rape cases reported to the police in a Province in one year, has shown that a third of reported rapes involved weapons, and the proportion was 41% among the rapes of adult women (Vetten, Jewkes R et al. 2008). Weapons were more commonly used in stranger rapes (reported in 55%). The most common weapon used was a hand gun and this was used in 19% of adult women's rape cases. They were much more common in multiple perpetrator rapes than single perpetrator rapes. Evidence suggests that guns facilitate a substantial proportion of rapes in some settings. It is hard to escape the conclusion, that as with alcohol, greater restriction on the availability of small fire arms would reduce the risk of rape for some women.

4. Discussion

4.1. Understanding risk factors and causation

For the purposes of this review, risk factors are factors that increase the risk (likelihood) of a person perpetrating sexual violence. In order for a factor to be a risk factor it has to be known to pertain before the incident of sexual violence and plausibly cause the perpetrator to act, rather than being associated with the action or an activity undertaken in the course of the act of rape (a pathway variable). There should be consistency across different studies and settings. There is very little longitudinal research on rape perpetration and so it is often not known for sure that an exposure did occur in advance of the rape. However, this can be known in cross-sectional research when both the time of a rape and the time of an exposure are known. For example, if a man rapes as an adult and exposures are in childhood, it is possible to determine temporal sequence from cross-sectional research.

It is the nature of risk factors that not all exposed to these factors will engage in the act being studied, and not everyone doing the latter will have the risk factor. For example, not all sex offenders have been victimised in childhood (van Wijk A, Vermeiren R et al. 2006) and the majority of those victimised do not go on to become offenders (Morris RE, Anderson MM et al. 2002; Maniglio 2009). Similarly the majority of sexually coercive adolescents in the United States do not have a history of sexual victimisation in childhood (Casey, Beadnell et al. 2009).

The question about what makes a person who has a risk factor vulnerable to become sexually coercive is of great importance in understanding rape prevention. It is a very important focus for further research into many of the established risk factors.

4.2. Understanding the evidence

This review has shown that there is strong evidence that five groups of amenable risk factors are important in rape perpetration: Adverse childhood exposures; attachment and personality disorders; social learning and delinquency; gender inequitable masculinities; and substance abuse and firearms. Yet it has also shown that there is a very considerable degree of interconnectedness between these groups of factors and indeed between them and other factors where direct impact on rape perpetration has yet to be demonstrated.

4.2.1. Role of genetics

There has been limited research into the role of genetics in rape perpetration, but much broader agreement about the heritable nature of anti-social behaviour, including delinquency and psychopathy. Given that these are risk factors for rape perpetration, it can be concluded that part of the causal pathway in rape perpetration for some men is genetic in origin.

4.2.2. Adverse childhood exposures, brain development, personality and social learning

There is good evidence that being sexually abused in childhood and exposed to parental intimate partner violence are both risk factors for rape perpetration. Although the findings for physical punishment are inconsistent, it may also be important through its role as a risk factor for delinquency. Furthermore the use of physical punishment may be one aspect of poor parenting that results in insecure or disordered attachment to caregivers and this has been shown to be a risk factor.

Adversity in childhood may directly impact on the developing brain, impacting on its anatomy and neurophysiology (functioning). Some of the research on the MAOA gene suggests that part of this process is genetically mediated, although the evidence is not yet conclusive. The impact of this is seen in personality, which may then predispose to both general anti-social behaviour and a propensity to become sexually violent.

There is quite strong evidence that exposure to trauma in childhood impacts on the developing brain, causing long term changes in brain circuits and systems (Anda RF, Felitti VJ et al. 2006). The changes are a response to stress. There have been several studies of adults who were abused in childhood, and very recently a large controlled study confirmed earlier findings that exposure to abuse in childhood results in reduced hippocampal volume, particularly on the right hand side of the brain (Teicher MH, Anderson CM et al. 2012). Research, furthermore, shows the impact of other forms of trauma in childhood, for example children who witness domestic violence also have anatomical abnormalities of the brain, and so do those exposed to harsh corporal punishment (Tomoda A, Suzuki H et al. 2009; Choi J, Jeong B et al. 2012). Many of the studies in this field have had quite small samples, but the robustness of their findings is enhanced by consistency and supportive research from animal models. For example, in mice neurogenesis in the hippocampal region is influenced by environment – stimulated in a richer environment and inhibited in a deprived one (Kempermann G, Kuhn HG et al. 1997; Anda RF, Felitti VJ et al. 2006).

It is not clear from research how the anatomical and neurophysiological impact translates in men into a proclivity for sexual violence. However, it seems likely that the impact is seen in personality. The research on personality, summarised above, compellingly presents itself as a pathway through which childhood exposures impact on propensity for sexual violence. It seems likely that these childhood exposures impact on personality through anatomical and neurophysiological mechanisms, but research at present stops short of describing these.

Social transmission of anti-social and sexually coercive behaviour is also likely to be an important part of the pathway. One of the major confounding factors in understanding the links between abuse exposure in childhood and subsequent sexual violence perpetration is the difficulty in adjusting adequately for the social transmission of anti-social behaviour within families (Moffitt 2005). The clustering of anti-social behaviour in families is well recognised, and may be partly genetic in origin, but it is also believed to be importantly influenced by social factors (Moffitt 2005). One pathway through which sexual abuse exposure is believed to impact on perpetration is through social learning and re-enactment, and impacting on ideas of acceptability of and familiarity with sexual coercion.

4.2.3. Personality, peers and delinquency

There is strong evidence that, boys and young men who are delinquent and join gangs are more likely to be sexually violent. Multiple factors are brought to bear on this practice. We have discussed genetic influences on anti-social behaviour, and personality factors that influence delinquent peer association, which in turn may be influenced by childhood adversity exposures. Social influences are important, and men who in personality are more susceptible to peer pressure may be more likely to join gangs and rape. Delinquent peer associations are also contexts in which young men may use drugs, alcohol and have weapons, all of which may situationally or causally impact on sexual violence perpetration. Furthermore, delinquent peer groups are generally contexts in which there is an exaggerated performance of heterosexuality with competition between men and boys to demonstrate manhood. This often may take the form of demonstrations of male power over women and the use of violence.

4.2.4. Gender inequitable masculinity: ideas and practice

There is strong evidence that the gender climate within a society impacts on the likelihood of rape perpetration and that a very large part of the problem of rape needs to be fundamentally understood as a performance of men's sexual entitlement over women. Social norms around gender relations need to be understood as one of the important environmental exposures that may mediate the likelihood of men who have been exposed to adversity in childhood becoming sexually violent. There is considerable evidence from research in gender studies that the content of dominant or hegemonic masculinity within a culture or sub-cultural setting

may be a latent unifying factor that explains associations between a range of men's practices and attitudes and their likelihood of raping. However this work does not explain how men may be attracted to or influenced into particular ideas of masculinity over others that pertain in a setting. It seems likely that personality factors and other social influences may be important here too.

4.3. Understanding sexual violence against children versus adults

There has been considerable attention in the literature to understanding perpetration of rape and sexual abuse, and how they may differ when victims are children or adults. Although substantial differences have been asserted or implied, a systematic review only revealed differences in one area, that of externalising behaviour, which was lower among those offending against children than against adults (Whitaker DJ, Le B et al. 2008). Although it is recognised that some men who abuse children have deviant sexual arousal and fantasies and may have emotional congruence with children, these patterns of ideas are not held by the majority of men and boys who are sexually coercive to children.

5. Conclusions

For many years theoretical understandings of rape perpetration have largely been based on clinical observations, and research with North American college students and convicted rapists. Yet, in the last decade, substantial research from Africa has emerged, including the first large longitudinal study, important systematic reviews of the field and research in biomedicine. On the one hand these constitute important advances, but overall empirical understandings of rape perpetration are still at a fairly early stage.

There is a considerable need for more research to deepen understanding of rape perpetration and this must be undertaken in a broader range of settings and global regions. Comparative methodologies are needed to enable the study and comparison of risk factors for sexual intimate partner violence, non-partner rape, child rape, gang rape and rape of men. There is a need for multi-disciplinary research that includes genetic and neuroimaging, and a comprehensive set of potential risk factors for perpetration and confounding factors. There is a need for longitudinal research with sufficient follow up to enable the relative incidence of rape for different risk exposures to be calculated.

Notwithstanding the limitations of the evidence base, developments over the last decade suggest that there is a need to move beyond some of the models that have dominated the field, including the four factor model of paedophilia of Finkelhor and Araji (Finkelhor D and Araji 1986) and the Confluence Model (Malamuth, Sockloskie et al. 1991; Malamuth, Linz et al. 1995; Malamuth 2003). Other theoretical perspectives need to be embraced, including the contribution of genetics, gender theory and developmental psychopathology. This paper stops short of proposing an alternative model, out of a desire to emphasise the complexity and interrelatedness of risk factors for rape. However, we do conclude that there is strong evidence that five groups of risk factors are important in rape perpetration: Adverse childhood exposures; attachment and personality disorders; social learning and delinquency; gender inequitable masculinities; and substance abuse and firearms. Furthermore genetic factors are important, although the predominant causal factors are environmental.

6. Implications for interventions to prevent sexual violence

6.1. Interventions: based on evidence of risk factors and rooted in behavioural theory

Rape perpetration is preventable. The predominant underlying factors are environmental, and central among them are gender attitudes. Although there is a genetic contribution that cannot be changed, it is possible to change the environmental exposures that influence expression of the genes involved. All of the groups of risk factors identified as underlying rape perpetration are potentially preventable. For many years it has been recognised that prevention strategies and interventions that are effective are soundly theoretically grounded. The same applies in rape prevention. It is essential that policies and interventions include both a thorough understanding of risk factors for rape perpetration and a theoretical grounding for interventions and strategies.

The most salient reminder of the need for a solid grounding in evidence and theory is the observation that interventions to prevent rape that have been used in North America have had varying success. For many years their focus has been overwhelmingly on changing attitudes (Lonsway 1996; Gidycz CA, Rich CL et al. 2002) and these programmes have shown limited, if any, success in reducing sexually aggressive behaviour (Gidycz CA, Rich CL et al. 2002). Authors have suggested that the focus on attitudes may be wrong, but a counter explanation is that rather than being wrong this focus may be insufficient. It is essential that rape prevention draws on the substantial recent advances in understanding of behaviour change and utilise more complex models. There are many theories of behaviour change, and it is not possible to review them in this paper, but Bandura's social cognitive theory is a good starting point in helping to understand the interplay between 'inner forces' such as attitude and personality, and environment, including exposure to peers and social learning, and structural factors. It therefore requires that interventions both focus on change in the environment and work with individuals, and provides a valuable starting point for more complex interventions (Bandura 1989).

Patriarchy and societal gender hierarchy is the most important environmental influence on men's likelihood of being sexually violent, thus it is important that interventions appropriately utilise gender theory, given that rape is essentially a gendered practice. The work of RW Connell in understanding gender and power, which gives special attention to men and masculinities, is particularly valuable (Connell 1987). Connell argues that all societies are fundamentally patriarchal, with men given greater value and thus accorded power over women. Patriarchy operates at all levels within a society and through its social institutions, usually bolstered by laws and policy that privilege men and thus discriminate against women. Values of which insinuate through social institutions, such as schools, courts, police services, hospitals and exert influence in subtle, as well as very overt ways.

Understanding masculinities is of vital importance for rape prevention as rape is predominantly a practice of men. The theory of Connell emphasises, that in any setting, masculinities are multiple, dynamic (i.e. not fixed in content) and open to change, and there may be differences in manhood between social groups and sub-groups, and in men's gendered practices which flow from these (Connell 1987). Connell argues that in a society one cultural model of ideal manhood will be hegemonic, that is it will hold a dominant position over other models of manhood and over women what is accorded by virtue of the consent (or acquiescence) of both men and women. In other words, this masculinity is able to attain a hegemonic status though agreement that it is an ideal between those who benefit from it and those subordinated by it. This occurs not through a conscious process, as a dominant cultural model it is 'taken for granted'

that this is how men are. In settings of marked gender hierarchy, hegemonic masculinities are heterosexual (usually homophobic), usually based on an expectation that men will dominate and control women, and they commonly valorise demonstrations of heterosexual prowess, strength and toughness and denial of vulnerability. Physical and sexual violence are often used as a way of establishing gender hierarchy and punishing transgressions, although Connell argues that the hegemonic position of such masculinities is not achieved through brute force (Connell 1987). Displays of heterosexual process characteristically involve having multiple sexual partners, whereas the need to be tough and strong is often translated into a readiness to fight, use weapons, as well as engage in considerable alcohol consumption (Jewkes and Morrell 2010). Hegemonic masculinities have been argued as operating at multiple levels, and thus within a sub-culture, the masculinity that is regarded as an ideal, may differ from that pertaining more broadly in society. Some sub-cultural masculinities are particularly violent, and reify sexual violence or emphasise male sexual entitlement, especially those commonly found in gangs (Bourgois 1996).

The implications of this analysis are that complex interventions are needed that work at multiple levels, particularly addressing environmental and structural factors as well as those working on individual level factors, such as gender attitudes. As a critically important structural factor, gender issues need to be addressed in a cross-cutting manner through rape prevention interventions.

6.2. Comprehensive intervention strategies

Interventions to prevent rape perpetration are needed for different age groups. Given that some risk factors for raping start from birth, it is essential that programmes to prevent rape perpetration include interventions directed at the first five years of life. The goal of these interventions is to strengthen caregiver child attachment, reduce use of physical punishment, address other forms of household dysfunction and enhance parenting. Such interventions can potentially impact on the risk factors of child exposure to violence and development of psychopathology, particularly psychopathic traits, and reduce delinquency. There is evidence that parenting interventions are effective in strengthening parenting in high, middle and low income settings (Knerr W, Gardner F et al. 2011; McCloskey 2011). Given the importance of witnessing IPV and the social learning component of gender-based violence it is important that parenting interventions address gender issues. Effective interventions need to be implemented with adaptation for new settings where appropriate.

Delinquency is an important risk factor in settings where rape perpetration is common in dating relationships or against non-partners. In these circumstances many men who will ever rape do so for the first time as teenagers. Rape perpetration interventions are needed to target boys before they rape and so must span all of the teenage years. In settings of poverty and deprivation, rape prevention needs to include interventions to promote healthy recreation for teenage boys to discourage forming gangs and 'hanging out' in contexts that can lead to rape. Interventions have been shown to have some success in reducing antisocial behaviour, although their impact has been modest (Moffitt 2005). It is quite possible that they would be strengthened by ensuring that they are comprehensive enough to address the structural context in which rape occurs as well as the gendered attitudinal context that provides the ideational framework from which boys and young men may rape. In particular, their goals should include the transformation of ideals of masculinity among their target group.

Interventions on gender are also needed for youth who are not part of gangs or identified as delinquent. The focus of such interventions needs to be on changing constructions of masculinity to promote more equitable and non-violent masculinities. A recent review of the effectiveness of such interventions shows that a range have been developed and evaluated in high, middle and low income settings (Ricardo C, Eads M et al. 2012). There is an increasing move to include gender based violence prevention in school curriculum, particularly those

interventions that promote a critical questioning of gender attitudes and promote an awareness of understanding sexual consent, and this seems a very valuable way of reaching a wide range of young men and boys. In recognition of the importance of challenging the 'taken for grantedness' of gender inequitable masculinities by women, it is important that girls and young women are also included in these programmes. Furthermore, these programmes need to acknowledge the vulnerability of men and boys own experience as victims, as well as experiences as witnesses of abuse at home.

The contribution of interventions to reduce alcohol consumption, drug use and small gun ownership to rape prevention is uncertain. For alcohol and drugs, the chief activities of risk are binge drinking and social drug use, rather than addiction. It seems likely that interventions that are of value for rape perpetration prevention will address the use of alcohol and drugs in a gendered, frequently peer, context in which sexual coercion may be encouraged and supported. Gun ownership similarly does not cause rape, but reducing societal levels of small firearm ownership reduces the numbers available for use in any form of crime.

Services for victims of rape have not been discussed so far in this review, but they are potentially very important in rape prevention because they send a message to society that rape is serious and will not be tolerated. High quality services are needed to meet victims' physical and mental health needs and support is needed from the police and criminal justice system to ensure that men and boys are not able to rape with impunity.

Part of the environmental frame of rape perpetration at a societal level is a country's laws and policies. In many countries rape in marriage is not a crime. In other countries rape and sexual offences legislation is weak and may disadvantage victims. Strong legislation, with good definitions of crimes, is an essential part of prevention. Overall we must strengthen the legal framework of gender equity in all areas of social life, including transforming gender dynamics in daily interactions, for example, through implementing effective policies in workplaces and by transforming the many aspects of education to promote gender equity in schools and school curriculum. In many settings these require legislation backed by systems-wide interventions.

7. Directions for future research

Based on the findings of this review, the following directions for research are proposed:

- **Broadening the geographical base of knowledge:** There is a great need for research on rape perpetration from a much wider range of countries and particularly low and middle income countries.
- **Deepening understanding of risk factors for perpetration of different types of rape:** There is a need for research from a range of settings that is able to compare risk factors for intimate partner rape, non-partner rape, gang rape and child rape and sexual abuse.
- **Stronger research designs:** There is a need for research to have stronger designs so that there is sufficient power to distinguish rape and other sexually coercive practices, comparison groups who have never been sexually violent (or never raped), valid measures of sexual violence, a comprehensive assessment of risk factors and confounders and more longitudinal research.
- **Multi-disciplinary research:** New generations of research are needed that combine perspectives from multiple disciplines, including developmental psychopathology, psychology, criminology, epidemiology, gender studies, genetics and neuroimaging.
- **Intervention research:** Mixed methods intervention research is needed both to develop interventions that are effective in reducing sexual violence perpetration. They can also deepen our understanding of sexual violence perpetration through examining which men change, what are the processes of change, and are barriers to change in the face of different types of intervention.
- **Understanding patterns of susceptibility:** Research is needed to understand why some men who have particular risk factors become perpetrators and others do not.

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