

**A study of the development of drinking patterns and violent  
behaviour amongst young people in England and Wales:  
secondary analysis of the Offending Crime and Justice Survey**

A Thesis submitted to the University of Manchester for the degree of  
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## **Abstract**

**The University of Manchester**

**Carly Lightowers**

**Doctor of Philosophy**

**A study of the development of drinking patterns and violent behaviour amongst young people in England and Wales: secondary analysis of the Offending Crime and Justice Survey**

**1st August 2012**

This thesis examines how drinking behaviours are associated with violent behaviour amongst young people in England and Wales. It is argued that in order to deconstruct the alcohol-violence relationship, it is necessary to critically examine drinking patterns and the development thereof as well as attitudes held towards alcohol consumption. The study comprises secondary statistical analyses of the Home Office's Offending Crime and Justice Survey, a survey providing data on young people's drinking and offending behaviour over four successive annual sweeps. Cross-sectional models are used to examine the predictors of violent offending and the role of alcohol consumption. These are subsequently extended into longitudinal models to examine change over time. Collectively, these models provide a detailed exploration of how alcohol consumption influences violent behaviour amongst young people and offer some insights into ways in which alcohol-related violence can be moderated.

Whilst, on the whole, individual attitude items did not significantly predict violent behaviour amongst regular drinkers, findings did, however, suggest three distinct classifications based on attitudes held towards drinking: 'social drinkers', 'positively motivated drinkers' and 'problem drinkers', which were significantly associated with age, binge drinking frequency and violent offending. Findings also support existing evidence that the pattern of drinking (rather than the frequency of alcohol consumption) is associated with violent offending and the study identifies a contemporaneous (time-specific) association between levels of binge drinking and assault outcomes. That is, that high frequency binge drinking is a temporally proximal risk factor for the increased propensity of committing assault offences and that occurrences in assault outcomes over time are relatively dependent on levels of drinking over time. In turn, this suggests that the periods in which young people are drinking more, they also offend more. The thesis thus provides evidence that reducing alcohol consumption in late adolescence may, in turn, reduce the prevalence of violent assault offences in and immediately after drinking occasions.

## **Declaration**

I hereby swear that that no portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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## **1 Chapter 1: Why study young people's alcohol consumption and violent behavioural patterns?**

The destructive impact of violence associated with alcohol consumption has been the focus of much political and academic attention (see HM Government, 2012, and academic commentaries by Parker, 2005; Measham, 2006; Järvinen and Room, 2007). Based on prevalence estimates for England and Wales from the British Crime Survey, Dubourg and Hamed (2005) suggest that violence against the person offences cost society in the region of £13,288 million in 2003/04<sup>1</sup>. However, despite its destructive social and financial impact, human violence remains relatively unexplored and the processes behind why levels of violence and their association with alcohol consumption vary significantly across cultures are not fully understood.

In England and Wales, an estimated 2.09 million incidents of violence were committed against adults in 2009/10 and the offender is thought by the victim to have been drinking in around 50% of violent crimes (Flatley et al., 2010). Young people in the UK are more likely to drink heavily in a single episode and to have been drunk (in the past 12 months) than most of their European counterparts, as a result they also experience higher levels of alcohol-related harm (Atkinson et al., 2012).

Many commentators have reported young people's alcohol consumption to be increasingly concentrated on high volume single drinking occasions (commonly referred to as 'binge drinking') (see Sumner and Parker, 1995; Measham, 1996; Järvinen and Room, 2007). Such drinking patterns have also been associated with interpersonal assault in many studies; with young people who binge drink being more likely to be involved in violent incidents (for reviews see McVeigh et al., 2005; WHO, 2006).

As identified in McVeigh et al.'s (2005) review of the literature on violence and in the World Health Organisation's (2006) review on young people, alcohol and violence, young people who drink are routinely found to be more likely to be

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<sup>1</sup> Estimated average costs for various offence classifications were derived using complex economic estimates and analyses for each offence type including health and criminal justice costs associated with dealing with such incidents. For further information see <http://webarchive.nationalarchives.gov.uk/20100413151441/http://www.homeoffice.gov.uk/rds/pdfs05/rdsolr3005.pdf>

both victims and perpetrators of violence. Thus, young people's drinking and associated violent behaviour have been identified as important public health and criminal justice concerns (such as by the World Health Organisation; see Krug et al., 2002, as well as in UK governmental policy, for example, DH, 2007; HM Government, 2012; Home Office, 2008).

Given this destructive impact, an examination of young people's drinking behaviour and associated violent behaviour over the life course is useful in order to understand how drinking behaviours are adopted and how these become associated with violent behaviour.

The research reported in this thesis aims to answer the following questions:

Are particular attitudes towards alcohol consumption associated with violent behaviour in young people?

Is the development of alcohol consumption patterns associated with violent behaviour in young people?

This introductory chapter will give a brief overview of the existing literature and outline the motivation for the thesis.

### **1.1 Sociological and criminological contributions on the understanding of alcohol and violence**

Whilst some people may be more likely to become violent after drinking, sociological or criminological approaches acknowledge the relationship between personality traits, behaviour and the context in which behaviour occurs. Such approaches thus purport that "behaviour is very dependent on the individual's social characteristics (such as age, gender, class) and the particular context in which that behaviour takes place" (Sumner and Parker, 1995:1). Amongst young people an understanding of their own drinking and related behaviour is likely, amongst other things, to be negotiated and reinforced by social interaction and networks as well as via peers, family upbringing and social status. It is thus hypothesised by Sumner and Parker (1995) that expectancies and contextual setting will affect alcohol consumption and resulting violence.

Media portrayals and political reactions can undoubtedly be misleading, and both popular opinion and criminal justice responses are heavily influenced by

these discourses. Criminological theorisation of the relationship between alcohol and violence, on the other hand, should attempt to define the true aetiology of such behaviour using sociological and psychological explanations. Several theories have been developed to explain variations in individual propensity for violent crime; some focus exclusively on individuals and others focus on the wider environment investigating the relationships between individuals and their economic and social surroundings. Early twentieth century positivist criminology identified the causes of crime as being the result of social or emotional deprivation or faults within the offender's person (see overview by Maguire, 1997). However, this approach has been considered to be insufficiently capable of explaining geographical concentrations of crime (such as rates of violence, including alcohol-related violence, in city centres), as well as explaining associations between deprivation and crime rates (that is, why deprived areas see higher rates of violence). Consequently, a shift of focus from the offender to the nature of the offence has occurred, allowing for a consideration of the contexts in which offences occur (Maguire, 1997). This ecological framework suggests a relationship between crime and contextual characteristics based on evidence that some areas suffer a disproportionate volume of violence and gives due consideration to the social structures and causal mechanisms that lead to criminal or violent behaviour (Maguire, 1997). In this framework, social factors such as inequality, disadvantage, deprivation, poor social integration, low social capital, high crime levels, availability of alcohol, demographic change, and weak governance all impact on levels of violent offending (see evidence reviewed and commentaries offered by Krug et al., 2002; McVeigh et al., 2005; Wedlock, 2006; WHO, 2006).

Acknowledging the many societal factors that influence violence implies that sustained socio-political change is required to address the root inequalities from which much violence stems. This includes tackling poverty, inequality and exclusion, as frustrations and resentment are brought about by these conditions and are often precursors to aggression and violence. Indeed, the recent financial crisis provides a useful example highlighting how the socio-political environment can influence alcohol consumption and violence. Concerns from experts warn of increased drinking, especially in the domestic sphere (as

drinking at home is more affordable than in licensed establishments), and domestic violence as a direct result of uncertainty and financial instability.

In addition to studying structural influences and the role of social inequality on both violence and alcohol consumption, further psychological work on cognitions underlying addictive and violent behaviour suggests that the propensity for drug use (including alcohol consumption) during late adolescence and early adulthood is mediated by the presence of risk factors. These include being brought up within a problematic family and association with deviant peers which impact heavily on an individual's criminogenic behaviour (see Hawkins et al., 1988; Andrews and Bonta, 2010). Analysis identifying 'risk factors' associated with criminal behaviour and substance misuse has formed much of the evidence for the 'what works' paradigm: a psychological approach to intervening in the problems of substance misuse (including alcohol) and criminality (Fergusson, 2007), which relies heavily on Cognitive Behavioural Therapy (CBT) as a method for tackling both.

In summary, identifying the factors associated with violence and the levels at which they operate enables a richer understanding of the conditions which mediate violence. From a policy point of view such understanding is required if the relationship between alcohol and violence is to be effectively moderated.

## **1.2 Alcohol consumption, adolescence and young adulthood**

Some authors suggest that changes in alcohol consumption are likely to be influenced by periods of transition including the transition from childhood to adulthood. During adolescence, alcohol consumption is often ritualised to mark the 'coming of age' as adolescents mature into young adults (see commentary by Room, 2007). According to Room (2007), the first experience with alcohol typically falls within the period of adolescence and young adulthood (around age 13-25). This is an age range that also corresponds to the period in which drinking to intoxication is most common. Bearing this in mind, it is interesting to note that early teenage drinking has been associated with problem drinking later in life. For example, Guo et al. (2002) measured alcohol use amongst students in urban areas at ages 10, 14, 16 and 21 and identified using alcohol in the last



month prior to being interviewed at ages 14 and 16 (although not at age 10) as a significant predictor of alcohol abuse and dependence at age 21.

As Room (2007) and others have observed, the period of adolescence and young adulthood has long been associated with experimentation, including experimenting with one's own behavioural patterns, and this can be viewed as a healthy part of growing up and learning to manage impulsiveness as well as delay gratification. Adolescence is thus often characterised by so-called 'risk-taking' behaviours, such as smoking, drug taking, gambling and legitimised 'risk-taking', such as adventure sports (see theoretical reflections on this topic by Measham, 2006). Whilst not legally allowed to buy their own alcohol or access bars and nightclubs, young persons under 18 years of age nonetheless often experiment with alcohol and drink alcohol with their peers. However, they may face increased vulnerability to alcohol-related harm as a result of trying to conceal their drinking from their elders.

Alcohol abuse is a well-established risk factor for involvement in violent crime. Compared to other age groups, young people can be particularly at risk of alcohol-related violence due to lifestyle factors. For example, drinking in homogeneous groups and increased use of nightlife environments can expose young people to social encounters and other intoxicated individuals in high risk environments which, in turn, increase the likelihood of violent encounters (see Graham et al., 1998; Levi, 1997; McVeigh et al., 2005, for overviews of the literature on violence and alcohol-related violence). Similarly, in a review of ways in which to prevent youth crime, Margo (2008) highlights that young people drinking at home with their parents over dinner were found to be less likely to engage in violence. It would thus appear that the context in which alcohol is consumed is likely to influence the behaviour that follows consumption.

### **1.3 Alcohol consumption and substance misuse**

Parker (1998) identifies a shift in modernity towards both an extended period of youth and more uncertain trajectories through adulthood, as a consequence of trends in deferring marriage, parenthood and confirmed careers. He notes that this 'unsettled' phase of young adulthood is a period in which leisure and

pleasure are particularly valued and thus alcohol and drug consumption are common. As a result of these trends, he highlights the "increasing propensity for leisure to be packaged and purchased both through legal and illegal markets" (Parker, 1998:144) and eloquently summarises the postmodern trend of UK youth purchasing time out through alcohol and drugs by drawing on other emerging consumption patterns:

If cosmetic surgery can deliver a better appearance, pharmacology can deliver a better experience (Parker, 1998:145).

In his work, Parker (1996; 1998) highlights the importance of considering alcohol as situated in wider (poly) drug use and argues for a paradigm shift from the focus on alcohol to the aetiology of offending in explaining crime (1996): a criminological explanation of the linkage between alcohol, poly drug use and offending which teases out the complexity of the relationship and avoids simplistic "alcohol plus young men equals violent crime" discourse and the tendency to blame young people for 'society's ills' (Parker, 1996:282).

As well as consuming alcohol, young people often combine this with illicit drug consumption. Common drug combinations are thought to be alcohol and cannabis amongst younger adolescents and alcohol and cocaine for young adults in more recent years (Parker, 2007). The latter trend brings with it concerns about accentuated propensity for violence in nightlife environments due to the effects of cocaine, as well as the combined effects of alcohol and cocaine consumption.

As part of these trends a growing cultural tolerance of drunkenness and young people's drinking has also emerged (Alcohol Concern, 2007). The strength of such cultural norms are not to be underestimated and Parker (1998; 2005) acknowledges this in relation to the increase in illicit drug use amongst young people in recent years. He suggests that the 'normalisation' of recreational drug use as a form of leisure consumption in youth culture has made "rapid prohibition or regulation in a democratic market economy almost impossible" (Parker, 1998:155) and goes on to highlight that this normalisation in drug use can be seen across the sexes, all age groups and all social classes.

Taking drugs is increasingly an act of consumption, a calculated risk decision to produce or induce 'good times' and 'time out' in a fast moving, uncertain world (Parker, 1998:163).

Here Parker suggests that young people make rational decisions about drugs: "they are usually clear about their own limits and are not led into either drug use or crime by demonic forces" (Parker, 1998:162), "often performing quasi 'cost-benefit' analyses in relation to their cost, the associated risks and the ability of given drugs to provide a 'buzz'" (Parker, 1998:160). This same process is also performed by young drinkers with limited financial resources: weighing up factors such as price, strength, taste and image (Parker, 1998). It is also suggested that "whilst there is little doubt that the drinking delinquent exists, he is usually already damaged by his life and educational experiences, not by his psycho-active excesses (Rutter and Smith, 1994; Carlen, 1996)" (Parker, 1998:162) and that it would thus "seem far more appropriate to discuss such young people as part of a debate about social exclusion, poverty, inequality and the causes of crime than to pander to tabloid opinion with sound bites about zero-tolerance and curfews" (Parker, 1998:162).

Whilst there is overlap between the issues surrounding alcohol consumption and wider substance misuse and the association of both behaviours with violence, this thesis will focus exclusively on alcohol consumption given its distinction as a readily available licit drug widely consumed by young people in England and Wales. That is not to ignore the fact that alcohol is often also consumed alongside other drugs (such as cocaine), but this will not be the main focus of this thesis and is explored elsewhere (see Lightowlers (in prep) for a study of the association between alcohol and cocaine consumption and violent behaviour). Further reference to the substance misuse literature will be made in Chapter 8 (Discussion) in relation to findings of the current study.

#### **1.4 The role of cultural norms, expectancies and motives for drinking**

Cultural norms are constructed of individual and societal beliefs about appropriate values, beliefs, attitudes and behaviours. The role of individual attitudes towards drinking is likely to play a role in shaping such cultural norms. Berridge et al. (2007) explore the 'normalisation of binge drinking' and identify

the need to study binge drinking as a social phenomenon, giving due consideration to these influences.

Not all violence involves alcohol and not all those who drink alcohol resort to violence. The proportion of violent events that involve alcohol varies cross-culturally; with varying strengths of association in different countries (see Sumner and Parker, 1995; Plant and Miller, 2007). For example, at the aggregate level, there are clear variations in drinking culture (this includes rates of consumption and the contexts in which alcohol is consumed) and the proportion of violence that is attributable to drinking, with the proportion being higher in northern and eastern than in southern Europe (Room and Rossow, 2001). Much epidemiological and public health research has focused on cultural variation in consumption patterns and drinking expectancies<sup>2</sup>, trying to explain the role of this in societal levels of harm (see Jarvinen and Room, 2007, for a selection of commentaries and studies). Factors beyond overall consumption levels are known to play a role in determining the strength of this association; for example, the alcohol-violence relationship is mediated by contextual factors such as social norms, cultural expectancies and the physical drinking environment.

It would thus seem plausible that alcohol-related behaviour is to some extent mediated by people's perception of their surroundings and their socio-cultural background (see Graham, 1980). For example, Sumner and Parker (1995) suggest that the drinking-disorder connection in Britain is likely to be related to cultural factors, such as cultural norms and attitudes held about alcohol consumption. These norms and attitudes are also likely to be shaped at an individual level by peer association and life events. It is thus important to consider drinking not only as an individual act of consumption but also as a form of social bonding or social ritual.

Andersson and Hibell (2007) highlight that there are many self-reported reasons for drinking amongst young people and that expectancies of drinking vary with characteristics such as age, gender, personality, socio-demographic background and drinking experience. They also note that it is not only heavy

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<sup>2</sup> Outcomes of drinking expected on the basis of social norms.

drinkers that hold beliefs and expectancies towards alcohol consumption but also those who are moderate drinkers and those who abstain. Often light drinkers or abstainers hold more negative expectancies towards alcohol, for example, expecting to feel sick, harm their health, get in trouble with the police, get a hangover or do something they may regret, and these expectancies thus moderate their consumption levels. Conversely, heavy drinkers tend to hold more positive expectancies, such as expecting to feel happy, relaxed, more friendly and outgoing, to have a lot of fun and/or to forget their problems (Andersson and Hibell, 2007).

Interestingly, results from the European School Survey Project on Alcohol and Other Drugs (ESPAD) suggest that in countries, such as the UK, where young people generally have positive expectancies towards alcohol consumption they also drink more and experience more drunkenness. What is more, they hold these positive expectancies despite experiencing a higher rate of negative outcomes as a result of their drinking<sup>3</sup> (Andersson and Hibell, 2007). However, Room and Rossow (2001) review the literature on the share of violence attributable to drinking and highlight that “whilst the literature offers some typologies of the cultural position of drinking and some hypotheses about the relation of rates of violence to them (Room and Mäkelä, 2000), empirical work on testing and refining such hypotheses is still at the beginning” (Room and Rossow, 2001:7). They go on to suggest that “a detailed understanding of the causal pathways and of potential points of intervention that can be used in preventing violence is needed to make a difference in the rate of alcohol-related violence” (Room and Rossow, 2001:3).

Given the evidence above (and the literature reviewed in further detail in Chapter 2), it is worthwhile accounting for motives and attitudes towards alcohol consumption when exploring young people’s drinking patterns in England and Wales. Eliciting beliefs and attitudes held by young people in relation to their alcohol consumption may offer an insight into how and why young people drink as they do, and this may in turn help identify which aspects or types of drinking

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<sup>3</sup> Negative outcomes include: fights, accidents or injuries, being hospitalised or being in trouble with the police, performing badly at school, having problems with friends or parents, having regretted or unprotected sex and/or being a victim of robbery or theft.

may be associated with violent behaviour and how attitudes may be mediating the alcohol-violence relationship.

### **1.5 Young people, drinking trajectories and criminal careers**

Specific alcohol consumption patterns such as heaving episodic drinking (sometimes referred to as 'binge drinking') have been statistically associated with interpersonal assault (see studies by Matthews and Richardson, 2005 and Finney, 2004). Given this association and the role that transitional periods are likely to play in developing drinking patterns and violent behaviour over the life course, it is especially pertinent to look at levels of drinking and violence during the period of adolescence and young adulthood. Furthermore, given the above outlined importance of behaviours and beliefs adopted during adolescence and young adulthood in determining criminal careers and violent behavioural trajectories (see review by Siennick and Osgood, 2008, of research on the impact of transitions to adult roles on criminal behaviour), the developmental aspect of drinking patterns and their impact on violent offending will also be explored in this thesis.

Many aetiological studies of crime adopt a life-course or 'criminal career' approach<sup>4</sup>. This approach acknowledges that levels of offending fluctuate during different stages in the life course and that criminal careers may have distinct phases and transitions, including the onset of offending, career duration and desistance (Farrington 1992)<sup>5</sup>. In studying criminal careers, Moffit (1993) suggests there may be two distinct developmental trajectories: the life-course persistent and the adolescent limited offender. In this framework, violent offending is considered to be a phase that many (predominantly young men) engage in during adolescence and which most later grow out of, with relatively few persisting into adulthood (many studies suggest persistence rates of around 5-10%; see Piquero et al., 2007; Hodgins, 2007; Farrington, 2003).

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<sup>4</sup> "The criminal career is conceived of as the longitudinal sequence of delinquent and criminal acts committed by an individual as the individual ages across the lifespan from childhood through adolescence and adulthood" (Land and D'Unger, undated). The concept of a 'criminal career' was championed by Blumstein et al. (1986) in their studies which sought to describe the key features of criminal careers; such as the patterns of onset, persistence, frequency, severity, and desistance.

<sup>5</sup> Whilst these theoretical constructs have been identified in criminology, there exist some complexities in how these ought to be measured, for example, in the cases of desistance.

Studies examining levels of alcohol consumption over the life course have also tried to taxonomise heavy drinking trajectories in adolescent development. For example, Oesterle et al. (2004) identified four distinct groups labelled ‘non-heavy drinkers’, ‘late onsetters’, ‘escalators’ and ‘chronic heavy drinkers’ – of which chronic and late onset heavy drinking were associated with negative health consequences<sup>6</sup>. Others have suggested that the early onset of binge drinking is associated with criminal behaviour (see Hill et al., 2000). Therefore, it is important to further explore the role and impact of alcohol consumption on violent behaviour at different stages of adolescence and young adulthood.

## **1.6 Aims and objectives of the current study**

In this thesis, it is argued that in order to deconstruct the alcohol-violence relationship, it is necessary to examine both expectations held towards alcohol and drinking patterns and the development thereof. To do this, a developmental life-course approach is proposed that accounts for behavioural changes and changes in alcohol consumption patterns over time. Examining how both drinking and violent behaviour are associated over the development period of late adolescence and early adulthood is the focus of the current thesis and it will draw on both the criminal careers and alcohol consumption literature. The specific objectives of the study are to:

- replicate previous studies which test whether there is an association between alcohol consumption patterns and violent behavioural outcomes<sup>7</sup>;
- identify whether attitudes and expectancies held about alcohol consumption moderate the relationship between alcohol consumption patterns and violent behavioural outcomes, and if so how;
- examine how changes in alcohol consumption over time impact on violent behavioural outcomes over time; and

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<sup>6</sup> Further studies of this kind will be reviewed in Chapter 3.

<sup>7</sup> Whilst numerous other studies have identified such an association, this replicative step is a necessary part of the research process here to situate the subsequent objectives and research questions.

- examine how changes in alcohol consumption patterns and prior tendencies to violence impact on the strength of the association between alcohol consumption and violent behavioural outcomes.

These objectives will be met by performing statistical analyses on secondary data from the Home Office Offending Crime and Justice Survey (OCJS) – a prospective longitudinal self-report survey of crime and delinquency amongst young people aged 10-25. The OCJS offers a snapshot of young people's lives, their drinking and offending behaviour over four successive annual sweeps (comprising the panel sample on which the current study will focus). Whilst these data are limited in their scope for examining risk factors or circumstances occurring/existing prior to this developmental stage, or to study longer term development through later adulthood, they do offer valuable data on the changing behaviours adopted during adolescence and early adulthood and therefore, are well matched to the aims of this study.

Initially, a series of cross-sectional models will be run to examine the predictors of violent offending and the role of alcohol consumption. Subsequently, a longitudinal series of models will be presented to assess whether the association between alcohol consumption patterns and violent behaviour vary over the period of adolescence and young adulthood or whether this remains constant. These models will collectively form a detailed exploration of how alcohol consumption and expectancies influence the development of violent behaviour amongst young people.

The next section of the thesis is divided into two chapters; the first being a review of the literature specifically on alcohol and violence and the second providing the developmental framework for the thesis. Chapter 2 will provide an overview of the debates and existing research surrounding alcohol and violence as well as highlight the pertinence of considering and disentangling this complex relationship. The subsequent chapter (Chapter 3) will motivate the thesis' focus on developmental changes in alcohol consumption and violent behaviour, that is, the role of alcohol consumption and its influence at various stages in the life course and summarise theory in this field.



Chapter 4 will describe in detail the methods and data used to address the aims and objectives of the study and Chapters 5 to 7 present the analyses of the OCJS dataset. Chapter 5 provides exploratory analysis of young people's alcohol consumption, violent behaviour and expectancies using the OCJS data and a cross sectional model examining the mediating role of attitudes on the association between drinking patterns and violence. Chapter 6 presents the analysis of the alcohol-violence relationship amongst young people using cross-sectional regression models, which are further developed longitudinally in Chapter 7. Chapter 8 discusses how the key findings contribute to our understanding of the alcohol-violence relationship amongst young people. This final chapter will also draw out the thesis' main conclusions and provide relevant policy recommendations as well as highlighting potentially interesting areas for further research.

## **2 Chapter 2: Alcohol and violence – previous research and theory**

The measurement of crime has always had associated difficulties such as the problem of capturing crimes that do not register in official, administrative and judicial processes. The proposed research aims to plug some of the gaps in knowledge of the links between young people's alcohol consumption and violent offending. The research addresses the question of whether particular alcohol consumption patterns and their development are associated with violent behaviour amongst young people and whether changes in alcohol consumption over time impact on violent behavioural outcomes. This chapter presents a review of the literature on alcohol and violence and their relationship drawing on the fields of criminology and public health that examines violence, its nature and definition, as well as recent changes and trends in young people's alcohol consumption. This chapter first examines the relationship between alcohol and crime more generally before specifically examining the characteristics of violence and then the specific relationship between alcohol and violence.

### **2.1 The alcohol-crime relationship**

Alcohol use has been linked to crime variously: exacerbating incidents, augmenting aggressive responses, or being used to summon the courage to offend (see review by Sumner and Parker, 1995). However, most drinking occasions do not result in crime and even the most criminally inclined individuals do not commit crime on all drinking occasions. It is not, therefore, possible to suggest a direct causal link between the two. Crime is an *exceptional* outcome of drinking; high levels of drinking can result in surprisingly little crime and disorder given the quantities consumed and the volume of people drinking together / in the same place (as identified in Sumner and Parker's (1995) review of the literature on alcohol and violence), and it is important to note that alcohol-related harm and violence are not evenly distributed across populations (as identified in the review by Collins (1982), studies by NWPFO (2007) and official national statistics (Kirwan et al., 2007;

Nicholas et al. 2007)). There is no biological evidence that supports the notion that alcohol unleashes criminal tendencies (Sumner and Parker, 1995).

So it is reasonable to posit there are situational factors that increase the risk of offending and that certain population groups are also more at risk of offending due to lifestyle and other factors. As Sumner and Parker suggest: “some kinds of alcohol consumption may be linked with some sorts of crime in a variety of ways” (1995:1). Thus analysis in relation to specific crime types is required to tease apart how alcohol influences behaviour by asking “what types of alcohol use by which types of people and in which situations may play what sort of part in which sorts of crime?” (Sumner and Parker, 1995:9).

Whilst measuring the prevalence of alcohol in offending is riddled with difficulties (further explored in relation to violent offending in section 2.2), several studies allude to the proportion of offences that involve alcohol. For example, figures from the British Crime Survey highlight that victims believe their assailants have been drinking in around 50% of violent offences (Flatley et al., 2010). Other estimates suggest that offenders have been found to be intoxicated in 30% of sexual offences, 33% of burglaries and 50% of street crime (Alcohol Concern, 1999), and attributable fractions from the New-ADAM Arrestee Survey suggest that in between 12% and 47% of crime alcohol is directly implicated, depending on the crime type, with 37% of Violence against the person offences estimated as being perpetrated under the influence of alcohol (Strategy Unit, 2003). It is noteworthy that the statistical association is routinely strongest when considering violent crime (Pernanen, 1981). However, caution is issued by scholars (Sumner and Parker, 1995; Pernanen, 1981) about drawing conclusions from such abstracted single impact figures since such estimates do not show a meaningful association with crime or imply a causal role, rather simply suggest that alcohol was absent or present and may simply be ‘coincidence estimates’. However, such estimates can form the meaningful basis for statistical enquiry by identifying a statistical association to be explained (Pernanen, 1981).

Alcohol-related violence can cause physical and emotional harm to individuals and sizeable costs to public health and criminal justice agencies, as well as inflicting wider socio-economic burdens as a result of victimisation and fear of

crime (see reviews on the violent literature by Krug et al., 2002 and McVeigh et al., 2005). Whilst the association between alcohol and violence has been well documented (see reviews and commentaries by McVeigh et al., 2005; Bellis et al., 2005; Pernanen, 1991; WHO, 2006), this association has almost come to be *assumed to be causal*. Alcohol has been described as permeating “almost every venue in which violence occurs” (Levi, 1997:873) and one may be forgiven for assuming the alcohol-violence relationship was a simple causal one if accepting the simplified mono-causal explanations offered by the media, as well as many simplistic policy responses offered for dealing with offences where the offender has been drinking (see commentary by Dingwall, 2006). Even the observation that 50% of assaults were committed under the influence of alcohol does not mean that alcohol was the cause in those 50% of cases any more than its non-consumption was the cause in the other 50% (Dingwall, 2006).

On closer inspection, the relationship between alcohol and violence identifies itself as a complex interplay of pharmacological effects, personal characteristics and contextual factors as highlighted by Graham et al. (1998). The fact that alcohol is consumed by many for enjoyment and pleasure with no harmful criminal outcomes on most occasions is often ignored in media and political portrayals of the alcohol and violence ‘problem’. Alcohol can have positive effects and potentially reduce the propensity for violence (Pernanen, 1991) by elevating mood as well as fostering companionship and frivolity. The pervading ‘malevolent assumption’ (Collins, 1981) regarding alcohol results in alcohol consumption being attributed directly to socially disadvantageous events occurring after alcohol consumption (Dingwall, 2006). In contrast, both government and the alcohol industry are quick to cite the economic benefits associated with alcohol consumption in legislative and policy responses concerning the development of the night-time economy (see Hadfield, 2006). Indeed, alcohol has been described as the “economic and cultural backbone of the night-time economy” (Winlow and Hall, 2006:105).

A wealth of research on alcohol consumption and its links with crime and its role in violence exists. However, this body of research is not conclusive in establishing the role of alcohol. Most commentators agree that a causal connection between consumption and crime is unlikely. Rather, as proposed by

Pernanen (1991) in relation to violence, there are likely to be common causes and intervening or mediating factors in the relationship between alcohol and criminal behaviour that may lead to an increase in the probability of a criminal or violent outcome. Empirical research in this field has often been criticised for employing biased samples of arrestees, offenders or violent incidents and for focusing the on cross-sectional identification of risk factors associated with violent offending and 'risky' drinking patterns (see commentaries by Pernanen, 1991; Blum, 1982; Farrington, 2001), offering only a limited explanation as to how these might operate. Some of the key findings from the existing research into alcohol and violence are presented here.

### **2.1.1 Alcohol and violence in England and Wales**

There has been much scepticism and dispute over the ability of official and administrative crime statistics to display the true nature and prevalence of violent crime (see Maguire and Brookman, 2005; Kershaw et al. 2008; BBC, 2008 for commentaries), thus figures from the British Crime Survey (BCS) – a national victimisation survey – are often cited as measures of the 'true' prevalence of crime in England and Wales. According to figures from the BCS, violent crime rates are falling<sup>8</sup> and, thankfully, extreme violence remains relatively rare (see Flatley et al. 2010). However, according to latest estimates, the offender is believed to have been drinking in around half (52%) of all violent offences between strangers in England and Wales (Flatley et al., 2010) and approximately a fifth (19%) of all violent offences are thought to take place in nightlife settings (in or around pubs and nightclubs), 80% of which are thought to involve alcohol (Budd, 2003).

Whilst violence is disproportionately committed by and against men, there has been an apparent rise in female involvement in disorderly conduct and violent behaviour in recent years (on the basis of increased cases of female offenders dealt with by the Youth Justice Board between 2003 and 2008; Travis, 2009)<sup>9</sup>.

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<sup>8</sup> Supplementary evidence from Accident and Emergency Department admissions data, however, highlights that whilst there has been overall national decreases in violence affecting both males and females for most age groups across England and Wales, there was "an increase affecting children aged ten and under" (Sivarajasingam et al., 2008, cited in Kershaw et al., 2008).

<sup>9</sup> Concerns about the narrowing gap between male and female alcohol consumption and alcohol fuelling violence and disorder in towns and city centres in the media are rife (see BBC News,

However, males are still disproportionately involved in violent crime and the number of girls involved in crime remains low (Youth Justice Board, 2009). Violent offences committed by girls are likely to be less serious than those committed by their male counterparts and their criminal careers shorter (Youth Justice Board, 2009).

In reviewing studies on the proportion of violence attributable to alcohol, Room and Rossow (2001) highlight the importance of differentiating between different kinds of violence when studying patterns of connection between alcohol and violence, as patterns of linkages between violence and drinking may well differ for different types of violence. The proposed research will thus focus specifically on interpersonal assault as a form of violence commonly associated with young people as opposed to other forms of violence, such as domestic or sexual violence (WHO, 2006; McVeigh et al., 2005). Interpersonal assault is also commonly associated with public violence between strangers and most commonly young people, especially in nightlife settings or when alcohol has been consumed (Bellis et al., 2005; Bottoms and Wiles, 1997; Finney, 2004; Levi, 1997; Maguire and Brookman, 2005; McVeigh et al., 2005).

### **2.1.2 Factors associated with alcohol-related violence**

Whilst there is no biological or physiological evidence that alcohol unleashes pre-existing aggressive or violent impulses (see review of research into alcohol's role in crime by Sumner and Parker, 1995), alcohol is known to impair cognitive functioning and thus the ability to process incoming information and developing suitable and appropriate responses to situational cues (see reviews by Graham, 1980; Graham et al., 1998; Sumner and Parker, 1995). Individuals may vary in their susceptibility to both these effects and/or aggressive impulses based on biological determinants, personality factors and disorders (Graham et al., 1998; Moeller and Dougherty, 2001). However, it is also recognised that alongside such biological determinants many responses for dealing with and managing aggression are fostered by social learning, upbringing and gene-environment interactions (see Aronson, 2004; Tremblay, 2008). Indeed, alcohol-

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2000; 2002; 2003; 2008; Taylor, 2008; Meikle, 2001; Hinsliff, 2004; Gunnell, 2005; Slack, 2008a; 2008b; Black, 2008; Guardian Online, 2002; Mail Online, 2005; MacRae, 2006; Mail Online, 2008; Hickley, 2004; Walters, 2009).

related violence has been described as “a complex problem rooted in the interaction of many factors – biological, social, cultural, economic and political” (Krug et al., 2002:10): these include individual attitudes and behaviours; relationships with friends, family and peers; and social environments (as identified in McVeigh’s (2005) review of factors association with violence).

At an individual level, being young, male, having low educational attainment, involvement in antisocial behaviour, prior violent victimisation, having delinquent peers, and high levels of alcohol consumption all increase the likelihood of both violent victimisation and offending (McVeigh et al., 2005). Both increased alcohol consumption and prior violent victimisation increase the risk of being involved in violence in the future, each exacerbating each other “with a strong association between consumption and an individual’s risk of being either a perpetrator or a victim of violence” (WHO, 2006:2). Prior violent victimisation or offending behaviour can also increase the risk of violent offending in the future (as identified by McVeigh et al., 2005, in their review of the literature and evidence on violence in Britain) and alcohol is sometimes used by victims of violence to self-medicate and cope with their experience, which can lead to heavy and problem drinking (as identified by Plant et al., 2002).

It is also true that drinking behaviour is subject to social influences and that alcohol consumption may form part of a wider cultural identity or lifestyle, for example, being used to facilitate ‘time out’ (see MacAndrew and Edgerton’s seminal work on the drunken comportment, 1969; Sumner and Parker, 1995). The situational and environmental context is thus likely to play a significant role on the likelihood of violence, especially where alcohol has been consumed. However, it is the role of cultural beliefs and expectancies<sup>10</sup> in relation to alcohol and violence, rather than environmental factors, that will form one of the foci of this thesis.

The distribution of alcohol-related violence varies geographically and amongst population groups (as identified by Collins, 1982; Kirwan et al., 2007; Nicholas et al., 2007). Those populations more at risk of violent offending include young people and males (see McVeigh et al., 2005; WHO, 2006). However, it is not

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<sup>10</sup> Expectancies here relate to beliefs held in relation to alcohol consumption and behavioural outcomes.

always socially excluded or deprived areas commonly associated with high crime levels that suffer the most – towns and city centres are particularly characterised by violent crime (in the form of interpersonal assault). Such incidents are concentrated on weekend evenings in areas surrounding late night entertainment venues and incidents are predominantly committed by young males (as highlighted in reviews by Bellis et al., 2005; Bottoms and Wiles, 1997; Maguire and Brookman, 2005; McVeigh et al., 2005). In such environments, both alcohol consumption and an array of situational, individual and cultural factors influence these trends.

Community and societal (macro level) factors also shape the nature and prevalence of alcohol-related violence. Factors such as inequality, disadvantage, deprivation, poor social integration, low social capital, high crime levels, alcohol availability, demographic change, and weak governance also impact on levels of violent offending (see reviews by Krug et al., 2002; McVeigh et al., 2005; Wedlock, 2006; WHO, 2006). The decline of manufacturing industry in many UK towns and city centres has given rise to the expansion of the ‘night-time economy’. This in turn has led to an increase in urban drinking venues and has shaped drinking culture (see commentaries by Bottoms and Wiles, 1997; Sampson et al. 1997; Bellis et al., 2005; Chatterton and Holland, 2003). Associated alcohol-related disorder and violence is highly visible in towns and city centres and has raised widespread concern surrounding ‘binge drinking’ and alcohol-related harm in England. These concerns have been highlighted by national government (see HM Government, 2012) and been subject to much media attention, especially in light of the recent implementation of the Licensing Act, 2003, in 2005.

Whilst the nightlife environment is only one of many contexts in which violence occurs, it is an environment in which alcohol contributes largely to the prevalence and severity of violent offences (Bellis et al., 2005; Finney, 2004); this presents a significant criminal justice, public health and urban management problem (as identified by Chatterton and Holland, 2003; Hadfield 2006). Assaults involving alcohol and/or occurring in and around nightlife venues often result in more serious injuries and are more likely to occur later in the day (that is, in the evening or night-time) (see reviews of the alcohol-violence literature by



Bellis et al., 2005; Bottoms and Wiles, 1997; Maguire and Brookman, 2005; McVeigh et al., 2005). A recent meta-analysis of studies on alcohol consumption and injury suggested that risk of injury increases monotonically with increased alcohol consumption (Taylor et al., 2010). The severity of these incidents as well as the public domain in which they occur, namely in towns and city centres, make them highly visible to both the authorities and the public (unlike other forms of violence, such as domestic violence) and therefore attract increased public concern. In addition to the general tendency for the overrepresentation of violence in the media, there has been extensive media coverage of alcohol-related disorder and violence in recent years especially surrounding the notion of 'binge drinking' and the implementation of the Licensing Act, 2003. Dingwall (2006:160) notes that "from the way that the government talk about the issue, one could be mistaken for thinking that the problem was becoming worse, even if the research suggests that the opposite is the case (Budd, 2003)". He also highlights that overrepresentation by the media can impact on the fear of crime and public concern (Dingwall, 2006).

### **2.1.3 Policy responses to alcohol related violence**

Given that not all violence involves alcohol and not all incidents of drinking result in violence, it may be useful to adopt an epidemiological approach to studying alcohol-related violence (Room and Rossow, 2001). An epidemiological framework enables the identification of which patterns and components of drinking are associated with which types of violence and at which level mediating factors may operate, allowing for a richer understanding of the conditions which mediate violence. In turn, this facilitates the development and evaluation of prevention initiatives and the dissemination and implementation of evidenced based practice (see WHO, 2007; Bellis et al, 2006; Booth et al, 2008).

The World Health Organization (WHO) highlight the extent and impact of violence (in nightlife) and promote a public health approach to the prevention of violence, based on the identification of risk factors (Krug et al., 2002). Using this approach preventative programmes have been designed and implemented by health and criminal justice agencies to modify urban environments and nightlife settings (see Bellis et al., 2007b). However, responses to alcohol-related

violence must avoid simplified positivistic notions of alcohol as a cause of social malaise and harm, and address the wider cultural and social factors associated with youth culture, risky drinking behaviour and violence. This cannot be achieved by relying solely on situational crime prevention techniques (such as police patrols, street lighting, CCTV and modifying the physical drinking environment). Whilst these techniques certainly have a role to play in managing violence in nightlife environments, it is important not to lose sight of the social and cultural factors shaping both drinking and violent behaviour, as situational or 'harm minimisation' approaches often focus exclusively on reducing adverse consequences of drinking, rather than moderating the behaviour itself (Plant et al., 2002). Factors, such as community cohesion and collective efficacy, have also been found to moderate violence (as identified in studies by Sampson et al., 1997; Bowers and Hirschfield, 1999; Wedlock, 2006) alongside social and cultural norms. However, addressing macro-level risk factors, such as cultural and social norms, can be resource-intensive and require sustained long-term investment.

The recent expansion of the night-time economy and increased trading hours for alcohol as a result of the implementation of the Licensing Act, 2003, in 2005 have been linked to increased consumption and associated harms, including violence (see studies and commentaries by Hobbs et al., 2003; Morleo et al., 2009; Chikritzhs and Stockwell, 2002). Subsequently, commentators have called for the consideration of a fifth objective surrounding public health in the Licensing Act, 2003, arguing that this would help reduce violence and other alcohol related harm (see Morleo et al., 2008; FPH, 2008; Sodeen and Shenker, 2008).

Considerations of the transmission of cultural values and their role in social behaviour are often absent in media and political discourse, as seen in the abundant political condemnation of young people, often blamed for societal ills and demonised by labels such as 'persistent offenders' (Parker, 1998). Social policy has also seemingly been shaped by "media-led misconceptions and the desire to present clear, simple solutions to the public", as in punitive responses to alcohol, drugs and crime (for example, zero-tolerance campaigns and the 'war on drugs'), despite the possibility that these may alienate 'risk-taking'

drinkers more and exacerbate the problems (Parker, 1998:145). Indeed, Parker (1998:161) noted the absence of evidence to support such approaches and pointed out that in the case of illegal leisure in the 1990s "despite quite enormous efforts and resources being put into prevention and prohibition" illegal leisure was only growing in popularity. Parker (1998:163) went on to highlight that 1990s youth had become the first chemical generation and objects of distorted debate: "they have received more control than care, more blame than apology, and had far more restrictions and regulations heaped upon them than rights, positive status and personal freedoms bestowed". The regulatory and punitive responses to young people's drinking and resulting behaviour need to be viewed in relation to those directed towards the drinks industry where a more 'hands off' approach of self-regulation can be observed (see Measham, 2006). This hypocrisy has been noted by many critics (Measham, 2006; Parker, 1998; Chatterton and Holland, 2003; Hadfield 2006) and, more recently, the previous Labour government has encouraged the drinks industry to 'put its house in order' (Parker, 1998:150).

## **2.2 Violence**

### **2.2.1 What is violence?**

Whilst aggression is a natural, common and instrumental response to threat or fear, it can result in physical violent action as a response. Violence is a destructive behaviour with the potential to harm individuals and communities. Violence can take many forms, physical, emotional and/or financial, and can be inflicted by a range of perpetrators (individuals, groups, governments and other collective organisations). Globally, levels and forms of violence differ substantially. However, by and large, physical violence can be defined as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation" (Krug et al., 2002:5). This definition, endorsed by the World Health Organization (WHO), classifies violence into interpersonal, collective and self-directed violence. Interpersonal violence is further separated into sub-

categories of youth violence, child maltreatment, elder abuse, sexual violence and intimate partner violence.

A criminal justice conceptualisation of violence seeks to define the different types in order to understand it better, in so doing it focuses mainly on legislative and operational policing classifications. Violent *crime*, as defined by the UK Home Office, includes categories of 'violence against the person' and robbery. Robbery (Section 8 Theft Act, 1968) is included and distinguished from theft (Section 1 Theft Act, 1968) as it is thought to comprise of a violent act involving the victim directly. 'Violence against the person' contains a wide spectrum of assaults ranging in severity of outcome: "from pushing and shoving that result in no physical harm, to murder" (Flatley et al., 2010:3; see Home Office, 2011, for a full list of offences classified under violence against the person). According to BCS estimates, in around half of violent incidents identified no injuries are sustained (Chaplin et al., 2011; Flatley et al., 2010). Thus standardised police categorisations used for operational and analytical purposes distinguish between 'more serious violence' and 'other violence against the person'; the more serious subgroup comprising of "violent offences where the injury inflicted or intended is life threatening, and offences resulting in death, regardless of intent" (Kershaw et al., 2008:200). The other 'violence against the person' subgroup includes offences involving less serious injury or no injury, for example, less serious wounding (Section 18 and 20 Offences against the person Act, 1861), threat or conspiracy to murder (Section 16 Offences against the person Act, 1861), and assault without injury (common law) (Kershaw et al., 2008). However, these 'less serious' violent offences may only be circumstantially less serious and may have involved serious intent: examples include endangering railway passengers or life at sea; possession of weapons; harassment; racially or religiously aggravated harassment or assault without injury; cruelty, neglect, abduction, or abandonment of children; assault without injury; as well as assault without injury on a constable (see Home Office, 2011, for a list of offences within these subcategories).

The above administrative classification of violence is a relatively restricted conceptualisation, and does not include many other forms of violence such as child abuse, elder abuse and/or domestic violence; therefore, the Home Office

has subsequently adopted a typology of violent crime distinguishing forms of violence in the BCS based on the relationship between the victim and offender, similar to those adopted in public health and by the World Health Organization (WHO). They are as follows: domestic violence, stranger violence, acquaintance violence and mugging<sup>11</sup>. According to BCS figures, violence perpetrated against men is much more likely to be stranger violence whereas women are more likely to be victims of domestic violence (Kershaw et al., 2008).

It is also worth mentioning that, until recently, the BCS did not survey those under the age of 16. Thus the BCS classification of violence may not only be biased towards offences perpetrated by adults, but also the prevalence of violence and assault amongst young people is not measured in this survey and the relative contribution of youth crime unknown. This is a recognised limitation of the study and, therefore, there have recently been developments which allow for the BCS to additionally survey those aged under 16, with a lower limit of 10 years of age in line with the Offending Crime and Justice Survey from 2009 onwards (Home Office, 2008). Whilst resulting statistics are still under consultation, initial results suggest that around two thirds of crime experienced by children aged 10 to 15 is violent crime (Chaplin et al., 2011).

### **2.2.2 How do young people become violent?**

Whether people are born or genetically predispositioned to behave violently, or whether they are made violent as a result of their experiences and surroundings has been the subject of much academic debate (see Pinker, 2004; Aronson, 2004; Tremblay, 2008). The answer to this question has substantial implications for preventing violent crime. More recent commentary on the nature-nurture debate proposes that it is likely to be an *interaction* between genetic and environmental factors that leads to violent behaviour mediated by situational

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<sup>11</sup> Definitions of these typologies are given by Kershaw et al (2008):

**Domestic violence:** "Assaults and woundings which involve partners, ex-partners, other relatives or other household members".

**Stranger violence:** "Assaults and woundings in which the victim did not have any information about the offender(s), or did not know and had never seen the offender(s) before".

**Acquaintance violence:** "Assaults and woundings in which the victim knew one or more of the offenders, at least by sight".

**Mugging:** "Robbery, attempted robbery, and snatch theft from the person".

triggers and motivational factors (see Aronson, 2004 and Graham et al., 1998, for theoretical reflections on violent behaviour).

The well-established age-crime curve<sup>12</sup> suggests offending (including violence) tends to start in early adolescence (when peer influences increase and parental controls decrease), peaking in late adolescence and decreasing with age thereafter (alongside cognitive and social development as well as increasing family and community controls). However, despite the general trend for violence to decrease with age, after peaking in late adolescence, a small minority of young people (consistently around 5-8%, as identified by Piquero et al., 2007 and Hodgins, 2007) continue to be violent well into adulthood. Additionally, more recent studies of early childhood behaviour have frequently observed aggressive and violent behaviour amongst infants (see reviews and commentaries by Aronson, 2004 and Edens and Douglas, 2006). It has therefore been hypothesised that childhood experiences, upbringing and environment play a considerable role in the development of violent behaviour: namely, that adverse childhood environments will foster violent behaviour amongst young people and that constructive ways of dealing with aggression must be encouraged (Tremblay, 2008). In this discourse on young people's development, rather than purporting that individuals learn violent behaviour as a response to aggression, it is suggested that infants, who often display aggressive and violent behaviour from an early age, need to be taught how *not* to resort to violence and be encouraged to develop other ways of managing aggression (Tremblay, 2008). The success of this may be mediated by/dependent on the situational environment.

In support of the notion that behaviour may be transmitted by early childhood experience, Nagin and Tremblay (2001) find mothers' characteristics, such as low educational attainment and being a teen mother, the best predictors of chronic aggression amongst children. Further, at its most extreme, witnessing or being subject to violence itself in childhood has been linked to future violent behaviour as well as other adverse outcomes, such as post traumatic stress disorder, depression, aggression, and substance abuse (and also problem

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<sup>12</sup> The term 'age-crime curve' refers to the curvilinear relationship frequently observed between age and offending. It describes the tendency for offending to peak in adolescence and subsequently decline with age.

drinking) (see commentaries by Gibson et al., 2009 and WHO, 2006). These findings highlight that violence also needs to be considered as an intergenerational issue, as parenting styles are passed down from one generation to another. More recently, Tremblay (2009) suggests that social environmental effects may not operate in the same way for both sexes; rather that baby girls develop alternatives to aggression more quickly and that environmental determinants have more of an effect on very young girls compared with boys.

How early childhood experience impacts on violent behaviour later in life manifests itself in a complex relationship of biological, psychological and social factors and has been the subject of study by many across varying disciplines, with its precise nature yet to be defined. Indeed, recently, the medical literature has pointed to factors, such as previous head and brain injury, as a contributing factor to later violence (see Stoddard and Zimmerman, 2012) and that violent behaviour is often closely related to conditions such as attention deficit disorder and antisocial personality disorder (Retz and Rösler, 2009), whilst the psychiatric literature has pointed to nutrition as a potential influence in young adults criminal behaviour (including violence; see Gesch et al., 2002). Nevertheless, little remains known of those who potentially have a violent disposition and are exposed to environmental risk factors but do not resort to or display violent behaviour (as highlighted in reflections offered by Trono, 2009). However, it has been hypothesised that where this is the case other mediating protective factors may be at play, such as a good education or strong peer influences (especially if female), thus offering them the ability to learn different methods of dealing with emotions and the ability to control themselves (Tremblay, 2009). Nonetheless, government responses and media attention have been keen to fixate on the notion of early childhood risk factors as a cause for violent behaviour, blaming poor parenting and the rise in lone parent households (Tremblay, 2009). However, such discourse is considered by many commentators to be ineffective as these trends may themselves be symptoms of wider social-structural inequality (see Wilkinson and Pickett, 2009; Young, 2007). Indeed, findings from a Danish study highlight that whilst violent offenders are more likely to come from seriously disadvantaged families they are

characterised more so by unstable education and employment records which are thought to constitute wider structural factors impacting on the likelihood of future violent offending (Christoffersen et al. (2003).

Whilst early childhood experience is central to the development of response strategies and coping mechanisms for dealing with anxiety and frustration later in life, adolescence is an important developmental stage in which onset of violent and criminal behaviour often occurs; particular attention is needed to understand the triggers and situational risk factors during this period and how these can be moderated.

### **2.2.3 Violence as a resource**

Aggression can be both a reactive and/or defensive reaction leading to either positive or negative outcomes. In a situation of danger, aggression can heighten anxiety so that action is taken to protect oneself (thus seen as instrumental). Conversely, action taken in response to aggression can be offensive and destructive. Whilst defensive aggression is often the result of fear or employed for reasons other than inflicting pain, offensive or 'hostile' aggression often stems from anger (Aronson, 2004). However, offensive aggression may be linked to a victory or reward and thus be regarded as enjoyable. Thus, violence itself may be viewed as a 'leisure pursuit' in some youth cultures or employed instrumentally as in the case of gang violence (as identified by Hunt and Laidler, 2001, in their review of alcohol and violence in the lives of gang members).

Violence is not always an unprompted and random occurrence; for example, it is a common method of social control in drug markets and criminal networks where its use may be calculated and 'rationalised'. In such a scenario, violence may be used as a form of protection by gangs and drug dealers as well as serve as a warning to other gangs or individuals (as identified by Broadhurst, 2006). In these instances violence may be used to instill fear in others in order to achieve potential power, control or respect in a 'culture of honour' (Aronson, 2004). By employing violence in this manner, individuals may potentially be reinforcing their own views on violence as a valid resource for achieving status and power, rather than learning more amenable and socially desirable behaviours.



Investigating how violence is used as a method of control amongst criminal networks and gangs may assist our understanding of violence and make for interesting future research. However, this is beyond the remit of the current study. The notion, however, that local 'gang' culture, permissiveness to crime and violence, and pressure from peers shape community attitudes towards violence and alcohol consumption and that these influence individual behaviour are key considerations when trying to establish mediating factors in the relationship between alcohol and violence.

#### **2.2.4 Violence as pleasure**

Despite an established association of violence with risk, spontaneity and youth, there remains an apparent cultural taboo around explanations of violence centred on the notion of violence as pleasure. Katz (1988) suggests that explanations of crime (including violence) have overly focused on background forces on criminal behaviour rather than examining the moral and sensual seductions of crime. He goes on to suggest adolescent criminal behaviour may be chosen as a way to seek 'sneaky thrills' which can produce pleasure and/or status amongst peers (Katz, 1988). The relative discomfort that individuals can sometimes respond violently to each other evokes amongst us may be one of the reasons behind why, despite its destructive social and financial impact, human violence remains relatively unexplored and not fully understood. Nonetheless, alcohol misuse may be used as a mitigating explanation after violent offending and yet the notion that alcohol 'unleashes' dormant and underlying violent tendencies is unsupported (Sumner and Parker, 1995).

On the one hand explanations of violence may centre around a discourse of violence as a learned behaviour, or alternatively suggest that impulsive and gratifying responses, such as violence, need to be 'unlearned'. As seen in other behaviours such as sadomasochism and self-harm, pain is preferred or deemed more pleasurable than the absence of emotion or sensation. Pain and (self-directed) violence are in such instances tolerated or considered pathways to relative pleasure. It is thus reasonable to suggest that violence directed at others may also be seen as pleasurable for the same reasons, especially when this violence brings benefits or victories, such as financial and sexual rewards

or affirmations of power and control; albeit these may be short-lived and followed by feelings of remorse, guilt and shame.

Indeed, in certain sections of society, aggression and violence are celebrated and rewarded (Edens and Douglas, 2006). As such, it is feasible that violence may be viewed as exciting and pleasurable in certain cultural or sub-cultural contexts; for example, in asserting macho values/masculinity especially in criminal networks and subcultures in which criminality and 'gangsterism' is aspired to or praised. It is thus hypothesised by some that crime and aggression are akin to some licit thrill-seeking behaviours such as extreme sporting activities, which others may turn to in order to keep such sensation-seeking and behavioural impulses at bay (for example, see theoretical reflections by Lyng, 2004). Violence is also passively indulged in via cultural media such as watching violent films or playing violent video/computer games. When considering violence as 'enjoyable' in this manner, an association between the frequent co-existence of alcohol consumption alongside violent behaviour seems to suggest a link based on thrill-seeking, pleasure, spontaneity and impulsivity, often associated with youth culture and lifestyles and the consumption of 'time out' (MacAndrew and Edgerton, 1969) or taking 'moral holidays' (see Parker, 2007).

### **2.2.5 Characteristics of violent incidents**

Violent incidents are not all the same, although they often have common characteristics. Understanding how violent incidents are triggered and how confrontations or social interactions escalate into violent incidents enables the identification of key stages and mediators in violent behaviour. In turn, this may enhance our understanding of how alcohol influences violence.

Violence might be considered an interaction between victim and assailant in which the central and dynamic concepts of dominance and submission need to be asserted or reinforced through the use power, ritual and performance. In violent encounters there is a perception by one or more parties of an injustice of some sort which triggers hostility, anger or aggression. However, it is important to note that this is a subjective interpretation and may vary dependent on one's relationship, affiliation to those involved or involvement in the act (see review

and commentary offered by Sumner and Parker, 1995). It is also likely that alcohol can, in some instances, influence and distort such perceptions resulting in the escalation of incidents into violent events that, if sober, may have been resolved differently (see theoretical reflections offered by Graham, 1980 and Graham et al., 1998).

On the whole, engaging in violence tends to be avoided by most people (as suggested by Katz, 1999) and many violent responses are often unplanned and spontaneous. Thus immediate emotional responses are often key to whether a violent incident occurs and how it unfolds. Unlike other forms of criminal behaviour, the distinction between victim and offender is often blurred when considering violence (Plant et al., 2002). It would appear that in the case of 'drunken brawls' and some street violence the notion of a culpable offender and an innocent victim is not always applicable. In such incidents, the 'victim' is often an arbitrary label assigned to the party who 'lost', was more seriously injured, reported the incident or required medical care as the result of an incident. Indeed, previous violent victimisation is also a strong predictor of future involvement in violence as an offender (see WHO, 2006). Thus initiatives need to consider targeting those who have committed violent offences as well as victims, as both parties are often active participants (especially in fights between young males).

People's own responses to aggression vary depending on the situation, learned responses and coping style, as well as personality traits and characteristics. As such, violence is viewed as the pathology of aggression: violence is destructive and people learn not to indulge in violent behaviour. Outcomes of aggression are often influenced by individual's reactions to environmental and social challenges and the handling of the incident by those involved or witnessing the incident as these can impact on key stages in the run up to a violent incident – namely, the build up, turning point, peak and a period of cooling off (Kluseman, 2009). The build-up stage is often characterised by ritual and performance, as seen in gang culture and in men affirming and reasserting their masculinity by appearing 'tough' (see Katz, 1999; Hunt and Laidler, 2001; Kluseman, 2009). This stage often acts as the arena in which force, dominance and aggression are paraded as a 'warning' to the other party (or parties). After this build-up

there is often a perceived turning point in which an incident may or may not lead to physical violence. Personal characteristics, learned behaviour and coping style may play a key role mediating such outcomes, as might the role of intoxication.

Sociological explanations of violence have often focused on the notion of anxiety as a mechanism behind violent behaviour (see commentary and theoretical reflections by Young, 2007). Given that socio-economic factors as well as cultural context are also thought to influence violent and criminal behaviours, many efforts to explain violence have centred around the processes and contexts that foster conditions in which violence thrives; for example, inequality, unjust and un-egalitarian societies and the resulting anxiety associated with such conditions. It is also thought that inequality and lack of opportunity harbour resentment, a lack of trust in communities and feelings of disrespect and humiliation, further exacerbating such anxiety (Wilkinson and Pickett, 2006; Young, 2007). Indeed, the resulting sense of low self- and social-esteem and associated anxiety is thought to play a role in "the casual violence seen in drinking establishments frequented by marginalised groups" as this "appears to be a consequence of the 'life is cheap' culture, characterised by cold-blooded acceptance of aggression and violence and disregard for one's safety" (Graham and Homel, 2008:85).

It has long been identified that those from disadvantaged backgrounds are disproportionately represented in the Criminal Justice System for violent offences. Whilst disadvantaged social positioning is neither a necessary nor sufficient condition for behaving violently (as to claim this would be purporting an ecological fallacy), it is likely to be an important contextual factor alongside other risk and mediating factors (such as a suitable trigger), as those with fewer stakes in conventional societal values and goals can be considered to have less to lose in resorting to violent responses or strategies to achieve respect and status (as advocated in strain theories of crime). This notion of having little to lose may be linked to social exclusion, as advocated by Young (2007), namely by the rejection of, or exclusion from, mainstream culture or society in which a diminished sense of self-worth is fostered. Furthermore, resentment as a result

of such processes may make violent responses more probable (see commentaries by Wilkinson, 2004; Young, 2007).

In this section characteristics of violent incidents were explored. It highlighted that violence is influenced by contextual factors such as socio-structural disadvantage and associated anxiety, inequality and social interactions. Given that violent incidents overwhelmingly involve young males, it is this issue and the role of 'masculinity' in explaining violence that are the foci of the next section.

### **2.2.6 Young males and performing masculinity**

When considering the dynamic of violent incidents, it is interesting to note that violence is often committed by males, both when directed against fellow males as well as against females (such as in sexual and domestic violence). Young males are particularly likely to be involved in violent behaviour – a trend seen in criminal careers more generally. Violent offending is also known to peak between the ages of 18-33 (as identified in studies on criminal careers such as those by Laub and Sampson, 2003 and Farrington, 2003); an age range associated with sexual competition, heightened sex differences, adolescent hormonal changes, and moral and social development (Archer, 2009).

There have been many attempts to explain this phenomenon. Gender roles and the constructions of cultural norms associated with these may play a role in alcohol consumption and violent behaviour. For example, norms surrounding masculinity often include celebrating physical strength, risk-taking, saving 'face', gaining 'respect' (Garside, 2010) and being a 'badass' (Katz, 1988) and may play a role in explaining higher alcohol consumption levels and involvement in (alcohol-related) violence by young males. Sociological commentary on age, violence, drinking and crime has often highlighted the extension of adolescence or extended youth as a key factor in recent trends in alcohol consumption patterns, as people are delaying marriage and settling down in favour of an extended period of pleasure-seeking (as outlined in Chapter 1).

Male and female sexual selection and social dynamics may help understand violent dynamic in more detail, why male and female 'fighting strategies' differ, and why males are disproportionately involved in committing violence, as well

as being the victims thereof (McVeigh et al., 2005). There are many forms in which aggression or violence can manifest itself and males tend to adopt direct verbal and physical responses (Archer, 2009). Males are also disproportionately represented in 'legitimated' forms of violence, for example, warfare (Archer, 2009).

### **2.3 Role of alcohol in violence**

"The relationship between alcohol and aggression [and indeed violence] is often assumed in modern Western cultures" (Graham, 1980:141). However, whilst such associations have long been established, the precise relationship between alcohol and violence remains relatively unexplored and (given methodological limitations and biased samples) the association between alcohol and violence identified in previous studies is not fully understood. In this section the existing literature on the role of alcohol in violence will be explored in more depth, particularly focusing on what is known about the relationship between alcohol and violence, and known risk factors associated with drinking and violent offending amongst youths and young adults.

Alcohol is a known risk factor for young people's involvement in interpersonal stranger violence. Thus explanations of alcohol-related violence amongst young people must consider both alcohol consumption and violence, whilst giving due consideration to the complex links between the two. Whilst there is no one set of causal mechanisms to explain the role of alcohol in violence, striving to identify the ecological conditions in which such behaviour thrives, as well as the individual and societal factors involved, may offer an insight into the nature of alcohol-related violence, which in turn fosters an understanding of how it can be ameliorated.

People drink and behave very differently depending on their environment and in different social settings (as Plant et al.'s (2002) review and MacAndrew and Edgerton's (1969) seminal study highlight). The effects of alcohol are thought to be mediated by personality, expectancies, situational factors and social norms (ICAP, 2005). In support of this hypothesis, poorly maintained and managed drinking venues have been found to be associated with increased aggression amongst drinkers (Graham and Homel, 2009), as are individual behavioural

characteristics, such as risk-taking or behavioural problems, which may serve as common risk factors to both drinking and violent behaviour (see Bellis et al., 2007b; Bellis et al., 2005).

The toxicological effects of alcohol are known to distort cognitive functioning in a number of ways, such as: distorting perceptions of risk and decision-making; increasing levels of aggression and reduced self-control (see reviews by Graham, 1980; Graham et al., 1998), which can lead to incidents escalating beyond what may have occurred if one or more individuals involved had not been under the influence of alcohol; and increasing physical vulnerability and the ability to defend oneself when under the influence of alcohol, in turn increasing the likelihood that incidents will result in physical harm or injury.

In addition to the toxicological effects of alcohol, alcohol may also be used in the purposeful preparation for violence (as highlighted in commentaries by Bellis et al., 2007b; Bellis et al., 2005; Hunt and Laidler, 2001; Sumner and Parker, 1995) or may be used by victims to self-medicate and cope with their experiences; this in turn can lead to heavy and problem drinking (see literature reviewed by Plant et al., 2002). Conversely, alcohol may reduce the propensity of violence by elevating mood as well as fostering companionship and frivolity or inadvertently preventing incidents of violence that may have otherwise occurred if the individual had not been too intoxicated (as identified in Pernanen's (1991) anthropological study on the drunken comportment (behaviour)).

Both alcohol misuse and criminal behaviour can be related through common risk factors such as previous violent victimisation (as highlighted by McVeigh et al., 2005), secondary exposure to violence (as identified by Gibson et al., 2009), or behavioural traits such as antisocial personality disorder (see Moeller and Dougherty's 2001 review on antisocial personality disorder, alcohol and aggression). Both increased consumption and prior violent victimisation increase the risk of being involved in violence in the future, each exacerbating each other "with a strong association between consumption and an individual's risk of being either a perpetrator or a victim of violence" (WHO, 2006:2).

Young people can be particularly at risk of alcohol-related violence due to lifestyle factors such as: their alcohol consumption patterns; use of public

space; and increased use of nightlife environments compared to other age groups, exposing them to environments conducive to violence and other intoxicated individuals (as identified in reviews by Graham et al., 1998; Levi, 1997; McVeigh et al., 2005). Whilst not legally allowed to buy their own alcohol or access bars and nightclubs, young persons under 18 are known to drink alcohol with their peers and may face exacerbated vulnerability to a range of alcohol-related harm given their age and the unsupervised public environments in which they drink (for example, on the streets and in public places, such as parks). In contrast, youths drinking at home with their parents over dinner are less likely to engage in violence or be cause for concern (Margo, 2008). Indeed, supervised drinking in the parental home as well as the provision of alcohol to young people by their parents (as opposed to buying this themselves or having others people buy it for them) has been found to be a potential protective factor against alcohol-related harm possibly because it fosters sensible and social drinking habits (as identified by Bellis et al., 2007a), whereas the early onset of drinking is associated with problem drinking later in life (as identified by Collins, 1982, when reviewing the literature on drinking and crime) and is a known risk factor for involvement in violent crime. Thus, if risk factors for violent behaviour can be moderated and responsible drinking encouraged at an early age this may protect young people from getting involved in violence – not only during youth but also long into adulthood<sup>13</sup>.

Given the complexity of the alcohol-violence relationship, it is difficult to ascertain alcohol's precise role. In order to understand this relationship in more detail, it is necessary to identify the many factors influencing the relationship at the individual level, the cultural factors involved and the role of social and situational environs that may mediate the relationship. Much of the existing research on alcohol and violence has focused on identifying the presence of alcohol in violent events (for overviews see Pernanen, 1991; Greenberg, 1982; Sumner and Parker, 1995). However, despite sustained research efforts it is difficult to pinpoint any causal relationships. Pernanen (1991) forwarded the

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<sup>13</sup> Of course, confounders such as peer influence and/or environmental setting would also need due consideration in developing such interventions, as it is plausible that young people who drink at home with their parents differ in a number of ways from those that do not (for example, in socio-economic status).



hypothesis that alcohol consumption may not directly determine involvement in violence, but rather is conditional on a number of other factors, which increase the probability of an interaction escalating into a violent incident (Pernanen, 1991).

Sumner and Parker (1995) review the role of alcohol in crime more generally and suggest that as crime is a rare and exceptional outcome of drinking and as drinking alcohol is a widespread social habit there is unlikely to be any mechanistic connection, rather *some kinds* of alcohol consumption are likely to be linked with *certain crimes* in a variety of ways. Therefore, rather than looking for a single general model of the alcohol and crime relationship, the authors argue that it is more relevant to look at which aspects of alcohol consumption might play a role in which crimes acknowledging that "the outcomes of alcohol use are necessarily a complex and tight interweaving of the pharmacological properties of the drug itself, individual susceptibilities to its effects and layers of social meanings, norms and expectations of drinking" (Sumner and Parker, 1995:44). This approach acknowledges the importance of human agency responding to behavioural cues despite intoxication, as advocated by MacAndrew and Edgerton (1969) in their anthropological study of the drunken comportment. The authors urge for a different research strategy centred around the question of "whether particular sorts of drinking lead to crime and if so what aspects of drinking (which involve more than just quantities and frequencies) are associated with what sorts of crime" (Sumner and Parker, 1995:42), and highlight the importance of focusing on the circumstances and ways in which drinking may or may not lead to crime.

So, rather than looking for a single definitive explanation of alcohol-related violence, the complexity of social meanings, norms and expectations of drinking, as purported by the social learning theory, should be acknowledged (see Sumner and Parker, 1995; MacAndrew and Edgerton, 1969). Social learning theory proposes two modes of learning: reinforcement and identification, both of which can be seen to be operating within peer groups in respect of both alcohol consumption and violence. In testing Aker's (1998) Social Structure - Social Learning Theory, Lanza-Kaduce and Cpece (2003) identified that much of the variance in binge drinking that can be explained by

social structural variables is absorbed by social learning variables. Thus, this supports Akers mediations hypothesis and suggests that social learning theory accounts for most of the variance in binge drinking (Lanza-Kaduce and Cpece, 2003).

Work within sociology and public health has examined motivational aspects and attitudes towards drinking as a mediator of alcohol consumption and its associated negative behavioural and health outcomes. Early studies of the reasons for drinking (see Knupfer et al., 1963; Cahalan et al., 1970) suggest that there are essentially two types of reason; the "personal" (for example, "to forget everything", "because I need it when I am tense or nervous" and "for relaxation") and the "social" (such as "to be sociable"), with the former tending to be associated with heavier drinking. More recent studies have found that "adolescents and young adults typically drink to obtain social rewards, to enhance positive mood, to reduce negative mood, and to avoid social alienation (Cooper, 1994; Cox and Klinger, 1988; Kuntsche et al., 2005)", with the latter group also being at increased risk of experiencing negative consequences as a result of drinking (Patrick and Maggs, 2010:756). In exploring reasons for drinking and social norms (amongst college students in the US) Patrick and Maggs (2010) identify motives for drinking (such as having fun and socialising, relaxation, coping, image, and sex) and motives against drinking (including physical, behavioural, not being ready for sex, impact on health, and contravening values). Overall, as Yurasek et al. (2011) observe, such studies have consistently suggested that "internal reinforcement of enhancement and coping motives generally show a stronger relationship with alcohol-related outcomes than the more externally reinforcing effects of social and conformity motives (Cooper, 1994; Cooper et al., 1992)" and that "coping motives are more strongly associated with alcohol-related problems (McCabe et al., 2002; Neighbors et al., 2004; Read et al., 2003; Schall et al., 1991; Stewart and Devine, 2000; Wood et al., 1992)" (Yurasek et al., 2011:992).

### **2.3.1 Measuring and assessing the role of alcohol in violence**

As the foregoing discussion illustrates, conceptualising the role of alcohol in violence is a complex undertaking. Equally challenging is measuring its presence, role and impact, as well as identifying the key components of both

drinking and offending behaviour that impact on the likelihood of alcohol-related violence occurring. In early research on alcohol and crime this led to methodological problems, which Dingwall (2006: 57), drawing on earlier work by Greenberg (1981), summarises as:

multiple and loosely defined concepts of alcohol use; lack of uniformity in definitions of crime; biased samples; failure to control for relevant variables; lack of information on the context in which drinking and crime co-occur; and inability to distinguish subgroups of alcohol users and offenders.

In his extensive study of alcohol and human violence, Pernanen (1991) identifies both operational and methodological limitations in previous research and calls for more theoretically driven and detailed research focusing on the general population. Previous research efforts have often been based on samples of official police records (violent events), arrestees and prison populations. These samples are biased towards criminal actors and violent events and yet take the violent incident as the dependent variable. This in turn restricts the explanatory and predictive ability of a study, as it does not distinguish between people that consume alcohol and become violent and those who consume alcohol and do not behave violently (Pernanen, 1991). Pernanen (1991:34) further suggests that, given limited systematic knowledge on the role of alcohol in everyday violence amongst the general population, it would be useful “to obtain data on subcriminal incidents of aggression (and the role of alcohol)”, which is one of the aims of the current thesis. In sum, the nature and prevalence of offending and alcohol-related behaviour in the general population has been relatively neglected, possibly due to a lack of suitable data.

A further limitation in the existing research is the indiscriminate measurement of alcohol as being either present or absent in an offence, which does not quantify patterns or levels of drinking and intoxication prior to the violent or criminal act. A distinction between drinking and drunkenness is often absent in the research (Greenberg, 1982), most likely due to difficulties in measuring subjective concepts such as ‘drunkenness’. However, details such as the amount consumed, length of drinking session, type of beverages consumed and/or

levels of drunkenness are required for a fuller understanding of how alcohol mediates violence (Pernanen, 1991).

Victimisation studies, such as the British Crime Survey (BCS), have relied on accounts of whether victims believed their assailant to have been drinking or not. However, this tells us little about the amount consumed or level of intoxication and relies on third party subjective assessment. Little research has attempted to examine typical alcohol use and patterns of consumption by perpetrators compared to the non-offending population or drinking patterns prior to a violent incident or outburst of aggression (Pernanen, 1991) - this is something the current thesis addresses. Simply identifying the frequent coexistence of alcohol in violent events, or the disproportionate rate of alcohol dependence amongst violent offenders, tells us little about the dynamic of how alcohol may be influencing behaviour and why it results in violent behaviour for only some people and on only some occasions.

Alongside the issues surrounding the conceptualisation and measurement of alcohol consumption and intoxication, run the parallel challenges of defining and operationalising violence. Not only are there many forms of violent behaviour but, as outlined previously, the distinction between victim and offender in alcohol-related violent encounters is often blurred (see Plant et al., 2002). The measurement of violence has tended to use very coarse metrics – typically of violence being either absent or present, rather than accounting for varying forms and levels of violence (Greenberg, 1982). (A more detailed account of measurement issues surrounding violence and the role of alcohol is presented in Chapter 4).

## **2.4 Changes in alcohol consumption**

### **2.4.1 International and UK trends**

The pharmacological properties of alcohol make it ‘no ordinary commodity’ (Babor et al., 2003). However, it has been consumed for centuries in many cultures. Its cultural positioning and role varies across countries, people and settings (Pernanen, 1991) as does the extent to which alcohol consumption is seen as normal and acceptable by young people and adults alike (Plant and Miller, 2007). In the Western world, alcohol has formed a commodity associated

with leisure and time out. In Northern Europe (including the UK) there is a strong emphasis in drinking to intoxication and subsequent control of drinking by formal criminal law (Room, 2007)<sup>14</sup>. Whereas Southern Europe is thought to have a more 'wet' culture', in which alcohol is more integrated into day to day activities and drunk more moderately (as identified by Ahlström et al., 2007, in their study of youth drinking cultures).

Alcohol has a longstanding place in UK culture where a strong 'pub culture' prevails, meaning that much of the drinking in the UK is done in public rather than at home (Room, 2007). This brings with it associated concerns in relation to how to effectively supervise drinking in the nightlife environment (as raised by Graham and Homel, 2008; Winlow and Hall, 2006; Hadfield, 2006). UK drinking culture also contributes to a limited integration of drinking at home with day-to-day activities and the education about drinking by parents.

As seen all over the post-industrial world, in the latter part of the 20th century, the decline of the manufacturing industry and development of the tertiary sector led to the large-scale development of the night-time economy, often centred around licensed leisure (see theoretical reflections and commentary by Chatterton and Holland, 2003; Hadfield, 2006). In the UK, this impacted on traditional drinking practices and establishments, previously based around local public houses and almost exclusively performed by men and young males. Given that drinking by young people was increasingly concentrated in town and city centres as opposed to in their local communities, many rural community pubs had to change to family-friendly pubs centred around serving food. The landscape of urban nightlife was also 'gentrified' during the same period, with a focus on cocktails, quality drinks and ambient settings targeting young professionals and women (Chatterton and Holland, 2003).

Historically, female drinking has been frowned upon due to a cultural association with deviance and sexual promiscuity. However, since the 1980s, whilst males still consume more alcohol than females, the alcohol industry has been quick to exploit both the female and adolescent market by offering high-strength, sweet and even low-calorie 'designer' drinks at affordable prices (Brain et al., 2000; Brain and Parker, 1997). Increasing concern and attention

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<sup>14</sup> Also seen in Australia (Parker, 2007).

has been given to the rise in consumption by female drinkers (as highlighted by Plant and Miller, 2007).

Another emerging trend of drinking in the home prior to going out, termed 'pre-loading', 'pre-drinking' or 'pre-gaming', has recently been identified (see Hughes et al, 2008; Homel and Graham, 2009). This trend can be seen in a number of countries and has raised considerable concern (as identified by Bennetts and Seabrook, 2008; Hughes et al, 2008; Wells et al, 2009), as this drinking behaviour has been linked to harms, including alcohol-related violence (as Hughes et al., 2008, identified in their study of risky drinking among 15 to 16 year old school children) especially in the domestic sphere (as identified by Valentine et al, 2007, who investigate where people drink alcohol and why). The increased risk of violence and harm is potentially explained by people entering the night-time economy already intoxicated and drinking heavily in unsupervised environments (Hughes et al., 2007). Some have suggested this trend could be attributed to low cost alcohol being sold in increasing volumes by off-licensed premises, such as supermarkets, compared to diminishing sales in on-licensed venues, such as pubs and clubs, as well as people drinking at home and waiting to go out into the town and city centre drinking establishments until later in the evening as a result of the extended opening hours facilitated by the Licensing Act, 2003, (see review of the impact of the Licensing Act, 2003, on crime and disorder by Hough and Hunter, 2008). Available evidence to test either of these hypotheses is limited, but, given increased alcohol purchasing power of young people (based on rising disposable income and stable alcohol prices, alcohol was thought to be up to 65% more affordable in 2007 compared to twenty years previously; Alcohol Concern, 2007<sup>15</sup>), it is likely to be a valid concern, especially as affordability has been linked to increased alcohol consumption (Babor et al., 2003).

#### **2.4.2 Changes in young people's alcohol consumption**

Young people's alcohol consumption is particularly associated with stranger violence between youths, often manifesting itself in the form of interpersonal assault. However, to ascertain the nature of that association, it is important to

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<sup>15</sup> For further detail on how this figure was arrived at see ONS (2007) Focus on Consumer Price Indices, Office for National Statistics and Economic Trends: London.

tease out which elements of drinking or which drinking patterns are more strongly associated with violent behaviours. In particular, high quantity alcohol consumption patterns such as heavy session or 'binge drinking' is associated with age. In 2006, Matthews et al. explored underage drinking patterns using the 2004 OCJS and found that underage drinkers (aged 10 to 17) who drank more regularly (more than once a week) were responsible for committing a disproportionate volume of crime, including violent offences. Using the 2003 OCJS, Matthews and Richardson (2005) found those classified as binge drinkers to be associated with committing a disproportionate volume of offences, including violent offences (whilst binge drinkers only accounted for 6% of the sample, they were responsible for 30% of all crimes and 24% of all violent offences).

Unsupervised leisure time spent with peers is also associated with offending, whilst quality time spent with parents is thought to prevent the onset of offending amongst children and young people (as Margo, 2008, identifies in reviewing what works in preventing youth crime). As Margo (2008) highlights, factors associated with offending, based on analysis of the 1970 British Cohort Study, include regular unsupervised socialising with peers in disadvantaged high-crime neighbourhoods and regular socialising with anti-social young people without supervision. Unsupervised 'hanging out' is also thought to be more common amongst boys (and, as we have seen from previous evidence reviewed above, it is also young males who are also more likely to be involved in violent encounters). Alongside concerns associated with unsupervised leisure time, a lack of leisure facilities and extra-curricular activities for young people can often lead to them drinking alcohol to alleviate boredom, to escape or feel a 'buzz' (Phillips-Howard et al., 2008).

Unlike illicit intoxicants, alcohol is readily available in England and Wales to those over 18 and alcohol may be made available legally to those under 18 in certain circumstances and under supervision by adults, for example, those aged between 16 and 17 years are allowed to consume some alcoholic drinks with a meal in a licensed premises, if it is bought for them and they are accompanied by an adult (as outlined in the Licensing Act, 2003). However, Licensees and staff of licensed premises have a duty not to serve or sell alcohol to those under

the age of 18 (Licensing Act, 2003) and it is an offence for adults to knowingly purchase alcohol for persons aged under 18, and police are allowed to confiscate alcohol off those aged under 18 (Criminal Justice and Police Act, 2001, and Confiscation of Alcohol (Young Person's) Act, 1997, respectively). The notionally strict regulation of sale of alcohol to those aged under 18 means it is afforded an 'adult status'. This has the inevitable consequence that its consumption becomes more attractive to under 18 year olds and therefore "there is little doubt that alcohol plays a key role in youth culture, where drinking alcohol is part of the acquisition of adult status in a society in which alcohol use (and misuse) is deeply embedded" (Sumner and Parker, 1995:45).

In the late 1990s and around the turn of the century, the volume of alcohol consumed in individual drinking sessions has been increasing, as have levels of alcohol-related harm amongst young people and the number of people abstaining from alcohol completely (Parker, 1998; Plant and Miller, 2007). Young people in the UK are more likely to drink than their European counterparts. As a result, they also experience higher levels of alcohol-related harm (Hibell et al., 2004). Quantities of alcohol consumed by underage drinkers (11 to 15 year olds) in England have doubled in the past 15 years particularly for males and older pupils (as revealed by the ESPAD<sup>16</sup> survey; Fuller, 2008). Further, 18 to 24 year olds have been known to drink more than any other group and often in pubs and clubs (Sumner and Parker, 1995). What young people drink has also changed; alongside a trend to drink to intoxication, the drinks industry has been quick to develop and supply strong designer drinks marketed at young people. "In short, young people's drinking, particularly away from dinner table wine, is dominated by brand name designer drinks" (Parker, 1998:151). The alcohol industry has effectively marketed itself to young people by acknowledging a new style of drinking amongst young people based on heavy session drinking with a focus on intoxication and high strength drinks (Sumner and Parker, 1995; Measham, 1996; Järvinen and Room, 2007). Such alcohol consumption is thought to constitute a form of leisure consumption facilitating 'time out' from everyday life (as identified in theoretical reflection from authors such as Parker, 1996; 2005; Measham and Brain, 2005; MacAndrew

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<sup>16</sup> European School Survey Project on Alcohol and Other Drugs.



and Edgerton, 1969). Given recent trends of heavy sessional drinking (or 'binge drinking') and 'pre-loading' (as outlined above) there have been associated concerns about increases in disorder and violence. These stem from evidence that heavier drinkers, of which we are seeing more in England and Wales, are more likely to be involved in wider 'risk-taking', that is, being recently very drunk, having tried drugs and having been arrested (Parker, 1998). Given the role of alcohol consumption in young people's leisure, alcohol consumption in relation to UK youth culture will be explored in the next section.

### **2.4.3 Alcohol consumption and youth culture**

Measham (2006) elaborates on the emerging patterns of alcohol consumption and acute intoxication in her notion of 'weekday restraint and weekend excess', suggesting that amongst young people abstinence had tended to be preferred during the week, when work is to be prioritised, followed by indulgent and hedonistic excesses at the weekend – within the night-time economy – to 'make up' for a hard working week<sup>17</sup>. In line with this trend it is no coincidence that violent incidents are concentrated on weekend evenings in areas surrounding late night entertainment venues (see evidence reviewed by Bottoms and Wiles, 1997; Maguire and Brookman, 2005). In such environments, both alcohol consumption and an array of situational, individual and cultural factors influence violent outcomes. Nightclubs have previously been identified as settings associated with a disproportionate volume of alcohol-related disorder and violent assaults. Many factors contribute to the potential for violent encounters, namely, large homogenous groups of young people drinking; dark, noisy and uncomfortable settings with limited seating; and competition for facilities (for example, queuing for drinks and/or toilets as highlighted by Bellis et al., 2007b). Poorly managed venues (such as those that are poorly maintained and have permissive attitudes towards anti-social behaviour) are unsurprisingly associated with higher rates of violent incidents (see Bellis et al., 2007b).

Frequenting nightclubs can expose individuals to settings in which drinking, drunkenness and violence occur and so increase their vulnerability to both

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<sup>17</sup> The author appreciates that Measham (2006) made these point based insights accurate at the time of writing, however, the landscape in terms of youth (un)employment has since changed.

violent victimisation and offending. Many nightclubs market themselves at distinct client bases and have varying cultures of (in)tolerance towards criminality and (dis)orderly behaviour as well as varying levels of permissiveness towards anti-social behaviour (including drunkenness and violence). Given that behaviour whilst under the influence of alcohol is often tailored to both the occasion and environment, it is possible that a culture of tolerance surrounding alcohol-related violence in nightlife venues will contribute to the prevalence of offending (as suggested by Graham and Homel, 2009).

Despite the interest young people may develop in legitimate forms of leisure, these are not always readily available and are often least accessible to those from disadvantaged backgrounds. For some young people drugs and alcohol may represent accessible forms of leisure on which they come to depend. In marketing alcohol, it is often presented to young people as a sophisticated and glamorous form of leisure, which allows them to 'purchase' an identity, typically involving sexual and social success.

This section has highlighted the tendency for young people to drink in high concentrations on weekends and in (high-risk) nightlife settings, especially on the weekends. Indeed alcohol consumption in its own right can be considered a leisure pursuit and the characteristics of such drinking can impact on the propensity for violent offences to occur.

Following the above narrative, an investigation of the social, political and historical context in which the 'problem' of alcohol-related violence is situated would clearly be valuable. The working hypothesis used in this thesis is that alcohol-related behaviour is to some extent pre-determined by people's perception of their surroundings and socio-cultural background and so the current research will focus on sociological factors accounting for culture and context. Indeed, examination of the development of young people and changing drinking behaviour and violence over the life course is essential for understanding how opinions, social norms and cultural expectancies are formed, maintained and indeed potentially changed. The developmental aspects to drinking and violent behaviour will be discussed in more depth in the following chapter.

### **3 Chapter 3: Development and change in drinking and criminal careers – previous research and theory**

#### **3.1 Why look at change in adolescence and young adulthood?**

The transition between childhood and young adulthood comes with challenges such as establishing an identity, forming relationships with peers and deciding on educational or employment pathways. Needless to say, this transition does not always go smoothly, partly because, for many, it is a period of experimentation with risk-taking. This can include experimenting with both alcohol and crime.

Criminal careers often commence in teenage years, peak at around age 18 and tail off in the twenties (see review on criminal careers by Siennick and Osgood, 2008). This is known as the 'age-crime curve' which, as Sumner and Parker (1995) observe, approximately maps onto that of drinking, and binge drinking more specifically, which tends to peak in young adulthood (18-24 years) and reduce thereafter (see, for example, the study by Tucker et al., 2003). This observation is also supported in Huang et al.'s (2001) study, which found that a positive correlation between alcohol and aggression decreased with age from mid to late adolescence. It has also been noted that problematic behaviours adopted during this period can have repercussions in adulthood. For example, Oesterle et al. (2004), who studied the association of trajectories of heavy episodic drinking during adolescence and health status (and practices) at age 24, identified long-term negative health consequences associated with heavy episodic drinking during adolescence and Guo et al. (2000) found that alcohol use during childhood and adolescence can lead to continued alcohol abuse and dependence in later life.

Young people's drinking behaviour will be learned and adopted as a direct result of the adult drinking behaviour they have come to know from observing their parents, possibly due to the transmission of family, cultural and social attitudes and norms held towards alcohol (Gilvarry, 2000). Indeed, recent estimates suggest that there may be as many as 1.3 million children in the UK affected by parental alcohol problems (that is, living with parents who misuse

alcohol; Strategy Unit, 2004). Parental drinking can affect children in many ways. For example, children may suffer disadvantage and behavioural problems where parental alcohol abuse results in poor parenting and disruptive households in which arguments and parental conflict are common (see report by Turning Point, 2006, on the effects of alcohol misuse on children, parents and families). Furthermore, the absence of suitable role models and/or cognitive, behavioural and emotional problems as a result of living with an alcohol-misusing parent can often be expressed by children and young people in the form of anti-social behaviour and learning difficulties (see literature reviewed by Alcohol Concern, 2006). More importantly, for our current purposes, Asthana and Halliday (2006) found that children of parents who drink are more likely to drink themselves. This in turn could lead them to developing alcohol dependency and/or alcohol-related problems later in life. The stresses and disruptions due to parental alcohol consumption outlined may increase the likelihood of negative behavioural outcomes, including violence and drinking problems, both because they foster instability and uncertainty and suitable pro-social coping mechanisms are unlikely to have been nurtured in such conditions.

The period of adolescence and early adulthood is also a period when many young people in England and Wales first come to the attention of the Criminal Justice System (CJS). Often those that do are those who have experienced a range of social, personal and economic problems – thus facing exacerbated vulnerability and complex needs (see commentary by Garside, 2010). The CJS has been described as being ‘out of touch’ with societal norms surrounding adulthood and changes in adolescent development over the last 50 years (that is, maturation (for example, leaving home, securing full time jobs and getting married) now continuing until mid or even the late twenties and beyond and the ongoing “fine-tuning of the ability to make reasoned and long-term judgements” (Nicholas et al., 2010:38), and offers limited provision for the needs of those transitioning between ‘childhood’ and ‘adulthood’. It has subsequently been argued that it is necessary to consider this period as a distinct phase in the life course, with its own challenges and requirements in relation to criminal justice

(see Nicholas et al., 2010), but also when studying developmental alcohol consumption trajectories (Maggs and Shulenberg, 2004).

The above outlined issues highlight the diversity and complexity in individuals' behaviour, which is often oversimplified – especially in political and media discourse on anti-social and criminal behaviour, by attributing 'bad' behaviour to alcohol consumption and assuming this association is static across the life course. It may be more appropriate to consider the behaviour in a wider framework of the individuals' development and needs, as well as the cultural setting in which the behaviour is framed: that is, considering the role of social norms, learned behaviour and expectancies in relation to both alcohol consumption and offending behaviour as well as individual development and changes in both alcohol consumption and attitudes towards alcohol consumption over the life course.

Many studies have identified an association between acute intoxication or heavy episodic drinking and an increased risk of committing interpersonal assault (see, for example, Matthews and Richardson, 2005; Finney, 2004; Shepherd, 1994; Room and Rossow, 2001). However, in order to assess the extent to which such drinking patterns influence violent behavioural outcomes from a developmental perspective it is necessary to assess both the distal and proximal effects of such drinking patterns and how young people's alcohol consumption patterns impact on the potential for violent behaviour across the period of young adolescence and early adulthood. Many studies to date have relied heavily on cross sectional analyses (for example, Matthews and Richardson, 2005; Finney, 2004; Shepherd, 1994; Room and Rossow, 2001) and there is comparatively little research focused on the longitudinal prediction of violence from prior drinking behaviour (whilst controlling for current drinking behaviour) and most of these are centred on US samples of young people (see Blitstein et al., 2005; Swahn and Donovan, 2004; White et al., 1993; Huang et al., 2001). Longitudinal studies allow for the study of within-individual changes in criminal activity over time, whereas cross-sectional studies can only examine inter-individual differences (Piquero et al., 2007). The aim of this chapter is to describe how developmental theory helps explain changes in drinking patterns and violent outcomes over the life course.

### 3.2 Extant developmental theory

The often observed age-crime curve with its steep peak in adolescence and rapid decline in the early twenties has been the subject of much academic attention in relation to the study of transitions associated with desistance and other age-linked changes in offending behaviour (for a review of the criminal careers literature see Siennick and Osgood, 2008). For example, two different developmental trajectories were originally identified by Moffitt (1993): 'life course persistent' and 'adolescent limited' offenders, and further work since then has identified further classifications of 'low level chronic' and 'late onset' offenders (Nagin and Tremblay, 2005) which Moffitt (2005) accepts.

Theoretical explanations for changes in offending behaviour associated with adult transitions such as marriage, employment and becoming a parent, are reviewed by Siennick and Osgood (2008) who highlight three main theoretical explanations and their key proponents:

- Sampson and Laub (1990) who purport that social investment into conventional roles, such as marriage and employment, served to restrain individuals from crime as they acquire greater "stakes in conformity" and are less willing to jeopardise this.
- Osgood, Wilson, O'Malley, Bachman and Johnston (1996) who suggest that it is the transitions themselves that restructure the individuals' lives and lifestyle patterns and thus the opportunities to offend.
- Warr (1998) who focuses on the decreased time spent with delinquent peers as an explanation for the reduction in offending on assuming adult roles, suggesting that reduced time spent and influence of deviant peers brings about a reduction in offending when taking on such roles.

Others have elaborated on these theoretical models and suggested that it is not necessarily the transition itself, but rather a cognitive shift and openness to identity change that precedes the role transitions (see Shover, 1996; Giordano, Cernkovich and Rudolph, 2002). In this framework Giordano et al. (2002) have described transitions in the life course as potential 'hooks for change' which can facilitate desistance (Siennick and Osgood, 2008).

To explain how developmental factors influence alcohol consumption, violent and delinquent behaviour, some researchers draw on the social development model (SDM) that strives to synthesize “the most strongly supported propositions of control theory, social learning theory, and differential association theory” (Catalano et al., 1996:429; for a brief summary of each of these theories see Hawkins et al., 2003). In so doing, an emphasis is placed on empirical predictors (both ‘risk’ and ‘protective’ factors) of antisocial behaviour to target reduction and/or prevention measures (Lonczak et al., 2001). Proponents of the social development model purport that different influences may be pertinent at particular points and transitional stages in the life course and that beliefs and behavioural patterns adopted in childhood and earlier adolescence influence likely pro-social or anti-social behaviour trajectories (see Catalano, et al., 1996). For example the social development model purports that an individual’s beliefs or norms guide behaviour across social contexts and developmental periods.

The beliefs and behavioural outcomes at the end of one developmental stage determine the starting point for the next developmental period by affecting both skills and the perception and availability of future opportunities for prosocial and antisocial involvement (Hawkins et al., 2003:274).

Interactional theory informs the social development model and is guided by interactional (bonds and social control) and social network theory as well as adopting a developmental life course perspective. Interactional theory emphasises bidirectional causality and “incorporates structural influences into the explanation of individual delinquent careers” (Thornberry et al., 2003:12). This theory posits that the cause of delinquency is a result of weakening social controls and reduction in bonding to conventional society through relationships with peers and family members, school attachment or alienation, as well as beliefs. Such bonds and attachments can foster, support and encourage either prosocial or antisocial development; for example, a weakening of prosocial bonds can result in involvement in delinquent networks.

Influences on social control are not unidirectional or static, rather causal influences vary developmentally. For example, in childhood, family influences are likely to be more influential than in later stages of the life course. It is thus

hypothesised that establishing more successful attachments and bonds earlier in the life course makes success in subsequent stages more likely as well as making the transition from adolescence to adulthood easier, with reduced risk of becoming involved in delinquency. Thornberry et al. (2003:13) summarise this well by highlighting that “delinquent behaviour feeds back upon and produces changes in both bonding and associations” and adds the observation that all these processes vary depending on structural influences, such as living in a disadvantaged neighbourhood and/or being from marginalised racial or ethnic backgrounds. For example, disadvantaged families or neighbourhoods may experience more difficult life course trajectories (exacerbating the processes leading to delinquent behaviour) and be subject to environments in which the chance of developing strong pro-social bonds is reduced and opportunities for deviant behaviour are heightened (Thornberry et al., 2003).

Social networks theory compliments interactional theory through its focus on relationships with peers and family and exploration of the dynamics of these relationships. Social networks theory posits that the structural dynamics of relationships either constrain or facilitate deviant behaviour and thus “delinquent behaviour is expected when the individual is enmeshed in some, and especially many, networks that allow or encourage such behaviour” (Thornberry et al., 2003:15). Interactional theory incorporates these ideas from social networks theory and develops a life course explanation of how bonds and associations between people influence delinquency over the life course.

### **3.3 Findings from existing research**

#### **3.3.1 Drinking careers**

As identified in literature reviewed by Tucker et al (2003) for their own study, findings pertaining to changes in alcohol consumption over the life course have highlighted systematic fluctuations in alcohol consumption and the many factors influencing drinking patterns at different life course stages. Drinking typically commences in late childhood/early adolescence and increases steadily during adolescence peaking in young adulthood before tailing off to more moderate consumption in adulthood. However, Maggs and Shulenberg (2004) argue this typical pattern masks several different trajectories, each of which has



implications throughout the life course and, as a consequence, many studies have concerned themselves with identifying differing drinking trajectories within adolescents and young adults.

The influences on drinking and patterns of drinking over the life course are not static but change depending on life events and life stages. Factors influencing the trajectory of young people's alcohol consumption can include things such as: parental drinking, age of onset, attitudes held towards alcohol consumption and peer influence, and these influences are identifiable from as early as 10 years of age (see, for example, studies by Guo et al., 2002; Tucker et al., 2003). Maggs and Shulenberg (2004) highlight that key events and circumstances during adolescence can impact on individuals' trajectories of alcohol use as well as associated outcomes during young adulthood and also highlight heavier drinking trajectories being associated with expectancies held about drinking (such as drinking to get drunk or to cope with stressful situations).

Typically, studies have identified between three and six distinct trajectories. Caswell et al. (2002) identified three trajectories surrounding drinking between the ages of 18 and 26: whilst two showed a marked reduction in their quantity of alcohol consumption after the age of 21, one showed marked increases after this age. They also found that "membership of heavier drinking groups was affected by environmental influences which are subject to policy change", for example, earlier access to licensed premises. Additionally, parental alcohol consumption, early access to alcohol (age 15 years), and age of onset of regular drinking were also found to influence trajectory class membership (Casswell et al., 2002:1427).

Oesterle et al. (2004), who studied the association of trajectories of heavy episodic drinking during adolescence with health status and practices at age 24 found four trajectories which they named: 'nonheavy drinkers', 'late onsetters', 'escalators' and 'chronic heavy drinkers'. The authors found disparities in health outcomes between the groups and concluded that "heavy episodic alcohol use during adolescence has long-term, negative health consequences" and that

“distinct patterns of adolescent heavy drinking affect health status and practices in young adulthood differently” (Oesterle et al., 2004)<sup>18</sup>.

Hill et al. (2000) also identified four trajectories of binge drinking (defined in their study as drinking at least five in a row in the last month) during adolescence which they labelled: ‘early highs’, ‘increasers’, ‘late onsets’, and ‘nonbingers’. These trajectories “significantly predicted positive and negative outcomes in adulthood after controlling for demographic characteristics, early proxy measures of the outcome, and adolescent drug use”.

A further study by Chassin et al. (2004) describes trajectories of substance use and dependence from adolescence to adulthood, specifically focusing on the effects of drinking by family members. Their study identifies three groupings which they label: ‘heavy drinking/heavy drug use’, ‘moderate drinking/experimental drug use’, and ‘light drinking/rare drug use’. They go on to highlight that “familial alcoholism raised risk for alcohol and drug use and dependence in part because children from alcoholic families were more impulsive and lower in agreeableness” (Chassin et al., 2004). This provides evidence that the drinking patterns of others can have an impact on those who are brought up observing them. The impact of peer drinking on individuals’ drinking behaviour has also been identified in the literature (see, for example, Li et al., 2002).

Tucker et al. (2003), who studied binge drinking trajectories in early adolescents and young adults, identified five classes: ‘nonbingers’, ‘moderate stables’, ‘steady increasers’, ‘adolescent bingers’, ‘early highs’, and comment that the difference among the classes means that prevention strategies that may be effective for one group may not be as effective for others (Tucker et al., 2003). The authors contrast their findings with that of Hill et al. (2000) and highlight the salient differences in the proportions of adolescents within the various trajectory classes as well as two distinct trajectories of early binge drinking found in their own study but not that of Hill et al. (2000). Tucker et al. (2003) identified two

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<sup>18</sup> Oesterle et al. (2004) found that on the whole those who did not engage in heavy episodic drinking during adolescence were less likely to suffer from health problems at age 24 and were most likely to engage in safe health behaviours, whereas adolescent chronic and late-onset heavy episodic drinkers were associated with negative health outcomes and practices at age 24.

classes with peaks in binge drinking during early adolescence: 'adolescent bingers' and 'early highs', whereas Hill et al. (2000) did not. However, they also noted that this may be due to differing sample characteristics in the two studies. They concluded that:

Despite these differences, both studies identified a trajectory class that peaked in its bingeing during early adolescence, another that steadily increased its bingeing throughout adolescence, and a third that never engaged in more than moderate bingeing. These similarities across studies that differ in sample characteristics and analytic strategy bolster our confidence in the validity of the trajectory classes (Tucker et al., 2003:85).

Schulenberg et al. (1996) identified six binge drinking trajectories associated with the transition to young adulthood in a sample of 18 to 24 year olds in their work based on their reading of the theory and existing research: 'never', 'rare', 'chronic' (i.e., high score at each wave), 'decreased' (i.e., high score at Wave 1 and low score by Wave 4), 'increased' (i.e., low score at Wave 1 and high score by Wave 4), and fling (i.e., low score at Wave 1, high score at Wave 2 and/or Wave 3, and low score at Wave 4). The latter four categories pertain to frequent binge drinkers (i.e. at least two episodes of binge drinking in a two-week period). Whilst the authors acknowledge that many studies have consistently identified patterns of ongoing but decreased frequent binge drinking during the transition to young adulthood, they additionally identify two further patterns: a time-limited 'fling' group and an increased frequent binge drinking group. These both consist of those individuals who were relatively 'problem-free' as a result of their alcohol consumption during late adolescence (that is, they experienced fewer difficulties in negotiating the transition to young adulthood and less problems associated with their drinking, such as difficulties during high school and future problems with alcohol). Thus Schulenberg et al.'s (1996) findings question the extent to which the roots of difficulties associated with alcohol consumption necessarily lie in adolescence.

There is considerable variation in precise classification of trajectories produced in the studies outlined above. However, as highlighted by Li et al. (2001), many studies identify a top-level dichotomy between those that start with low/modest

alcohol consumption and those that start with a high initial consumption level. Li et al. (2001) also note differences in individual growth in rate of alcohol consumption between the two trajectory classes as well as a significant effect of gender in predicting class membership. Gender specific findings suggest that male adolescents tend to start drinking earlier and that whilst females had steeper developmental trajectories in alcohol consumption, males maintained higher consumption levels once they had entered high school (Li et al., 2001). A further study by Lanza and Collins (2006) also suggests that drinking trajectories may differ based on young people's educational pathways and find that young people who enrol in college see elevated drinking patterns during their college years only (with this increase only bringing their drinking up to the level of those not enrolled in college), whereas those who do not enrol in college, nor have elevated drinking patterns during this time, are at increased risk of heavy drinking into adulthood. Furthermore, they identify that whilst heavy drinking does start in college for some it is two to three times more likely to start in high school.

A recent systematic review by McCambridge and Rowe (2011) of 54 cohort studies of the consequences in adulthood of late adolescent alcohol consumption found that "the majority of studies provided evidence for a link between adolescent drinking and drinking behaviour in later adulthood", with all studies assessing alcohol problems or dependence in adulthood finding statistically significant associations with drinking in late adolescence. They also note that "alcohol consumption confers additional risk of alcohol problems both on those who are already more vulnerable in various ways to poorer health and psychosocial outcomes, and strikingly also among those who are not otherwise vulnerable" (McCambridge and Rowe, 2011: 4). The authors highlight the policy relevant implications of longitudinal studies in the field and suggest that:

if adolescent drinking does not cause later difficulties in adulthood then intervention approaches aimed at addressing the acute consequences of alcohol, such as unintentional injuries and anti-social behaviour, may be the most appropriate solution. If causal relationships do exist, however, this approach will not address the cumulative harms produced by alcohol, unless such intervention successfully modifies the long-term

relationship with alcohol, which seems unlikely (McCambridge and Rowe, 2011:1).

They thus conclude that:

in addition to making both alcohol and heavy drinking less available, less acceptable, and more expensive, these findings indicate a need for policy makers to encourage young people to be more cognisant of the long-term risks to adult health and well-being, and to act on this awareness in their decision making about whether and how much to drink. This encouragement requires much more than the provision of accurate information about risks if it is to have any real prospect of influencing actual behaviour. Alcohol harm reduction has largely been concerned with reducing various risks inherent in drinking situations and their immediate aftermaths. This study demonstrates the need to develop a longer term perspective on harm reduction (McCambridge and Rowe, 2011: 5).

The studies reviewed here suggest considerable heterogeneity in trajectories of binge drinking over adolescence and early adulthood and also identify a variety of risk factors for problematic or heavy drinking, including the early onset of alcohol use (for an overview see Tucker et al., 2003). Tucker et al. (2003) praise these studies as contributing greatly to knowledge on the course of binge drinking. However, they also note that gaps still remain as few studies cover the entire 'risk period' with a predominant focus on adolescent and early adulthood binge drinking. However, alcohol consumption has frequently been identified as a risk factor for offending in many developmental studies of drinking behaviour and it is to the life course research on delinquency and violent behaviour to which this thesis now turns.

### **3.3.2 Criminal careers and violent behavioural trajectories**

The criminal career paradigm recognises that individuals start their criminal activity at some age, engage in crime at some individual crime rate, commit a mixture of crimes, and eventually stop. Hence, the criminal career approach emphasizes the need to investigate issues related to why and when people start offending (onset), why and how

they continue offending (persistence), why and if offending becomes more frequent or serious (escalation) or specialized, and why people stop offending (desistence) (Piquero et al., 2007:9).

Many previous etiological studies of criminal and delinquent behaviour have relied on longitudinal panel designs, such as the accelerated longitudinal design (in which multiple overlapping age cohorts are followed), as these allow for a description of onset and course of anti-social career (and termination if long enough) as well as for the identification of antecedent risk factors and, to a certain extent, causal processes. Whilst such long-term, repeated measurement survey designs are not as definitive at testing causal processes as experimental designs, they are the closest method of doing so, especially where such studies capture major developmental periods and begin prior to the onset of offending (Thornberry and Krohn, 2003). Piquero et al. (2007:28) emphasise the need for longitudinal study designs, by drawing on the work of Blumstein et al., who they say "argue that, while longitudinal and cross-sectional research designs are useful, longitudinal data are superior to cross-sectional data in testing causal hypotheses, namely because longitudinal data permit observation of the time ordering of events observed and provide better control of extraneous variables because each person acts as his/her own control".

Such surveys have been grounded in various theoretical frameworks used to describe and explain the prevalence, onset and trajectory of offending within criminal careers; for example, the Rochester Youth Development Study is guided by interactional and social network theories (Thornberry et al., 2003) or they have simply been designed to test many different hypotheses and examine possible mechanisms linking risk factors to antisocial behaviour, as in the Cambridge Study of Delinquent Development (Farrington, 2003). However, despite subtle differences in theoretical underpinnings and differing population samples, many such studies have produced similar findings and conclusions about criminal careers more generally, given their overlap in purporting that different risk factors will be in operation at different stages of the life course. Studies have consistently identified multiple risk factors in delinquent development, including poor parenting, early onset of delinquency, violent victimisation, and many more.

### **3.3.2.1 Risk factors associated with violent offending careers and persistence**

Farrington (1991) reports that the 5.4% of chronic offenders<sup>19</sup>, in his sample of London males, are responsible for almost half of all offences committed and that, in general, violent offenders tend to be 'chronic' or frequent offenders (Farrington, 1982<sup>20</sup>). Shaw and Gross (2008) review the literature on early childhood experiences and delinquent development focusing on studies examining early childhood factors from aged 0 to 3. Whilst outside the age range studied in the current thesis, the review highlights a number of interesting findings in relation to childhood development and later alcohol consumption, such as that by Offord et al. (1991) suggesting that pre-natal drinking on the part of the mother is associated with increased risk of antisocial outcomes. However, such effects are moderated by the environment in which the young person grows up, including factors such as levels of family conflict and child abuse (see review by Shaw and Gross, 2008). For example, childhood disruptive behaviour has been associated with subsequent anti-social outcomes, and higher levels of disruptive behaviour are often found in families with low socio-economic status, poor quality of parenting (including abuse) and parental antisocial behaviour and/or psychiatric illness (Shaw and Gross, 2008). Similarly, data from Denmark suggest that whilst family factors are predictors of future violent behaviour the impact of structural factors, such as reduced educational and employment opportunities, is more widespread (Christoffersen et al., 2003).

Children who display violent behaviour are more likely to commit serious violent offences as adults, with a greater risk the earlier this behaviour is displayed (see studies by Herrenkohl, Huang, Kosterman, Hawkins, Catalano, and Smith, 2001), they are also more likely to offend for longer periods of time compared to those starting later in life (Thornberry et al., 2003). Many studies have identified positive peer and parental influences as well as the child's commitment to and success at school as pertinent to fostering pro-social social development and guarding against subsequent delinquent behaviour. Thus transitions, such as

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<sup>19</sup> Defined as having committed 9 offences or more and at least 8 separate convictions (Farrington 1991).

<sup>20</sup> Cited in Farrington (1991).

from primary to high school, increase the risk of young people becoming involved in, or increasing their involvement in, problem behaviours as children move towards middle adolescence and are subject to less parental influence and supervision (Thornberry et al., 2003). The social development model attempts to account for aspects of differential association theory by suggesting that if a young person perceives a reward in anti-social behaviour, that young person may bond to persons, groups and institutions that behave anti-socially and thus develop anti-social beliefs and attitudes, further manifesting themselves in antisocial behaviour (see Catalano and Hawkins, 1996, for an overview of the Social Development Model). Evidence from the Rochester Youth Development study suggests young people behave in manners consistent with that of their peers, thus, if associating with delinquent peers, this creates a social environment in which delinquency is reinforced and further association with others who engage in delinquency more likely (Thornberry et al., 2003). Thus peers who engage in delinquent behaviour "have an indirect effect on delinquency, operating through the reinforcing environment of the peer network. In turn, engaging in delinquent behaviour leads to increases in association with delinquent peers" (Thornberry et al., 2003:28).

Findings from the Pittsburgh Youth Study identify many risk factors for violence operating at various stages of the life course and that delinquent careers have both proximal and distal antecedents (Loeber et al., 2003). Childhood predictors associated with later violence included: low academic achievement, lack of guilt, being old for school grade, parents disagreeing on discipline, African American ethnicity<sup>21</sup>, impulsivity, behavioural problems (such as attention deficit hyperactivity disorder), particular personality traits (such as negative emotionality), less constraint and psychopathy, attitudes favourable to delinquency, poor reading, drug dealing, low educational achievement, depressed mood, associating with delinquent peers (Loeber et al., 2003). Loeber et al. (2003:125) also find that "delinquency, conduct problems, physical aggression, attention deficit, and covert behaviour were particularly closely interrelated" when using exploratory and confirmatory factor-analysis techniques. School problems more generally, such as school dropout, truancy

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<sup>21</sup> Ethnicity in this case is likely to be likely to be associated with violence given its association with large number of other risk factors that are unmeasured in this instance.



and poor performance, are also established as contemporaneous risk factors associated with violence and delinquency (Huizinga et al., 2003).

In his study of London boys, Farrington identifies the most important predictors at age 8 to 10 of later offending as including: antisocial behaviour as a child (troublesomeness, dishonesty, aggressiveness), hyperactivity (impulsivity, attention deficit, poor concentration, restlessness, risk taking, impulsivity), low intelligence/school achievement, family criminality, family poverty and poor parenting (Farrington, 2003). Whilst specific predictors of aggression and violence included: high levels of daring and risk taking behaviour, poor parental supervision, low family income, large family size, physical neglect and convicted parents (Farrington, 2003).

It is pertinent to note that the risk factors for violent and/or delinquent behaviour rarely occur in isolation. Rather, multiple problems often coexist and have additive and interactive effects influencing delinquency and violent behaviour (Thornberry et al., 2003). Huizinga et al. (2003) highlight that as the number of problems an individual experiences increases so too does the risk of delinquency. They suggest that interventions aimed at reducing delinquency in young people need to be multifaceted: "if the number of risk factors exceeds the number of protective factors, there is a very small chance of successful adolescence. And, the chance of a successful adolescence is not high until the number of protective factors far exceeds the number of risk factors" (Huizinga et al., 2003:73).

Loeber et al. (2003) also found that victims of inner-city violence often shared characteristics with violent offenders and appeared to live in circles engaged in illegal behaviour (Loeber et al., 2003:103). This supports the hypothesis that being a victim of violence is also a risk for violent offending as victims may resort to violence in order to defend themselves, for later retaliation, or live in or frequent environments in which such behaviour is rife, thus being exposed to a greater chance of victimisation and involvement in violence (Huizinga et al., 2003).

### **3.3.2.2 Criminal careers and characteristics of violent offenders**

Levels of violence for males have consistently been identified in longitudinal studies as increasing from the age of 10 and peaking around the age of 19, whereas females' aggressive behaviour tends to decline in late teens (Huizinga et al., 2003), with the prevalence of physical fighting for females decreasing especially between ages 12 and 17 (Loeber and Hay, 1997)<sup>22</sup>. Active violent offenders do not necessarily offend regularly; patterns examined over criminal careers spanning three to five years suggest that offending is intermittent, often with whole years in which no offending took place (Huizinga et al., 2003). Many studies have, however, identified a group of chronic offenders who form only a small proportion of the whole population but account for the vast majority of offences. For example, Thornberry et al (1995)<sup>23</sup> found 15% of individuals to be accountable for 75% of all violent crimes. These 'chronic violent offenders' tend to be heavily involved in other forms of offending, including drug use, and develop from minor aggression at younger ages to more serious violence when older (see Thornberry et al., 2003, for an overview of findings from the Rochester Youth Development Study).

Studying London males aged 8 in 1953 until they were aged 46 using self-reports and conviction data, Farrington (2003) identified that the prevalence of offending increased up to age 17 before then decreasing, with the fastest increase in prevalence being at age 14 and the fastest decrease being at age 23. The mean age of conviction was identified as 21. Once again, in this sample a few chronic offenders accounted for a large proportion of crime and early onset of offending was associated with more persistent offenders and a large volume of offences over a longer time (in line with Moffitt's 1993 'life course persistent offenders' who began early and were different to the 'adolescent-limited' offenders who began later and had shorter criminal careers). "However, according to self-reports, the apparent reformation of the adolescent-limited offenders was less than complete. At age 32, they continued to drink heavily, use drugs, get into fights, and commit undetected offences" (Farrington, 2003: 144).

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<sup>22</sup> Cited in Loeber et al., (2003:104)

<sup>23</sup> Cited in Thornberry et al., (2003)

As in the literature on drinking careers, the number and nature of particular trajectory groups has been studied extensively and Moffitt's (1993) dichotomous classification of 'life course persistent' and 'adolescent limited' offenders tested and expanded upon. It is assumed such distinct trajectory groups have distinct aetiologies, with differing causal mechanisms and pathways of criminal behaviour (Hawkins et al., 2003). Patterson and Yoergen (1993) also identified two distinct criminal trajectory groups: 'early' and 'late' starters, however, many have debated the true number of trajectory groups (for a summary see Hawkins et al., 2003).

Chung et al. (2002) identified five such trajectory groups using semi-parametric group based modelling (SGM) on the Seattle Social Development Project sample (aged 13-21) based on self-reported offending (Hawkins et al., 2003). These were labelled 'non-offenders' (those who had never reported any offending), 'late onsetters' (reported no offending by age 13 but some low seriousness offending by age 21), 'desistors' (reported low seriousness offending by age 13 but had largely desisted by age 21), 'escalators' (reported low seriousness offending at age 13 and reported serious offending by age 21), and 'chronics' (reported high levels of offending throughout the adolescent period) (Hawkins et al., 2003:265). The 'chronic' group identified in this study shared considerable overlap with Moffitt's (1993) life-course persistent group of offenders, namely, childhood onset and persistence of offending into late adolescence and early adulthood. The proportions of such a group in both studies were also found to be similar – with 6% identified as life-course persistent offenders in Moffitt's (1993) study and 7% described as 'chronics' by the Seattle Social Development Project. However, the more detailed trajectory groups offered by the analysis of the Seattle Social Development Project data identify more specific areas for prevention and/or intervention, in particular, by highlighting the 'escalator' group.

### **3.3.3 Alcohol consumption and violent behavioural trajectories**

Many studies researching criminal and violent careers have identified alcohol use amongst the risk factors. However, whilst trajectories of offending behaviour have been the subject of much investigation, the extent to which changes in

alcohol consumption during adolescence and young adulthood influence changes in violent or criminal behaviour has received relatively little attention.

As previously outlined, the onset of both offending and drinking tend to occur at similar stages in the life course: those aged between 16-24 are most likely to be learning to drink, drinking to excess and frequenting nightlife venues; therefore, this is an age group disproportionately associated with public and nightlife violence. In light of this, it would seem pertinent to examine young peoples' drinking behaviour and how their alcohol consumption patterns impact on the potential for violent behaviour in a developmental framework. In order to assess the extent to which such drinking patterns influence violent behavioural outcomes from a developmental perspective, it is necessary to assess both the distal and proximal effects of such drinking patterns and how young people's alcohol consumption patterns impact on the potential for violent behaviour across the period of young adolescence and early adulthood.

Farrington (2003) highlights that offending often forms part of wider/larger syndrome of antisocial behaviour, which includes drinking more and saying drinking made them violent. Findings from his study illustrate that many risk factors overlap and that there is significant continuity between childhood aggression and adult violence (Farrington, 1989a; 1991b; in Farrington, 2003); those who were aggressive in childhood/adolescence being more likely to be heavy drinkers and commit violent offences later in life and "convicted teenagers who were both unemployed and heavy drinkers had an exceptionally high probability of persistence (nearly 90%)" (Farrington, 2003:154).

The association between drug and alcohol use and crime leads to natural questions about the sequencing of events and how these relate to possible developmental pathways, for example, from alcohol and drug use to offending. It is generally understood that trajectories to offending rarely follow such neat and orderly stages; rather it is purported that they may run in parallel, be chaotic and/or overlapping (for a summary of the findings from the Seattle Social Development Project see Hawkins et al., 2003). It is also unlikely that there is one developmental pathway that captures such change – rather (as seen above in the trajectories of alcohol use and offending separately), there are likely to be multiple trajectory groups.

Loeber et al. (2003) used the Pittsburgh Youth Study to study developmental pathways to serious delinquency. Rather than simply investigating a concurrent association between alcohol and violence, they found a reciprocal association between alcohol and violence in their longitudinal analysis with Odds Ratios between frequency of alcohol use and later frequency of violence similar to those for violence regressed on later alcohol use. Whilst there was no linear dose-response relationship between alcohol consumption and violence severity, change in alcohol consumption was a strong predictor of changes in violence: "these results confirm earlier research showing a dynamic, and often very proximal, confluence between alcohol consumption and violence" (Loeber et al., 2003:123).

Hussong et al. (2004) studied developmental relations between substance abuse and individual differences in desistance from antisocial behaviour during young adulthood; they found that the periods in which young people drink more, they are also more likely to behave violently. Hussong et al. (2004) thus suggest that substance abuse can act both as a 'snare' for time-specific elevations in antisocial behaviour relative to an individual's own developmental trajectory, as well as a 'launching factor' operating as a distal effect to slow an individual's pattern of crime desistance relative to the population norm during this period; that is, that early substance abuse may identify young men who are on a trajectory of elevated antisocial behaviour (Hussong et al., 2004).

Longitudinal studies, based on different samples of young people, have routinely found high volume drinking to be a predictor of future violent behaviour. For example, Blitstein et al. (2005) found alcohol consumption to be a predictor of violent behaviour amongst male and female students, with earlier alcohol use being associated with later violence; Swahn and Donovan (2004) found high volume drinking to be both a correlate of contemporaneous violent behaviour and a predictor of future violent behaviour amongst adolescent drinkers and, using nationally representative data for the US, Maldonado-Molina et al., (2011) found consistent alcohol use to be a predictor of violence in young adulthood and violence not to be a predictor of future problematic alcohol use. Conversely, White et al. (1993) found that aggressive behaviour among males of 12-18 years led to increased alcohol use and alcohol related aggression, but

that levels of alcohol consumption were not related to later aggression (White et al., 1993); they thus conclude that individuals who engage in alcohol-related aggression are likely to be aggressive from early adolescence and behave aggressively whether or not they use alcohol. However, in another study, Huang et al., (2001) recognised it was important to understand the developmental associations between alcohol consumption and aggressive behaviour over time<sup>24</sup> and looked at associations between these behaviours from early to late adolescence. They examined cross-lagged effects from alcohol use to interpersonal aggression, as well as those from interpersonal aggression to alcohol use, and found a reciprocal effect between these behaviours in later adolescence; thus finding both longitudinal associations (between alcohol use and later interpersonal aggression and interpersonal aggression and later alcohol use) occurring in parallel. They also found that the positive cross-sectional correlation between alcohol and aggression decreased in strength with age from mid to late adolescence (Huang et al., 2001). Although their results “suggested that reducing one behaviour will probably not have a long-term impact on the other”, they offer the insight that “early prevention efforts aimed at shared risk factors may reduce both contemporaneously” (Huang et al., 2001:64). Results from the studies reviewed here are mixed as to specifying the causal ordering of events in the alcohol-violence relationship and further research to disentangle factors that precede and those that co-occur with violent behaviour is called for by Swahn and Donovan (2004).

Many of the studies of delinquency have focused on explaining the behaviour of young men, however there may be differences in patterns of association between males and females. Early aggressive behaviour was found by White and Hansell (1996) to be a better longitudinal predictor of later alcohol-related aggression amongst males, whereas alcohol use was a better predictor of alcohol-related aggression amongst females. Yet, Huang et al. (2001:66) found that “for both sexes, early aggression predicted later alcohol use, but early

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<sup>24</sup> “In this study, we focused on developmental associations over time rather than the immediate effects of alcohol use on aggressive offending. Therefore, we did not assess acute effects of alcohol use on aggression. Studies of acute effects clarify the relationship between doses of alcohol and immediate aggressive actions. In contrast, developmental studies help to clarify the temporal associations between alcohol use and aggression and to understand the long-term effects of each behaviour on the other. Both types of studies are needed to better understand the alcohol-aggression relationship” (Huang et al., 2001:80)

alcohol use was not significantly related to later aggression”. Other studies have also explored the extent to which gender modifies predictors of violence. Swahn and Donovan (2004) include an interaction for gender and heavy episodic drinking which was not found to be significant. However, Blitstein et al. (2005) hypothesised that the pattern between violence and substance use may be different across genders and found that gender modified the association between drinking and violence: heavy episodic drinking was not associated with violence amongst males, whereas heavy episodic drinking suppressed the rate of violence in females. Finally, Huang et al. (2001) did not find that sex moderated the reciprocal effect of aggression and alcohol use identified in their study.

The studies reviewed here suggest that the findings to date on the impact of prior drinking on later violence are mixed. One of the current study’s aims is to investigate the temporal links between alcohol use (in particular risky single occasion drinking) and violence (in the form of assaults with or without injury) in a sample of adolescents and young adults in England and Wales, and to test the hypothesis that current rather than earlier drinking impacts on subsequent violent behaviour. The current thesis thus elaborates on our understanding of how heavy episodic drinking patterns may influence violent outcomes in the form of assaults (both with and without injury) by asking whether violent behaviour can be predicted from current and earlier alcohol consumption patterns in young people in England and Wales.

### **3.4 Summary and reflections**

From the reviewed literature, it is possible to highlight the frequent coexistence of both drinking and criminal careers and how the study of such overlapping developmental trajectories can provide useful analyses with which to illuminate the role of alcohol in violent behaviour from an interactional and developmental perspective. The current review of the literature highlights that research on developmental pathways of alcohol consumption and violent behaviour has routinely identified an overlap in drinking and violence at various stages of adolescence and young adulthood. It is thus thought that both behaviours may be part of a wider syndrome of antisocial behaviour, potentially including other

criminal behaviours, gambling and smoking (see Farrington, 2003; Piquero et al., 2007). Parker (1996) argues that criminal careers overlap with drinking careers in many complex ways and there is no simple answer to this relationship, rather there are many confounding lifestyle and modern youth culture factors that mediate the relationship. Nonetheless, existing studies have examined the temporal relationship between alcohol consumption and violence across adolescence and young adulthood, making it an interesting avenue for further work in this thesis.

The current study will address the yet unanswered question of the extent to which earlier drinking and current drinking predict the likelihood of current violent behaviour (by exploring the distal and proximal effects of alcohol consumption patterns on violent behaviour), and thus aim to tease out developmental associations between alcohol consumption patterns and violent behaviour in England and Wales over the period of young adolescence and early adulthood. Doing so not only addresses the outstanding question of which predictors early in life distinguish offending trajectories more generally, but also examines specific developmental associations between alcohol use and violent behaviour, for example, by testing the 'snare' and 'launch' hypotheses (as proposed by Hussong et al., 2004).



## **4 Chapter 4: Data and Methods**

### **4.1 Data source selection**

Current media attention and political concern surrounding alcohol consumption and violent crime, coupled with scepticism of recorded crime statistics, invite a thorough quantitative investigation into the role of alcohol consumption in violent incidents. Given the many limitations and shortcomings of administrative and criminal justice data on alcohol and violence, for example, not being able to capture undetected or unreported crimes, survey data was sought for a thorough investigation into young people's drinking patterns and their role in violent behaviour. Given the rare nature of violent events a large sample was required in order to assure sufficient cases of violence for analysis. In light of this requirement, secondary data from a large scale national or international study was preferred. Room and Rossow (2001) also advocate studying the role of drinking in violent events using large general population samples as a result of reviewing studies seeking to estimate the proportion of violence attributable to alcohol – an approach that the current thesis also adopts. Many sources were reviewed before finally settling on self-report data from panel data over four sweeps of the Offending Crime and Justice Survey (OCJS, 2003-2006). By adopting these data this thesis builds on a somewhat partial understanding of alcohol consumption and its role in violence as they offer a unique insight into the developmental trajectories of young people in England and Wales, their alcohol consumption patterns and involvement in violence.

Other surveys were reviewed but were not used in the current study. These studies included:

- The International Crime Victims Survey (ICVS),
- The European Crime and Safety Survey (EU ICS)
- The European School Survey Project on Alcohol and Other Drugs (ESPAD)
- The British Crime Survey (BCS)

- The New-ADAM<sup>25</sup> Arrestee Survey
- The Edinburgh Study of Youth Transitions and Crime.
- The Peterborough Adolescent and Young Adult Development Study (PADS) (an ongoing 10 year study of adolescents and young adults in Peterborough)

The reasons for not using these studies are as follows. PADS is a high quality study, yielding information on young people's routine activities and offending, including substance misuse. No access to this data was available at the time of writing. As the name suggests, PADS only collates information on young people in Peterborough, and is thus limited in its geographic coverage; the current study concerns itself with young people's drinking patterns and associated violent behaviour in all of England and Wales.

Both the ICVS (1989, 1992, 1996, 2000, 2004/2005) and the EU ICS (2005) are cross-sectional surveys focusing on victimisation, and do not ask detailed questions on drinking behaviour necessary for the current exploration. Whilst ESPAD (1995, 1999, 2003, 2007, 2011) offered many detailed questions on young people's alcohol consumption, it was limited in its ability to offer suitable measures of how this may have been involved in violent behaviour. Many less serious violent behaviours, such as bullying and getting into fights at school, or with friends, were captured. However, an assessment as to whether alcohol had been consumed in such instances was not available. Otherwise, the only suitable measure would have been whether an individual had experienced a 'physical fight' because of their own alcohol use in the last 12 months. However, it was felt that alcohol use may not necessarily be considered the 'cause' even if it had been consumed prior to an incident of violence, and that a measure of whether alcohol had been consumed immediately prior to an incident may be more beneficial. Furthermore, its cross-sectional design limits the ability to look closely at young people's development over time.

The main shortcoming of the BCS for the purposes of this study was that it concerns itself with adult victimisation (as opposed to offending) as well as only asking a limited number of questions on alcohol consumption. The New-ADAM

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<sup>25</sup> New English and Welsh Arrestee Drug Abuse Monitoring programme.

Arrestee Survey looks at offending, but only samples offenders over 17 years of age who have come to the attention of the criminal justice system as a result of having been arrested. The latter study would therefore allow for limited commentary on how alcohol consumption influences everyday violence, much of which does not get reported or come to official attention. Finally, the Edinburgh Study of Youth Transitions and Crime is a very rich longitudinal source of data on young people, drinking behaviour, offending, their peers and social circumstances as it is linked to a number other data sources such as administrative data from social work departments, the children's hearing service and parental and teacher survey data (see Smith and McVie, 2003). However, it also does not specifically measure whether alcohol was consumed prior to committing a violent offence. Furthermore, it is limited in its geographic coverage to the City of Edinburgh, for these reasons this other source of survey data was not used. The OCJS was deemed more appropriate for the current study, and was selected from the available data sources.

The OCJS comprises of a general population sample of those aged 10 to 25 and asks young people a range of questions about committing crime, including violent crime, capturing detailed information on up to six offences disclosed by participants. Most importantly, this data was selected as it asks detailed questions about violent offences such as robbery and assault, as well as asking many detailed questions about drinking behaviour – a combination which many other surveys did not offer in sufficient detail. The OCJS was designed as a four-year rotating panel survey, “which means that in each subsequent year, part of the previous year's sample is re-interviewed, and is augmented by a further 'fresh' sample to ensure a cross-sectional representative sample of young people” (IAS, 2007:280). This accelerated longitudinal design (in which multiple overlapping age cohorts are followed) enables cross-sectional comparisons on an annual basis, and also enables longitudinal analysis of panel members to look at temporal links, behavioural changes and changes in attitudes over time (IAS, 2007). The effects of within year variation in age within individuals as well as cohort effects can thus be measured and assessed using these data. The most recent sweep (2006) was only recently published, and thus the potential for longitudinal analysis using this survey has not yet been

exploited by many – with only a few existing studies having done so, for example, Pudney (2008).

The use of the aforementioned rich, yet underutilised, dataset will enable longitudinal analysis of the association between young people’s drinking patterns and violent behaviour. Findings from the current research will be contrasted with those from previous research, such as existing typologies of young people’s drinking as well as theories of delinquent development and drinking and crime to validate or contest exiting findings and theory.

Whilst the OCJS makes a valid and useful tool for the investigation outlined here, it has a number of limitations, such as only following young people for up to four years and asking limited theoretically informed variables on the alcohol-violence relationship. These limitations will be reflected on further in Chapter 8.

#### 4.1.1 OCJS data selection and preparation

To enable an analysis of the temporal association in violent behaviour and drinking patterns over time, the panel sample from the OCJS was thought to be the most appropriate for use in the current study as it provides information on patterns of offending and drinking for individuals over time. The panel sample employed in this study consists of those who had responded to the final sweep of the survey and on at least one other occasion. This panel sample (n= 4554) will form the basis of all analyses presented in subsequent chapters of the thesis, unless otherwise stated. The patterns of response of this sample over the four sweeps are displayed below in table 4.1.

**Table 4-1 Patterns of response over three previous sweeps for 2006 panel members**

<i>Number of sweeps</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>N</i>	<i>%</i>
All 4 sweeps	✓	✓	✓	2539	47
	✗	✓	✓	1198	22
3 sweeps only	✓	✓	✗	65	1
	✓	✗	✓	55	1
2 sweeps only	✗	✗	✓	654	12
	✗	✓	✗	43	1
Total	2659	3845	4449	4554	

✓ = responded to this sweep, ✗ = did not respond to this sweep.

A panel sample also allows the analyst to examine sequences of behaviour (Hales et al., 2009). However, rather than limit the sample to those who responded on all four occasions (n=2539), it was considered worth boosting numbers of respondents by including those that had also responded on fewer occasions (namely, on at least two occasions).

In order to perform longitudinal analysis, data from the four sweeps needed to be merged into a single file. This facilitates looking at the development of drinking behaviours and changes in behaviours in individuals over time. The four independent datasets from each sweep were combined for panel members using SPSS.

It is possible to structure longitudinal data files as either 'flat' or 'hierarchical' depending on the analyses one is going to perform. Initially, a flat data file was created by matching cases from the 2006 panel sample on their unique ID number for previous sweeps and importing the additional variables. The newly created flat panel data file thus takes the structure outlined in Table 4.2.

**Table 4-2 Flat data file structure**

<i>Unique reference number</i>	<i>2003 Alcohol measure</i>	<i>2004 Alcohol measure</i>	<i>2005 alcohol measure</i>	<i>2006 alcohol measure</i>
00001	1	-	1	2
00002	2	2	1	2
00003	3	-	-	4
00004	-	4	5	3

A further hierarchical date file was created by matching data from up to four sweeps in which they were surveyed using individuals' unique reference numbers. Thus in the resulting data file each individual had up to four entries for each sweep to which they responded (see file structure in Table 4.3 below). A hierarchical data structure of this kind is required for hierarchical modelling techniques, such as repeated measures models in which observations to the sweeps are considered clustered within individuals over time (see the techniques employed in Chapter 7). More detail on such methods is given in Section 4.4.5.1.

**Table 4-3 Hierarchical data file structure**

<i>Unique reference number</i>	<i>Sweep year</i>	<i>Violence measure</i>	<i>Alcohol measure</i>
00001	2003	1	2
00001	2004	0	1
00001	2005	1	2
00001	2006	-	2
00002	2004	0	1
00002	2005	0	0
00002	2006	1	2

## **4.2 Sampling strategy, weighting, data preparation and sensitivity analysis**

### **4.2.1 Sampling strategy and weighting**

The OCJS uses a random probability sample design; namely, a multi-stage stratified random sample of individuals in households based on postcode districts as the primary sampling units (PSUs), stratified by police force area (PFA), region and district (based on population density and occupational profile) (Phelps et al., 2006). “This approach means that every address has a known probability of selection, which enables weighting to be applied in the analysis to give every productive interview an appropriate weight within a nationally representative sample” (Phelps et al., 2006:5). Weights were derived by the data collectors to correct for differences in probability of selection, non-response, and to match the makeup of the population (young people in England and Wales); and, in the case of longitudinal analysis, to account for attrition. A complex weighting system for the various samples (panel, fresh, and rejoining samples) is employed, with each designed to optimise the sample as best as possible, before applying the ranking ratio method to produce a weight based on age, sex and region.

Panel members for the 2004, 2005 and 2006 surveys were recruited as part of the original sample design in 2003, and consisted of those aged 10-25 years in 2003 who had been captured in the original survey and who were successfully re-contacted. The rejoining sample consists of those who responded in a given

wave and not on the subsequent occasion, but who were successfully contacted in a later wave. Offending is known to be geographically clustered, and selecting the sample from the original PSUs enables more valid year on year comparisons. That is, if samples had been drawn from different PSUs, variation between sweeps and samples may have been less comparable, as variation may have been geographic (Phelps et al., 2006).

The weights for the fresh sample, the rejoining sample and the panel sample components of the OCJS 2006 were derived separately and then combined and adjusted. The four stages weighting the fresh sample were:

1. Correcting for the unequal selection of the addresses.
2. Correcting for the selection of a single eligible household where there was more than one at the selected address.
3. Correcting for the selection of an eligible resident where there was more than one at a household.
4. Reducing the bias from differential non-response.

(Phelps et al., 2007).

The selection and non-response weights calculated for the third wave of the OCJS (2005) were substituted for the panel sample<sup>26</sup> in wave 4 (2006), using an approach similar to that described above. Additional stages to account for non-response in earlier waves and reducing the bias from drop-out between Waves 3 and 4 were performed, before recalibrating the weights in terms of age, sex and region. The **panel sample weights** were devised by running logistic regression models to predict factors associated with failure to complete the survey in wave 4 (3 models – one for each earlier sweep – within 2 age groups) (Phelps et al, 2007). The characteristics associated with failure to participate in Wave 4 in the logistic regression models are displayed in Text Boxes 4.1 and 4.2 for each age group respectively. Resulting coefficients formed the basis for inverse probability sample weights for non-response. Weights for the **rejoining sample** are carried forward from the previous sweep

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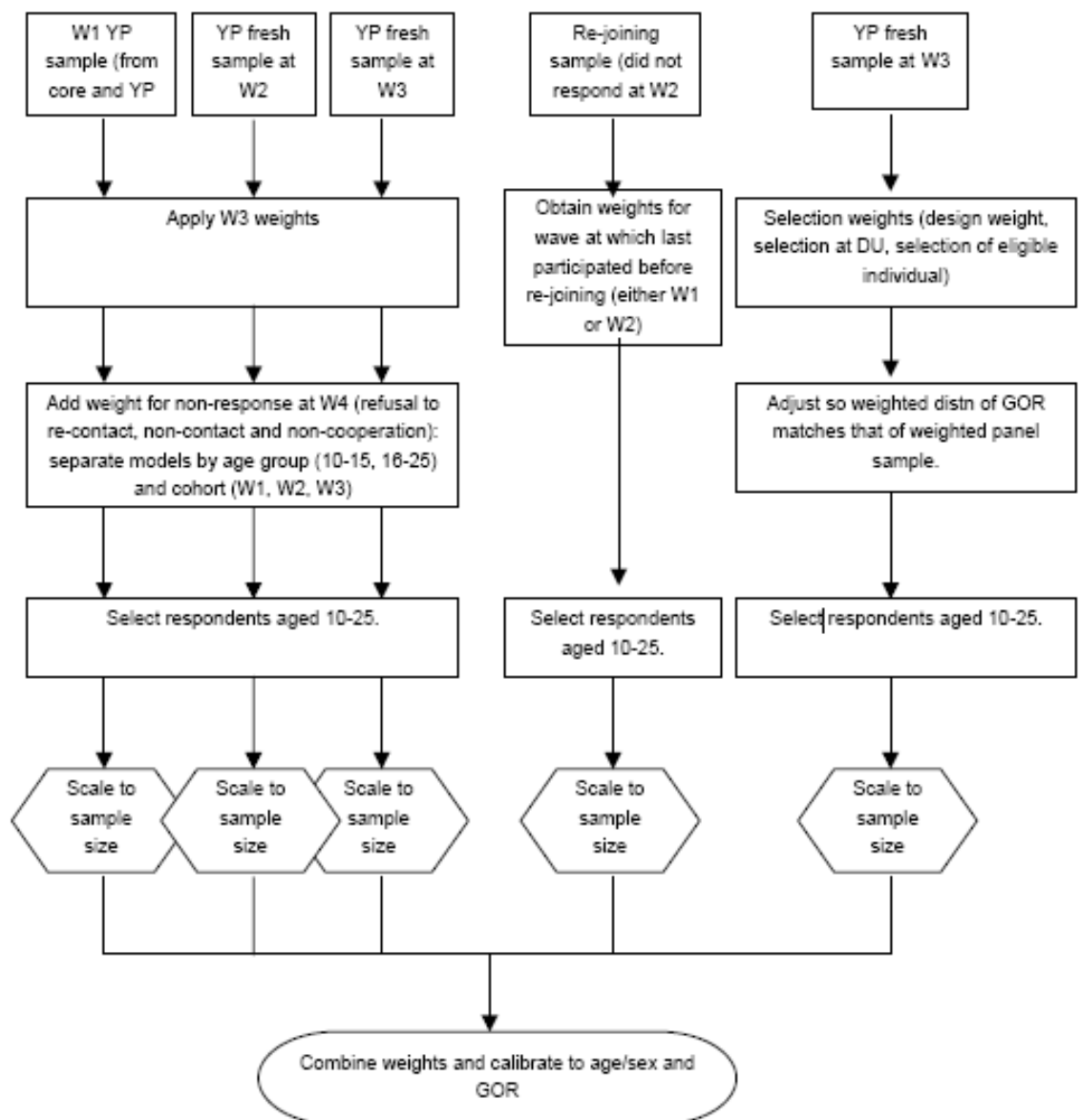
<sup>26</sup> The panel sample was defined by the data collectors for their purposes as those who responded on all four occasions. The current thesis also looks at panel data but has derived a sub sample of those who responded to the last sweep and on any prior occasion which is also referred to the panel sample for the purposes of the current study.

to which they responded. The full weighting strategy is summarised in Figure 4.1 below.

<p><b>Text Box 4.1 Independent variables in logistic regression models for those aged 10-15</b></p> <p><b>Wave 1</b></p> <ul style="list-style-type: none"> <li>• Like to get apprenticeship/employment</li> <li>• training course at age 16</li> <li>• What usually does with friends</li> <li>• Any security device at home</li> <li>• What usual do with friends</li> <li>• Type of local authority</li> <li>• Ever been arrested by police</li> <li>• Sex of respondent</li> <li>• Common to have rubbish/litter in the area</li> <li>• Age of household reference person</li> </ul> <p><b>Wave 2</b></p> <ul style="list-style-type: none"> <li>• Age of respondent</li> <li>• How common vandalism, graffiti or damage to property</li> <li>• Sex of respondent</li> <li>• Has neighbour complained in last year</li> </ul> <p><b>Wave 3</b></p> <ul style="list-style-type: none"> <li>• Common to have rubbish/litter in the area</li> <li>• Household owned/regularly used motor vehicle</li> </ul> <p>Phelps et al., 2007</p>	<p><b>Text Box 4.2 Independent variables in logistic regression models for those aged 16-25</b></p> <p><b>Wave 1</b></p> <ul style="list-style-type: none"> <li>• How interesting found interview</li> <li>• How often go clubbing</li> <li>• Ever taken cannabis</li> <li>• People using/selling drugs common in area</li> <li>• Taken part in drama/arts/music/singing</li> <li>• GOR</li> <li>• Still at school</li> <li>• How truthful with drug questions</li> <li>• Drank alcohol in previous year</li> <li>• Same HRP in household as Wave 1</li> <li>• Sibling in household</li> <li>• Usually do with friends</li> <li>• Ever suspended from school</li> <li>• How often go to the pub</li> <li>• Been arrested by police</li> <li>• Neighbour complained in last year</li> <li>• Important for offenders to apologise</li> <li>• Ever skipped school</li> </ul> <p><b>Wave 2</b></p> <ul style="list-style-type: none"> <li>• Ever taken ecstasy</li> <li>• How interesting found interview</li> <li>• Mother in household</li> <li>• GOR</li> <li>• Tried to avoid paying on public transport in last year</li> <li>• Been noisy/rude in public in last year</li> <li>• Any security device</li> </ul> <p><b>Wave 3</b></p> <ul style="list-style-type: none"> <li>• Any parent in household</li> <li>• Common to have rubbish/litter in the area</li> <li>• How interesting found interview</li> <li>• Tenure of dwelling</li> </ul> <p>Phelps et al., 2007</p>
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**Figure 4.1 Cross-sectional weighting strategy for 2006 Offending Crime and Justice Survey**



Reproduced from Phelps et al., 2007.

**Longitudinal weights** were generated in a similar way to the panel sample weights: the 2005 (Wave 3) weights for selection and non-response were carried forward, then bias from attrition between Waves 3 and 4 accounted for. This was once again achieved by employing the reciprocal of the predicted probability of obtaining an interview at Wave 4 based on characteristics identified by logistic regression models, before recalibrating the weights so that they matched the population make up in terms of age, sex and region - thus

reducing potential bias in under-representing certain age groups and/or Government Office regions.

#### **4.2.1.1 Weighting sensitivity analysis**

To assess if bias was introduced in the variables of interest, the values of such variables in Wave 1 were examined against whether respondents participated in Wave 2 in attrition models. Systematic differences in these traits would suggest bias in the type of person that was likely to respond in subsequent sweeps compared to those who were more likely to drop out. The pertinent variable of interest used in the model assessing attrition weights for those aged 16-25 was whether they drank alcohol in the previous year.

Whilst not definitive, an indication as to whether regular drinkers were systematically more likely to drop out at Wave 2 or not was sought by examining the association between the two variables<sup>27</sup>. Results for whether respondents drank in the last 12 months and whether they responded at Wave 2 encouragingly yielded an insignificant association (non weighted :  $\chi^2=1.231$ ,  $df=1$ ,  $p = 0.267$ ) – thus there does not seem to be a significant difference in those that responded to the subsequent sweep and those that dropped out in whether they were drinkers or not<sup>28</sup>.

Although not controlled for in the weighting strategy, the same analysis was run for the same age group to examine whether respondents had ever committed an assault offence, and whether they responded to the subsequent wave. Results were also insignificant (non weighted:  $\chi^2=3.121$ ,  $df=1$ ,  $p = 0.077$ <sup>29</sup>); thus, treating the interpretation here with caution, there does not appear to be much difference in this trait and predicting response in Wave 2.

#### **4.2.1.2 Attrition and representativeness of the population**

The original 2003 sample consisted of 10,079 people aged 10 to 65 living in private households in England and Wales, with a boosted sample for both young people and for non-white respondents (young people were boosted to

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<sup>27</sup> The author notes that given a large enough sample size, p values for this two by two table may well be significant and is thus treating the interpretation of this association with caution.

<sup>28</sup> When run as regression models, coefficients predicting response at Wave 2 were also insignificant.

<sup>29</sup> When run as regression models, coefficients predicting response at Wave 2 were also insignificant.

comprise approximately half of the sample;  $n=4574$ ) ( $n=1,882$ ). The response rate for the main sample was 74%. Subsequent sweeps are restricted to 10-25 year olds and comprise panel and fresh respondents, totalling approximately 5,000 young people in each sweep. Over half (54%) of those interviewed in the 2003 cohort were still present in the panel sample in 2006 (Hales et al., 2009) and panel response rates for each sweep after the initial sweep in 2003 ranged between 82 and 85 per cent. In each sweep the fresh sample was used to replace those lost by attrition. Retention rates were lowest amongst those aged 18 and over and highest amongst those aged 10 to 15. These were thought to be associated with young people's family situation and compulsory school attendance, and the older age group possibly moving out of the parental home. The differences in attrition by age can be corrected for by using the longitudinal weights (Hales et al., 2009).

Whilst the sampling strategy outlined is robust and similar in design to other national household surveys, such as the British Crime Survey (BCS), it does not capture those in communal establishments; for example, homeless people, more serious incarcerated offenders in institutions, or those with drug and alcohol problems that may be in hospital or care. Indeed, a feasibility study of sampling from communal establishments for this survey found "assault rates were significantly higher in the communal establishments study" (Home Office, 2005b:13). However, the report concluded overall that "the study has shown that combined household and establishment estimates of drug use and offending for 16 to 29 year-olds are no different from those derived from households alone. Of 16 to 29 year-olds, establishment residents form around only two per cent of the population, and rates would have to be exceptionally high for their inclusion to have any serious impact on population estimates" (Home Office, 2005b:14). Whilst weighting can correct for the general make-up of the population, and does so fairly effectively in the weighting strategy adopted here, there is no way to control for whether respondents are systematically different from non-respondents in their behaviour based in the first wave of data collection.

#### **4.2.1.3 Weighting strategy employed in current study**

Whilst rigorous weights have been produced for many of the OCJS samples and subsamples, as outlined above, no such weights have been derived specifically for the subsample employed in this thesis, and neither the cross sectional nor the longitudinal weight is the correct one to employ in this instance. Cross sectional weights exist for all those responding in 2006 aged between 10 and 25, and longitudinal weights are available for all those in the panel sample who responded on all four occasions. However, given the sophistication of weights originally calculated for the OCJS, it was considered worthwhile weighting the subsample by the original weights rather than running an unweighted analysis.

Whilst the attrition analysis done by Hales et al. (2009) suggests it is generally valid to extrapolate findings from the sample of those who responded on all four occasions and infer them to the whole population of young people, sensitivity and exploratory analyses performed here refute this conclusion, and thus the subsample includes those who responded in 2006, and on at least one prior occasion.

Using the longitudinal weight and imputing values for missing cases based on this would have introduced bias as one could reasonably expect those with and without weights, that is, those who did and did not respond on all four occasions, to be different from each other, especially in respect to the variables of interest. Indeed Nevill et al. (forthcoming: 96) note that “older respondents aged 18 and above were more likely to drop out of the OCJS sample than younger respondents. This is probably because many leave home at this stage and become difficult to follow-up.” Whilst analyses could have been limited to those who responded on all four occasions using the longitudinal weight, a larger sample size based on those who responded in 2006 and on any prior occasion was also preferred given multilevel modelling techniques to be employed, which can make statistically efficient use of data even when there are missing observations, as well as relatively rare outcome variables (such as in the case of violent assaults). In light of these issues many exploratory analyses were performed in order to settle on a solution, and whilst there is no

ideal solution, the one adopted and outlined here was thought to be a suitable compromise.

Whilst solutions such as recreating suitable weights for the sample employed here and other imputation methods (such as hot decking, multiple imputation or bootstrapping) could have provided potential solutions, these were not adopted, predominantly given the high correlations between the weights that are already available and the minimal improvement that imputation techniques would yield for the subsample, and also given the extra time and resources necessary to do so. In addition, much of the detail for recreating suitable weights was not readily available from the data providers.

As information on the primary sampling units (PSUs) can be extracted from the OCJS, a model based approach to analysing the data (that is, using the PSU as a level in a multilevel model) could also have been adopted to account for the sample design used for the OCJS data collection. However, this would have required three level models, accounting for observations clustered within individuals within PSUs. Furthermore, the model based approach does not automatically take into account the unequal selection probabilities of residents from a household, nor the unequal probabilities of responding to later waves. There were also concerns around small numbers of individuals and occurrences of the outcome variable in individual PSUs. In light of this, weighting the data was preferred to account for the unequal probability of selection.

The entire sample identified for this thesis (that is, those who responded in 2006 and on any prior occasion, N=4554) was explored in more depth to identify an effective solution for the absence of suitable weights, and how best to weight for missing values in this instance. Given the relatively wide range in the weight values in both the whole sample and the sample aged 16 and over (on which many of the models in this thesis focus; see Table 4.4), running a weighted rather than an unweighted analyses was considered worthwhile.

**Table 4-4 Weight distribution by sample type**

<i>Age range of sample</i>	<i>Weight</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
10 and over	Wave 4 cross sectional weight	4152	.207	5.75	.937	.757
	Wave 4 longitudinal weight	2539	.217	4.804	1.000	.792
16 and over	Wave 4 cross sectional weight	2677	.207	5.75	1.035	.817
	Wave 4 longitudinal weight	1831	.217	4.804	1.120	.872

The correlation between the longitudinal and the 2006 cross sectional weight was examined and found to be relatively high ( $r=.964$ ), as were correlations between cross sectional weights with cross sectional weights in earlier years (all exceeding correlations of 0.8; see Table 4.5), although the strength of these correlations diminished slightly between earlier sweeps.

**Table 4-5 Correlations between cross sectional weights by sample type**

	<i>R<sup>2</sup> for sample aged 10 and over</i>	<i>R<sup>2</sup> for sample aged 16 and over</i>
2006 by 2005 weight	.915	.956
2005 by 2004 weight	.884	.915
2004 by 2003 weight	.873	.871

Outliers and cases that could potentially influence the relationship between the 2006 cross sectional weight and the longitudinal weight were also examined for both the full and over 16 year old samples (see Table 4.6). The Cook's distance values did not raise concern (as only values that exceed a value of 1 should raise cause for concern; Cook and Weisburg, 1982<sup>30</sup>; see Table 4.6). Centred leverage values also confirm this with values nearer to 1 being cause for concern (Field, 2005; see Table 4.6). Finally, as no standardised DFBeta values were over the absolute value of 1, it was concluded that none of the cases exerted a disproportionate influence over the model (see recommendations outlined by Field, 2005).

<sup>30</sup> Cited in Field, 2005.

**Table 4-6 Influential case diagnostics by sample type**

Age range of sample	Measure	Minimum value	Maximum value
10 and over	Cook's Distance	.000	.827
	Centered Leverage Value	.000	.019
16 and over	Cook's Distance	.000	.700
	Centered Leverage Value	.000	.021

Correlations between cross-sectional weights in each year and cross sectional weights in their earlier waves were examined in more detail by exploring the extent to which weighting variables in any one year were related further by running a PCA (with pair wise deletion) on these variables. Results suggested a single component which accounted for 87.5% of the variation (rising to 90.5% when run on the over 16 year old sample). Whilst it is acknowledged that PCA is an exploratory mathematical algorithm, rather than a statistical modelling procedure, other data reduction techniques, such as principal axis factoring, were also run, and these yielded exactly the same results. Thus the PCA method was deemed valid in this instance. Furthermore, given that much of the variation between the two weights can be explained by the two weighting variables, it was concluded that missing values in one weighting variable could viably be substituted with values from the other.

As most models in this thesis focus on those over 16 years of age, the differences between the subsamples with and without longitudinal weights in those aged 16 to 29 were also examined. That is, those aged 16 and over who responded on all four occasions (for whom the longitudinal weights have already been calculated  $n=1831$ ) and those with less consistent response patterns (for whom no longitudinal weights have been calculated  $n=1248$ ). The impact of belonging to each group was assessed by examining cross tabulations and associations with key variables on which the weights are based, such as age group, sex and Government Office Region (GOR). Whilst the initial cross tabs did not raise cause for concern (there were no systematic differences in the variables by membership of the weighted and unweighted sample), further analyses to look at the differences in findings derived from each subsample were deemed prudent as there were systematic differences in the

outcome variable (assault) between the two subsamples ( $\chi^2=19.710$ ,  $df=1$ ,  $p=0.000$ ).

The association between the outcome variable (assault) and membership of the weighted sample of those who responded on all four occasions ( $n=1831$ ) and the unweighted sample with less consistent response patterns ( $n=1248$ ) was also examined controlling for key variables that comprise the weight itself, such as GOR, age and sex, and proved to be significant. Thus, in further sensitivity analyses, some of the proposed models for the findings chapters (specifically those specified in Chapter 6) were run here, controlling for membership of each subsample to examine the impact of this variable on the overall findings.

The models to be specified in Chapters 5 and 6 were run, controlling for membership to each subsample and this covariate was significant in all models. Thus, non-weighted models were run too, and this affected the interpretation of some of the results, giving further weight to the decision to utilise existing weights rather than running unweighted models<sup>31</sup>.

Finally, the proposed models were run on both the subsample of 16 year olds and over that had longitudinal weights and responded on all four occasions ( $n=1831$ ) and on the unweighted subsample of 16 years olds and over who had less consistent response patterns ( $n=1248$ ), to examine to what extent findings and subsequent conclusions drawn from the two samples differed. Only minor effects of weighting were seen on the significance of a sex-binge drinking interaction effect between the weighted and unweighted models (both with and without controlling for Government Office region as a way for accounting for more of the weighting variation in the model). The interaction was significant in the unweighted models, whereas it was not in the weighted models.

Given the relatively high correlation ( $r=.964$ ) and thus reasonable consistency between the longitudinal and the 2006 cross sectional weight and the reasons outlined above (in Section 4.2.1.2), it was decided that the 2006 cross sectional weight, which is available for all cases in the dataset aged 10-25, was a reasonable starting point from which to derive a solution, and values for this

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<sup>31</sup> In the models presented in Chapter 5 the effect of binge drinking frequency became insignificant once prior violence and level of agreement with the statement 'when I drink I often do or say things I regret' were controlled for. In the models presented in Chapter 6 the effects of current binge drinking frequency were no longer significant when accounting for prior violence.



were used where available. This approach also was adopted so as to start with the most complete set of weights possible and to have to impute as few values as possible, and thus avoid introducing unnecessary error. Given the almost exact correlation between the longitudinal and cross sectional weights, this approach was considered valid. Furthermore, many of the models in this thesis are run as cross sectional models. Only the MLMs in Chapter 7 are longitudinal repeated measures models. These models were estimated via Monte Carlo Markov Chain (MCMC), and the weights are ignored in the MLwiN software for this procedure<sup>32</sup>. Nonetheless, for those aged 26 to 29 there were no cross sectional weights as these were not calculated by the data collectors who only calculated weights for those aged between 10 and 25 (n=402), and would thus need to be suitably modified to be used. For this small proportion of the sample, where possible, their longitudinal weight in 2006 was carried forward as the most appropriate weight value to use, as these weights were available for those who had responded on prior occasions (n=296). This left 106 respondents that had no longitudinal or cross sectional weight in 2006; that is, they were between 26 and 29 years of age and had not responded on all three prior occasions. In the absence of a longitudinal weight and given relatively high (yet diminishing)

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<sup>32</sup> Given the heuristic nature of this solution, it was also run starting with the 2006 longitudinal weights (for 1831 respondents) and then substitution of the missing weights for the 1248 respondents with their most recent cross-sectional weight, as it could be argued this is more appropriate for longitudinal analysis, that is, analysis of the panel sample (although weighting is only used in cross-sectional models ran on this sample in the current study). When used in this manner, the resulting weights have a high consistency with the weights derived using the 2006 cross sectional weights as a starting point ( $r^2=.985$ ) and very similar distributions (range 0.21-5.75, mean= 0.981 std dev=.793 and range 0.21-5.75, mean= 0.997 std dev=.783 for weight using 2006 cross sectional weight and weight using longitudinal weight as a starting point respectively). Furthermore, a sensitivity test also suggests large variability between those with a longitudinal weight and those without (Mann–Whitney U test  $p=.000$ ; with a slightly higher mean and standard deviation amongst those who did not have a longitudinal weight).

Further sensitivity analysis was performed in the form of rerunning some of the models presented in chapter 6 using the alternative weight (based on original longitudinal weight). This yielded similar results to the models presented in chapter 6. The models ran with the alternative weight (based on original longitudinal weight) highlight a significant overall effect of binge drinking, both at the lower as well as the higher frequency, with these effects remaining once prior drinking was accounted for. Thus, when comparing results to the models presented in Chapter 6, broad overall conclusions remain similar: that is, the more frequently one binge drinks the more likely one is to have committed an assault offence. The main difference was that gender and age coefficients were not significant when using the alternative weight. On balance, given the high consistency between the two weights as well as the variability identified between groups in the sensitivity testing, the weight based on the 2006 cross sectional weight was opted for here as it was based on the most complete set of original data.

correlations between cross-sectional weights and cross sectional weights in previous years (all above 0.8), the value of the latest cross sectional weight for which they had a value was carried forward (n=106)<sup>33</sup>. This approach was adopted as the remaining 106 cases had no 2006 cross-sectional weight and only one prior observation with a cross-sectional weight, and it was thus not possible to impute weights using the PCA scores already derived given the use pair wise deletion in this procedure.

Descriptives for the resulting weight used (for the whole sample aged 10 and over) are displayed in Table 4.7 below and the correlations between this and other weights in the data set are displayed in Table 4.8 below; all of which yield relatively high correlations (all above 0.726, and almost complete correlation with the 2006 cross sectional weight) and thus suggest it is reasonable to proceed with the manipulated weight.

**Table 4-7 Descriptives for final weight employed for whole sample aged 10 and over**

<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
4554	0.21	5.75	0.9805	0.79315

**Table 4-8 Correlations between final weight employed and other weights in the dataset (for whole sample aged 10 and over)**

	<i>Pearson Correlation</i>
Imputed weight by longitudinal weight	.974
Imputed weight by 2006 cross sectional weight	1.00
Imputed weight by 2005 cross sectional weight	.920
Imputed weight by 2004 cross sectional weight	.806
Imputed weight by 2003 cross sectional weight	.726

Even in the final solution employed here, a level of error is introduced at each stage of manipulation, especially as the missing data were not missing at random but pertained to a particular group of people aged 26 to 29. Indeed, whilst age is also a factor confounded in the weighting, there are so many other factors accounted for in the weighting strategy. However, it was considered

<sup>33</sup> The value of their 2005 cross sectional weight was carried forward for 63 respondents. A further 39 respondents had the value of their 2004 cross sectional weight carried forward and, finally, the value of their 2003 cross sectional weight carried forward for the remaining 4 respondents.

reasonable to proceed in this instance, acknowledging the shortcomings of doing so, and given the rigorous checks conducted, the adopted solution is nonetheless considered more efficient than running analyses un-weighted.

#### 4.2.2 Sensitivity analysis

Active violent offenders do not necessarily offend regularly; examination of criminal careers spanning three to five years by Huizinga et al. (2003) suggest that offending is intermittent, often with years in which no offending takes place. Longitudinal designs with regular measurement, as employed in this study, are thus preferred to consider offending patterns over intervals stretching a period of years. However, not all individuals responded to all four sweeps. Given that violence is relatively rare amongst the general population, the number of individuals having committed violent incidents across successive sweeps was examined (see Table 4.9 below), as were responses to binge drinking measures.

**Table 4-9 Proportions of those having committed a violent offence and binge drinking in the panel sample by sweep**

	2003	2004	2005	2006
% having committed assault offence	15.1	16.7	16.0	11.7
Unweighted sample size (n)	2580	3655	4156	4502
% binge drinkers	-	82.5	80.6	76.3
Unweighted sample size (n)	-	1069	1293	2649

- = question not asked in 2004

Once data from all four sweeps had successfully been merged, various exploratory analyses and sensitivity analyses on key variables were run, and methods for dealing with missing data explored. The purpose of these analyses was to check for bias and systematic error pertaining to key variables of interest and look at patterns of attrition and non-response across successive sweeps. These analyses subsequently informed decisions on how best to account for the complexity of the survey design and attrition (for example, by using weighting) as well as the development of suitable models and appropriate data manipulation, such as non-linear transformations and accounting for non-normal distributions, or including a quadratic function of age. For example, given the

relatively low and rare nature of violent offending, models need to be adapted to allow for the non-normal distribution of violent incidents in the population; that is, to allow the model to assume a Negative binomial distribution<sup>34</sup>.

### **4.3 Response and explanatory variable definitions and measures**

The definitions and measures chosen for the response and explanatory variables from the survey for this analysis will impact on the meaning and interpretation of findings. Given the secondary nature of this analysis, the researcher is unable to self-define the measures. Rather, they must rely on the suitable selection of available measures to capture the construct of interest. For example, 'violence' could be defined in a number of ways: by behaviour, such as physical attack or emotional abuse; or by the setting in which it occurs, such as in public or in the domestic sphere. Furthermore, it could be measured in a number of ways, for example, by recording self reported perpetration or victim reports of physical attacks. Each of the key measures employed in the current study will now be detailed in turn.

#### **4.3.1 Violence**

The current study will focus on a binary measure of self reported 'assault' both resulting in, and not resulting in injury to the victim. In the OCJS participants were asked whether they had "ever/in the last 12 months used force or violence on anyone on purpose, for example, by scratching, hitting, kicking or throwing things, which you think did not injure/injured them in some way?"<sup>35</sup>. This definition was chosen to represent physical violence. Whilst this conceptualisation excludes many other forms of violence, such as emotional and sexual abuse, it has been chosen based on previous research findings that

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<sup>34</sup> Negative binomial modelling was preferred over Poisson modelling given the over dispersion in the outcome variable (whether had committed an assault or not).

<sup>35</sup> A binary measure of assault outcomes was the focus of the bulk of the analyses presented in this thesis given the over dispersed distribution of the variable capturing number of assaults perpetrated (in which most responses were either zero or '1') as well as apparent problems with accurate respondent disclosure to this variable (values as high as 1000 assaults in a year were recorded - with extreme values being more common in those under the age of 16 – and were thought to be exaggerated or incorrect, or at the very least problematic in terms of interpretation). In light of these issues, focus was retained predominantly on the binary variable and where analyses are presented on the number of assaults extreme outliers have been removed.

suggest assault is the most common form of violence perpetrated by young people (especially those aged 18-24), and is often associated with excessive alcohol consumption (see Finney, 2004; Levi, 1997; McVeigh et al., 2005; WHO, 2006). Naturally, there are obvious problems associated with self-reports of such incidents, as respondents may not wish to disclose such behaviour or may indeed inflate the severity of incidents (although this is likely to be less common). These issues are explored in more detail in section 4.5.2 below. In light of the problems associated with self-reports and other issues such as selective or partial recall and varying definitional interpretations, the Home Office has made considerable efforts to overcome these by developing the way in which the survey was delivered. For example, to minimise the influence of interviewer presence in reports of offending or drug use (see Hamlyn et al., 2003, for further detail on the survey design and question wording), a comprehensive list of descriptive behaviours which can later be recoded into crime types to aid interpretation and maximise honest disclosure, as well as ensuring sensitive questions are posed using audio-CASI (computer-assisted self-interviewing)<sup>36</sup>, was devised.

#### **4.3.2 Alcohol-related assault**

Whilst it is often difficult to ascertain how alcohol is implicated in violent incidents, measuring this using survey questions is indeed limited. The OCJS asks further questions about offences disclosed by respondents (for up to six offences) including whether they had been drinking at the time of the offence (“and can we just check, had you taken drugs or drunk alcohol when you did it?”). Here this will serve as a measure of whether the assault offence involved alcohol consumption and will thus be termed ‘alcohol-related’.

Thus whilst the OCJS offers a measure of whether or not the perpetrator had been drinking at the time of an assault offence, it merely records the presence or absence of alcohol prior to an offence and does not quantify levels of consumption or intoxication. Therefore, no distinction of the amount of drugs or alcohol consumed or how long prior to the incident these had been consumed is

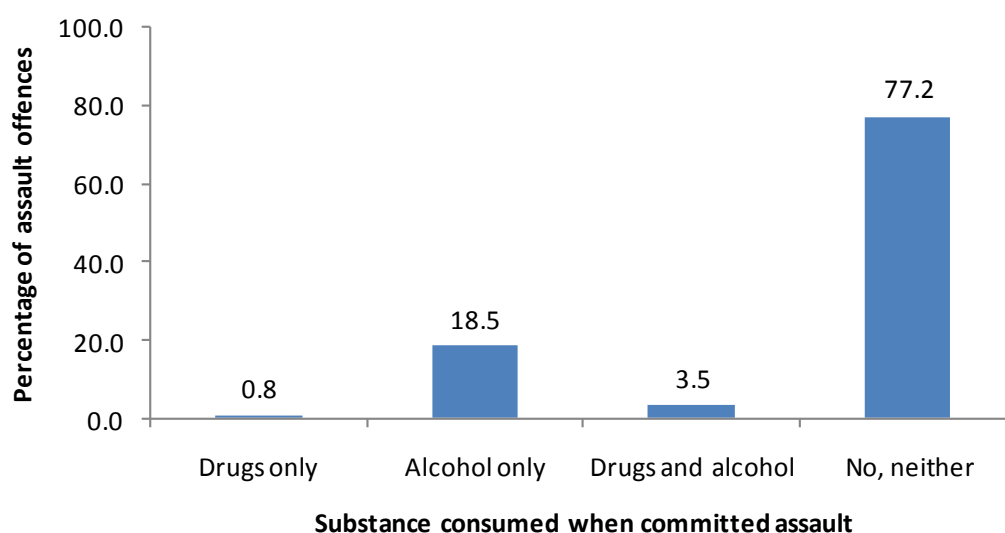
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<sup>36</sup> Audio-CASI allows respondents to listen to questions and possible answers via headphones before entering their response directly into a computer.

possible. In his review of methodologies for studying drinking and criminal careers, Greenberg (1982) notes that a distinction between drinking and drunkenness is often absent in the research, most likely due to difficulties in measuring subjective concepts such as 'drunkenness'. Whilst it may not be possible to address this gap fully, broader associations between drinking patterns and violent behaviour can be identified.

Given the way in which the question was asked of respondents: ("and can we just check, had you taken drugs or drunk alcohol when you did it?"), it is also not possible to accurately assess whether the consumption of alcohol (or drugs) was a contributing factor to the offending behaviour or not. The double-barrelled questioning about alcohol and drug consumption offers the respondent the option of choosing 'alcohol only', 'alcohol and drugs' or 'drugs only'. Figure 4.2 below highlights that when examining the incidents of assault captured in the final sweep (2006) 'alcohol only' was most common answer in relation to assault offences (18.5%), after neither having consumed drugs nor alcohol (77.2%). Responses from the 'alcohol only' and 'alcohol and drugs' categories have been merged in order to capture all incidents that involved alcohol consumption.

**Figure 4.2 Percentage of assault offences committed by 10-25 year olds surveyed as part of the combined fresh and panel sample in 2006 in which drugs and / or alcohol had been consumed (N=828)**



A variable capturing alcohol-related assault was created to form the dependent variables for subsequent multinomial models. Detail on whether drugs and/or

alcohol had been consumed in an assault in 2006 was merged into the flat panel data file from the supporting nature data file (2006). Cases were linked on their unique identifiers and this information merged. Subsequently, a new variable was computed based on whether an individual had committed an assault in the last year and whether drugs and/or alcohol had been consumed. The new variable has three categories: not having committed an assault, having committed an assault in which alcohol was not implicated, and having committed an assault in which alcohol had been implicated. Here ‘implicated’ refers to whether alcohol had been consumed prior to committing the offence. Those that drank only alcohol or consumed both drugs and alcohol prior to an offence were classified as having committed an alcohol-related offence, those that had consumed only drugs prior to an offence would thus feature as having committed a non-alcohol related assault.

Whilst the overwhelming majority of respondents had committed no assault at all (93.6%), only 5.5% had committed an assault which had not involved alcohol (although it may have involved drugs), and an even smaller proportion (0.9%) had committed an alcohol-related assault based on the recoded variable (see Table 4.10).

**Table 4-10 Proportion of panel sample having committed alcohol-related violence in the last 12 months in 2006 for whom data was available on the nature of their assault offences (N=4103)**

<i>Assault type</i>	<i>% of respondents</i>
No assault	93.6
Alcohol related assault	0.9
Assault no alcohol	5.5
Total	100

As an alternative to this measure the OCJS also asks respondents who are regular drinkers (for example, drink once a month or more) whether they had started fighting during or after drinking. This too could be used as a proxy for “violent behaviour whilst drunk” given the low numbers of those having committed an alcohol-related assault offence using the previously described variable. However, whether or not an individual had got into a fight during or after drinking is only asked of those who drink regularly and no further detail is

gleaned as to whether respondents fought without having drunk. Amongst 16 to 29 year olds, 209 (of 2384 valid responses) said they had been in such a fight.

### **4.3.3 Drinking patterns and binge drinking**

Alongside the problems associated with self reports of offending and violent behaviour, there are concerns about the accuracy and disclosure of drinking behaviour. Commentators have expressed concerns over the problems of recall and underreporting in other social and government surveys (Goddard, 2001; Bellis et al., 2009) and there may be specific concerns in relation to asking such questions of underage drinkers, such as a reluctance to admit such behaviour or a tendency to amplify their drinking behaviour to appear experienced or adult, or fit in with perceived norms and behaviours of their peers.

However, a number of standardised measures on alcohol consumption and drinking patterns employed in other prominent national surveys are captured in a similar way in the OCJS. These include:

- Frequency of drinking
- Type of alcohol consumed
- Where usually drank alcohol
- Whether had been and how often got drunk
- 'Binge drinking' (drinking more than 6/8 units in one day)
- Consequences of drinking behaviour such as getting into a fight, or stealing/damaging something.

To measure the impact of drinking patterns in subsequent analyses a measure of binge drinking frequency (defined by drinking more than six/eight units in one day for females and males respectively) is employed, as there is a known association between heavy episodic drinking and violent behaviour identified in the literature (see Chapters 1 and 2). This measure is used as a proxy for binge drinking in other national government surveys such as the General Household Survey, which informs the Alcohol Harm Reduction Strategy for England and National Alcohol Strategy (Herring et al., 2008). Drinking frequency was only asked of those who had ever drunk and had also done so in the last 12 months. Binge drinking frequency was subsequently only asked of those who drank at



least once a month or more. The binge drinking variable is measured here on a six point scale between 'most days' and 'less than once every couple of months'. To aid interpretation and avoid categories with low numbers, the six categories in the original binge drinking measure have been collapsed in some analyses to provide three indicators: those that drink regularly (once a month or more) but do not binge drink, those that binge drink at a lower frequency (once to ten times a month), and those that do so more frequently (eleven times a month or more).

Whilst evidence reviewed in Chapter 2 suggests it is the pattern of alcohol consumption (such as binge drinking patterns) that is likely to be associated with violent offending, rather than drinking per se, the OCJS also asks respondents whether they had felt drunk after drinking in the past year. This could serve as a useful proxy for drinking to the point of intoxication in the way that is merely assumed in the binge drinking measure outlined above. However, this question is based on the respondent's subjective interpretation of their intoxicated state and is liable to variation in interpretation between respondents. Moreover, no dose-response relationship can be established using such a measure, and there is no indication of quantity consumed. The question of whether respondents had felt drunk after drinking is limited in detail, and the frequency of having felt drunk was only captured over the last 12 months if they said yes to the filter question of having drunk in the last year as well as whether they had felt drunk after drinking in the last year. The binge drinking variable is based on behaviour over the last month and is more appropriate here as it is a) more accurate and b) a proxy for current drinking behaviour which may have altered over the past 12 months. For these reasons, as well as the diminishing sample size associated with the filter questions preceding this question and evidence from other empirical studies reviewed in Chapter 2, the binge drinking measure was preferred as a starting point in the analysis and the measure of being drunk after drinking was not used<sup>37</sup>.

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<sup>37</sup> Amongst 10 to 29 year olds 65.7% (of a total of 3643 valid responses) said they had felt drunk in the last year, with 13.9% of the 2233 valid cases with responses to the frequency question saying they felt so more than once or twice a week (compared to those who felt so 2 or 3 times a month; 23.2%, once a month; 17.2%, once every couple of months; 23.1%, and less often; 22.6%). There was also a strong association between the frequency of binge drinking and the frequency of feeling drunk ( $\chi^2=544.481$ ,  $df=10$ ,  $p=000$ ), with those in the higher binge

#### 4.3.4 Drinking expectancies and attitudes

Alongside the actual drinking behaviours of young people, the OCJS captures a series of questions on what could be considered motivations and/or attitudes held towards drinking alcohol by employing measures such as:

- 'When I drink I often do or say things I regret'
- 'Drinking alcohol makes me feel relaxed'
- 'Drinking makes me feel more friendly and outgoing'
- 'Drinking helps me to forget my problems'
- 'I drink to get drunk'
- 'I drink because my friends do' (only asked of respondents under the age of 16)

These expectancy measures differ from those used in ESPAD (European School Survey Project on Alcohol and Other Drugs; see Järvinen and Room, 2007; Andersson and Hibell, 2007) in which questions were asked about *expected* personal positive and negative consequences; namely, how *likely* an individual thought it was that the following would happen to them after drinking:

- Positive:
  - 'feel happy'
  - 'feel relaxed'
  - 'feel more friendly and outgoing'
  - 'have a lot of fun'
  - 'forget all my problems'
- Negative:
  - 'feel sick'
  - 'get in trouble with the police'
  - 'harm my health'
  - 'not be able to stop drinking'
  - 'get a hangover'
  - 'do something I would regret'

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drinking frequency categories also being more likely to have felt drunk more often, suggesting also that there is some overlap between the two variables.

Järvinen and Room (2007)

However, whilst the variables captured in the OCJS offer an insight into whether (and how) motivations for drinking or views held towards the likely consequences of alcohol consumption mediate consumption patterns and associated behaviour, they are only asked of regular drinkers, that is, those that drank once a month or more. Furthermore, as well as motivations for drinking and expectancies of doing so, the use of alcohol as an alibi or excuse in deviant disavowal can be explored using the proxy measure of ‘because I was drunk’ which can be given explanation/reason/justification for committing crimes, including violent offences<sup>38</sup>.

In most of the analyses, the response categories for the variables listed above have been collapsed for parsimony in models and to aid interpretation of the resulting odds ratios as well as to avoid categories with low numbers. For example, those who strongly agreed or who agreed to a given statement were grouped together in a recoded variable to form those who ‘agreed’ and this was contrasted against those who ‘disagreed’ (derived from the original categories disagree and strongly disagree).

#### **4.3.5 Focus on young people**

The OCJS is a particularly relevant data set for this thesis, given its focus on young people. The OCJS captures information on those aged 10 to 25 years old. It thus includes those aged 10-17 who may be considered ‘underage drinkers’ as well as those young adults aged 18-25 years of age who are legally entitled to drink, but who are also still experimenting with alcohol and making use of licensed premises and late night entertainment venues. This age range also covers those disproportionately associated with public assault and violence; namely, young males aged between 18 and 24 and follows respondents for up to four years. Thus the OCJS offers a unique opportunity to monitor the changes in drinking and violent behaviour of young people growing up at various stages of young adolescence and early adulthood. Practically,

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<sup>38</sup> Whilst the analyses presented in the thesis do not explore this specifically, Chapter 8 discusses the merit of doing additional analyses to look at this issue.

however, given low levels of drinking amongst under 16s many analyses presented in this thesis focus on the 16-25 age range.

#### 4.3.6 Consistency of measures over time

When trying to measure change over time, both in trend and longitudinal analysis, it is important that the methods and measures (that is, survey questions) are the same on each successive occasion. Most questions remain the same between sweeps in the OCJS, however, the binge drinking measure “how often in the last month have you had 6/8 or more units of alcohol on any one day?” was only introduced in the second sweep (2004). Analyses and model specification in this thesis thus focus on sweeps 2004 to 2006. However, even when survey questions remain stable over the different sweeps, respondents may not necessarily respond to questions at each sweep due to either item and/or survey non-response. Indeed, an analysis of the available response patterns of the panel sample over the successive sweeps for the key variables of assault and binge drinking are summarised in Tables 4.11 and 4.12 below, and suggest that whilst there are similar proportions of individuals committing assault in each sweep, the sample size for those interviewed in prior years as well as in 2006 diminishes. Analyses presented in this thesis have been carefully specified to account for missing observations using appropriate methods, such as weighting and multilevel repeated measures modelling techniques, and the use of Monte Carlo Markov Chain estimation (MCMC) as used in Chapter 7, or otherwise acknowledge relevant limitations where there is missing data.

**Table 4-11 Response by the panel sample to assault measure by sweep (N=14893 observations over 4 sweeps)**

<i>Sweep</i>	<i>No assault in the last 12 months</i>	<i>Assault in the last 12 months</i>	<i>Total</i>
Sweep 1 (2003)	2190 84.9%	390 15.1%	2580 100.0%
Sweep 2 (2004)	3019 82.6%	636 17.4%	3655 100.0%
Sweep 3 (2005)	3426 82.4%	730 17.6%	4156 100.0%
Sweep 4 (2006)	3920 87.1%	582 12.9%	4502 100.0%

**Table 4-12 Response by the panel sample to binge drinking measure by sweep (N=5011 observations over 4 sweeps)**

<i>Sweep</i>	<i>Binge: never</i>	<i>Binge: low (once to ten times a month)</i>	<i>Binge: high (eleven times a month or more)</i>	<i>Total</i>
Sweep 2 (2004)	219 20.5%	745 69.7%	105 9.8%	1069 100.0%
Sweep 3 (2005)	251 19.4%	931 72.0%	111 8.6%	1293 100.0%
Sweep 4 (2006)	667 25.2%	1771 66.9%	211 8.0%	2649 100.0%

#### **4.4 Data Analysis strategy**

Whilst a number of methods for addressing the proposed research questions are available, selected options for exploring the above outlined data are presented here alongside the relevant merits of doing so.

##### **4.4.1 Sample characteristics**

General characteristics of the panel sample and responses to key variables, such as the prevalence of drinking and violent offending behaviour, were examined, and sub group analyses by age and gender was performed to describe the profile of drinkers and those having committed an assault. For example, cross tabulations and measures of association. The panel sample (n = 4554) is 51% male, ranging between ages 11 and 29 (median = 20, mean = 19.57, Std dev = 4.75). When asked in 2006, around one in eight respondents (11.7%) had committed an assault in the last 12 months. When examining the proportions of males and females from the panel sample that had committed assault in 2006, findings suggested that almost two thirds of those having done so were male (62.8%): 14.3% of males had committed an assault offence compared to 8.9% of females, and the association between gender and assault was found to be statistically significant ( $p < .001$ ,  $df = 1$ ,  $\chi^2 = 32.153$ ), although weak (Cramer's V = .085).

Whilst there was no significant association between the frequency of alcohol consumption (that is, how often individuals drink alcohol) and having committed an assault offence, Table 4.13 below highlights a modest significant relationship amongst regular drinkers (those that drink at least once a month) in the panel sample (n=2626) between the frequency of binge drinking and having committed an assault offence ( $\chi^2= 31.259$ ,  $df= 5$ ,  $p<.000$ ,  $\phi= .107$ ), with those having committed an assault disproportionately distributed across the higher frequency binge drinking categories.

**Table 4-13 Percentage of panel respondents who drink regularly having committed assault or not by binge drinking frequency (unweighted counts in brackets)**

	<i>Not in last 12 months</i>	<i>Offended in last year</i>
Never in the last month	24.1	20.6
Once or twice in the last month	36.6	28.2
3 or 4 times in the last month	19.3	20.6
Between 5 and 10 times in the last month	11.7	15.0
Between 11 and 20 times in the last month	5.5	8.3
More than 20 times in the last month	2.8	7.4
Total	100	100
(unweighted base)	(2267)	(359)

Relationships between important variables such as drinking, binge drinking frequency, and having committed a violent assault were examined using the panel sample. Cross tabulations and strengths of associations between these variables were examined for current drinking behaviour as well as binge drinking in 2004 and 2005. On considering frequency of binge drinking measures both in 2006 and in previous years, and their relevant association with violent outcomes in 2006, both current and previous binge drinking had significant moderate associations. This suggests that increased binge drinking frequency is associated with violent outcomes in the same year ( $\chi^2=31.259$ ,  $df=5$ ,  $p=000$ ,  $V=.107$ ) as well as one year on (2005 binge drinking association with assault outcomes in 2006:  $\chi^2=32.399$ ,  $df=5$ ,  $p=000$ ,  $V=.138$ ), and two years on (2004 binge drinking association with assault outcomes in 2006:  $\chi^2=31.515$ ,  $df=5$ ,  $p=000$ ,  $V=.144$ ). Earlier binge drinking frequency was also found to be significantly associated with later binge drinking measures using the 2004 and 2005 measures ( $\chi^2= 645.393$ ,  $df=25$ ,  $p=000$ ,  $V= .310$  and  $\chi^2= 555.666$ ,  $df=25$ ,  $p=000$ ,  $V=.273$ , respectively). Contemporaneous drinking frequency per se,

rather than binge drinking frequency, was not significantly associated with assault outcomes in the same year ( $\chi^2 = 3.033$ ,  $df=5$ , n.s.).

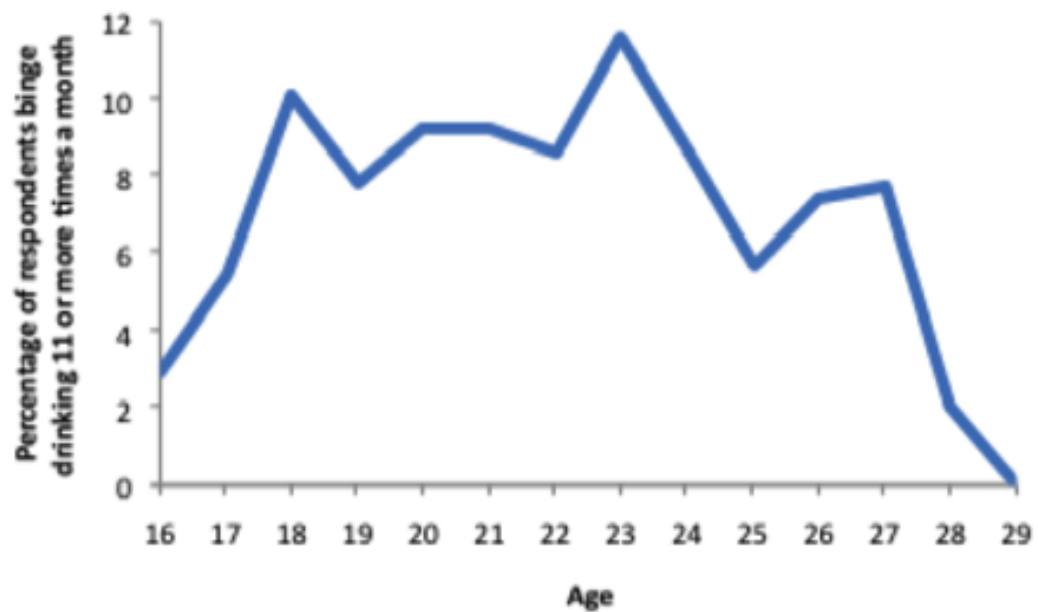
To enable analyses of those who did not drink, or only drank moderately (that is, less than once a month), to be contrasted against those that binge drank, a new variable was computed with the categories outlined below in Table 4.14. Whilst just over a third were categorised as non- or moderate drinkers, the highest proportion of respondents (43.2%) were those who binge drank between one and ten times a month. Only a small minority exceed binge drinking 10 times a month (5.6%).

**Table 4-14 Percentage of those in the panel sample in categories of the 2006 derived binge drinking variable**

	<i>Percentage of respondents</i>
Non or moderate drinkers (drink less than once a month)	35.7%
Those who drink once a month or more but do not binge drink	15.2%
Binge drink between 1 and 10 times a month	43.2%
Binge drink more than 10 times a month	5.6%
Total (unweighted base)	4322

The effects of age on central variables of interest were also explored; namely, binge drinking frequency and assault outcomes. Using the collapsed binge drinking variable the percentage of respondents that binge drank more than 10 times a month were plotted by age in Figure 4.3. This highlights a distinct curvilinear relationship of age with high frequency binge drinking within the 16-29 age range.

**Figure 4.3 Percentage of respondents in high binge drinking category in 2006 by age (16-29)**



Similar plots were also run on percentage of respondents who had commit assault highlighting which shows a general downward trend between the ages of 16 and 29 and a modest curvilinear trend between the ages of 10 and 29 (see Figures 4.4 and 4.5). A similar plot is presented for both males and females separately (Figure 4.6) and suggests the overall downward trend with age is loosely supported for both genders, however that the respective peaks and troughs seemingly overlap at age 22. In addition, despite limitations and concerns associated with this measurement of number of assault outcomes as outlined in footnote 35, the mean number of assaults by age were also examined confirming similar trends in assault outcomes by age (see Figures 4.7 and 4.7).



Figure 4.4 Percentage of respondents having committed assault in 2006 by age (10-29)

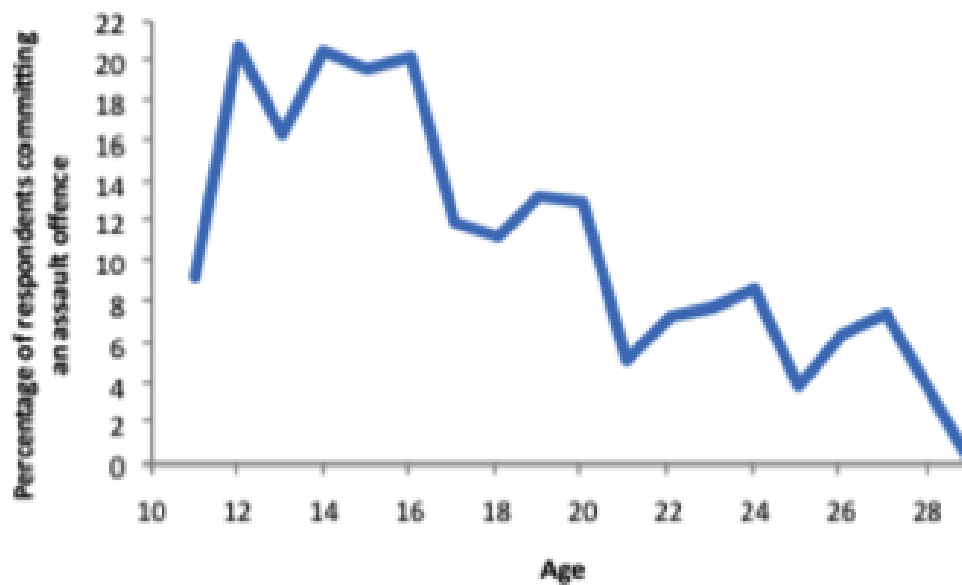


Figure 4.5 Percentage of respondents having committed assault in 2006 by age (16-29)

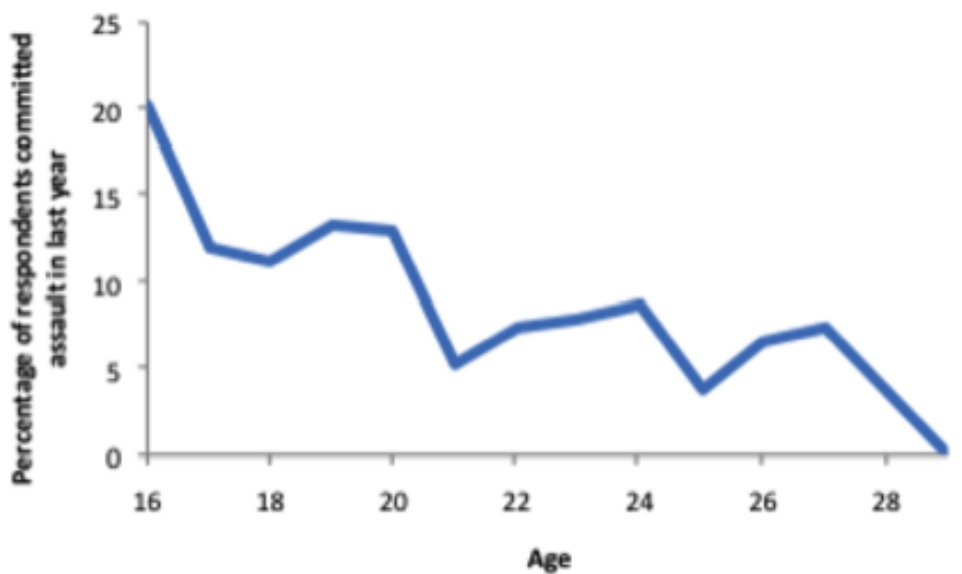
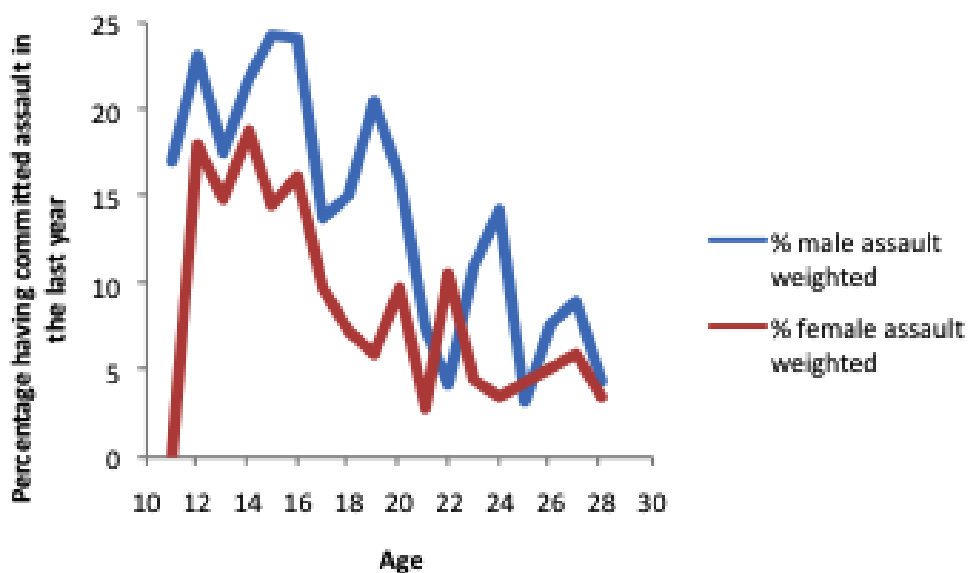
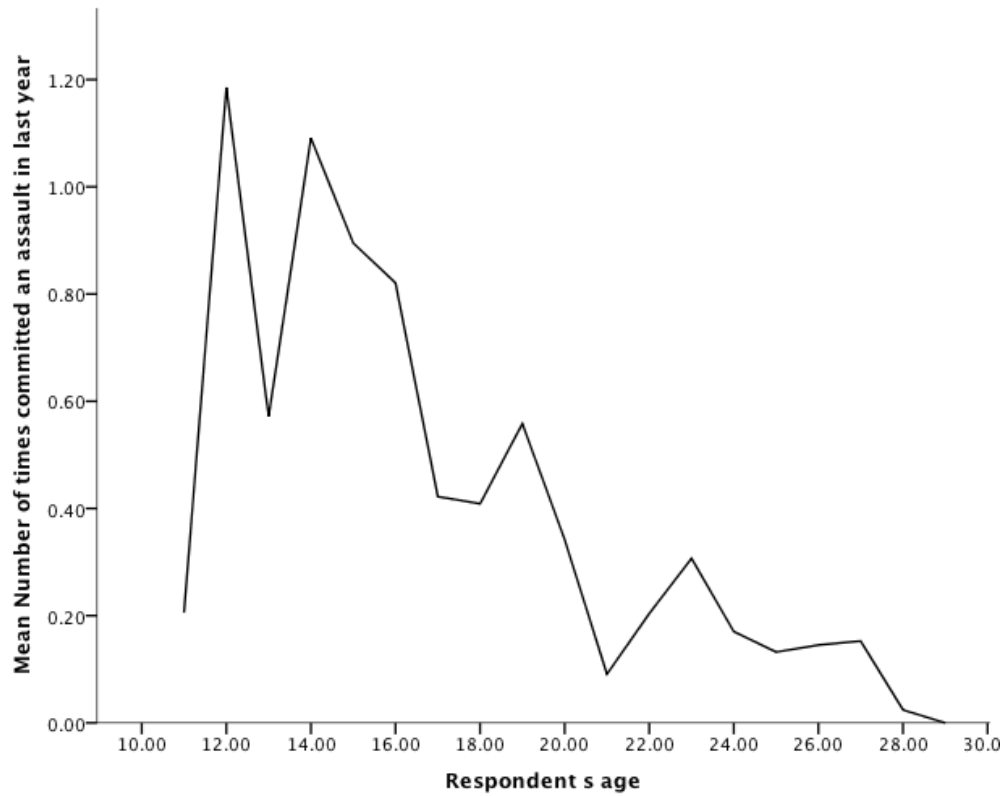


Figure 4.6 Percentage of respondents having committed assault in 2006 by age (10-29) and gender

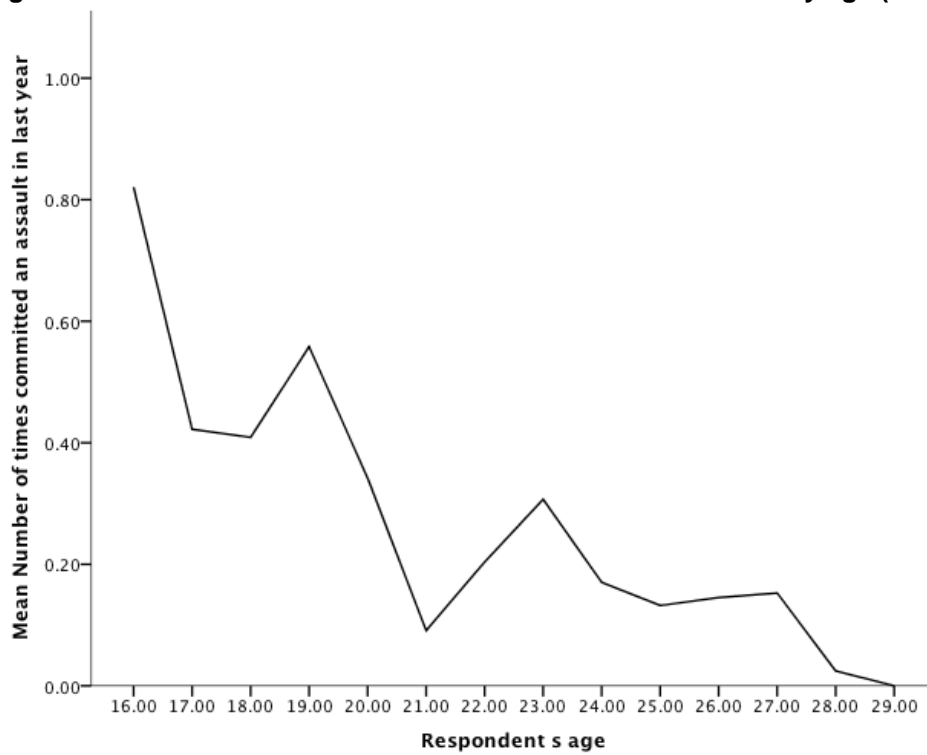


**Figure 4.7 Mean number of assault offences committed in 2006 by age (10-29)\***



\*outliers >60 removed.

**Figure 4.8 Mean number of assault offences committed in 2006 by age (16-29)\***



\*outliers >60 removed.

#### **4.4.2 Exploring young people's attitudes and expectancies towards alcohol consumption**

Alongside such descriptive analyses, more sophisticated methods of exploring the data were utilised, such as exploratory and confirmatory factor analysis (EFA and CFA) and latent class analysis (LCA), to look at the classification and grouping of variables into latent constructs (or factors) or across groups of individuals, which may be used as categories or typologies of, for example, drinkers. These methods were employed for measures surrounding attitudes and expectancies around alcohol consumption, and will be elaborated on below (findings of these analyses are presented in Chapter 5).

Many commentators have stressed that information on drinking patterns and contextual factors, rather than alcohol consumption or volume of alcohol consumed per se, may help explain the role of alcohol in offending or violent behaviour (for example, Sumner and Parker, 1995). In light of this, taxonomies and typologies of drinking patterns have been developed in the field of public health (for example, Department of Health, 2005), and are used to characterise drinkers with certain consumption patterns and examine their socio-demographic characteristics and/or geographic distribution. The prevailing drinking typology used to look at how drinking behaviour affects both health and behavioural outcomes is the Alcohol Needs Assessment Research Project (ANARP) classification, which centres around adverse health and harmful outcomes associated with drinkers, and classifies drinkers according to their weekly alcohol intake; those drinking between 15 and 35 units a week for women and between 22 and 50 units a week for men are considered hazardous drinkers and those drinking more than 35 units a week for women and more than 50 units a week for men are considered harmful drinkers (Department of Health, 2005). However, this classification tells us little about how those units are consumed and distributed across a given or typical week – such as whether these units are spread evenly across the week, whether they are concentrated on an individual drinking session, or whether the consumption follows a weekday constraint and weekend excess pattern. The main drawback of this typology of risky drinking, however, is that it is based on sensible drinking guidelines for adults and does not account for how alcohol may influence

younger people differently or exacerbate their risk of injury or violence. In light of this, it would seem useful to develop a typology of young people's drinking in England and Wales using the detailed drinking variables available in the OCJS, which focuses on behavioural rather than health outcomes. For example, using young peoples' attitudes and expectancies towards alcohol consumption.

Establishing the prevalent drinking patterns amongst young people will subsequently allow them to be contrasted against those patterns identified by other authors, and allow theories about young people's drinking and their impact on violent behavioural outcomes to be developed. Models can be formulated in subsequent stages of the analytical strategy to test these theories. Principal components analysis (PCA) serves as a valuable exploratory technique to ascertain which key 'components' of drinking behaviour explain the most variability in drinking patterns. PCA scores can be used as independent variables to be included in further predictive / explanatory models.

However, it should be noted that PCA is merely a mathematical formula and exploratory technique (as opposed to a statistical model) for transforming the available data into components likely to explain the most variability and as such it does not identify latent variables. In light of this, data reduction techniques, such as exploratory and confirmatory factor analysis (EFA / CFA), were also used to explore groups of variables, such as those pertaining to drinking behaviours, that might together form underlying latent constructs (PCA is closely related to factor analysis, however, the latter is based on different assumptions concerning variance). Factor analysis allows groupings of variables, that are inter-related, to be identified, and may help establish how these are related to each other (detecting structure), for example, attitudes towards and expectancies of alcohol use could be examined alongside actual consumption levels. Factor analysis may therefore identify important groupings of drinking attitudes and behaviours that would otherwise not be apparent. Resulting factors can only summarise the associations of the measures included, and care must be taken to include suitable and relevant variables, and in the interpretation of the factors. Factor analysis may be considered more relevant for testing hypotheses or theory compared to PCA. The latter is most suited to exploratory analyses.

Latent class analysis allows a set of observed multivariate categorical variables to be transformed into a set of latent variables and can thus be likened to a form of factor analysis for categorical data (see Uebersax, 2008). This is deemed an appropriate technique when observed values are derived from a pre-defined list of possible values, such as attitude structures, from survey responses (Uebersax, 2008). This method is likely to be useful for testing and identifying subtypes of individuals with distinct attitudes and/or expectancies towards drinking (such as the positive/negative expectancy groupings identified (see Andersson and Hibell, 2007) where the variables concerned are discrete. Latent class analysis (LCA) was also employed to look at the clustering of individuals in groups based on their responses to drinking questions.

#### **4.4.3 Regression modelling techniques**

Regression modelling allows for the analysis of multiple variables at the same time, and an assessment of how the dependent variables change in relation to the independent variables. Standard linear regression modelling assumes that the dependent variable of interest is continuous and a linear function is fitted to assess the association with independent variables. However, to analyse dichotomous outcomes, such as whether an individual has committed an assault or not, requires a non-linear model, such as logistic regression. Here, a 'logit' function is fitted to the model to estimate the log-odds (and hence the probability) of an event (for example, an assault offence) occurring. See Equation 4.1 for the logistic regression formula. Whilst the dependent variable needs to be dichotomous, the independent variables can be either categorical or continuous in such models.

##### **Equation 4-1 Logistic regression formula**

$$\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k$$

The resulting odds ratios, obtained by exponential transformations, are measures of effect size which describe the association between the outcome variable (assault) and the independent variable in question used to assess the risk of the outcome. Using the outcome variable of assault, this would thus be the ratio of the probability of having committed an assault, to the probability of

having not committed an assault. An odds ratio of 1 implies that the event is equally likely in both groups (see Equation 4.2 below, where  $p$  is probability of  $Y=1$ ).

**Equation 4-2 Odds ratio formula**

$$\frac{p}{1 - p}$$

#### **4.4.4 Examining drinking patterns and their associations with violent offending – cross-sectional modelling**

Logistic regression models using panel respondents were developed and the results of these are reported in Chapters 5 and 6. Logistic regression modelling enables an assessment of the relative contribution of independent variables on the likelihood (predicted probability) of an outcome variable (in this instance, examining to what extent binge drinking frequency increases the likelihood of committing an assault offence). An initial series of cross-sectional models looking at drinking patterns and their association with assault outcomes was subsequently extended to include earlier measures of binge drinking and violent behaviour in panel members, so as to account for development and change over time within individuals.

In the models presented in this thesis, demographic factors associated with violent behaviour such as age, gender and a measure of previous violent behaviour (in 2005) were controlled for. Previous violent behaviour was used to control for a tendency for violent behaviour more generally within individuals. Whilst there are countless models that could have been fitted, including numerous potential confounders of the association between alcohol consumption and violence (such as socio-economic status, behavioural problems, delinquency, school performance, family problems, etc.), the models presented in this thesis focus on examining the impact of contemporaneous and distal alcohol consumption patterns on violent outcomes in the form of assault. This provides a tighter focus on the attenuation/modification in coefficients

pertaining to alcohol consumption when accounting for prior offending and drinking behaviour<sup>39</sup>.

#### **4.4.5 Examining the temporal association between drinking patterns and violent behaviour: longitudinal modelling**

##### **4.4.5.1 Exploring development: Longitudinal analysis**

The current study adopts a developmental life course approach to situating alcohol consumption and behavioural outcomes, aiming to establish temporal associations as well as potentially effective points of intervention. The OCJS enables longitudinal analysis, which can complement the cross-sectional analyses by accounting for changing drinking patterns and criminal behaviour during adolescence and young adulthood. Cross-sectional analysis, as previously outlined, can only highlight associations between variables at a given point in time. However, longitudinal techniques are thought to assist the identification of specific offending and drinking trajectories and explore factors associated with onset, transition and desistence in relation to both offending and drinking careers. “The longitudinal method not only charts the process of individual change and development, but also generates much stronger evidence for testing causal explanations than any cross-sectional study can” (Smith and McVie, 2003:176). Using such methods it is thus possible to monitor adolescent transitions, identify adolescent risk factors and facilitate more robust insights and testing of causal processes - such as those leading to the involvement in alcohol consumption / violence.

The OCJS offers a snapshot of young people’s lives, their drinking and offending behaviour over four years. Whilst this is limited in its ability to look at risk factors or circumstances prior to this developmental stage or go on to assess long term development throughout adulthood, it offers an insight into the changing behaviours adopted during adolescence and early adulthood. Albeit, whilst this is a short-term trajectory, adolescence is a period which captures many different life events, such as leaving school or the parental home, the

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<sup>39</sup> Whilst negative binomial modelling was also a potential technique identified to examine the covariates of the number of offences committed and multinomial regression identified as suitable for examining the covariates of alcohol-related violent offending and/or severity of offences (whether assault incurred an injury or not), the data was unsuitable for such analyses and is described in Chapter 6.

transition from education to employment, establishing romantic partnerships as well as many others. Such life events and transitions offer a rich contextual backdrop to how people's drinking and associated behaviours may be mediated. The survey interviews those over ten years of age, aligning itself to the national age of criminal responsibility, and includes those up to and including 25 years – an age that may loosely be associated with the coming of 'adulthood' – whilst the panel sample originally recruited at age 25 is followed until age 29.

In order to test some of the hypotheses implicit in the research questions, a series of sophisticated repeated measures multilevel models were run. Each enables a different research question to be addressed; for example, multi-level modelling allows for an examination of the extent to which variation in assault outcomes is attributable to change within or between individuals (whilst accounting for the covariance structure in the longitudinal panel data) over the period of adolescence and young adulthood.

To make the most of the available data given that there is non-response on some occasions for some individuals, a multilevel framework is adopted to account for the complex data structure in which up to four annual observations are captured for each individual. In such a framework, observations at each time point can be considered nested within individuals – thus increasing the number of observations and relative power of the available data. Furthermore, the MLM method is useful in its ability to extract maximum power from the available data: occasions may differ between individuals in longitudinal data measurement, however, the multi-level framework allows for such missing observations and the number of measurements to be different for individuals "in spite of the longitudinal aspects, it is even permitted that for some individuals only one measurement is available" (Snijders, 1996:406). Additionally, unlike ordinary regression analysis, this framework does not assume all observations to be independent (for example, drinking behaviour at time point 2, 3 and 4 will almost certainly be dependent on drinking at time point 1, as will the measure of whether an individual has ever committed a violent offence), and allows the variance between the two levels (time points and individuals) to be distinguished.



Given the current thesis' focus on the development of alcohol consumption and violent behaviour amongst young people, the longitudinal dependence of the observations over the four sweeps forms part of the substantive investigation, making MLM particularly appropriate in this instance. Findings from the initial regression models are thus subsequently rerun using a multi-level repeated measures framework, in which it is "straightforward to incorporate not only covariates that are constant in time, but also changing covariates" (Snijders, 1996:408). This modelling procedure also allows for a consideration of either a random intercept, in which the same rate of growth for each individual is assumed, or a random intercept and random slope to allow a different rate of growth for each individual. Thus the use of such models is appropriate for analysing "the development curves of individuals, not only on their average level but also on the speed or acceleration of development, or on other characteristics of the way in which Y changes with time" (Snijders, 1996:408), and asking questions concerned with "differences exist between individuals with respect to their development curves, and which covariates have effects on the level, speed and 'shape' of development" (Snijders, 1996:408). Data preparation was performed in SPSS version 16 and the repeated measures models were fitted using MLwiN version 2.21<sup>40</sup>.

The multi-level approach allows for more flexibility in the way in which it deals with different ages and events in each measurement occasion. Key considerations in defining the models, as outlined by MacCallum et al. (1997), will include whether linear or non-linear models for representing change are appropriate, the merit of analysing multiple outcomes individually or simultaneously, and likely variables to be included in the model that may be related to the random parameters or outcomes. In the models run here, a logit function was employed to cater for the dichotomous assault outcome variables, and whilst covariates such as gender were specified as fixed, others such as age and binge drinking frequency were allowed to vary over time.

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<sup>40</sup> For the multilevel logistic regression models, Monte Carlo Markov Chain (MCMC) estimation was used, implemented via MLwiN (Browne, 2009). MCMC estimation generally leads to better estimates of the model parameters than other methods, such as Penalised Quasi Likelihood (PQL). It should be noted, however, that the sample weights have no effect when the MCMC estimation procedure is implemented in MLwiN. All models presented in the current thesis employ MCMC with 20000 iterations.

#### **4.4.5.2 Age specification in longitudinal analysis**

The panel sample age ranges from 10 to 29 years of age over the four sweeps. Given the accelerated longitudinal design in which multiple overlapping cohorts are followed, respondents' age will vary (within this range) in any given sweep as will the age range over which they are surveyed across the four sweeps. Given low levels of binge drinking in those aged under 16 years, the models in this thesis focus on regular drinkers aged 16 to 29. In light of this, age has been re-specified in the models here to start at the age of 16 to aid interpretation of the resulting coefficients: age coefficients thus pertain to one year's increase in age starting from the age of 16 and up to the age of 29.<sup>41</sup>

### **4.5 Study limitations**

#### **4.5.1 Limitations surrounding self-reports for measuring alcohol consumption**

Many social and epidemiological studies as well as government research projects are concerned with measuring prevalence and patterns of alcohol consumption within the population and the levels of harm and adverse health outcomes associated with alcohol consumption<sup>42</sup>. However, obtaining accurate information on adolescent drinking is riddled with methodological challenges, especially concerning those who are not legally allowed to buy alcohol (Pavis et al., 1997). In many studies, alcohol consumption has been measured using information on alcohol sales (population per capita of 100% alcohol consumed; see HMRC, 2008) and/or consumption self-reports from national survey data (see Lader, 2009; Robinson and Lader, 2009). Findings presented from different data sources may give varying pictures of the nature and scale of alcohol consumption. For example, sales data has been used to suggest a decrease in overall consumption especially since 2004 (BBPA, 2008; HMRC,

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<sup>41</sup> The option of standardising age offers limited ability to interpret substantively the effect of age in a regression model. It produces a model centred on the mean; that is, for the average 19/20 year old. Moreover, interactions also using this specification of age are complex to interpret offering effects also centred around this value. However, rescaling age to start at age 16 (by subtracting 16 from the age variable) offers benefits to the interpretation of subsequent coefficients in regression models as well as interpretation of the interactions between age and binge drinking and will therefore be adopted in the models in the current study. Models in this thesis will adopt a rescaled value of age as outlined here unless otherwise stated.

<sup>42</sup> Examples include: Cabinet Office, 2004; Department of Health, 1995; 2005; NWPPO, 2007; Lader, 2009; Robinson and Lader, 2009.

2008), and to highlight a diminishing proportion of alcohol (predominantly beer) purchased in licensed premises, with more and more alcohol (especially wine) being purchased in off licensed premises in recent years (BBPA, 2008; Deacon et al., 2007). However, self-reports can elucidate more specific patterns of consumption, motivations for drinking, and attitudes held towards alcohol consumption and associated behaviour. For example, self-reports have highlighted that there are more abstainers in recent times, however, those who do drink a sizeable proportion (and increasingly a sizeable proportion of females) are bingeing or drinking above the recommended health guidelines at increasingly younger ages (see Smith and Foxcroft, 2009).

“Obtaining reliable information about drinking behaviour is difficult, and social surveys consistently record lower levels of consumption than would be expected from data on alcohol sales. This is partly because people may consciously or unconsciously under-estimate how much alcohol they consume” (Goddard, 2008:47). Indeed, in relation to self-reports or other individual accounts of alcohol consumption, intoxication itself can prove a barrier to accurate or reliable estimates based on distorted cognitive functioning and poor or distorted memory or recall. Furthermore, individuals may not know the strength and quantity of alcohol they consume (Pavis et al., 1997)<sup>43</sup>, especially if drinking at home rather than in a licensed premise where standardised quantities are served.

Given many valid concerns surrounding survey self-reports of alcohol consumption, such as the influence of social desirability and selective or limited recall, consistency amongst young people’s disclosure to alcohol use was examined alongside other drugs by Percy et al. (2004) in the Belfast Youth Development Study and alcohol was found to be the drug with the lowest recanting rate (defined as a positive report of life-time use that was subsequently denied). However, the recanting rate for alcohol-intoxication was slightly higher than for the use of alcohol itself (Percy et al., 2004). The authors note that recanting is lowest for drugs with the least social stigma (Percy et al., 2004). Given the widespread acceptability of alcohol consumption and

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<sup>43</sup> However, there is recent evidence that this is indeed changing since the implementation of unit labelling and that young people are relatively au fait with labelling and units, using these to calculate cost effective means of getting drunk (see Jones and Gregory, 2009).

intoxication in the UK, this may suggest that people are willing to openly disclose their true consumption. However, as noted by others, recent government efforts to educate people about the harms associated with alcohol consumption and attempts to tackle social norms held about drinking, people may be offering what they perceive as more socially desirable responses (Herring et al., 2008). Reports may be influenced by recent government attempts to increase education and awareness about the quantities of alcohol individuals are consuming in recent times: for example, educational campaigns have been rolled out surrounding standard drink sizes and 'units' of alcohol therein and guidance offered on recommended daily and weekly consumption for males and females (see Department of Health, 1995). Whilst not all are familiar with calculating their consumption in this manner or feel the need to do so, self-reports may suffer from respondents answering in what they perceive to be a more socially desirable manner; that is, there may be a tendency to under-report consumption (see Goddard, 2008). Indeed, recent survey findings do suggest increasing awareness of alcohol consumption and its measurement in units as well as having heard of the government's daily recommended consumption levels (Lader, 2009).

In addition to problems associated with under-reporting, inflated reports of alcohol consumption may also lead to inaccuracies in drinking estimates. This may occur amongst young people due to adolescent bravado (Pavis et al., 1997) or as a result of assured anonymity and other precautions taken by researchers to minimise underreporting, as well as to gain a sense of increased status amongst their peers (Percy et al., 2004). It is therefore likely that over-reporting will be highest in areas or environments with a strong cultural emphasis on alcohol consumption and where permissive attitudes are held towards underage drinking and intoxication. Both forms of reporting error (under- and over-reporting) have significant implications for estimates derived from survey data, especially those derived from cross-sectional surveys as such error cannot always be identified or corrected (Percy et al., 2004).

#### **4.5.2 Limitations surrounding self-reports for measuring violent behaviour**

Since the 1950s, self-reports of violent offending have been used to enhance our knowledge and understanding of criminal behaviour as previously most of our understanding of criminal behaviour was based on official data (Thornberry and Krohn, 2000). The self-report method in its simplest sense asks “individuals if they have engaged in delinquent or criminal behaviour, and if so, how often they have done so?” (Thornberry and Krohn, 2000:33), with the purpose of “measuring the prevalence and incidence of offending, evaluating the correlates of offending, and/or describing the trajectories of delinquent careers” (Marshall, undated:1). Self-report surveys have formed the basis of many aetiological studies of crime (Thornberry and Krohn, 2000) and have been widely used to test delinquency theories (Farrington, 2001) in the absence of being able to observe crime first hand, and in light of the many limitations surrounding official crime and arrest statistics (Thornberry and Krohn, 2000; Collins, 1982). Indeed the development of self-report surveys has been described as one of the “most important innovations in criminological research in the 20th century” (Thornberry and Krohn, 2000:34).

Merits of using self-report data include capturing incidents not detected or reported to the criminal justice system or other agency/organisation, the ability to obtain detail on the nature and context of the incident as well as being able to estimate the prevalence of crime within the general population. Further, unlike victimisation surveys, a unique insight into the offender’s perspective and their motivations are enabled and, as with victimisation surveys, accounts are not biased by the subjective interpretation and perceptions of criminal justice officials or practitioners. This increases transparency between the actual behaviour and motivations for the offence, and reduced bias between the actual behaviour and the data as recorded in official statistics (Thornberry and Krohn, 2000). It also ensures that results obtained are not subject to changes in police recording practices or policing practices and priorities, as many criminal offences brought to official attention are not recorded (Thornberry and Krohn, 2000).

However, there remain a number of limitations associated with self-reports, such as concerns surrounding unreliable answers, for example, exaggerated answers, unwillingness to disclose incidents and distorted recall. However, efforts have been made to address issues of recall where possible, for example, limiting recall periods to 12 months. Whilst this is still long enough to pose recall problems, “there is evidence that 12-month recall of crime victimization is fairly good, except for some inaccuracies in the placing of the event within or beyond the recall period (Sparks et al., 1977)” (Smith and McVie, 2003:177). Notwithstanding, it is likely that “among frequent offenders, recall of offending may be more problematic than recall of victimization would be” (Smith and McVie, 2003:177).

Self-report surveys are reliant on respondents answering honestly and correctly; thus, there is always a chance that participants may conceal, exaggerate or forget incidents (Farrington, 2001). Concerns surrounding the reliability and validity of this method are indeed justified. However, whilst asking people to disclose sensitive and incriminating information is always going to bring with it some challenges. Those who developed the Edinburgh Study of Youth Transitions and Crime (ESYTC), however, identify that “it is clear from comparisons with official records and the reports of parents, teachers and peers, that respondents do reveal much of their offending, although it is more difficult in principle to establish how many of them exaggerate, and to what extent” (Smith and McVie, 2003:178). Integrity of the self-report method has been preserved by continued efforts to improve on the reliability and validity of surveys and improve the quality of results (Thornberry and Krohn, 2000). Sophisticated psychometric, technical and academic improvements (such as internal validity checks and computer assisted interviewing techniques) have been made to the self-report survey method and are used in the OCJS. However, it is pertinent to note that there may well be systematic bias implicit in self-reports amongst certain subgroups, such as females disclosing more of their offending than males (see Smith and McVie, 2003).

As well as issues of reporting, however, active violent offenders do not necessarily offend regularly; patterns examined over criminal careers spanning three to five years suggest that offending is intermittent often with years in

which no offending took place (Huizinga et al., 2003). Therefore, longitudinal designs with regular measurement are required; offending patterns must be considered over a period of years and the four years available in this study only provide a snapshot of young people's offending careers.

Despite some of the outlined limitations such as selective recall, memory distortion and the exaggeration or under-emphasising / disclosure of incidents, the self-report method is still considered a valid and appropriate tool with which to study the role of alcohol in crime and violence, especially in the absence of alternative methods, such as measuring offending using conviction data, which are considered even more flawed (see Smith and McVie, 2003). Furthermore, in the case of the Offending Crime and Justice Survey (OCJS), extensive testing and piloting was undertaken to ensure validity (see Home Office, 2005a and Home Office, 2005b) and sight should not be lost of the considerable benefits the self-report method has brought to our understanding, and continues to do so.

#### **4.6 Summary and signposting**

Given some of the limitations in existing studies of victimisation reports and administrative data, as well as limited detail in other self-report studies on offending and / or alcohol consumption, the OCJS was selected for this study. The OCJS panel sample, in addition, offers an opportunity to look at developments and changes in alcohol consumption and violence over time amongst young people, whereas many other self-report surveys are limited to cross-sectional analyses. Having selected the data, a series of data preparation steps and exploratory analyses were performed to assess the various avenues for analysis in this thesis and will be presented in the next chapter (Chapter 5).

## **5 Chapter 5: Exploring attitudes towards alcohol consumption and violent behaviour amongst young people**

### **5.1 Introduction**

Many commentators suggest that the cultural context in which alcohol is consumed and the attitudes held towards consumption may shape resulting drunken comportment (MacAndrew and Edgerton, 1969; Graham, 1980; Graham et al., 1998; Sumner and Parker, 1995; Parker, 1998; Measham, 2006; Plant and Miller, 2007). Many studies (predominantly in the US) have attempted to explore the role of motivations and attitudes towards drinking on subsequent alcohol consumption as well as negative behavioural and health outcomes and have routinely found that 'coping' motives are more strongly associated with alcohol-related outcomes (such as alcohol abuse) than 'social' and 'conformity motives' (Cooper et al., 1992; Cooper, 1994; cited in Yurasek et al., 2011). As expectancies (beliefs held in relation to alcohol consumption and behavioural outcomes) and motivations for alcohol consumption may be central to further understanding and intervening in the alcohol-violence relationship, a more detailed inspection of individual-level attitudes towards alcohol consumption and violent outcomes would thus seem useful in trying to unpick this relationship further, and is the aim of the current chapter.

Differing cultural beliefs, expectancies and drinking practices have long been linked to varying drinking experiences and outcomes. Moreover, motivations for drinking (or indeed taking drugs) may influence the type of experience in the selection of drinks, quantities, drinking companions and setting in which alcohol is consumed. For example, Andersson and Hibell (2007) highlighted that those young people who hold positive expectancies or attitudes towards alcohol consumption also drink more and continue to hold such beliefs despite suffering higher rates of alcohol-related harm, including violence. Conversely, they found that light drinkers often have negative expectancies towards drinking. Expectancies about what drinking will do to one's behaviour may also form part of their motivation for drinking, for example, if people are 'drinking to get drunk', 'drinking to forget' or to make them 'more friendly and outgoing'. Indeed some such statements found in the OCJS (see Text Box 5.1) might be considered



more 'problematic' drinking motives or expectancies (such as 'drinking helps me to forget my problems'), whereas other items might be considered motives for 'social facilitation' (for example, 'drinking makes me feel more friendly and outgoing'). In turn, particular behavioural and health outcomes may thus be associated with such attitudes.

**Text Box 5.1 Attitudinal statements about alcohol consumption in the Offending Crime and Justice Survey**

- 'Drinking alcohol makes me feel relaxed'
- 'When I drink I often do or say things I regret'
- 'Drinking helps me to forget my problems'
- 'Drinking makes me feel more friendly and outgoing'
- 'I drink to get drunk'
- 'I drink because my friends do'

\*this question was only asked of younger respondents and was thus omitted from the current analysis which uses panel respondents of all ages (12-29).

Having reviewed the literature as outlined in Chapter 2, it is hypothesised that there may be two underlying motivational factors or classifications present in the group of attitudinal statements surrounding alcohol consumption in the OCJS. Drinking motives have previously been described as generally falling within groups associated with higher "internal reinforcement (i.e., enhancement and coping) versus external reinforcement (i.e., social and conformity)" as well as varying "by positive reinforcement (i.e., enhancement and social) versus negative reinforcement (i.e., coping and conformity)" (Yurasek et al., 2011: 992). Thus one such distinction that may be found in the available measures here is that there might be a group of 'social' drinkers associated with external and positive reinforcement and a group of 'problematic' drinkers associated with internal negative reinforcement factors (as outlined above). Another classification might be that the first four OCJS items may be akin to expectancies, whereas the fifth is more likely to be a motive (as suggested by Room, 2010, personal communication; see Text Box 5.1 for full list). In order to test some of these possibilities it was considered useful to explore the latent constructs and groupings of variables using data reduction techniques. As the OCJS items cannot be validated as existing conceptual variables in the reviewed literature, they are thus limited in their ability to adequately test specific behavioural theory. However, given the gaps in understanding about the ways in which attitudes mediate the alcohol-violence relationship and the potential role of

beliefs, expectancies and attitudes in the cultural transmission of norms and values associated with alcohol and violence (as purported by behavioural theories, such as expectancy theory (Vroom, 1964), social learning theory (Bandura, 1977) and the theory of planned behaviour (Ajzen, 1988)), the available items were nonetheless explored and the findings obtained offer some interesting findings to contrast against empirical findings from other studies (see Chapter 8).

This chapter first presents the results of analyses in relation to the age of both (binge) drinkers and those who commit assault offences. Subsequently, in order to assess distinct grouping of expectancies and/or motives for drinking and their impact on violent offending, a series of exploratory analyses and data reduction techniques were employed. These analyses examine underlying latent constructs, patterns in responses, and groupings of individuals by their attitudes towards drinking and motivations for drinking, using data classification and reduction techniques including: principal components analysis (PCA), exploratory and confirmatory factor Analysis (EFA and CFA) as well as Latent class analysis (LCA). Finally, findings from cross-sectional regression models are used to explore the extent to which current drinking behaviour and attitudes towards and motives for alcohol consumption increase the propensity of violent offending, in the form of assaults.

Collectively, the analyses constitute a detailed exploration of the attitudes held towards drinking and characteristics of those that drink as well as how attitudes and alcohol consumption influence violent behaviour amongst young people during adolescence and young adulthood. This chapter thus addresses the following research questions:

1. How old are those that commit assault offences?
2. How old are those that binge drink?
3. Are there latent constructs captured by attitudinal measures?
4. Are there distinct groupings of individuals who hold similar attitudes towards drinking?
5. Are attitudes held towards drinking associated with assault outcomes?

## 5.2 Methods and measures

To address the first two research questions (outlined above) bivariate methods were employed to examine the age profile of those having committed assault, as well as those who binge drink. As outlined in Chapter 4 (section 4.3.4), the five attitudinal questions asked of all respondents (see Text Box 5.1) were employed here to explore potential groupings/classifications of drinkers or underlying latent attitudinal factors associated with drinking behaviour and/or violent behaviour. The attitudinal measures asked of regular drinkers (those who drank once a month or more) were used to address questions three and four (outlined above), using factor analyses to address the former and latent class analyses to address the latter.

Factor analysis was employed as a technique with which to explore the structure of the data across the set of five attitudinal variables and identify any overarching latent construct from these. This technique enables one to reduce the data into a smaller set of factors whilst retaining much of the detail captured in the original variables – with fewer components accounting for most of the variation between the correlated variables – and thus reducing multicollinearity in subsequent modelling (Field, 2005; Chatfield and Collins, 1980). As the indicator measures were captured using a four point Likert scale (strongly agree to strongly disagree), these were initially used in the same way as continuous/interval variables. A principal components analysis (PCA) was thus performed in SPSS as rudimentary exploratory analysis to examine general patterns and results<sup>44</sup>. In light of the fact that this technique is primarily for continuous variables and to cater for the ordinal scale on which these items were measured, the analysis was refined by performing an exploratory factor analysis (EFA) in Mplus Version 5, which can cater for categorical variables in such procedures. Nonetheless, PCA and EFA remain exploratory mathematical techniques looking at the available sample data and cannot be generalised to the population at large as they are not stochastic models, and thus do not include a random component (error term); therefore, it is not advised to read too much meaning into the components yielded by such techniques. However, they

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<sup>44</sup> Listwise deletion was used in this instance as it was considered likely that the same people would not respond to each of the attitudinal questions.

highlight those variables contributing largely or comparatively little to the overall variation (Field, 2005; Chatfield and Collins, 1980). In light of this, having examined the results from the PCA and EFA, and having considered the underlying social hypotheses, both a one and two factor confirmatory factor analysis (CFA) were subsequently performed using Mplus to verify the composition of any underlying factors identified in the earlier exploratory techniques. In contrast to the exploratory techniques previously outlined, CFA models the relationship between factors by using multivariate regression to describe “the relationships between a set of observed dependent variables and a set of continuous latent variables” whereby “the relationships are described by a set of linear regression equations for continuous factor indicators” (Muthén and Muthén, 2007: 49).

Rather than trying to identify an underlying latent factor from the items, latent class analysis was subsequently used to explore similarities in the data structure based on individuals’ responses to a set of predetermined items. LCA models latent variables that represent subpopulations (unobserved subgroups of cases) in the data. In LCA population membership is inferred from the data and class membership and explains “the relationships among the observed dependent variables similar to factor analysis” (Muthén and Muthén, 2007: 131). However, unlike factor analysis, LCA classifies individuals based on their responses to the variables under consideration rather than look at the variability between correlated variables (Muthén and Muthén, 2007: 131)<sup>45</sup>. In this instance, LCA is considered more appropriate than cluster analysis, as cluster analysis is not based on a statistical model (UCLA, undated). LCA employs multivariate regression to describe “the relationships between a set of observed dependent variables and a set of categorical latent variables” where “the relationships are described by a set of [...] logistic regression equations for binary or ordered categorical latent class indicators” (Muthén and Muthén, 2007: 131).

Finally, logistic regression modelling was employed to look at the correlates of assault outcomes amongst regular drinkers, including the attitudinal variables,

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<sup>45</sup> Also, in factor analysis, the unobserved latent variables are continuous, whereas in LCA they are categorical (discrete).

in order to address question 5 (are attitudes held towards drinking associated with assault outcomes?). Whilst originally captured on a four point Likert scale, the response categories to the attitudinal variables listed above were collapsed to two categories, to avoid categories with low numbers, as well as for parsimony in the logistic regression modelling. For example, those who strongly agreed or who agreed were grouped together in a recoded variable to form those who 'agreed' and this was contrasted against those who 'disagreed' (derived from the original categories disagree and strongly disagree).

### **5.3 Findings 1: The age profile of those who binge drink and those who commit assault offences**

The age distribution of those who have committed an assault offence suggests a lower age profile on average (mean = 17.65) compared to those who had not committed an assault (mean = 19.83). Of those panel respondents that drank at least once a month, and would therefore be asked the binge drinking questions (N=2649), the youngest respondents were 11 years old; however, the mean age was 21.12 years (standard deviation 4.00). The oldest respondents were 29 years old.

When binge drinking frequency is broken down by age group (see Table 5.1), it is apparent that those aged between 16 and 29 were more likely to binge drink, and do so frequently, than their younger counterparts (78.9% of 16-29 year olds binge, compared with only 50.6% of 11-15 year olds). Thus suggesting the prevalence of binge drinking is more common amongst those aged 16 and over.

**Table 5-1 Binge drinking frequency in the last month for age groups – collapsed categories**

<i>Binge drinking frequency</i>	<i>11-15</i>	<i>16-29</i>	<i>All ages</i>
Never	49.4%	21.1%	23.7%
Low: 1-10 times	48.2%	69.0%	67.1%
High: 11 or more times	2.4%	9.9%	9.2%
Total	100%	100%	100%
(un-weighted base)	(383)	(2266)	(2649*)

\* Number of respondents in the panel sample who were recorded as drinking once a month or more.

## **5.4 Findings 2: Using PCA and factor analysis to determine whether there is an underlying latent construct in the attitudinal measures towards alcohol consumption**

### **5.4.1.1 Principal components analysis (PCA)**

An initial PCA was run on the panel sub-sample using the five attitudinal items asked of all regular drinkers in the sample<sup>46</sup>. The results obtained from the non-rotated solution are displayed in Table 5.2 below and suggest a single factor solution when using a cut-off value of 1 for the Eigenvalues; the loadings for this factor were all reasonably heavily loaded onto this factor. However, component two is borderline with an Eigenvalue of 0.925 (based on the usual cut-off value of 1) and thus a two-factor solution will not be ruled out at this stage. A PCA with varimax (orthogonal) rotation allowing for maximum dispersion between factors loadings produced similar results and so the unrotated solution was deemed adequate. The original un-rotated PCA was run separately for both under and over 16 year olds and similar results were found in each instance. Thus subsequent analyses were performed on both age groups combined.

<sup>46</sup> Although an assumption of PCA is that the variables used are continuous, this assumption is being consciously violated here. PCA is employed here as an exploratory technique using the Likert data (in which there is assumed to be an underlying latent construct) rather than breaking down the variables into dummies (as used by Filmer and Pritchett, 2001), thus losing the ordering of the variables, and to avoid the interpretative complexities of this method or the computationally intensive polychoric approach (computing the correlations between two ordinal variables). Kolenikov and Angeles (2004) endorse the approach adopted here as superior to that employed by Filmer and Pritchett (2001) and it is less complex than adopting a polychoric approach. The authors suggest “the gain from using computationally intensive polychoric correlations in getting the “correct” variable weights may not be very large compared to the PCA on ordinal data” (Kolenikov and Angeles, 2004: 36).

**Table 5-2 Principal components analysis results**

	<i>Eigenvalues</i>	<i>Cumulative %</i>
Component 1	2.429	48.6
Component 2	.925	67.1

Given the earlier hypothesis that there may be two distinct underlying constructs, a two component solution was also requested and produced the loadings displayed in Table 5.3. The factor loadings indicate the relative contribution of a variable to a given factor (Field, 2005). The loadings point to a potential distinction between a primary factor on which most items load heavily and a second on which items ‘when I drink I often do or say things I regret’, ‘drinking helps me to forget my problems’ and ‘I drink to get drunk’ are negatively loaded.

**Table 5-3 Two Principal component solution loadings**

<i>Item</i>	<i>Component 1</i>	<i>Component 2</i>
Drinking alcohol makes me feel relaxed	.626	.621
When I drink I often do or say things I regret	.705	-.427
Drinking helps me to forget my problems	.762	-.108
Drinking makes me feel more friendly and outgoing	.718	.396
I drink to get drunk	.666	-.435

#### **5.4.1.2 EFA**

Having observed a borderline one/two component solution in the rudimentary exploratory PCA analysis, it was considered worthwhile specifying a factor analysis in Mplus to take into account the categorical measurement of the chosen ordinal items<sup>47</sup>. Furthermore, EFA is a statistical procedure which accounts for the variance which is common to multiple items, rather than a mathematical data reduction technique to reduce the number of items as in the case of PCA. Principal components are useful as a method of data reduction but not for understanding the structure of the data. Factors allow for the latent structure to be identified. Findings from this analysis suggested an underlying latent variable consisting of all five attitudinal measures, with an Eigenvalue of 4.418 and all items heavily loaded onto a single factor (all >0.9), with a second

<sup>47</sup> Default oblique rotation was used in the EFA and one and two factor solutions were examined.

factor having very small loading values. In light of these findings and the previous ambiguity of the PCA, a confirmatory factor analysis (CFA) for both a single factor solution as well as a two factors solution were run to verify these initial findings, whilst accounting for the error in the sample.

#### **5.4.1.3 Confirmatory factor analysis**

A single factor solution CFA was requested; the resulting CFI<sup>48</sup> value suggested a reasonable fit to the data, however, the RMSEA<sup>49</sup> was not overly convincing and taken together the results did not suggest a satisfactory fit (Chi square  $p > 0.01$ <sup>50</sup>, CFI = 1.000, RMSEA = 0.093). Two factor solutions were thus also subsequently specified: the first based on the PCA and EFA results suggesting a factor based on the problematic drinking factors (doing or saying things they regret after drinking (2), drinking to forget one's problems (3) and drinking to get drunk (5)), and a second factor based around the social facilitation and relaxation associated with drinking (attitudes 1 and 4). This specification also suggested an unsatisfactory fit (chi square:  $p > 0.01$ , CFI = 0.999, RMSEA = 0.082).

Thus, whilst the PCA had alluded to a borderline 2 component solution and the EFA suggested one underlying latent variable consisting of all five attitudinal measures, a single-factor solution was supported in the confirmatory factor analyses.

#### **5.4.1.4 Interpretation and next steps**

In light of this, no support is offered to the hypothesis that these items may form two distinct grouping of expectancies, such as social facilitation or problematic drinking, nor a classification dividing motives and attitudes or expectancies. The items may thus merely be considered akin to a single 'family' of cultural attitudes/expectancies held towards alcohol consumption.

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<sup>48</sup> Comparative fit index.

<sup>49</sup> Root mean square error of approximation.

<sup>50</sup> A significant  $p$  value for the chi square test is expected with large samples and thus cannot be depended upon entirely.



### **Findings 3: Using latent class analysis to determine whether there are distinct groups of those with similar attitudes towards alcohol consumption**

It was considered worth exploring the clustering of individual responses to these items using latent class analysis: that is, exploring whether there are distinct groups of people who have similar attitudes to one another (similar patterns of responses), as opposed to looking for a latent structure in the variables themselves. It was hypothesised that there may be distinct categories of like-minded drinkers or groupings of individuals who hold similar attitudes about drinking alcohol or motives for doing so. A possible distinction between at least two classes (typologies) were hypothesised: those drinking to facilitate social interaction and relaxation and potentially considered 'positively motivated' and those drinking to forget, to deal with their problems, or that tend to do or say things they regret after drinking and thus potentially described as 'negatively motivated'<sup>51</sup>.

#### **5.4.1.5 Latent class analysis findings**

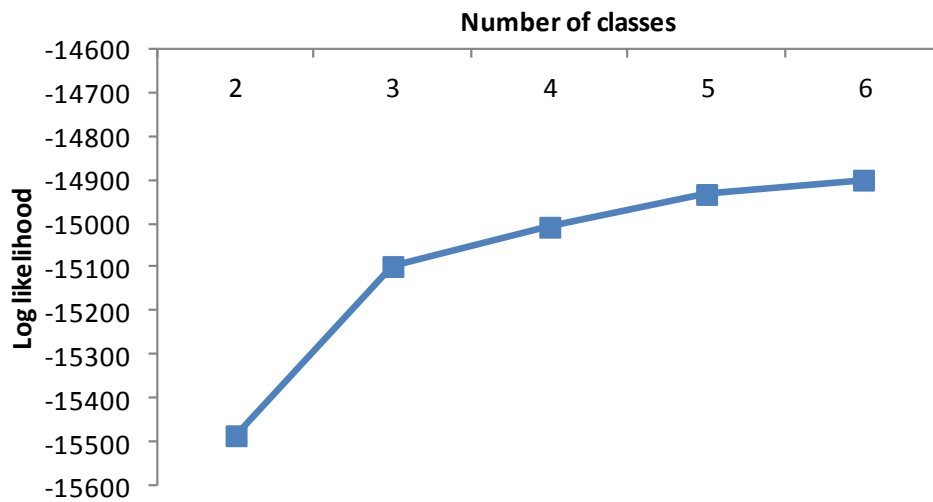
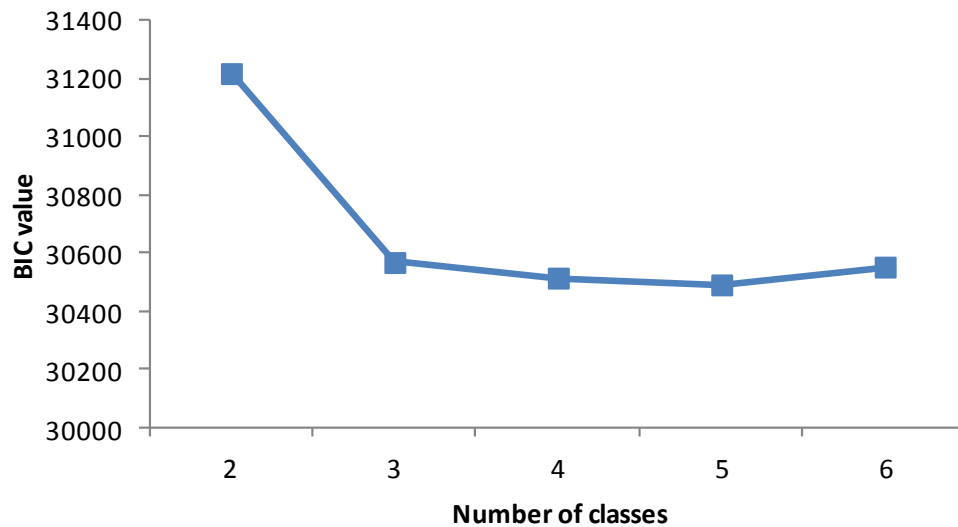
Initially, a 2 class mixture model was run on the attitudinal measures, based on a minimum number of classes that can be specified and prior findings from the PCA and factor analyses. Subsequently, further classes were requested and the model fit statistics examined (see Table 5.4 below). The model fit information and statistics suggested a solution between 3 and 5 classes, predominantly based on the BIC reduction and subsequent rise as well as the p-values. The class probabilities for each solution were examined to assess how the classes were constructed and how these might be interpreted substantively. Given the limited added interpretative value provided by the 4 and 5 class solutions, and that having 4 and 5 classes did not seem to improve model fit (Figures 5.1 and 5.2), the 3 class solution was deemed the most appropriate fit to the data in this instance.

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<sup>51</sup> As the third item in the second grouping seems less related to the 'negatively motivated' label, it may be that doing or saying things they regret after drinking is a consequence of drinking for these 'negatively motivated' reasons.

**Table 5-4 Latent class analyses model fit information (weighted)**

Number of classes	2	3	4	5	6
Log likelihood	-15486.5	-15097.9	-15007.6	-14932.4	-14899.5
Number of parameters in model	31	47	63	79	95
Bayesian Information Criterion (BIC)	31219.16	30568.97	30515.4	30492.02	30553.31
Adjusted Bayesian Information Criterion (ABIC)	31120.66	30419.64	30315.23	30241.01	30251.46
Akaike Information Criterion (AIC)	31035	30289.76	30141.14	30022.71	29988.95
2*log likelihood reduction compared to previous model	1817.314	777.238	180.619	150.433	65.76
p value for model in comparison with previous model (k-1)	0	0	0.4491	1	1
Entropy (level of miscalculation)	0.64	0.694	0.609	0.651	0.626

**Figure 5.1 Log likelihood values for two to six class solutions****Figure 5.2 BIC values for two to six class solutions**

The response probabilities for the 3 class solution are examined here to interpret the classifications identified in the modelling procedure (see Tables 5.5 and 5.6 below). These suggest one majority class (class 2 (56%)) and two further classes of the same size (classes 1 (21%) and 3 (23%)). The response probabilities suggest class 1 consists of those who are more likely to say they disagree alcohol makes them do things they regret, that alcohol helps them forget their problems, and that they drink to get drunk. They also agree modestly on the more positive items such as drinking makes me relaxed/friendly and outgoing and so may constitute a class of 'social drinkers'. The second class tend to agree more strongly that drinking makes them feel relaxed and makes them more friendly and outgoing, yet do not drink to get drunk or to forget their problems; they also do not seem to do things they regret as a consequence of drinking, and so may be termed 'positively motivated drinkers'. The third class also agree (more strongly) that drinking makes them feel relaxed and makes them more friendly and outgoing, however, they also drink to get drunk and forget their problems and tend to experience adverse effects of drinking such as doing things they regret. These may thus constitute a group of more 'problematic drinkers'. Figure 5.3 below illustrates that the main distinction between classes 1 and 2 are of degree of 'agreement' with attitudes associated with being positively motivated and that class 3 has a distinct 'form' of response pattern associated with negative motivations. Given the distinction of the three classes mainly on their level of 'agreement' with the items (previously identified as one underlying factor) this may be considered akin to levels (high, medium, low) within that factor.

**Table 5-5 Latent class analyses class response probabilities for three class solution – detailed categories**

	<i>Class 1 'Social drinkers' (21%)</i>	<i>Class 2 'Positively motivated drinkers' (56%)</i>	<i>Class 3 'Problematic drinkers' (23%)</i>
<b>Drinking alcohol makes me feel relaxed</b>			
Strongly agree	0.059	0.102	0.519
Agree	0.575	0.774	0.411
Disagree	0.21	0.12	0.053
Strongly disagree	0.156	0.004	0.017
<b>When I drink I often do or say things I regret</b>			
Strongly agree	0.023	0.028	0.281
Agree	0.072	0.36	0.484
Disagree	0.215	0.466	0.173
Strongly disagree	0.69	0.146	0.063
<b>Drinking helps me to forget my problems</b>			
Strongly agree	0.023	0.001	0.347
Agree	0.04	0.295	0.455
Disagree	0.06	0.489	0.126
Strongly disagree	0.877	0.216	0.072
<b>Drinking makes me feel more friendly and outgoing</b>			
Strongly agree	0.053	0.093	0.681
Agree	0.464	0.768	0.297
Disagree	0.182	0.132	0.019
Strongly disagree	0.301	0.008	0.004
<b>I drink to get drunk</b>			
Strongly agree	0.005	0.03	0.247
Agree	0.057	0.271	0.400
Disagree	0.113	0.426	0.215
Strongly disagree	0.825	0.274	0.138

**Table 5-6 Latent class analyses class response probabilities for three class solution – collapsed categories**

	<i>Class 1 'Social drinkers' (23%)</i>	<i>Class 2 'Positively motivated drinkers' (54%)</i>	<i>Class 3 'Problematic drinkers' (23%)</i>
<b>Drinking alcohol makes me feel relaxed</b>			
Agree	0.634	0.876	0.93
Disagree	0.366	0.124	0.07
<b>When I drink I often do or say things I regret</b>			
Agree	0.095	0.388	0.765
Disagree	0.905	0.612	0.236
<b>Drinking helps me to forget my problems</b>			
Agree	0.063	0.296	0.802
Disagree	0.937	0.705	0.198
<b>Drinking makes me feel more friendly and outgoing</b>			
Agree	0.517	0.861	0.978
Disagree	0.483	0.14	0.023
<b>I drink to get drunk</b>			
Agree	0.062	0.301	0.647
Disagree	0.938	0.7	0.353

**Figure 5.3 Response probabilities for those who strongly agree or agree to the attitudinal items – three class solution**

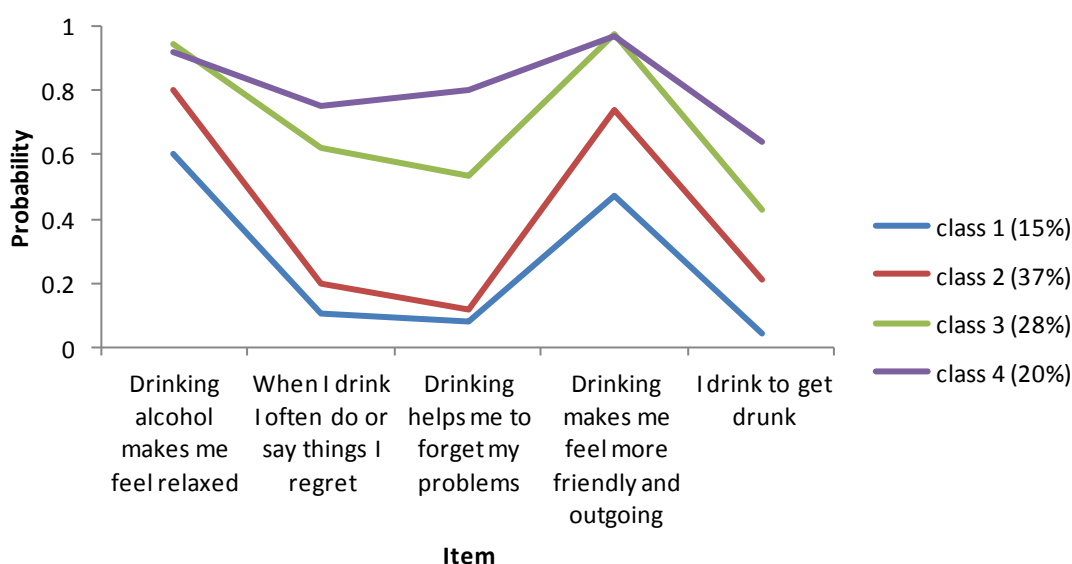


In the response probabilities for the 4 class solution, class 4 is of very similar composition to class 3 in this instance, and offers minimal additional insight into the groupings (see Table 5.7 and Figure 5.4). The 3 class solution is thus deemed to be appropriate here and will be explored in more detail.

**Table 5-7 Latent class analyses class response probabilities for four class solution – collapsed categories**

	Class 1 (15%)	Class 2 (37%)	Class 3 (28%)	Class 4 (20%)
<b>Drinking alcohol makes me feel relaxed</b>				
Agree	0.605	0.802	0.943	0.921
Disagree	0.395	0.199	0.057	0.079
<b>When I drink I often do or say things I regret</b>				
Agree	0.106	0.195	0.62	0.754
Disagree	0.895	0.805	0.38	0.246
<b>Drinking helps me to forget my problems</b>				
Agree	0.08	0.115	0.532	0.804
Disagree	0.92	0.885	0.468	0.196
<b>Drinking makes me feel more friendly and outgoing</b>				
Agree	0.469	0.743	0.978	0.97
Disagree	0.531	0.257	0.022	0.029
<b>I drink to get drunk</b>				
Agree	0.044	0.208	0.427	0.643
Disagree	0.956	0.792	0.573	0.358

**Figure 5.4 Response probabilities for those who strongly agree or agree to the attitudinal items – four class solution**



Further exploratory analyses were performed using the most likely class membership (using the three class solution): associations between latent class

membership and age, in which drinking behaviour as well as violent behaviour were examined. Of the regular drinkers assigned a latent class membership (N=2809), social drinkers (class 1) were significantly more likely to be under 16. Whereas positively motivated drinkers (class 2) and problematic drinkers (class 3) were more likely to be over 16 ( $\chi^2=19.999$ ,  $df=2$ ,  $p<0.01$ ,  $\phi=.083$ ; see Table 5.8).

**Table 5-8 Class membership by age group (n=2809\*)**

	<i>under 16</i>	<i>over 16</i>
Class 1 'Social drinkers'	31.5%	19.8%
Class 2 'Positively motivated drinkers'	49.1%	57.2%
Class 3 'Problematic drinkers'	19.6%	32.1%
Total (Unweighted base)	100% (n=421)	100% (n=2388)

\* Total number of panel sample members assigned a latent class membership.

On examining the assigned class membership by drinking frequency, the 'social drinkers' label for class 1 appears to be supported as this category were more likely to be in the lower drinking frequency categories (see Table 5.9). Conversely, the 'problem drinkers' were more likely to be in the higher drinking frequency categories and the 'positively motivated drinkers' were more likely to feature in the middle frequency categories ('once or twice a week' and '2 or 3 times a month';  $\chi^2=240.159$ ,  $df=6$ ,  $p<0.01$ ,  $\phi=.289$ ).

**Table 5-9 Class membership by drinking frequency (n=2809\*)**

	<i>Most days</i>	<i>Once or twice a week</i>	<i>2 or 3 times a month</i>	<i>Once a month</i>
Class 1 'Social drinkers'	15.0%	15.4%	27.0%	40.8%
Class 2 'Positively motivated drinkers'	38.1%	62.7%	57.2%	41.6%
Class 3 'Problematic drinkers'	46.9%	21.9%	15.8%	17.60%
Total (unweighted base)	100% (n=296)	100% (n=1392)	100% (n=810)	100% (n=311)

\* Total number of panel sample members assigned a latent class membership.

Class membership and drinking patterns were further exploring by cross tabulating most likely class membership against binge drinking frequency (see Table 5.10). Those who never binge drank were less likely to be 'problem drinkers' (class 3). Whereas, those who binged regularly were more likely to be

in this class (class 3), with those doing so 11 times a month or more being even more likely ( $\chi^2=304.638$ ,  $df=4$ ,  $p<0.01$ ,  $\phi=.334$ ).

**Table 5-10 Class membership by binge drinking frequency (n=2640\*)**

	<i>Never</i>	<i>1-10 times a month</i>	<i>11 or more times a month</i>
Class 1 'Social drinkers'	39.8%	15.9%	6.4%
Class 2 'Positively motivated drinkers'	52.3%	59.6%	45.4%
Class 3 'Problematic drinkers'	8.0%	24.5%	48.2%
Total	100%	100%	100%
(unweighted base)	(n=663)	(n=1766)	(n=211)

\* Total number of panel sample members assigned a latent class membership and for whom binge drinking measures were available.

Finally, the association between drinking class membership and having committed an assault offence was examined. Table 5.11 below highlights that those who had offended were more likely to be in the problem drinker classification, with the 'social drinkers' being the least likely to have offended ( $\chi^2=13.260$ ,  $df=2$ ,  $p<0.05$ ,  $\phi=.068$ ).

**Table 5-11 Class membership by whether committed an assault or not in the last year (n=2784\*)**

	<i>Class 1 'Social drinkers'</i>	<i>Class 2 'Positively motivated drinkers'</i>	<i>Class 3 'Problematic drinkers'</i>
No assault	91.1%	87.8%	84.4%
Assault	8.9%	12.2%	15.6%
Total	100%	100%	100%
(unweighted base)	(n=602)	(n=1545)	(n=637)

\* Total number of panel sample members assigned a latent class membership and for whom assault measures were available.

#### 5.4.1.6 Interpretation and next steps

Whilst the CFA identified a single underlying factor comprising all attitudinal items, LCA identified that there are groups of people who are more likely to respond to these items in similar ways than others. Three such classes were identified 'social drinkers', 'positively motivated drinkers' and 'problematic drinkers'. With 'problematic drinkers' being more likely to commit assault offences and associated with higher frequency drinking and binge drinking. The labels given to the classes were substantiated in the exploratory bivariate analyses looking at most likely class membership and variables of interest, such as (binge) drinking frequency and committing assault offences.



The findings from the LCA are interesting and can be borne in mind throughout this thesis. Most likely class membership thus be employed as a covariate in further modelling in chapters 6 and 7 to assess the contribution of attitudes held towards drinking on the alcohol-violence relationship.

Given the inherent error (entropy = 0.694) in predicting latent class membership and varying methods for allocating individuals to latent classes (as discussed by Goldman, 2007<sup>52</sup>), the questionnaire items will also be further explored as standalone items in a logistic regression modelling framework in the current chapter to ascertain their association with assault outcomes and whether they intermediate the effects of binge drinking.

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<sup>52</sup> There are multiple ways in which individuals can be assigned to latent classes. Goldman, 2007, examined the proportion of incorrect assignments using two different assignment procedures (a modal latent class approach assignment procedure based on the estimated probability distribution of the latent classes corresponding to each of the response patterns, and a second assignment procedure which uses random assignments based on the estimated probability distribution of the latent classes corresponding to each of the response patterns). However, a methodological critique of the various methods for doing so is beyond the scope of this thesis and the latter method (default in Mplus) was employed here as two methods yield largely similar results.

## **5.5 Findings 4: Using Logistic regression modelling to assess the association between attitudes held towards drinking and assault outcomes**

### **5.5.1 Model 1 – Predicting violent outcomes from drinking patterns and attitudes**

Initially a cross-sectional logistic regression model was run to predict having committed an assault in the past 12 months (2006) using only *regular drinkers* from the panel sample based on a measure of binge drinking frequency as well as attitudes held towards drinking, whilst controlling for age, gender as well as adding in assault in 2005. The binge drinking measure ('How often in the last month have you had six/eight or more units of alcohol on any one day?'<sup>53</sup>) was significantly associated with assault outcomes ( $p < 0.01$ ). This model suggests that younger people and males are more likely to commit assaults as are those who binge drink – particularly those who binge drink more frequently (see Table 5.12). Controlling for current drinking patterns and attitudes, previous violent behaviour was strongly associated with assault outcomes in 2006. When hierarchically specifying the model to include the attitudinal variables, only one of the attitudes held towards alcohol consumption was significantly associated with having committed an assault in the same year ('when I drink I often do or say things I regret'), although this was no longer the case once the rest of the attitudinal variables had been added (2006; see Table 4).

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<sup>53</sup> This question was phrased as '6 units' for female respondents and '8 units' for male respondents, in line with gender specific health guidelines for alcohol consumption.

**Table 5-12 Logistic regression – Assessing the associations between attitudes towards drinking and assault offence outcomes in last year (reference category none)**

	<i>B</i>	<i>Exp (B)</i>
Constant	-1.49	0.22*
Age	-0.09	0.91**
Male	0.29	1.34**
2006 How often in the last month have you had 6/8 or more units of alcohol on any one day? (base never)		**
Low frequency (1-10 times a month)	0.68	1.97**
High (11 or more times a month)	1.01	2.74**
Agree Drinking alcohol makes me feel relaxed 2006	0.03	1.03
Agree When I drink I often do or say things I regret 2006	-0.26	0.77
Agree Drinking helps me to forget my problems 2006	0.03	1.03
Agree Drinking makes me feel more friendly and outgoing 2006	-0.18	0.84
Agree I drink to get drunk 2006	0.00	1.00
2005 Assault offence in last year	1.98	7.25**
R2 Cox & Snell	0.101	
R2 Nagelkerke	0.21	
Chi-square	213.451	
-2 Log likelihood	1103.598	
N	1859	

\*p ≤ .05; \*\*p ≤ .01

In assessing the impact of the attitudinal measures, the model above was subsequently refined and re-specified to only include the second attitudinal statement ('when I drink I often do or say things I regret'). Initially, a model was run with age, gender and binge drinking as covariates (Model 1, Table 5.13), before examining the attenuation in regression coefficients for binge drinking once having accounted for agreeing that 'when I drink I often do or say things I regret' (Model 2, Table 5.13). Those that tended to disagree that alcohol made them do or say things they regret were more likely to have committed an assault offence (Exp B = .652,  $p < .01$ ; Model 2, Table 5.13), and the coefficients for binge drinking reduced slightly in each category. Finally, the attenuation of the regression coefficients was examined once previous violent offending was entered into the model, done so as to control for a violent disposition more generally. In this model (Model 3, Table 5.13) agreeing that 'when I drink I often do or say things I regret' was no longer significant. However, binge drinking frequency, age and gender remained significant and previous violent offending was strongly associated with committing an assault offence (Exp B = 7.264,  $p <$

.01). The effects of gender also became insignificant once a violent disposition the year before was accounted for in the model (Model 3, Table 5.13).

**Table 5-13 Logistic regression - Any assault offence in last year (reference category none)**

	<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>	
	B	Exp (B)	B	Exp (B)	B	Exp (B)
Constant	-.397	.672	-.105	.900	-1.504	.222*
Age	-.136	.873**	-.136	.873**	-.091	.913**
Male	.484	1.622**	.490	1.632**	.294	1.342
2006 How often in the last month have you had 6/8 or more units of alcohol on any one day? (base never)		**		**		**
Low frequency (1-10 times a month)	.794	2.212**	.715	2.045**	.675	1.963**
High (11 or more times a month)	1.505	4.505**	1.354	3.874**	1.007	2.738**
Agree: When I drink I often do or say things I regret (2006)			-.427	.652 **	-.278	0.758
2005 Assault offence in last year					1.983	7.264**
R2 Cox & Snell	0.032		0.036		0.10	
R2 Nagelkerke	0.067		0.074		0.21	
Chi-square	65.354		73.124		212.95	
-2 Log likelihood	1252.695		1243.925		1104.1	
N	1859		1859		1859	

\*p ≤ .05; \*\*p ≤ .01

## 5.6 Discussion, reflections and next steps

Results from the CFA suggested an underlying latent variable consisting of all five attitudinal measures; which would suggest the variables are capturing one underlying latent construct. For example, general commonly held attitudes towards alcohol consumption. Results from the latent class analyses yielded interesting results suggesting three distinct classifications: 'social drinkers', 'positively motivated drinkers' and 'problem drinkers', possibly akin to levels within the underlying factor identified in the CFA. Class membership was significantly associated with age, general drinking and binge drinking frequency and assault. These findings should be borne in mind throughout this thesis as, given the evidence reviewed, it is possible that there could be distinct typologies of drinker that pose particular concern for violent behaviour. However, whilst the attitudinal measures are explored as independent observable measures in modelling procedures in the current chapter, most likely class membership is also used as a covariate in the models in chapters 6 and 7 to examine the extent to which these groupings mediate/moderate the relationship between alcohol and violence.

On the whole, individual attitudinal measures did not significantly predict drinking behaviour or violent outcomes in the subsequent models. One, however, appeared to be marginally significantly related to violent behavioural outcomes: 'when I drink I often do or say things I regret'. Indeed, those that tended to disagree that alcohol made them do or say things they regret were more likely to have committed an assault offence, or put another way, those who agreed that alcohol has this adverse effect less likely to commit an assault. Agreeing that 'when I drink I often do or say things I regret' thus appears to have a protective effect (reducing as opposed to increasing the risk) on the likelihood of committing an assault offence, when also controlling for binge drinking frequency. Whilst it is not possible to tease out the precise nature of the relationship found here between attitudes towards alcohol, drinking and violent behaviour, it may be that those who thought alcohol may make them do things they regret are less likely to commit assault due to behavioural modifications, such as: minimising their drinking to avoid violence, minimising exposure to risky environments, such as pubs, bars and nightclubs, and/or selecting

different peer groups. For respondents who have experienced adverse effects such as doing things they regret, this may moderate the frequency with which they drink to excess to avoid doing things they later regret. However, the attenuation of the regression coefficient associated with 'when I drink I often do or say things I regret', once having controlled for previous violence, suggests that such interpretations should be treated with caution, as there are likely to be other processes at play, such as individuals being disposed to violent or aggressive behaviour more generally. There may also be confounding factors not accounted for in the current models.

Research to date on expectancies, alcohol and harmful outcomes has suggested that those holding more positive attitudes towards alcohol consumption tend to drink more, and (despite their positive expectancies about how alcohol may affect them) also tend to experience higher levels of alcohol related harm (Andersson and Hibell, 2007). Here, a comparable result has been obtained, whereby those that believe alcohol is less likely to have a negative effect on their behaviour (that is, they are more likely to disagree alcohol will make them do things they regret) are also more likely to commit an assault offence. Thus, beliefs held in relation to alcohol consumption and behavioural outcomes (expectancies) may be relevant in predicting associated behavioural outcomes and form effective points for intervention in limiting the adverse consequences of drinking and violent behavioural outcomes.

Whilst the findings here shed further light on how drinking patterns and beliefs affect violent behaviour in the form of assault, it is noteworthy that the attitudinal questions were only asked of regular drinkers, despite the fact that opinions amongst those who had tried drinking but chosen to abstain, or who only drank moderately (particularly in relation to the item 'when I drink I often do or say things I regret') may well have allowed for interesting comparisons. Furthermore, the items could not be verified as validated measures used elsewhere in the literature and did not seem to be thoroughly grounded in the existing literature. Further work examining the role of expectations and the way in which these mediate and/or moderate alcohol-related violent behaviour is encouraged, as it is not possible here to establish whether they are influenced

by exogenous factors, such as the choice of drinking establishment, which in turn may influence the probability of violent outcomes.



## **6 Chapter 6: Drinking patterns and their associations with violent offending: Part 1 – Cross sectional lagged analysis**

### **6.1 Introduction**

This chapter examines the extent to which there is a relationship between young people's drinking patterns and potential violent behaviour amongst adolescents and young adults in England and Wales and the extent to which attitudes held about alcohol consumption mediate this relationship. The panel sample will be used to assess the impact of current and prior binge drinking on violent outcomes using regression modelling. This will offer an insight into how alcohol consumption patterns are associated with violent outcomes in the form of assaults (with and without injury). Given previously identified low rates of binge drinking and low base numbers for regular drinkers under 16 years of age, further analyses in this and the subsequent analytical chapter (Chapter 7) will focus specifically on those aged 16-29.

The first aim of this chapter is to investigate the temporal association between alcohol use (in particular risky single occasion drinking, or 'binge drinking') and violence (in the form of assaults with or without injury) and to test the hypothesis that current rather than earlier (binge) drinking impacts on subsequent violent behaviour. Thus, these analyses offer a unique insight into a two year window (2005-2006), during the developmental period of adolescence to young adulthood (16 to 29 year olds), of young people's alcohol consumption patterns and involvement in violence. The remainder of the chapter aims to build on addressing how alcohol consumption patterns are associated with assault outcomes by examining the role of attitudes in the relationship between alcohol and violence as well as associations between drinking patterns and the *severity* of violent offending, and whether the offence was alcohol related.

A series of cross-sectional models first examine the correlates of violent offending, including (binge) drinking frequency. These are presented in findings section 1. The first model in findings section 1 examines the correlates of violent offending in the same year (2006) whilst controlling for prior violent offending the year before (2005). This model is subsequently extended to examine whether earlier binge drinking (the year before, 2005) influences later violent

behaviour and a third model is then run to examine whether current binge drinking intermediates the effects of prior drinking. Taken together, these models facilitate an exploration of the temporal association between drinking frequency, heavy single occasion alcohol consumption, and violent behaviour amongst young people during adolescence and young adulthood (16 to 29 years). Finally, the resulting model was run including an interaction effect between gender and binge drinking frequency to examine whether or not the association between binge drinking and violent outcomes was moderated by gender. The resulting model is run both with and without measures of prior violence, whilst controlling for attitudes in the form of most likely class membership from the LCA results obtained in Chapter 5. These models allow for an assessment of the mediating role of attitudes in the alcohol-violence relationship, and whether these are retained as a mediator once previous violent behaviour is accounted for (section 2).

Findings in sections 3 and 4 build on the earlier logistic regression modelling by re-specifying the outcome variable to further elucidate associations between alcohol consumption and particular aspects of violent offending. In findings section 3 a three category outcome variable is described classifying individuals into non-offenders, those that have committed an assault offence, but had not consumed alcohol prior to committing the offence, and those that had committed an alcohol-related offence (that is, they had consumed alcohol prior to committing the assault offence). The possibility of running a multinomial model was explored using this outcome variable to enable an assessment of the role alcohol consumption plays in alcohol-related offending, and thus tease out causal and spurious elements of the relationship between binge drinking and violent behaviour. In findings section 3 the potential of running a multinomial model is described to enable an assessment of the role alcohol consumption plays in the severity of violent offence outcomes (whether an individual had committed an assault with or without incurring and injury to the other party, or has not committed an assault offence). However, given small numbers for both outcome variables in findings sections 2 and 3, such modelling was deemed unfeasible. Finally, the result of the analyses are summarised and discussed.

Collectively, the results aim to address the following research questions:

1. Is binge drinking associated with assault outcomes in young people in the same year?
2. Is prior binge drinking associated with assault outcomes?
3. Do attitudes mediate the alcohol-violence relationship?
4. To what extent does binge drinking contribute to alcohol-related assault outcomes in the same year?

Overall, the findings presented here facilitate a detailed exploration of how alcohol consumption influences the development of violent behaviour amongst young people during adolescence and young adulthood.

## **6.2 The sample**

To investigate drinking behaviour and its impact on violent behaviour over time, it was necessary to consider those individuals who responded on more than one occasion to the survey. For initial exploratory analyses the subsample of panel members surveyed in 2006 aged between 16-29 and surveyed on at least one prior occasion were used (N=3079). Weighting was used to correct for differences in probability of selection, non-response and to match the makeup of population (young people in England and Wales), as well as to account for attrition. While attrition rates were relatively low, a rigorous multistage weighting strategy was employed to account for attrition in the longitudinal sample as outlined in chapter 4.<sup>54</sup>

## **6.3 Measures**

### **6.3.1 Outcome variables**

Violent behaviour is captured here by whether or not respondents reported having committed an assault (both with and without incurring an injury to the

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<sup>54</sup> In order to examine potential variation in assault outcomes in each year, the fresh (cross-sectional) samples in each sweep year were used to assess the differences in the proportion of individuals committing an assault in the given year. Such differences may be considered annual fluctuations in the prevalence of violent behaviour within the population and, if present, can skew the interpretation of changes over time. To further examine such variation (amongst those respondents that featured as 'fresh' rather than 'panel' respondents), a series of logistic and multinomial regression models were run on outcome variables of whether respondents had committed an assault offence in the last year as well as how often respondents usually had an alcoholic drink in the last 12 months. The predictive impact of the sweep year to which they belonged was found to be insignificant in both models, suggesting that there were no significant reason to believe change over time could not be examined in this data set.

other party). That is, respondents were asked if they had used force or violence on anyone on purpose in the last year, for example, by scratching, hitting, kicking or throwing things and whether they believed it had injured the other party in some way. This dichotomous outcome was used in the initial logistic regression models.

To further explore the role of binge drinking in *alcohol-related* assault, information from details of the offences were linked back to individuals in the panel sample to identify those who had not committed an assault offence in the last year, those that had committed an assault offence in which they had not consumed alcohol, and those who had committed an assault offence in which alcohol had been consumed. Where respondents had committed multiple offences, one or more of which was alcohol related, they were assigned the code pertaining to having committed an alcohol-related offence in the last year.

Whilst multinomial regression modelling was preferred to look at the association of binge drinking and this three-way categorical response variable, it would have had to be run on a subsample of regular drinkers aged 16-29, given the structural relationship between the outcome variable and drinking frequency: as it is unlikely that those who do not drink will have committed an alcohol-related assault. However, small numbers in some of the categories did not allow for this and exploratory analyses are therefore presented here. However, it was possible to run a further logistic regression module on a subsample of regular drinkers using an alternative outcome measure of alcohol-related violence: that is, whether an individual had got into a fight after drinking, as this allows for a consideration of the association between binge drinking frequency and alcohol-related violent offending.

Further exploratory analyses to look at the added impact of binge drinking on the scale of violent offending (count of assaults in last 12 months) and severity of violent offending (three category variable distinguishing between whether an assault incurred injury to other party or not) are also presented here for the same reason.

### 6.3.2 Covariates

Measures of drinking – frequency of drinking and of binge drinking – were used as covariates, however, drinking frequency was only asked of those who had drunk in the last 12 months, and binge drinking frequency in the last month was subsequently only asked of those that drank at least once a month or more. It is worth noting that the assault outcome measure did differ significantly between regular drinkers (monthly or more) and non-regular drinkers (less than once a month) (10.2% and 6.4% committed an assault in 2006 respectively).

Binge drinking was captured in the OCJS in the form of drinking in excess of twice the recommended unit allowance for males and females as defined by the government health guidelines (six/eight or more units<sup>55</sup> in one day for females and males respectively). This variable was measured on a six point frequency scale between ‘most days’ and ‘less than once every couple of months’. To aid interpretation and avoid categories with low numbers, the six original categories have been collapsed to provide three indicators in the regression models: those that do not binge drink, those that do so at a lower frequency (once to ten times a month) and those that do so more frequently (eleven times a month or more). Alongside well established demographic factors associated with violent behaviour, such as age and gender, measures of previous violent behaviour were used to control for a violent disposition more generally. Thus all models presented here control for age and gender as well as previous violent offending (in 2005).

Attitudes will be controlled for by using a measure of most likely class membership from the previous LCA (see Chapter 5). This approach attributes individuals to a given class as identified in the LCA on the basis of probability and this is used as an individual level characteristic in the modelling procedure. It is important to note that these values have been assigned on the basis of probability rather than being a definitive state attributable to individuals and that this must be borne in mind in the interpretation of the results.

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<sup>55</sup> A unit is a measurement of alcohol used in the UK to define recommended limits for alcohol consumption. One unit equates to 10 millilitres or 8 grams of pure ethanol; approximately the equivalent amount of alcohol contained in half a pint of beer or lager, a small glass of wine, or in a standard measure of spirits (DH, 1995).

## **6.4 Methods**

Given the lower rates of binge drinking and low base numbers for regular drinkers under 16 years of age, the regression analyses examining the impact of drinking patterns on violent behaviour will focus specifically on those aged 16-29 (N=3079) in the panel sample. A series of bivariate exploratory analyses were also performed examining age and gender variations in binge drinking and assault outcomes, including an examination of the distribution of both drinking frequency and binge drinking frequency for those who did and did not commit an assault in the same year (2006) using Mann Whitney U tests. Weighted regression modelling was employed here to examine the association of binge drinking on violent outcomes whilst controlling for independent variables, such as age and gender.

## **6.5 Findings**

### **6.5.1 Exploratory analyses**

The OCJS panel sample aged 16-29 (N=3079) was first examined thoroughly, and results for key variables are summarised here and in Table 6.1 below. Table 6.1 displays the distribution of binge drinking frequency in the original variable categories for both males and females. Males were more likely ( $\chi^2=40.591$ ,  $df=3$ ,  $p < .001$ ) to be heavier binge drinkers and, on the whole, both males and females were more likely to be low level binge drinkers as opposed to high frequency binge drinkers or not binge drink. Although the majority of both males and females reported never having committed an assault offence (9.5% respondents had committed an assault offence in 2006), almost twice as many males (12%) as females (6.9%) reported committing an assault.

**Table 6-1 Binge drinking frequency in 2006 for males and females aged 16-29 (with 95% confidence intervals)**

<i>Binge drinking frequency</i>	<i>Male</i>	<i>Female</i>	<i>Both</i>
Non or moderate drinker	19.5%	25.3%	22.4%
Never in the last month	15.4%	17.4%	16.4%
Between one and 10 times in the last month	55.0%	52.1%	53.6%
11 or more times in the last month	10.1%	5.2%	7.7%
Total* (un-weighted base)	100% ( 1347)	100% (1590 )	100% (2937)*

\* Total number of over 16s for whom drinking information was available.

Relationships and differences were examined (using the Mann Whitney U tests) between drinking and binge drinking frequency and having committed a violent assault. Current binge drinking had a significantly different distribution for those who had and who had not committed an assault ( $Z=-5.655$ ,  $p<.001$ ), as was the drinking frequency measure ( $Z=-4.255$ ,  $p<0.01$ ).

Cross tabulations between binge drinking in 2005 and binge drinking in 2006 found that binge drinking the year before was significantly associated with later binge drinking ( $\chi^2= 1262.347$ ,  $df= 9$ ,  $p<.001$ ). Initial models will focus on current binge drinking and its impact on the odds of committing an assault offence, before going on to explore the impact of the earlier binge drinking measure.

### **6.5.2 Findings 1: Logistic regression modelling to look at correlates of committing assault offences**

Initially, logistic regression models were run on those in the sample aged between 16 and 29 for whom observations for both outcome and explanatory variables were available from both 2006 and 2005 sweeps ( $N= 1882^{56}$ ), whilst controlling for age, gender and previous violent offending. These models explore whether young people's drinking patterns are associated with the odds of having committed assault (both with and without incurring an injury to the other party) in 2006. Given the developmental focus of this study, accounting for prior drinking behaviour was deemed necessary rather than relying solely on

<sup>56</sup> Total number of over 16s for whom information was available for the binge 2006, 2005 and assault in 2005 variables.

current drinking measures, as this may allow for more robust insights into how drinking behaviour influences later violent behaviour during adolescence and young adulthood. A cross-sectional model was run to examine the propensity for violent offending including a measure of current drinking behaviour (in the same year, 2006). This model was subsequently re-specified to use only a measure of binge drinking from the previous year (2005) to examine whether prior binge drinking was associated with later violent outcomes. A third model was then run reintroducing the current binge drinking measure to examine any attenuation in the regression coefficients, and thus examine the extent to which the association between prior drinking and violence is mediated by current drinking. Finally, the original model, using the current binge drinking measure, was adopted and rerun to include an interaction effect of gender and binge drinking frequency, examining the extent to which gender moderated the relationship between current binge drinking and assault outcomes. In each of the models, age, gender and previous violent behaviour (in 2005) were controlled for.

Model 1 (Table 6.2) highlights that binge drinking is associated with assault outcomes in the same year (2006) at the highest frequency of doing so 11 or more times a month (Exp B = 1.851,  $p < .05$ ). When accounting for binge drinking in 2005 (as in Model 2) rather than 2006, this was found to be insignificantly associated with assault outcomes in 2006. On controlling for prior binge drinking in 2005 and reintroducing binge drinking in 2006 in Model 3, prior binge drinking in 2005 remains insignificant, and 2006 binge drinking is not deemed significant. Given the limited contribution of accounting for prior binge drinking (2005) in these models, subsequent modelling will proceed to look at binge drinking in the same year (2006).



**Table 6-2 Logistic regression - Whether committed an assault offence in last year (reference category none) based on current and prior binge drinking frequency**

	<i>Model 1 Current drinking only</i>	<i>Model 2 Prior drinking only</i>	<i>Model 3 Prior and current drinking</i>
	B	B	B
Constant	-2.968**	-2.924**	-2.907**
Male	.416*	.389*	.385*
Age	-.066*	.078*	-.074*
Committed an assault in 2005	2.164**	2.179**	2.144**
Binge drinking frequency 2005 (base non or moderate drinkers)		n.s	n.s
Binge drinking frequency 2005 (never)		-.377	-0.350
Low binge drinking frequency 2005 (1-10 times a month)		.324	.244
High binge drinking frequency 2005 (11 or more times a month)		.431	.193
Binge drinking frequency 2006 (base non or moderate drinkers)	n.s		n.s
Binge drinking frequency 2006 (never)	-.227		-.239
Low binge drinking frequency 2006 (1-10 times a month)	.199		.035
High binge drinking frequency 2006 (11 or more times a month)	.616*		0.428*
R2 Cox & Snell	.085	.085	.087
R2 Nagelkerke	.195	.195	.198
Chi-square	201.093	201.183	204.570
-2 Log likelihood	1098.445	1098.354	1094.967
N	1882	1882	1882***

\*p ≤ .05; \*\*p ≤ .01; n.s. = overall impact of variable not significant

\*\*\* Total number of over 16s for whom information was available for the binge 2006, 2005 and assault in 2005 variables.

The model settled on above (Model 1) was subsequently re-run on all cases for which independent variables were available for the 2006 measures and previous violent offending in 2005 (N=2588<sup>57</sup>). This model (Model 1.1, Table 6.3) yields similar results to that with fewer cases above (Model 1, Table 6.2) and suggests that males are more likely to commit an assault offence (Exp B = 1.49), as are those who have committed such an offence the year before (Exp B = 6.99) and those that are younger (Exp B = .914). Additionally, binge drinking frequency is associated with assault outcomes with the association increasing

<sup>57</sup> Total number of over 16s for whom information was available for the binge 2006 and assault in 2005 variables.

in strength the more often individuals drink to excess (Exp B = 2.19 for doing so 11 or more times respectively).

**Table 6-3 Logistic regression - Whether committed an assault offence in last year (reference category none) based on current binge drinking**

	<i>Model 1.1</i>
	B
Constant	-2.832**
Male	.399**
Age	-.090**
Committed an assault in 2005	1.944**
Binge drinking frequency 2006 (base non or moderate drinkers)	**
Binge drinking frequency 2006 (never)	-.178
Low binge drinking frequency 2006 (1-10 times a month)	.322
High binge drinking frequency 2006 (11 or more times a month)	0.784**
R2 Cox & Snell	.1089
R2 Nagelkerke	.191
Chi-square	259.061
-2 Log likelihood	1485.642
N	2588***

\*p ≤ .05; \*\*p ≤ .01; n.s. = overall impact of variable not significant

\*\*\* Total number of over 16s for whom information was available to the binge 2006 and assault in 2005 variables.

The same model was rerun to include an interaction term between binge drinking and gender to investigate the potential added effects of binge drinking on the potential for violence if male. However, as Model 1.2 in Table 6.4 below highlights, on the whole this term was insignificant in predicting assault outcomes.

**Table 6-4 Logistic regression - Whether committed an assault offence in last year (reference category none) based on current drinking with gender\*binge drinking interaction terms**

	<i>Model 1.2</i>
	B
Constant	-3.303**
Male	1.156**
Age	-.088**
Committed an assault in 2005	1.977**
Binge drinking frequency 2006 (base non or moderate drinkers)	**
Binge drinking frequency 2006 (never)	.385
Low binge drinking frequency 2006 (1-10 times a month)	.818*
High binge drinking frequency 2006 (11 or more times a month)	1.601**
Male*Binge 2006 interaction term	n.s
Male* Binge drinking frequency 2006 (never)	-.950
Male* Low binge drinking frequency 2006 (1-10 times a month)	-.842*
Male* High binge drinking frequency 2006 (11 or more times a month)	-1.305*
R2 Cox & Snell	.092
R2 Nagelkerke	.196
Chi-square	266.209
-2 Log likelihood	1478.494
N	2588

\*p ≤ .05; \*\*p ≤ .01; n.s. = overall impact of variable not significant

### 6.5.3 Findings 2: Logistic regression modelling to look at the role of attitudes in the alcohol-violence relationship

Results from the LCA, in the form of most likely class membership, are used here in logistic regression models to explore the extent to which current drinking behaviour and attitudes towards alcohol consumption predict the likelihood of violent offending, in the form of assaults. This addresses the question as to whether attitudes held towards drinking are associated with assault outcomes. The specification of the regression models also enables an assessment of whether latent class membership mediates the relationship between heavy episodic drinking and assault outcomes already established elsewhere (see Lightowlers, 2011) using established and validated processes suggested by Barron and Kenny's (1986; 2012<sup>58</sup>). Attenuation of heavy episodic drinking

<sup>58</sup> See <http://davidakenny.net/cm/mediate.htm>

coefficients once latent class membership is entered into the models would thus suggest mediation of this relationship, whereas a significant interaction effect between heavy episodic drinking and Latent Class membership would suggest Latent Class membership is moderating this relationship.

Models were initially run without controlling for prior violent behaviour (see Models 1 and 2, Table 6.5). Model one respecifies the above finalised model on the subsample for who available most likely class membership could be assigned ( $n=1977$ ), verifying previous findings. Most likely class membership was then entered as a covariate into this model (Model 2). The modest attenuation of the heavy episodic drinking coefficients in model 2 suggests partial mediation of the relationship between heavy episodic drinking and assault outcomes, with most likely latent class membership, specifically membership of the 'problematic drinker' group ( $\text{Exp}(B)=1.977$ ), explaining some of variation in assault outcomes. Finally, the model was rerun to take account of previous violent behaviour (see Model 3, Table 6.5). On doing so, most likely class membership was no longer a significant predictor of assault outcomes and neither was binge drinking at the lower level or gender, suggesting previous violent behaviour is an important predictor of future violence and more influential than gender and attitudes held about drinking.

**Table 6-5 Logistic regression – Assessing the associations between age, sex, heavy episodic drinking, attitudes towards drinking, prior assault type and assault offence outcomes in last year (reference category none)**

	<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>	
	<i>B (S.E)</i>	<i>Exp (B)</i>	<i>B (S.E)</i>	<i>Exp (B)</i>	<i>B (S.E)</i>	<i>Exp (B)</i>
Constant	-2.317 (.228)	.099**	-2.650 (.284)	.071**	-3.192 (.307)	.041**
Age	-.137 (.025)	.872**	-.135 (.025)	.874**	-.090 (.026)	.914**
Male	.420 (.149)	1.521**	.407 (.149)	1.502**	.218 (.159)	1.243 n.s.
2006 How often in the last month have you had x or more units of alcohol on any one day? (base never)		**		**		*
Low frequency (1-10 times a month)	.561 (.214)	1.753**	.443 (.218)	1.558*	.431 (.228)	1.539 n.s.
High (11 or more times a month)	1.324 (.264)	3.760**	1.125 (.274)	3.081**	.846 (.292)	2.330**
Most Likely class membership (base ' <i>Social drinkers</i> ') MLclassmship (' <i>Positively motivated drinkers</i> ')				*		n.s.
			.434 (.234)	1.543 n.s.	.335 (243)	1.399 n.s.
MLclassmship (' <i>Problematic drinkers</i> ')			.682 (.254)	1.977**	.457 (.266)	1.579 n.s.
Committed assault in 2005					2.017 (.158)	7.518**
R2 Cox & Snell	.030		.033		.103	
R2 Nagelkerke	.061		.068		.211	
Chi-square	63.951		71.660		229.689	
-2 Log likelihood	1353.201		1345.492		1187.463	
N	1977		1977		1977	

\*p ≤ .05; \*\*p ≤ .01

### 6.5.4 Findings 3: correlates of alcohol related assault

The logistic regression models were run for a dependant variable of having committed an assault or not and suggested that current binge drinking frequency was significant in predicting this outcome. In light of these findings, and in order to tease out a more precise account of how drinking patterns are associated with violent behaviour, running similar models on an outcome variable which distinguished between assaults in which alcohol had been prior to the offences and those not involving alcohol was considered to be of interest. The data on whether alcohol had been consumed prior to committing an offence was linked to data on whether respondents had committed an assault offence to create a dependant variable of alcohol-related violence (as outlined in Chapter 4 section 4.3.2.); that is, having committed an assault without the influence of alcohol, having committed an assault with the influence of alcohol, and not having committed any form of assault.

Whilst multinomial models using the newly derived outcome measure were preferred for examining those predictors found to be significant in the earlier logistic regression models (in order to examine how these influenced assault offence outcomes where alcohol had been consumed), the small number of those having committed assault and having consumed alcohol when they did it (see Table 6.6), and subsequent cross tabulations with other covariates did not allow for this type of analysis.

**Table 6-6 Percentage of respondents having committed an assault with and without alcohol**

	<i>Frequency (unweighted)</i>	<i>Valid Percentage (weighted)</i>	<i>Valid Percentage (unweighted)</i>
No assault	2750	96.5	96.5
Assault with alcohol	15	0.4	0.5
Assault no alcohol	86	3.0	3.0
Missing	228	-	-
Total	3079	100	100

As an alternative to the derived variable of alcohol related assault tried above, the OCJS also asks regular drinkers (those who drink once a month or more) whether they had got into a fight during or after drinking; this may form another variable with which to capture information about the correlates of alcohol-related

violence, however only amongst regular drinkers. Of 2384 valid responses to this question amongst 16 to 29 year olds (209 of which said they had been in such a fight), the above model was rerun to look at the association between binge drinking frequency and alcohol-related violent offending. The model was run on the 1979 cases that had valid responses to this variable, the outcome variable, the previous violent offending measure, and the binge drinking frequency measure.

Results from Table 6.7 suggest that binge drinking frequency is significantly associated with fights after or during drinking and that increased frequency of such drinking brings with it a slightly larger risk amongst regular binge drinkers (Exp (B) = 2.17 and Exp (B) = 2.29 at the lower and higher binge drinking frequencies respectively). As in earlier models previous violent offending (see above) was a strong predictor of having been in a fight in the current year (with those having a prior history of assault being 6.5 times more likely to be involved in a fight during or after drinking).

**Table 6-7 Logistic regression – Whether had been in a fight during or after drinking in last year (reference category none) based on current binge drinking**

	<i>Model 2.1</i>
	B
Constant	-3.096**
Male	.320*
Age	-.105**
Committed an assault in 2005	1.879**
Binge drinking frequency 2006 (base never)	**
Low binge drinking frequency 2006 (1-10 times a month)	.773**
High binge drinking frequency 2006 (11 or more times a month)	.830**
R2 Cox & Snell	.099
R2 Nagelkerke	.196
Chi-square	205.604
-2 Log likelihood	1179.688
N	1979

\*p ≤ .05; \*\*p ≤ .01; n.s. = overall impact of variable not significant

### 6.5.5 Findings 4: correlates of severe assault offences

In order to look at the role of alcohol consumption in predicting the likelihood of an assault with and without incurring an injury, a number of exploratory analyses were performed in order to assess the feasibility for running such a multinomial model. Counts and weighted percentages of respondents over 16 falling into each of these categories are displayed in Table 6.8<sup>59</sup>. Given a relatively small number of individuals having committed an assault without incurring an injury, and small counts in cells when this variable is cross tabulated with covariates such as binge drinking frequency and prior violent offending variables, it was concluded that a multinomial model of this specification was not possible in this instance.

**Table 6-8 Percentage of respondents having committed an assault with and without injury**

	<i>Frequency (unweighted)</i>	<i>Valid Percentage (weighted)</i>	<i>Valid Percentage (unweighted)</i>
No assault	2750	90.5	89.9
Assault with no injury	96	2.8	3.1
Assault with injury	214	6.7	7.0
Missing	19	-	-
Total	3079	100	100

## 6.6 Discussion, reflections and next steps

### 6.6.1 Associations between drinking patterns and assault outcomes and the role of attitudes

As well as suggesting that gender (being male) and previous assault offences are associated with assault outcomes, findings presented here suggest that binge drinking is associated with assault outcomes amongst young people and this effect is temporally proximal (that is, both occur in the same year). Furthermore, the strength of this association increases with increased binge drinking frequency. Whilst effects of prior binge drinking were examined (that is, binge drinking in the previous year) these were not found to be associated with

<sup>59</sup> Whilst in the original data participants could have been recorded as having committed both assault *incurring injury* and assault *not incurring injury*, in creating the categories for this variable, whether someone had committed an assault *incurring injury* in any of the six potential offences was recorded as such and so would not feature in the category of having committed assaults *without incurring injury*, even if one or more of their offences was of this nature.



later violence. In effect, there was no evidence of earlier measures of drinking associated with later violence. Findings here seem to point to a time-specific association between binge drinking and assault outcomes, in line with what is already known about the nature of alcohol-related violence: that both often co-occur in high risk settings and that alcohol can cause some social situations to escalate into violent incidents, as outlined in Chapter 2.

The hypothesis that current, rather than prior, binge drinking is associated with violent offending thus seems to be supported here. However, given the significant association found between current and earlier drinking in the exploratory analyses (prior binge drinking was found to be significantly associated with later binge drinking both one and two years on), it seems that a life course perspective is nonetheless useful to further understand alcohol consumption patterns and associated violence. It may be worth exploring the impact of escalated binge drinking on violent outcomes in further work of this kind. That is, whether or not those increasing or remaining constant with their drinking are more likely to be violent in subsequent years and whether those reducing their binge drinking frequency are less likely to offend.

Furthermore, given the significant association of earlier offending measures with subsequent assault offences, it would seem that there is merit in examining violent behaviour from a developmental perspective using such techniques. From this vantage point, it would also seem valuable to expand on the models presented here to explore this relationship at different stages in the life course and how changes in alcohol consumption patterns over adolescence and young adulthood alter the likelihood of violent offending, whilst controlling for other intervening factors and life events.

The role of attitudes seems to partially mediate the relationship between current binge drinking and assault outcomes, with 'problematic drinkers' (those more likely to agree strongly that that drinking makes them feel relaxed and more friendly and outgoing as well as drinking to get drunk, to forget their problems and doing things they regret as a result of their drinking) being twice as likely to commit an assault offence, having controlled for binge drinking frequency. However, the effect of attitudinal measures becomes insignificant once prior

violence is controlled for, suggesting this is a more significant indicator as to whether or not someone is likely to behave violently or not.

Whilst the findings from the regression models present are interesting, the assumption of independence between independent variables in logistic regression is violated in the models when controlling for prior offending and binge drinking. It is highly likely, as these are repeated observations clustered within individuals, that such observations are correlated. For example, an individual's level of drinking may very well be dependent on their prior drinking behaviour, after all, a drinker in one year cannot become a lifetime abstainer in the subsequent year. In light of this violation and the rudimentary logistic regression framework employed here, further modelling to account for the panel data structure and the clustering of observations within individuals using a multi-level framework are required to more accurately specify longitudinal models, and to examine binge drinking and violent behavioural trajectories. Employing such a framework would also overcome concerns over the high level of missing cases in some of the regression models, as a multilevel framework would enable an extraction of the maximum power out of the available observations.

#### **6.6.2 Associations between drinking pattern and other violent outcome variables**

The relationship between alcohol consumption and violence is not always simple; rather than being intrinsic to violent behaviour, an individual's drinking may be one of many features which make an individual more likely to behave violently. The models specified in the current paper pertain only to associations between alcohol consumption patterns in the last month and violence in the past year. They do not link alcohol consumption temporally to a violent incident, or highlight the sequencing of behaviour within any one year. They are consequently limited in their ability to ascertain any causal processes. It was therefore considered valuable to explore the role of binge drinking in alcohol-related assault outcomes (that is, where alcohol had been consumed at the time of committing an assault offence). This would potentially enable a closer examination of how alcohol consumption is linked to violent incidents and assess whether the offender was under the influence of alcohol at the time of an offence. However, with only 15 valid cases of alcohol-related assault in the

sample under consideration further modelling of the correlates of alcohol related assault offences was not possible.

The problem of small numbers was also the case when considering the severity of violent offending, with only 96 individuals having committed assault where no injury was incurred there were many cells with low numbers when this variable was cross tabulated with the independent variables to be modelled. Further modelling of the scale of violent offending using a measure of assault offences committed in the last year was also not possible here given low levels of offending. However, all of these areas are interesting areas for further research in the future with samples that can accommodate such specifications; these may be better suited to samples of offenders in which levels of offending are likely to be higher.

### **6.6.3 Summary and next steps**

Whilst the current findings suggest a number of interesting points; for example, that binge drinking acts as a potential risk factor for temporally proximal violent behaviour and that prior violent offending is a potential risk factor for future violent offending, causal links cannot be established in the current study. However, the strong contemporaneous association between heavy episodic drinking and assault, as well as fight outcomes, appears to be consistent with research highlighting that substance use during early adulthood is associated with time-specific variations away from individuals' longitudinal patterns of aggressive behaviour (Hussong et al., 2004). That is, in the periods in which young people drink more, they were also more likely to behave violently, even when accounting for previous levels of aggression.

Overall, the current chapter emphasises the merit of considering current alcohol consumption patterns when considering the impact of alcohol consumption on violent behaviour (in the form of assault offences as well as alcohol-related fights). Despite an insignificant association of prior binge drinking with later violent behaviour, previous violent offending was significantly associated with the likelihood of further offences in the form of assault offences as well as alcohol-related fights. Therefore, considering behavioural problems associated

with violent behaviour in a wider developmental framework during the period of young adolescence and early adulthood would seem worthwhile.

The limitations associated with the techniques employed here point to the need for a more sophisticated multilevel repeated measures framework in which to consider the data, which will be explored in Chapter 7. Further work is also encouraged with other outcome variables, such as a distinction between alcohol related and non alcohol related assault outcomes, a distinction between those assault offences that resulted in injuries and those that did not as well as the number of assault offences committed. This research could further explore more specifically how alcohol consumption is associated with violent offending; possibly using alternative samples, such as samples of offenders in order to allow for large enough incidents of offending in these classifications.

## **7 Chapter 7: Drinking patterns and their temporal association with violent offending: Part 2 – longitudinal analysis**

### **7.1 Introduction**

The transition between childhood and young adulthood is one in which binge drinking and (violent) offending can feature, as outlined in Chapter 3. Criminal careers often commence in teenage years, peak in early adulthood, and tail off in the twenties (see review on criminal careers by Siennick and Osgood, 2008), this is known as the ‘age-crime curve’. As Sumner and Parker (1995) observe, this trajectory of offending approximately maps onto that of drinking which often starts at a similar time in the life course and co-occurs in young people. Farrington (2003) studied London boys aged 8 in 1961 until they were 46, and identified the prevalence of offending increased up to age of 17 before then decreasing, with the peak increase in prevalence lying at the age of 14 and the peak age of decrease at the age of 23, with a mean age of conviction of 21. More specifically, violent offending has been found to peak between the ages of 18 to 33 (see studies by Laub and Sampson, 2003; Farrington, 2003) and increased levels of violence for males have consistently been identified in longitudinal studies in the 10 to 19 age range, whereas females tend to decline in late teens (Huizinga et al., 2003). Huang et al. (2001) also found that the positive correlation between alcohol and aggression decreased with age from mid to late adolescence. Although their results “suggested that reducing one behaviour will probably not have a long-term impact on the other” they offer the insight that “early prevention efforts aimed at shared risk factors may reduce both contemporaneously” (Huang et al., 2001:64). However, others have suggested that substance abuse can act as both a ‘snare’ as well as a ‘launching’ factor for elevations in anti-social behaviour (see Hussong et al. 2004, as discussed in Chapter 3), and these hypothesised effects are tested in the current analyses.

In order to assess the extent to which such drinking patterns influence violent behavioural outcomes from a developmental perspective it is necessary to assess both the distal and proximal effects of such drinking patterns and how young people’s alcohol consumption patterns impact on the potential for violent

behaviour across the period of young adolescence and early adulthood. Many studies to date have relied heavily on cross sectional analyses (for example, Matthews and Richardson, 2005; Finney, 2004; Shepherd, 1994; Room and Rossow, 2001) and there is comparatively little research focused on the longitudinal prediction of violence from drinking behaviour (whilst controlling for prior drinking behaviour) and most of these are centred on US samples of young people (see, Blitstein et al., 2005; Swahn and Donovan, 2004; White et al., 1993; Huang et al., 2001). Longitudinal studies allow for the study of within-individual changes in criminal activity over time, whereas cross-sectional studies can only examine inter-individual differences (Piquero et al., 2007).

Findings from earlier cross-sectional models (see chapter 6 and Lightowlers, 2011) suggest there is a contemporaneous association between binge drinking and violence in the same year and this evidence suggests there was no further predictive ability of prior binge drinking on the likelihood of violent offending. This supports other findings elsewhere that suggest substance use during early adulthood is associated with time-specific variations away from individuals' long term patterns of aggressive behaviour (see for example Hussong et al., 2004). However, the extent to which this finding holds when accounting for the natural clustering in the observations in repeated measures data will be examined here. The analyses presented in the current chapter thus build on the previously outlined limitation associated with assuming independence between observations in repeated measures data by accounting for this in the modelling procedure.

This chapter builds on the latter by developing more sophisticated longitudinal models that adequately account for the clustering of observations within individuals in the panel data. It thus examines the joint development of drinking patterns and violent behaviour across the late adolescent and early adult years. Three nested multi-level models are reported exploring the relative contribution of binge drinking in predicting the likelihood of assault, as well as highlighting the variation accounted for within and between individual's propensity to commit assault when controlling for their drinking behaviour. Subsequently the final model is presented separately for males and females and the results are discussed with reference to the prior findings. Collectively, these analyses make

an important contribution to explaining how alcohol consumption is associated with the development of violent behaviour amongst young people during adolescence and early adulthood in England and Wales.

## 7.2 Methods

The panel sample (those who responded in the final sweep and at least on one other occasion) was employed here in repeated measures models to investigate the impact of drinking behaviour on violent behaviour over the period of childhood and young adolescence. However, data from three sweeps 2004-2006 were used in the models presented here, as the question about binge drinking frequency was introduced in 2004. Given low numbers of regular drinkers under age 16, the models run here that examine the impact of drinking patterns on violent behaviour will focus specifically on those aged 16 to 29<sup>60</sup>. For these models a subset of those panel respondents aged 16 to 29 that had responded on at least two occasions and for whom binge drinking measures were captured was used – that is, those persons who gave a response to the binge drinking questions in sweeps two (2004) to four (2006) (N=2890; 6633 observations). The measures used were identical to those employed in chapter 6.

The logistic regression models presented in Chapter 6 serve as exploratory analyses to examine the impact of binge drinking in the current and previous sweeps on committing an assault in the 2006 sweep. Whilst these models were informative they contravene the assumption of independence between observations, as repeated measures data is inherently clustered within individuals. Thus these models were re-run and verified/optimised here using a multi-level repeated measures framework, which accounts for the clustering of observations over time within individuals. In such a framework, some covariates, such as gender, are constant in time, but some are also changing covariates, such as binge drinking frequency and age in this instance. The

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<sup>60</sup> The number of under 16 year old regular drinkers was 430 (29.2% of all those under the age of 16 in the sample) compared to 2394 regular drinkers over 16 (77.8% of all those aged 16 or over in the sample). As age was included as a covariate the small numbers would make the models unstable. Furthermore, the small proportion of drinkers under the age of 16 gives reason to be concerned that that group may be categorically different from group over the age of 16.

finalised model is run separately for males and females to explore whether differing processes may be operating between the genders.

Data preparation was performed in SPSS version 16 and the repeated measures models were fitted using MLwiN version 2.21.

### **7.3 Findings**

A series of binomial repeated measures models were run in hierarchical stages to examine the effects of binge drinking on violent behaviour, controlling for covariates age and sex identified in previous cross-sectional analyses (chapter 6) as well as time (sweep year), which were fitted as a categorical covariate given the non linear change in assault over time apparent from exploratory analyses. Table 7.1 illustrates the resulting coefficients for each of these stages, which will be documented and narrated in turn.

#### **7.3.1 Model 1 - predicting assault from sweep year**

Initially a binomial null model (using MCMC, 20000 iterations<sup>61</sup>) was run to predict the outcome (assault) from the constant. Before adding time as covariate, the variance partition coefficient (VPC) was 0.57 for this model, suggesting that 57% of variation in assault is between people, the remainder between occasions. Subsequently Model 1 was run predicting assault outcomes from a constant and sweep year<sup>62</sup>, this increased the VPC to 0.60. Coefficients from this model suggest that the overall contribution of sweep year is significant and thus worth controlling for when considering multiple overlapping cohorts - that is, people can be of different ages in different years. It will therefore be retained in subsequent models. This finding may suggest period effects confounding the results or may be a feature of the cohorts increasing in age in each subsequent sweep (cohort effects; age specific period effects).

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<sup>61</sup> For the multilevel logistic regression models, Monte Carlo Markov Chain (MCMC) estimation was used, implemented via MLwiN (Browne, 2009). MCMC estimation generally leads to better estimates of the model parameters than other methods, such as Penalised Quasi Likelihood (PQL). All models presented in the current paper employ MCMC with 20000 iterations.

<sup>62</sup> Given fluctuations in the prevalence of violent offending over the three years and to adjust for a better assessment of age based on multiple overlapping cohorts in accelerated longitudinal design.



### **7.3.2 Model 2 – predicting assault from sweep year, age and sex**

Age and sex were added to the model as fixed effect explanatory variables, leading to a slight reduction in the variance partition coefficient, compared to Model 1; having accounted for age and gender variation, 57% of variation in assault is between people, the remainder between occasions. Both age and sex were found to be significant predictors, with males being more likely to commit assault and with age being negatively related to the risk of committing an assault.

### **7.3.3 Model 3 – predicting assault from sweep year, age, sex and an age squared term**

To more accurately interpret the impact of age on the rate of change in violent behaviour an age squared term was entered into Model 2. In this model the effects of an age squared term were not found to be significant, nor did the VPC alter much. However, given theoretical insights pertaining to the age crime curve as outlined above, the interaction term was retained in subsequent models to examine its effects when controlling for drinking patterns. Age and sex remained significant covariates in the model.

### **7.3.4 Model 4 – predicting assault from sweep year, age, age squared, sex and binge drinking**

To examine the impact of binge drinking frequency on assault, dummy variables were entered in the fixed part of the model for Model 4. This highlighted a significant effect of binge drinking, with the probability of assault increasing in size with increased binge drinking frequency. In this model, as well as the sex and age terms, the age squared term was significant and in a positive direction, thus modifying the negative age term slightly. Once binge drinking frequency is controlled for in this model, the effect of age increases: it may thus be that one group of binge drinkers continue to drink to excess and are more prone to violence when drunk, and that the proportion of non-bingers see a reduced propensity of violent behaviour with increasing age. Again the variance partition coefficient reduced slightly; in this model 53% of variation in assault is between people, with the remainder being between occasions. This decrease potentially suggests there is more temporal variation in the outcome variables associated

with binge drinking behaviour; this interpretation is further supported by the insignificant age-binge drinking interaction term introduced in model 5 below.

### 7.3.5 Model 5 – predicting assault from sweep year, age, age squared, sex, binge drinking and binge drinking with age interaction

In the final model, the effects of an age-binge drinking interaction were introduced to examine whether the impact of binge drinking was moderated by age. However, such an interaction was not found to be significant, thus suggesting age does not moderate the effect of binge drinking. That is, that age has a significant impact on violent outcomes as does binge drinking; however, there is no evidence of a multiplicative effect of these two variables. It would thus seem that binge drinking makes assault outcomes more probable regardless of age. Therefore, in order to explain the effects of binge drinking on assault outcomes, Model 4 (as detailed in equation 7.1 below) was settled on. This model was subsequently run separately for males and females to examine whether the development associations between binge drinking and violence operate differently for males and females.

#### Equation 7-1 Final model specification - model 4

$P = \Pr((y_{ij} = 1) | x_{ij})$ , where  $y_{ij}$  is probability of an individual  $j$  having assaulted on occasion  $i$ .

$$\text{logit}(P) = \beta_0 \text{constant}_j + \beta_1 \text{sweep 2005}_{ij} + \beta_2 \text{sweep 2006}_{ij} + \beta_3 \text{age}_{ij} + \beta_7 \text{age}_{ij}^2 + \beta_4 \text{male}_j + \beta_5 \text{binge never}_{ij} + \beta_5 \text{binge low}_{ij} + \beta_6 \text{binge high}_{ij} + u_j$$

**Table 7-1 Model coefficients: predicting assault (base no assault offence)**

	<i>Model 1</i>	<i>S.E.</i>	<i>Sig</i>	<i>Model 2</i>	<i>S.E.</i>	<i>Sig</i>	<i>Model 3</i>	<i>S.E.</i>	<i>Sig</i>	<i>Model 4</i>	<i>S.E.</i>	<i>Sig</i>	<i>Model 5</i>	<i>S.E.</i>	<i>Sig</i>
	<i>B</i>		<i>level</i>	<i>B</i>		<i>level</i>	<i>B</i>		<i>level</i>	<i>B</i>		<i>level</i>	<i>B</i>		<i>level</i>
Constant	-3.651	0.165	**	-0.598	0.415	n.s	-0.222	0.685	n.s	2.508	1.01	*	2.279	1.598	n.s
Sweep 2005	0.506	0.127	**	0.485	0.125	**	0.5	0.128	**	0.59	0.127	**	0.638	0.132	**
Sweep 2006	0.481	0.142	**	0.398	0.138	**	0.42	0.143	**	0.494	0.14	**	0.543	0.145	**
Age				-0.167	0.021	**	-0.19	0.04	**	-0.371	0.06	**	-0.369	0.093	**
Age squared							0.003	0.004	n.s	0.018	0.006	**	0.024	0.008	**
Male				0.826	0.144	**	0.836	0.147	**	0.71	0.138	**	0.749	0.138	**
Binge drinking never (reference category 'non or moderate drinker')										0.02	0.223	n.s	0.937	1.308	n.s
Binge drinking low (reference category 'non or moderate drinker')										0.881	0.168	**	2.29	1.065	*
Binge drinking high (reference category 'non or moderate drinker')										1.564	0.242	**	4.81	1.837	**
Binge drinking never.Age													-0.048	0.067	n.s
Binge drinking low.Age													-0.072	0.055	n.s
Binge high. Age													-0.161	0.092	n.s
Constant/Constant	4.888	0.622		4.321	0.606		4.357	0.587		3.745	0.565		3.904	0.563	
VPC	0.60			0.57			0.57			0.53			0.54		
DIC:	3511.167			3482.164			3479.405			3492.728			3481.97		
Units: caseref	2939			2939			2939			2939			2939		
Units: sweep	6052			6052			6052			6052			6052		

\*p ≤ .05; \*\*p ≤ .01, n.s. = non significant

Model 1: overall contribution of sweep \*\*; Model 2: overall contribution of sweep \*\*; Model 3: overall contribution of sweep \*\*; Model 4: overall contribution of sweep \*\*; overall contribution of binge drinking \*\*; Model 5: overall contribution of sweep \*\*; overall contribution of binge drinking \*; overall contribution of interaction n.s.

### **7.3.6 Male only model**

When run on male respondents only, the resulting models suggest that binge drinking remains a significant predictor of assault, increasing monotonically with the heavier the frequency of episodic drinking (see Model 4, Table 7.2). Age also remains significant in a negative direction with a significant positive age squared coefficient (Model 4). However, the age squared term is insignificant in the male only model. This suggests the effect of increasing age for males reduces the likelihood of offending and this effect is not modified by a positive age squared term. The variance partition coefficient reduced from 0.61 in Model 1, to 0.59 in Model 2 and then to 0.54 for Model 4; thus the amount of within and between individual variation explained is comparable to models ran for both genders combined. When comparing the variance partition coefficients here with those obtained in the female-only models (see below) they are slightly higher for males, possibly suggesting there is more variation in assault outcomes between males than females.

### **7.3.7 Female only model**

On examining only female respondents, findings suggest that binge drinking is once more a significant predictor of assault outcomes, however, compared to the male only model the effects of low level binge drinking frequency are less pronounced. Nonetheless, as with males, the risk of an assault outcome increases with increased binge drinking frequency and age is also a significant predictor, with older respondents being less likely to commit an assault offence. In the female only model, however, the age squared term was significant and in a positive direction, thus modifying the negative age term slightly (see Model 4, Table 7.3). The reduction in the goodness of fit (DIC) in these models compared to the previous male only models suggest that the impact of binge drinking is slightly more important for females than males.

**Table 7-2 Model coefficients: predicting assault (base no assault offence) males**

	<i>Model 1</i>	<i>S.E.</i>	<i>Sig</i>	<i>Model 2 B</i>	<i>S.E.</i>	<i>Sig</i>	<i>Model 3 B</i>	<i>S.E.</i>	<i>Sig</i>	<i>Model 4 B</i>	<i>S.E.</i>	<i>Sig</i>	<i>Model 5</i>	<i>S.E.</i>	<i>Sig</i>
	<i>B</i>		<i>level</i>			<i>level</i>			<i>level</i>			<i>level</i>	<i>B</i>		<i>level</i>
Constant	-3.292	0.217	**	-0.024	0.565	n.s	-0.842	1.049	n.s	2.26	1.222	n.s	0.775	1.209	n.s
Sweep 2005	0.603	0.17	**	0.575	0.17	**	0.554	0.172	**	0.632	0.169	**	0.645	0.174	**
Sweep 2006	0.618	0.193	**	0.512	0.189	**	0.494	0.191	**	0.54	0.194	**	0.554	0.193	**
Age				-0.161	0.028	**	-0.112	0.063	n.s	-0.329	0.073	**	-0.247	0.071	**
Age squared							-0.006	0.007	n.s	0.012	0.007	n.s	0.009	0.008	n.s
Binge drinking never (reference category 'non or moderate drinker')										0.229	0.323	n.s	2.092	2.029	n.s
Binge drinking low (reference category 'non or moderate drinker')										1.171	0.244	**	2.01	1.24	n.s
Binge drinking high (reference category 'non or moderate drinker')										1.877	0.32	**	2.907	2.416	n.s
Binge drinking never.Age													-0.101	0.105	n.s
Binge drinking low.Age													-0.049	0.065	n.s
Binge high.Age													-0.059	0.121	n.s
Constant/Constant	5.129	0.895		4.763	0.87		4.82	0.846		3.889	0.745		4.011	0.732	
VPC	0.61			0.59			0.59			0.54			0.55		
DIC:	1874.773			1869.543			1867.79			1880.746			1879.104		
Units: caseref	1337			1337			1337			1337			1337		
Units: sweep	2726			2726			2726			2726			2726		

\*p ≤ .05; \*\*p ≤ .01, n.s. = non significant.

Model 1: overall contribution of sweep \*\*; Model 2: overall contribution of sweep \*\*; Model 3: overall contribution of sweep \*\*; Model 4: overall contribution of sweep \*\*; overall contribution of binge drinking \*\*; Model 5: overall contribution of sweep \*\*; overall contribution of binge drinking n.s.; overall contribution of age\*binge drinking n.s.

Table 7-3 Model coefficients: predicting assault (base no assault offence) females

	<i>Model 1 B</i>	<i>S.E.</i>	<i>Sig level</i>	<i>Model 2 B</i>	<i>S.E.</i>	<i>Sig level</i>	<i>Model 3 B</i>	<i>S.E.</i>	<i>Sig level</i>	<i>Model 4 B</i>	<i>S.E.</i>	<i>Sig level</i>	<i>Model 5 B</i>	<i>S.E.</i>	<i>Sig level</i>
Constant	-3.831	0.266	**	-0.437	0.645	n.s	2.181	1.274	n.s	4.766	1.455	**	3.756	2.257	n.s
Sweep 2005	0.385	0.183	*	0.392	0.189	*	0.458	0.191	*	0.602	0.191	**	0.66	0.22	**
Sweep 2006	0.321	0.2	n.s	0.289	0.201	n.s	0.362	0.211	n.s	0.502	0.215	*	0.565	0.238	*
Age				-0.17	0.033	**	-0.324	0.073	**	-0.497	0.086	**	-0.454	0.14	**
Age squared							0.016	0.007	*	0.031	0.008	**	0.035	0.015	*
Binge drinking never (reference category 'non or moderate drinker')										-0.11	0.316	n.s	0.819	1.801	n.s
Binge drinking low (reference category 'non or moderate drinker')										0.697	0.229	**	2.93	1.435	*
Binge drinking high (reference category 'non or moderate drinker')										1.274	0.382	**	6.884	2.708	*
Binge drinking never.Age													-0.048	0.088	n.s
Binge drinking low.Age													-0.113	0.07	n.s
Binge high.Age													-0.278	0.133	*
Constant/Constant	4.005	0.887		4.159	0.859		4.124	0.875		3.955	0.805		4.14	0.867	
VPC	0.55			0.56			0.56			0.55			0.56		
DIC:	1642.771			1614.06			1613.301			1610.19			1607.264		
Units: caseref	1602			1602			1602			1602			1602		
Units: sweep	3326			3326			3326			3326			3326		

\*p ≤ .05; \*\*p ≤ .01, n.s. = non significant

Model 1: overall contribution of sweep n.s; Model 2: overall contribution of sweep n.s; Model 3: overall contribution of sweep \*; Model 4: overall contribution of sweep \*\*; overall contribution of binge drinking \*\*; Model 5: overall contribution of sweep \*\*; overall contribution of binge drinking \*; overall contribution of age\*binge drinking n.s.

### **7.3.8 Model 6 – predicting assault from sweep year, age, age squared, sex, binge drinking and most likely class membership**

To incorporate the role of attitudes and expectancies in the longitudinal models a series of nested models were also run on a subsample of those for whom latent class membership could be assigned and for the other covariates featured in the previous models (n=1151). The results of which are displayed in Table 7.4 below. This smaller subsample is a non-random selection of the previously employed sample and will as such have distinct characteristics – for example, only drinkers will be assigned a ‘most likely class membership’ variable. In the models we can see that being male does not feature as a significant predictor of assault outcomes using this subsample – most likely, due to the reduced sample size in this group of nested models, and the gender and drinking profile thereof). It is also noteworthy that the binge drinking coefficients are also not significant in these models, once more perhaps explained by the previously established relationship between most likely classmembership and drinking behaviour identified in Chapter 5. Interestingly, however, most likely classmembership in 2006 features as a significant predictor of assault outcomes here over and above being male and binge drinking frequency, with the ‘problematic drinkers’ once more being those more likely to have committed an assault offence. Once more, age, age squared and sweep years were all significant covariates of assault outcomes as in previous models.

**Table 7-4 Model coefficients: predicting assault (base no assault offence)**

	<i>Model 1</i> <i>B</i>	<i>S.E.</i>	<i>Sig</i> <i>level</i>	<i>Model 2</i> <i>B</i>	<i>S.E.</i>	<i>Sig</i> <i>level</i>	<i>Model 3</i> <i>B</i>	<i>S.E.</i>	<i>Sig</i> <i>level</i>	<i>Model 4</i> <i>B</i>	<i>S.E.</i>	<i>Sig</i> <i>level</i>	<i>Model 5</i> <i>B</i>	<i>S.E.</i>	<i>Sig</i> <i>level</i>
Constant	-3.569	0.233	**	-0.001	0.582	n.s	2.066	2.332	n.s.	1.51	1.405	n.s.	2.041	1.834	n.s.
Sweep 2005	0.595	0.189	***	0.578	0.188	**	0.641	0.205	**	0.615	0.201	**	0.689	0.205	**
Sweep 2006	0.644	0.204	**	0.557	0.204	**	0.619	0.214	**	0.571	0.222	*	0.646	0.225	**
Age				-0.199	0.03	**	-0.322	0.14	*	-0.29	0.085	**	-0.367	0.115	**
Age squared				1.02	0.225	**	1.047	0.233	**	1.026	0.23	**	0.97	0.234	**
Male							0.013	0.013	n.s.	0.009	0.008	n.s.	0.017	0.011	n.s.
Binge drinking never (reference category 'non or moderate drinker')										-0.756	0.415	n.s.	-0.646	0.434	n.s.
Binge drinking low (reference category 'non or moderate drinker')										0.2	0.346	n.s.	0.18	0.365	n.s.
Binge drinking high (reference category 'non or moderate drinker')										0.289	0.439	n.s.	0.135	0.453	n.s.
'Positively motivated drinkers' (reference category 'social drinkers')													0.708	0.316	*
'Problematic drinkers' (reference category 'social drinkers')													1.522	0.352	**
Constant/Constant	4.878	0.904		4.318	0.861		4.498	1.116		4.35	1.026		4.286	0.899	
VPC	0.597			0.568			0.578			0.569			0.566		
DIC:	1519.667			1494.188			1491.963			1491.078			1477.291		
Units: caseref	1151			1151			1151			1151			1151		
Units: sweep	2480			2480			2480			2480			2480		

\*p ≤ .05; \*\*p ≤ .01, n.s. = non significant

Model 1: overall contribution of sweep \*\*; Model 2: overall contribution of sweep \*\*; Model 3: overall contribution of sweep \*\*; Model 4: overall contribution of sweep \*\*; overall contribution of binge drinking \*\*; Model 5: overall contribution of sweep \*\*; overall contribution of binge drinking \*; overall contribution of most likely class membership \*\*.



## 7.4 Discussion

The headline result reported above confirms those from the earlier logistic regression models (see chapter 6 and Lightowlers, 2011): the risk of committing an assault offence increases monotonically with increased binge drinking frequency and this is the case for both males and females. The positive age squared term modifies the negative effect of age in both the combined and female specific models so that the impact of age decreases the older the young person gets. This resonates with established findings concerning violent offending trajectories and criminal careers, as we would expect offending (as well as drinking) to be highest in the early stages of this age range and of tail off towards the end. However, it is surprising that this effect is not seen in the male only model, especially that many of the studies that established the evidence base for the age-crime curve were based on studies of males. The variance partition coefficients (VPCs) suggest that around half of the variation in assault is between people and the remainder is between occasions, suggesting that considering variation in violent offending in a developmental framework is an important part of understanding this problem. Results here also suggest that there is more variation in assault outcomes between males than between females and that the effect of low frequency binge drinking appears to be slightly greater for males than females.

The addition of drinking to the simpler multi-level model (only controlling for sweep year, age and gender) did not reduce the variance partition coefficient dramatically, and the insignificant interaction between age and binge drinking suggests that it is not necessarily the age at which young people binge drinking that is influencing violent outcomes. Taken together, these findings point to a contemporaneous association between drinking and violent outcomes – that is, it may be that increases/decreases in the probability of committing assault over time are dependent on levels of drinking. This is consistent with results reported elsewhere (see Hussong et al., 2004) and here findings seem to suggest binge drinking frequency operates more as a ‘snare’ for time specific increases in violent behaviour within an individual’s trajectory, rather than a distal ‘launching’ factor for

sustained increases in the potential for violent behaviour relative to the population norm. There may also be other time-varying factors influencing this variation not accounted for in the current models: many other social factors are known to influence changes in offending over the life course, such as establishing an identity, starting to make decisions for oneself, selecting peers and friendship networks, deciding on educational and/or employment pathways as well as dealing with events that life throws up. Therefore, further investigation of those factors pertinent to adolescence and early adulthood (such as changing peer and friendship networks; educational and employment transitions; as well life events and changes in marital status) in this framework is warranted.

Findings from the models controlling for most likely class membership highlight that attitudes or expectancies held about alcohol consumption are significant in predicting assault outcomes. Once more the 'problematic drinkers' emerge as the group most likely to perpetrate an assault offence. Once more, evidence is offered here that these attitudes/expectancy classifications mediate the alcohol-violence relationship to some extent and perhaps offer insights in how best to target limited resources when trying to address both reducing binge drinking and associated violence.

## **8 Chapter 8 Discussion**

The thesis has presented some interesting findings in relation to young people's alcohol consumption and its relationship with violence during the period of late adolescence and early adulthood. This chapter discusses key findings and themes drawing on existing literature and prominent research studies in the field. Policy relevant insights and implications are discussed, the shortcomings and limitations of the current study are acknowledged and areas for continued and further research identified.

The current study focuses predominantly on those over the age of 16, as there were low levels of regular drinking (once a month or more) in the under 16 age group. This corresponds to the approach taken in previous studies that have identified drinking as commencing in early adolescence and teenage years. Findings obtained on the demographics of those committing assault offences also correspond with the wider literature on violence which highlights younger people and males as being more likely to commit violent offences (see, for example, Huizinga et al., 2003).

The results obtained here replicate findings from the wider literature on criminal careers and the commonly observed 'age-crime curve'; for example, increased levels of violence amongst males in the 10-19 age range and subsequent decline in rates of violence in the late twenties (see review of the literature offered by Loeber et al., 2003). In particular, the findings agree with those of Hales et al. (2009), also using OCJS data, which identify a peak of violent offending around 14 and 15 years of age followed by a rapid reduction in offending.

The current findings point to a positive association between the frequency of heavy episodic drinking (or 'binge drinking') and the likelihood of committing an assault offence. These findings replicate those from previous cross-sectional studies of young people (for example, see reviews by McVeigh et al., 2005; WHO, 2006, as discussed in Chapters 1 and 2).

The current findings add to the existing evidence base that increased frequency of binge drinking appears to increase the relative risk of violent offending. Nonetheless, the statistical association found here does not imply causality as not all those involved in binge drinking are prone to violent behaviour: some of the subtleties of this relationship and potential additional moderating factors are discussed later in this Chapter.

### **8.1 Attitudes towards alcohol consumption and their role in the alcohol-violence relationship**

One aim of the current study was to identify whether attitudes and expectancies held about alcohol consumption mediate the relationship between alcohol consumption patterns and violent behavioural outcomes and, if so, how. Expectancies and attitudes held towards drinking and drunken comportment were hypothesised to mediate the relationship between alcohol consumption and violent behaviour. Analyses were thus performed to explore this further using the attitudinal and expectancy measures outlined in Chapter 5. Results from latent class analyses presented in Chapter 5 suggest three distinct classifications of individuals within the dataset, each holding varying attitudes and expectancies towards consuming alcohol. The three classifications identified here were labelled ‘social drinkers’, ‘positively motivated drinkers’ and ‘problematic drinkers’. Further analyses of these groups suggest the labels assigned to them were reasonable descriptions of the classifications and highlight that the ‘problematic drinkers’ were likely to drink more often and drink to excess more often as well as be more likely to commit an assault offence.

Further logistic regression models using individual attitudinal items, however, were run and highlighted agreement with the statement ‘when I drink I often do or say things I regret’ as being a significant predictor for assault outcomes. However, the effect of this covariate became insignificant once previous violent offending was controlled for. The attenuation of this coefficient, once a violent disposition was controlled for, suggested that it was more pertinent to consider individuals’ predisposition to violent behaviour rather than their attitudes towards drinking.

However, further modelling using the most likely class membership category from the LCA as a covariate in chapter 6 and 7 highlighted that those who were likely to be classified as ‘problematic drinkers’ were more likely to have committed assault, pointing towards ways in which limited resources to reduce binge drinking and associated violence might be targeted (further explored in section 8.1.3).

### **8.1.1 Overview and interpretation of the current findings**

Overall, the findings have highlighted distinct typologies of individuals who hold similar attitudes towards drinking. One of these typologies seems to constitute a group of ‘problem drinkers’ who may also drink excessively and/or be disproportionately likely to commit assault offences. Whilst the analyses presented in this thesis are unable to define the precise nature of the relationship between attitudes and/or expectancies held towards alcohol consumption and alcohol related violence, three hypothesised relationships based on the existing literature were tested. Firstly, it was hypothesised that some attitudinal statements might be akin to ‘problematic’ or ‘negative’ drinking motives (such as, ‘drinking helps me to forget my problems’). Other items might thus be considered motives for ‘social facilitation’ (for example, ‘drinking makes me feel more friendly and outgoing’). Using such a classification it is therefore purported that those who drink for negative reasons or to ‘cope’ (for example, to forget their problems), or who tend to experience negative outcomes, such as doing things they regret, may potentially be those associated with alcohol-related violent behaviour. A second hypothesis was that there might be two underlying factors or classifications, one of which constitutes a group of ‘problematic drinkers’ and another that drink for social facilitation. A third potential hypothesis suggests some of the items might be expectancies (anticipated outcomes of alcohol consumption), whereas others were more likely to be motives for drinking.

The findings here do not support any of the above outlined original hypotheses fully. However, elements of both the first and second may be valid, as the ‘problematic drinkers’ classification loads more heavily onto agreement with items such as ‘drinking makes me feel relaxed’, ‘drinking makes me feel more friendly

and outgoing', 'I drink to get drunk', 'drinking helps me to forget my problems', and 'when I drink, I tend to do things I regret'. This suggests that the 'problematic drinkers' group (which is also associated with higher levels of alcohol consumption overall and thus this group are potentially using alcohol for a wide range of reasons in differing circumstances) are more likely to drink for anticipated positive outcomes (such as relaxing, forgetting their problems and to be more friendly and outgoing) and potentially have problematic motives for drinking, such as drinking to get drunk and to forget their problems.

Combined with the further finding that those who believe alcohol will potentially have a positive effect on their behaviour (that is, they disagree alcohol will make them do things they regret) are also more likely to commit an assault offence, the findings obtained here loosely correspond to findings from the ESPAD survey<sup>63</sup> which suggest that positive expectancies<sup>64</sup> were held about drinking in cultures which also drink more, but that also experience more harm as a result of drinking (Andersson and Hibell, 2007). Andersson and Hibell (2007) also found that light drinkers often have negative expectancies towards drinking; however, comparative findings to contrast against these could not be obtained here using the OCJS measures as these were only asked of regular drinkers.

The findings obtained here also add some empirical evidence to concerns raised by Parker (2008) about young people drinking to 'cope' or deal with their problems; this is symptomatic of dependent lifestyle heroine abuse in the 1980s, rather than using alcohol for pleasure and leisure (sometimes termed recreational substance misuse). It is, however, important to note that there may be other processes in operation, which could explain some of the clustering of individuals in groups (and associations of the attitudes with violent outcomes). For example, those who thought alcohol may make them do things they regret minimise or moderate their drinking, their exposure to risky drinking environments, and/or select different peer groups to avoid violence potentially based on previous adverse experience.

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<sup>63</sup> A survey of 15-16 year old school pupils in 26 European countries.

<sup>64</sup> Such as believing it was likely they would feel happy, relaxed, more friendly and outgoing, have a lot of fun and forget all their problems after drinking.

### 8.1.2 Links to existing literature, research and theory

Work on attitudes and expectancies in relation to alcohol consumption really started in the 1950s and 1960s and two main strands of work looking at reasons for drinking emerged using population surveys. The first was championed by Harold Mulford in Iowa (see Mulford & Miller, 1960 for the original article in this tradition). The other was the Berkeley/Washington DC tradition of Knupfer and Cahalan, which included reasons for drinking in their studies (see Knupfer et al., 1963 and Cahalan et al., 1970). The findings from both bodies of work suggested that such items could be fitted on a Guttman scale, which meant essentially that those who gave 'personal' reasons (for example, "to forget everything", "because I need it when I am tense or nervous" and "for relaxation") also gave social reasons (such as "to be sociable") and tended to drink considerably more heavily than those who gave only sociability reasons. However, the ways in which such findings ought to be interpreted caused concern amongst sociologists; for example, "drinking to forget" was recognised as a 'bad' sign in the US population, but sociologists drew on the work of Mills (1940) and debated whether respondents saying "yes" had more to do with whether they were comfortable acknowledging a potential problem than with internal motivations (see notes on discussion on the meaning and measurement of motivations for drinking captured by Room 1984). Since then, work in this area has been limited and the links between motivations for alcohol use behaviours are not well understood.

In recent psychological research, a new tradition has emerged exploring reasons for drinking and social norms amongst US college and university students. However, reference to the earlier literature of the 1960s and 1970s is largely absent in this body of work. For example, in their study of college students, Patrick and Maggs (2010) use latent profile analysis<sup>65</sup> to identify drinking motivational profiles. These include motives *for* drinking, such as having fun and socialising, relaxation, coping, image, and sex; and motives *against* drinking include physical and behavioural motives. They also identified specific sexual motivations *for* and

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<sup>65</sup> This technique is akin to latent class analysis as used in the current study, but using continuous manifest variables and categorical latent outcome variables (categories).

*against* drinking<sup>66</sup>. Whilst sex motivational profiles were found to be associated with sexual experiences, drinking motivational profiles were associated with alcohol use and psychosocial adjustment. The authors conclude that differentiated intervention programmes should be targeted at those with different and distinct profiles of motivations and reasons for engaging in risk behaviours (Patrick and Maggs, 2010).

In reviewing the literature, Patrick and Maggs (2010) identify that adolescents and young adults tended to drink to enhance positive mood, to reduce negative mood, to obtain social rewards and avoid social alienation. Findings from the studies they review also suggest that 'social drinkers' were associated with more moderate alcohol use, whilst 'enhancement drinkers' were more likely to engage in heavy alcohol use. Furthermore, individuals with coping motivations for drinking tended to display drinking problems and addictions (Cooper et al., 1995; Cox & Klinger, 1988; Kuntsche et al., 2005), with the latter group also being at increased risk of experiencing negative consequences as a result of drinking (Patrick and Maggs, 2010). Their own "findings are consistent with this pattern, with higher negative alcohol-related consequences, lower peer self-image, and higher neuroticism among individuals highly motivated to drink (including coping motivations)" (Patrick and Maggs, 2010:763). Kuntsche et al.'s (2005) study also suggests that social motives are the most common motives for drinking whilst a minority of college students drinks to cope, which resonates with the findings obtained in the current study (see Chapter 5).

Yurasek et al. (2011:992) suggest the key assumption of motivational models is that they posit "that alcohol use is often motivated by specific benefits, including using social incentives, coping with negative affect, enhancing pleasant feelings, and conforming to peers' expectations (Cooper, 1994; Cox and Klinger, 1988)". They also highlight that drinking motives tend to vary by internal reinforcement (i.e., enhancement and coping), external reinforcement (i.e., social and conformity), as well as by positive reinforcement (i.e., enhancement and social) and negative

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<sup>66</sup> For example, sexual motivations *for* drinking included enhancement, intimacy and coping; sexual motivations *against* drinking included not being ready, health and values.



reinforcement (i.e., coping and conformity). Moreover, they go on to suggest that empirical studies looking at motivational factors find that “internal reinforcement of enhancement and coping motives generally show a stronger relationship with alcohol-related outcomes than the more externally reinforcing effects of social and conformity motives (Cooper, 1994; Cooper et al., 1992)” and that “enhancement motives are more strongly related to alcohol consumption, whereas coping motives are more strongly associated with alcohol-related problems (McCabe et al., 2002; Neighbors et al., 2004; Read et al., 2003; Schall et al., 1991; Stewart and Devine, 2000; Wood et al., 1992)” (Yurasek et al., 2011:992).

The results obtained in the current study can be compared to the three groupings identified by Cooper et al. (1994) who, using their drinking motives questionnaire, identify three classifications of drinking motivations: ‘social’, ‘coping’ and ‘enhancement’ motives, although Cooper later modifies this classification and identifies an additional ‘conformity’ classification (Cooper, 1994). However, the available measures in the OCJS were chosen by data collectors and are not seemingly grounded in the literature reviewed here. Nonetheless, they are reminiscent of the old Berkeley/Washington tradition; although, only later (in the 1970s) was it acknowledged how scholars had circled around the obvious in our alcohol tradition and recognition given to the fact that people ‘drink to get drunk’ (Room, 2010, personal communication).

### **8.1.3 Policy relevance and avenues for further research**

It seems that there may be a distinct type of “problem drinker” and there may be some merit in targeting resources to high volume and problematic drinkers in order to prevent alcohol-related violence as well as previous violent behaviour acting as a trigger for violence prevention programmes. In addition, rather than simply attempting to alert young people to recommended and safe alcohol consumption limits or the negative health implications of alcohol consumption, there may be additional value in working with young people to tackle some of the problems and difficulties they face. For example, signposting them to or providing them with services to address these and so avoiding them turning to alcohol to ‘cope’ or

'forget'. In this study, as in the work of Patrick and Maggs (2010), there is evidence to support differentiated, tailored and targeted intervention at distinct groups of young individuals that have similar attitudes and motives for drinking.

On the back of studies of norms held about alcohol consumption amongst students in the US, there has been a recent increase in the popularity of social marketing and 'social norms' campaigns targeted at challenging the 'norms' held about alcohol consumption amongst young people. Such approaches aim to challenge beliefs about what constitutes normal, accepted, negotiated behaviour and so aims to modify misapprehensions surrounding alcohol use and in turn influence attitudes and drinking behaviour. Findings from a series of studies on social norms conducted in the north of England suggest that young people tend to overestimate the alcohol consumption of their peers compared with their actual level of consumption (see Burrows et al., 2010; Burrows et al., 2009; Lightowlers et al. 2009a; Lightowlers et al. 2009b) as do studies conducted in the US which identify a link between the perceptions of others' drinking and own consumption levels (Neighbours et al., 2007; Borsari and Carey, 2000). These studies collectively suggest that work around targeting social norms may be beneficial.

Given the tentative conclusions that have been drawn here and the inability within the limitations of the data to establish whether attitudes have a direct effect on alcohol consumption or violent behaviour, further work examining the role of expectancies and the way in which these mediate and/or moderate alcohol-related violent behaviour is encouraged. Such work would ideally focus on how attitudes and/or expectancies may be moderating alcohol consumption and/or violent behaviour and also consider the role of situational factors (such as type of drinking establishment).

## **8.2 The association between prior violent offending and binge drinking on violent offending amongst young people**

A second aim of the current study was to examine how changes in alcohol consumption patterns and pre-existing tendencies to violence impact on the

strength of the association between alcohol consumption and violent behavioural outcomes.

### **8.2.1 Overview and interpretation of current findings**

Previous violent behaviour (having committed an assault offence in the previous year) was used to control for those with a tendency for violent behaviour in the cross-sectional modelling and test whether earlier violent behaviour was associated with future violent offending. In all the logistic regression models (in which it was used) this variable had a large and statistically significant coefficient and therefore was a significant predictor of whether the individual would commit an assault offence in the following year. This resonates with the hypothesis that those with a violent temperament or who are repeatedly exposed to situations which can become violent may be more likely to engage in such behaviour again, as suggested by much of the literature reviewed in Chapter 3; for example, many studies have previously identified childhood violent behaviour as a risk factor for adult violent offending (see studies by Herrenkohl et al., 2001; Hawkins et al., 2000), and Farrington (Farrington 1989a; 1991b) consistently identifies significant continuity between childhood aggression and adult violence in his study of young males.

### **8.2.2 Links to existing literature, research and theory**

Developmental frameworks, such as that proposed by Farrington (1992), seek to understand offending and the frequency of offending by analysing the risk factors an individual is exposed to over time, especially in the early stages of juvenile development. Thus, in order to effectively evaluate potential risk and develop suitable programmes for young people who commit violent offences and also consume alcohol, further detail on how this dynamic risk varies over time and at different stages in the life course is necessary; that is, whether violent behaviour and/or alcohol consumption pose an ongoing or delayed risk as well as a well-documented proximal risk factor for violent offending. Findings obtained in the current study suggest, firstly, that binge drinking is associated with assault

outcomes amongst young people; secondly, that the strength of the association between drinking and violent behaviour increases with increased binge drinking frequency; and, thirdly, that this effect is temporally proximal (that is, both occur in the same year), thus suggesting a contemporaneous association between heavy episodic drinking and violence. These findings build on the small number of studies in this area which focus on US samples and which offer incongruent findings (see Huang et al., 2001; Swahn and Donavan 2004; Blitstein et al., 2005; White et al., 1993 as reviewed in chapters 3 and 7) and also correspond to long standing evidence of the nature of the alcohol-violence relationship; that is, that both alcohol consumption and violent behaviour often co-occur at similar stages in the life course and that alcohol can cause some social situations to escalate into violent incidents especially in high risk settings.

The finding that those who have previously committed an assault were much more likely to commit another assault offence also resonates with Moffitt's (1993) dichotomous classification of 'life course persistent' and 'adolescent limited' offenders, and with the well established finding (highlighted by Huizinga et al 2003; Khron and Thornberry, 2003; Thornberry et al., 2003; Farrington, 1991; 2003; Shaw and Gross, 2008) that a small minority of chronic offenders who account for the vast majority of offences. However, we also know that the frequency at which active offenders offend is not necessarily static and that offending can be intermittent, thus the findings here should be treated with caution. Further, longer-term longitudinal work would be required to further tease out offending trajectories and patterns more specifically.

The reviewed literature also suggests an increased likelihood of violent offending as a result of having previously been a victim of violence for various potential reasons, such as exposure to high risk settings, or having learned to resort to violence as a response to conflict and frustrations, or by engaging with delinquent peers as advocated by the social learning theory (see Bandura, 1977) and Aker's (1998) Social Structure - Social Learning Theory (as tested by Lanza-Kaduce and Cpece, 2003). It may also be that prior violent victimisation impacts on subsequent alcohol consumption and therefore subsequent violent offending, as experience of

violence in childhood or later life has been associated with the development of heavy or problem drinking (Plant and Plant 2002). However, this could not be explored further in this study due to problems with the victimisation module in the OCJS as will be further discussed below in section 8.6.1.3. Further work investigating the overlap between violent victimisation and perpetration as well as potentially looking at the role of violent victimisation on alcohol consumption and violent offending is, however, encouraged. For example, separate analyses could be run on subsamples, that is, those who have been victims of violence and those who have not. This was, however, outside the scope of the current study, which focused on violent offending rather than victimisation.

There are also many other potentially important covariates of violent offending that could have been considered and controlled for, including socio-economic status, behavioural problems, delinquency, school performance and family problems. However, whilst these can be important in adequately explaining processes that lead to offending behaviour and testing theories that seek to explain criminal behaviour, these detract from the focus of the current thesis which was on attitudes, prior violent offending and drinking patterns and so were not included. They are, however, alongside some of the other outlined options, areas for further investigation.

### **8.2.3 Policy relevance and areas of further research**

The findings reported here suggest it is important to consider prior violent offending when assessing the relative risk of further violent offending and thus imply such behaviour ought to act as a trigger for intervention in violence prevention and reduction programmes, as previously identified. The findings reported here also suggest that both prior violent offending and binge drinking excessively are potential risk factors for violent behaviour and are worthy of consideration in potential interventions aimed at reducing violence and reoffending. These risk factors have been identified in many of the other studies reviewed in this thesis (see Chapters 2 and 3) and such research has informed interventions aimed at targeting the prevention of youth crime in the community, for example, in attempts

at offering diversionary activities to alter young people's routine activities and engage them in meaningful activities and leisure pursuits (rather than street drinking).

In criminal justice responses, structured behavioural programmes are often targeted at offenders who have perpetrated a violent offence, or whose offending is alcohol or substance misuse related (see, for example, Control of Violence for Angry Impulsive Drinkers (COV-AID)). Amongst the adolescent offending population such interventions address the issue by focusing on personality specific motivational pathways which "have been found to reduce coping motives and alcohol consumption (Conrod et al., 2011)" Yurasek et al. (2011:992). Evidence obtained here tends to support the need for such programmes to address both the issue of violent offending as well as alcohol consumption in reducing violent offending, although it does not elucidate specifics of how such programmes should be delivered. There is, however, a whole body of research investigating the effectiveness of such interventions and the use of cognitive behavioural therapy in addressing addictions and offending behaviour otherwise known as the 'What works' paradigm, aimed at delivering interventions and practice grounded in a sound evidence base (see Dowden and Andrews, 2000 for a meta-analysis on the treatment of violent offending and Andrews et al.'s 1990 review of the four principles of rehabilitation).

Andrews and Bonta (2006) note the importance of identifying and targeting criminogenic needs (dynamic risk factors that can be modified) amongst those that offend. In order to reduce reoffending and encourage offenders to cease offending, they also advocate delivering appropriate treatment by matching services with personality, motivation and ability as well as with demographics such as age, gender, and ethnicity. The development of research aimed at identifying and defining risk factors has provided much of the evidence base influencing the ways in which the Probation Service addresses substance use and criminality (see commentary by Maurutto and Hannah-Moffat, 2006). For example, the Probation Service's Offender Assessment System (OASys) identifies factors such as social, economic and lifestyle factors, use of drugs and alcohol, psychological problems,

and personal needs revolving around offending behaviour in order to calculate the likelihood of those who offend being reconvicted, to assess the risk of harm to others, and to indicate the need for further specialist treatment. The current study builds on this evidence base and can thus further inform the development of such actuarial risk assessment tools, for example, by highlighting the associated risk of violent offending with heavy episodic drinking patterns and prior involvement in violence, and the need to address these as part of violent offending behaviour amongst young people.

Given that treatment for alcohol problems and dependence is increasingly coming under the auspices of health services, in order to tackle alcohol related violence, treatment ought to be delivered in partnership with criminal justice to increase its effectiveness (as advocated in the current Ministry of Justice Business Plan in relation to drug dependency and the recent Green Paper on Transforming Justice; MoJ, 2011 and CSJ, 2010). However, few community penalties are specifically targeted at addressing alcohol misuse, fewer still are targeted at young people, and approaches for doing so are not standardised across authorities/probation areas (see CSJ, 2010 for a review of the current situation in relation to drug and alcohol treatment for people who offend in England and Wales), despite evidence here that alcohol consumption is widespread amongst young people over 16 and that their consumption patterns greatly affect the propensity to offend. Moreover, Andrews and Bonta (2006) also emphasise that effective treatment and clinical supervision of people who offend requires specific responsivity of assessment instruments to enhance public protection from repeat offending. Thus, the support required by young people who offend to tackle their alcohol abuse ought to be evidence-based and targeted to their specific needs; it is therefore important to accurately identify these in relation to violent offending.

However, interventions tailored at violent offenders still need to be specifically tailored to individual circumstances, mental health needs and offending patterns (such as instrumental or expressive violent behaviour), as prior violence can predict future violent offending with considerable accuracy. For example, Rice (1997) highlights that wrongly targeted therapeutic programmes in rehabilitating

violent offenders in a mental health context can actually increase the likelihood of recidivism for certain offenders. Howells and Watt (1997) also stress that delivering broad generalised treatment packages to violent offenders in prison and correctional settings means the specific needs of individuals are not being met and may be inappropriate (such as for those who use instrumental violence, for example, psychopaths) as violent offenders are a heterogeneous group. Therefore, the authors call for programmes that have an adequate theoretical basis for individual problem formation, population needs analysis, breadth of approach, cultural relevance, systemic integration, targeting of programmes at high-risk offenders, and evaluation of outcomes (Howells and Watt, 1997).

### **8.3 The temporal and developmental links between binge drinking and violent offending**

The final aim of this thesis was to examine how changes in alcohol consumption over time impact on violent behavioural outcomes over time, given the multiple transitions associated with the period of late adolescence and young adulthood. The temporal relationship between both drinking and violent behaviour amongst young people was thus examined to elicit insights into how alcohol consumption poses a risk for violent offending during this stage in the life course.

In order to effectively evaluate potential risk and develop suitable programmes for young people who commit violent offences and also consume alcohol, further detail on how this dynamic risk varies over time and at different stages in the life course is necessary; that is, whether alcohol consumption poses a temporally ongoing risk or delayed risk as well as a well-documented proximal risk factor for violent offending. Such insights offer a more detailed understanding about the temporal factors associated with the risk of alcohol-related violent offending.



### **8.3.1 Overview and interpretation of current findings and links to existing literature, research and theory**

#### **8.3.1.1 Temporal relationship and developmental findings**

Here evidence of a contemporaneous association between excessive alcohol consumption and violent behaviour has been found (suggesting increases/decreases in the probability of committing assault over time are dependent on levels of drinking). These findings resonate with those obtained by Hussong et al., (2004) who find that substance use during early adulthood is associated with time-specific variations away from individuals' long term patterns of aggressive behaviour. It thus appears from findings in the current study that binge drinking frequency is likely to operate as a time specific 'snare' for increases in violent behaviour, rather than a distal 'launching' factor for sustained increases in the potential for violent behaviour within an individual's trajectory.

Findings from the longitudinal multi-level models in Chapter 7 also suggest there is temporal variation in the outcome variable associated with binge drinking behaviour and that binge drinking may thus make assault outcomes more probable regardless of age (in this particular range from 16 to 29 years old). These findings thus emphasise the importance of considering variation in violent offending within a developmental framework as an important part of understanding the association between binge drinking and violent behaviour. Furthermore, a positive age squared term in the longitudinal models in Chapter 7 modifies the negative effect of age so that the impact of age decreases the older the young person gets, as seen in other accounts of violent offending trajectories which suggest that offending (as well as drinking) is highest in the earlier stages of this age range and tails off towards the end. Finally, given that the effect of age increases once binge drinking frequency is controlled for in the multilevel models (see Chapter 7), it also appears there may be a distinct group of binge drinkers who continue to drink and who are more prone to violence when drunk. Conversely, it seems plausible that there is also a group of non-binge drinkers who experience a reduced propensity of violent behaviour with increasing age.

### **8.3.1.2 Gender specific processes**

Whilst White and Hansell's (1996) study yields findings suggesting the alcohol-aggression model operates differently for males than females, as do those obtained by Blitstein et al. (2005), others explore the extent to which gender modifies predictors of violence and do not find an interaction for gender and heavy episodic drinking to be significant (Swahn and Donovan, 2004). Evidence obtained by Huang et al. (2001) presents a further mixed picture on gender specific process in the alcohol-violence relationship, as they did not find that sex moderated the reciprocal effect of aggression and alcohol use in their study. Findings in the current study (see models run in Chapter 7) suggest that there is more variation in assault outcomes amongst males than females and that the effect of low frequency heavy episodic drinking appears to be slightly greater for males than females. Interestingly, although the age squared term modifies the effect of age in the combined and female-only models, so that that the impact of age decreases the older the young person gets, this effect is not seen in the male only model. This contradicts the many prior studies which established the evidence base for the age-crime curve amongst males.

### **8.3.2 Policy relevance**

Whilst some previous studies have found negative effects of early drinking on later health and social outcomes, others hypothesise that individuals mature out of adolescent drinking or antisocial behaviour, as highlighted by McCambridge and Rowe (2011). Each process has a potentially different implication for the development of policy concerned with reducing alcohol related harm and violence. "If adolescent drinking does not cause later difficulties in adulthood then intervention approaches aimed at addressing the acute consequences of alcohol, such as unintentional injuries and anti-social behaviour, may be the most appropriate solution. If causal relationships do exist, however, this approach will not address the cumulative harms produced by alcohol, unless such intervention successfully modifies the long-term relationship with alcohol, which seems unlikely" (McCambridge and Rowe, 2011:1). Evidence here does not definitively point to one

or the other, but does suggest that there is merit in considering contemporaneous violent behaviour and alcohol consumption alongside developmental variation in alcohol consumption over the period of young adulthood. Findings here suggest that reducing alcohol consumption in late adolescence will, in turn, reduce the prevalence of violent assault offences in and immediately after drinking occasions in line with Huang et al.'s (2001) conclusion that "reducing one behaviour will probably not have a long-term impact on the other" however that "early prevention efforts aimed at shared risk factors may reduce both [alcohol consumption and violent behaviour] contemporaneously" (Huang et al., 2001:64). The current findings also suggest that there may be developmental fluctuations in both alcohol and violent behaviour during young adulthood. Further evidence and more specific studies on mediators and moderators of the effects of alcohol on violent behaviour are however required to ascertain whether alcohol consumption predicts later violent behaviour. Although, in their review of adult consequences of adolescent alcohol consumption, McCambridge and Rowe (2011) highlight a need to develop a longer term perspective on harm reduction in relation to alcohol consumption and poor health outcomes and later alcohol problems more generally.

The current study provides a better understanding of the dynamic role of alcohol on the risk of violent offending over the stages of young adolescence and early adulthood; thus it is possible to illicit a number of important practical and policy implications and insights into how to target community intervention in the prevention of alcohol-related violence at relevant and timely stages in the life course. The current findings lend support to situational crime prevention techniques which aim to reduce the likelihood of violent incidents in high risk drinking environments (as outlined in Chapter 2), however, they also suggest there may be additional merit in targeting interventions at young people when they show marked increases in binge drinking behaviour, and also tackling this behaviour amongst young people promptly as they navigate through the transitions between late adolescence and early adulthood (as well as targeting attitudes held towards drinking and motives for drinking as outlined in section 8.1.3). Further work on eliciting more detail on developmental aspects of the alcohol-violence relationship

would inform and help further develop criminal justice actuarial risk assessment tools; it is therefore an important area for further research.

#### **8.4 Wider links to criminological theory**

Theories focusing on individuals, impulse control and behavioural modification, such as the rational choice theory (proponents of which include Gottfredson and Hirschi, 1990 and Moffitt, 1993), suggest the need to modify individual behaviour, and findings presented here could be seen as supporting this. However, this is not to ignore the influence of social context and structure, which has not been explored in depth in this study. It is likely that social-structural inequality also has a role to play in where we might find higher proportions of alcohol-related violence; that is, that social systemic marginalisation and deprivation is likely to result in disproportionate rates of alcohol consumption as well as violent behaviour. For example, there is evidence to suggest that more deprived areas and impoverished communities are disproportionately targeted with off-licence provision (see, NWPHO, 2007). Furthermore, these areas have higher levels of crime, for example, due to more difficult life course trajectories as a result of poverty and lack of education or employment opportunities which exacerbate the processes leading to delinquent behaviour (Thornberry, 2003). Moreover, increased alcohol availability has been linked to increased health and social problems, including violence (see, for example, Sivarajasingam et al., 2006), and higher rates of intentional injury are closely linked to poverty and inequality (Shepherd and Farrington, 1993). In light of such evidence, it therefore seems plausible that social-structural processes may also be influencing alcohol-related violence trends.

It is also important to note that other influences, as well as cultural factors and norms briefly explored in the current study, are likely to impact on the potential for alcohol-related violence behaviour, such as bonds and ties to pro- or anti-social peers and perceived rewards of adopting pro- or anti-social behavioural choices, as advocated in Edwin Sutherland's Differential Association theory (1924; 1947), Bandura's Social Learning Theory (1977), and the Social Development Model (see Catalano and Hawkins, 1996). However, these have not been accounted for in the

current study and thus further work building on the current models and accounting for such factors is encouraged.

## **8.5 Wider policy relevance and implications**

### **8.5.1 Individual level explanations and intervention**

Whilst a relationship between heavy episodic drinking, violent behaviour and their timing in the life course has been identified in the current study, there remain important unanswered questions. For example, what factors affect whether young people either persist with or ‘grow out’ of both excess drinking and violent offending? And do changes in one behaviour impact on the other? Changes in drinking and violent behaviour during adolescence and young adulthood and the processes associated with the onset, development and cessation remain relatively unexplored and unexplained. Further work could be done to address the question of whether the development of violent behaviour amongst young people is associated with the development of particular alcohol consumption patterns, with the aim of identifying key risk factors for young people’s problematic drinking and violent behaviour. Particular attention ought to be given to cultural beliefs, developmental changes and lifestyle factors. Identifying such risks could further illicit insights into how to manage and prevent the risk of excessive alcohol consumption and associated violent behaviour during the periods of adolescence and young adulthood and inform the ‘What work’s’ evidence base in rehabilitating young offenders and reducing violent recidivism (see, for example, Andrew’s and Bonta’s (2010) ongoing meta-analysis of predictors of recidivism, including violent recidivism).

Initially, the findings obtained in the current study seem to lend support towards intervening in young people’s behavioural trajectories when they exhibit high frequencies of binge drinking or increases in binge drinking frequency. Interventions targeted at known violent offenders with alcohol or substance misuse problems often focus on modifying substance misusing behaviour and impulse control to reduce recidivism (using models predominantly grounded in rational

choice theory). However, as no causal ordering can be identified in the current study, nor could alcohol be determined as a feature of violent offending at the time of the offence, such drinking patterns do not necessarily result in violent behaviour and caution must be issued in assuming binge drinking as a risk factor for violent offending. Further longitudinal research would be required to enable the identification of groups and offending trajectories and thus inform targeted and time-specific intervention. Such work has been championed by other scholars, for example, Thornberry et al. (2003) summarise findings from the Rochester Youth Development Study in relation to criminal careers and highlight that chronic violent offenders tend to be heavily involved in other forms of offending, including drug use, and the careers of chronic violent offenders tend to start earlier, end later and develop from minor aggression at younger ages to more serious violence when older. However, the extent to which individual intervention can be targeted at those who are not known offenders is also morally questionable and is debated widely in the literature surrounding risk factor research (see Case and Haines, 2008)<sup>67</sup>. There are also many other potential mediators that could operate to facilitate or prevent violent behavioural outcomes following alcohol consumption that are not accounted for here. These may include level of education, social bonds and ties to pro- or anti-social peers, personal impulse control and responsibilities, or indeed contextual and situational factors, such as the drinking environment, which will be considered in the following section.

How narratives are framed to 'explain' individual violent behaviour and drinking will greatly influence the way in which policy seeks to address it. For example, generalised monocausal explanations based on models of uncontextualised individual choice and moral irresponsibility invoke simplistic, ineffective and unsustainable 'kneejerk' policy responses which fail to look at and address the systemic failure of the state to provide opportunities and resources for young

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<sup>67</sup> Shepherd and Farrington (1993:91) highlight that the advantage of focusing on high risk individuals and groups is that scarce prevention resources can be targeted more efficiently. However, this needs to be balanced against the disadvantage of some children potentially being stigmatized by early identification and labelling. They thus suggest that "in order to minimize the possibility of stigmatization, it might be better to target prevention efforts on communities at risk rather than on individuals at risk."

people which may contribute to higher rates of criminal behaviour. Such simplistic interpretations, fail to account for contextual and societal influences (explored in more detail below). In order to encourage policy responses that adequately address these issues, perhaps more aptly and accurately the 'problem' of alcohol-related violence amongst young people ought to be framed as a problem of traumatised children who have been brought up in communities in which violence and alcohol consumption is potentially rife and opportunities for legitimate leisure, educational and employment pursuits are limited.

### **8.5.2 Contextual explanations and situational crime prevention**

Whilst individual factors and explanations go some way to explaining the alcohol-violence link, they do not adequately explain why some areas and environments systematically see more alcohol-related violence than others. Ecological studies have consistently identified higher rates of alcohol-related disorder and violence within city centres, and pointed to the fact that higher levels of violence can be found in more deprived communities (see, for example, the study by Jones et al., 2011). Contextual factors thus shape rates of violence (1) by affecting the development of individuals within an area (that is, by creating more individuals prone to offending) as well as (2) by shaping an area or environment itself, which may make it more criminogenic (that is, attracting higher rates of offending).

In the case of the former process, contextual factors may shape the environment, which in influences the behaviour and development of those who live or operate within it. For example, more deprived communities tend to experience higher levels of violence as a result of many processes associated with the socially corrosive powers of inequality; namely, that social relations are often poorer in more hierarchical societies as a result of competitive social strategies (compared to more affiliative social strategies associated with more egalitarian social structures; Wilkinson, 2004) and more punitive and violent government policy (Wilkinson and Pickett, 2009). As a result, lower collective efficacy is fostered in such areas (which mediates violence, see Sampson et al., 1997) which, in turn, fosters such conditions further. Higher rates of alcohol-related violent offending are also found

in disadvantaged areas, which often have higher rates of harmful drinking (NWPFO, 2007) and which may have minimal provision of other more wholesome leisure pursuits, and potentially more people turning to alcohol to cope with their impoverished situation and/or frustrations.

Whereas, when considering the situational determinants of high levels of offending, as outlined in the second process, it is worth noting that “the effects of drinking depend upon the alcohol consumed, the drinker and the setting in which consumption occurs” (Plant and Plant, 2002:207). In this framework, there is thus a need to consider the characteristics of ‘high-risk’ environments (e.g. poorly managed pubs and clubs as well as city centres). For example, the proliferation of licensed venues to attract economic growth in city centres especially at night) has resulted in an environment ‘prone’ to alcohol-related disorder and violence. It is also worth noting that disadvantaged areas, in which rates of harmful drinking are consistently higher (NWPFO, 2007), are also areas in which alcohol is readily available as a result of high concentrations of licensed premises and outlets selling low cost alcohol (Sivarajasingam et al., 2006).

At a local level, there are systematic differences in the rates of alcohol-related violence occurring in different drinking venues (for example, as highlighted by administrative data such as A&E admissions; see the work of the Trauma Injury and Intelligence Group (TIIG)<sup>68</sup>). Many scholars have reviewed the literature and conducted empirical studies examining the impact of the structural layout, health and safety, and serving policies of venues on the proportion of alcohol-related violence associated with that venue. They systematically identify higher rates of alcohol-related violence associated with particular traits, such as poor management (see Bellis et al., 2007b), lax serving policy, tolerance towards alcohol-related violence and criminality or a culture of ‘promiscuity’ (Graham and Homel, 2009). Additional traits include uncomfortable settings with limited seating or ‘vertical’ drinking establishments aimed at selling as much alcohol as possible (Bellis et al., 2007b), as well as competition for facilities amongst patrons (for

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<sup>68</sup> <http://www.tiig.info/>



example, queuing for drinks and/or toilets Bellis et al., 2007b). To manage these problems many initiatives aimed at responsible serving and management by licensees has been developed in recent years and situational crime prevention techniques are often employed in and around licensed premises (for example, police patrols, street lighting and CCTV) to enhance safety and manage violence when it occurs - such measures may even be made prerequisites of a venue's licensing conditions. A large body of work (for example, that championed by Homel et al 1992; Graham and Homel (2008); Homel, McIlwain and Carvolth, 2001) has looked at the modifiable factors associated with nightlife and drinking environments that can reduce alcohol-related aggression and violence and suggest that key factors in reducing nightlife and alcohol-related violence comprise situational factors and effective urban and premise management as well as regulation change.

Whilst approaches aimed at modifying drinking and nightlife environments can be useful in managing the immediate problem of alcohol-related violence by containing it and minimising immediate harm, they ignore the wider social and cultural factors which shape drinking and violent behaviour and the wider harms these can cause, as well as fail to address the excessive and potentially irresponsible drinking behaviour itself. Furthermore, although such situational techniques can minimise incidents occurring in the nightlife venues/premises themselves that can also displace the problem, causing incidents to spill out onto the streets, occur in late night food venues or taxi cabs, or even in the home after returning from an evening out. However, it is also important to note that situational aspects, and indeed situational *motivations* (influenced by the interplay of family, peer and community context during an individual's life), influence the alcohol-violence relationship – with community and cultural variables playing an important role as a set of background, contextual, sensitising and energising factors that explained why some people drink more and indeed commit alcohol-related violent offences. Indeed, at a wider population level, in order to tackle some of these wider issues (alongside local and situational prevention initiatives), wider cultural and socio-economic changes need to be encouraged in order to reduce alcohol-related

violence (see Levi, 1997 and Chapter 2). However, policy responses are often limited in their aims of modifying these wider societal issues as they can be resource-intensive and require sustained long-term investment.

### **8.5.3 UK criminal justice policy**

Current UK government policy responses to the problems of youth violence in England and Wales predominantly centre around gangs, gun and knife crime (for example, policy strategy document '*Ending Gang and Youth Violence*', HM Government, 2011; see also commentary by Shute et al., 2012), however, despite evidence of a widespread gang problem in the UK (with the definition of what constitutes a gang being widely contested by academics; see Bullock and Tilley, 2008; Hallsworth and Young, 2004; Howell, 2007) gun and knife crime incidents remain relatively rare (Sharp et al, 2006). Conversely, the scale of the burden associated with more common alcohol-related nightlife violence is estimated at 2.09 million incidents in 2009/10, of which around 50% involve alcohol (Flatley et al., 2010) and approximately a fifth (19%) of which were thought to take place in nightlife settings (in or around pubs and nightclubs), with 80% of these incidents thought to involve alcohol (Budd, 2003).

Whilst the reduction of alcohol related harm and violence are both current government priorities (DoH, 2007; Home Office, 2004), there has nonetheless been rapid and widespread expansion and development of the night-time economy in the UK as well as the deregulation of licensing (in the form of the Licensing Act, 2003). "The widespread and liberal post-industrial expansion of the night-time economy in the UK relies heavily on alcohol as its 'economic and cultural backbone'" (Winlow and Hall, 2006:105). Rather than the development of city centres for evening activities resulting in increased foot-flow in town and city centres at night, and thereby increasing ownership and observed public spaces with the effect of subsequently reducing crime, deregulation and associated development of the night-time economy (such as large corporate chains and developers), many argue this has in fact given rise to criminogenic environments and opportunity for disorder and misbehaviour (Hadfield, 2006; Hayward and

Hobbs, 2007; Hobbs et al., 2000; Hobbs et al., 2005a; Hobbs et al., 2005b). Hadfield (2006) argues consumerism is rife in these environments and the accompanying drive to achieve social status is associated with high levels of anxiety amongst youth, with the corrosive forces of insecurity, instrumentalism and competition impacting on levels of youth violence.

Furthermore, others add that market forces aimed at seducing young people to transgress 'normal' everyday behaviour and consume alcohol to excess is at odds with moderation and restraint as advocated in individualised models of rational choice on which so many efforts to control the disorder and violence in the night-time economy are based (Measham, 2006; Hayward and Hobbs, 2007; Hobbs et al., 2000; Hobbs et al., 2005a; Hobbs et al., 2005b). Nonetheless, UK policy and legislation aimed at reducing alcohol related crime, violence and disorder predominantly seeks to legislate and regulate consumers rather than retailers and manage the problem using harm reduction initiatives, practices of self-regulation<sup>69</sup> and by criminalising those participating in the recreational consumption of alcohol, made abundantly available as a direct result of deregulation led by profit and the market economy (see commentaries by Measham, 2006; Hayward and Hobbs, 2007; Hobbs et al., 2000; Hobbs et al., 2005a; Hobbs et al., 2005b). For example, to aid local partnerships and police in managing the sheer extent of the problem, the previous Labour government introduced measures such as Drinking Banning Orders<sup>70</sup> and Penalty Notices for Disorder<sup>71</sup>, whilst merely issuing empty threats for the drinks industry to 'put its house in order'.

Such measures focus on personal choice and freedom, rather than holding accountable those responsible for encouraging excessive drinking amongst young people and making alcohol widely available at relatively low cost, they penalise individuals who partake in the activities made available in the night-time economy. These approaches may be regarded as misplaced given widespread evidence of

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<sup>69</sup> For example, voluntary codes of practice in relation to responsible sale of alcohol have been established by the manufacturing and retail trade itself and there exists a current framework of voluntary self-regulation of the manufacturing, advertising, and retail alcohol trade in England and Wales (Measham (2006).

<sup>70</sup> For further info see <http://www.homeoffice.gov.uk/drugs/alcohol/drinking-banning-orders/>

<sup>71</sup> For further info see <http://www.homeoffice.gov.uk/police/penalty-notice/>

irresponsible sale of alcohol, poor management of licensed premises and low cost alcohol contributing the prevalence and scale of alcohol-related violence and disorder. This is against a backdrop of self-regulation by the alcohol industry as well as its widespread opposition to raising the minimum price for alcohol and other taxation initiatives aimed at reducing alcohol-related harm, and the newly liberalised licensing regime as a result of the provisions of the Licensing Act, 2003<sup>72</sup>. Indeed, Measham (2006:258) argues: "in order to produce the most effective policy mix, individualised models of harm reduction and demand reduction need to be located within broader, culturally appropriate, and context-specific policies that consider the socio-economic, political, and environmental factors influencing harm, demand, and supply". Indeed, Parker (1998) additionally highlights approaches adopted based on narratives of the 'drinking delinquent' (for example, zero-tolerance / 'war on drugs') may alienate 'risk-taking' drinkers more and exacerbate the problem. Parker (1998:162) adds to this by arguing that whilst young people invariably do make rational decisions about drugs (and thus presumably about alcohol) and whilst the 'drinking delinquent' undoubtedly exists, "he is usually already damaged by his life and educational experiences, not by his psycho-active excesses (Rutter and Smith, 1994; Carlen, 1996)". Thus suggesting it is more appropriate to "discuss such young people as part of a debate about social exclusion, poverty, inequality and the causes of crime than to pander to tabloid opinion with sound bites about zero-tolerance and curfews" (Parker, 1998:162), whilst highlighting that youth have "received more control than care, more blame than apology, and had far more restrictions and regulations heaped upon them than rights, positive status and personal freedoms bestowed" (Parker, 1998:163).

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<sup>72</sup> The liberalisation brought about by the licensing legislation was thought to potentially reduce alcohol-related harm and violence by increasing access to alcohol (a feature that received widespread opposition from health and criminal justice professionals as well as other commentators such as alcohol researchers and even some alcohol retailers given the current climate of determined drunkenness by young drinkers) and avoiding accelerated drinking prior to closing times (associated with congestion and aggression amongst late night drinkers), which could subsequently be staggered (Measham, 2006).

In the UK, violence prevention, as with all crime prevention, is, by statute, the responsibility of local crime prevention partnerships; with an emphasis placed on locally co-ordinated multi-agency action and various community safety initiatives to manage risk (see 'Alcohol-related crime and disorder data: guidance for local partnerships' issued by the Home Office, 2003; Tierney and Hobbs, 2003). "These initiatives traditionally focus "on licensed premises, the street, transportation, offenders and various campaigns, such as the promotion of 'sensible' drinking and alerting customers to the dangers of 'spiked' drinks (Shepherd, 1994; Plant, Single and Stockwell, 1997; Home Office, 2004b)" (Tierney 2006:455). In practice this means that the problem of alcohol-related violence is often picked up by town centre management, licensing committees and licensees themselves as well as crime enforcement agencies such as the police, with the former potentially having vested interests in preserving and expanding the night-time economy to attract economic growth under the guise of 'regeneration' – facilitated by neo-liberal economic policy and ideals and a liberalised market economy approach and regulation (see Measham, 2006; Hayward and Hobbs, 2007; Hobbs et al., 2000; Hobbs et al., 2005a; Hobbs et al., 2005b). However, that is not to discount the good work that has been done in trying to engage local licensees in minimising alcohol-related crime and disorder, influence licensing policy and practice, and implementing bar staff/server and door staff training (see, for example, the Tackling Alcohol-related Street Crime (TASC) Project in Cardiff<sup>73</sup> and many other such efforts nationwide). However, it is important to note the liminal governance of the night-time economy to which so many other commentators have pointed (see Hayward and Hobbs, 2007; Hobbs et al., 2000; Hobbs et al., 2005a; Hobbs et al., 2005b).

#### **8.5.4 UK public health and alcohol policy**

UK public policy acknowledges both violence and alcohol as major public health concerns since both issues generate a widespread burden on the health service as

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<sup>73</sup>[http://www.drugsandalcohol.ie/5555/1/Home\\_Office\\_Research\\_Study\\_265\\_Reducing\\_alcohol\\_related\\_violence.pdf](http://www.drugsandalcohol.ie/5555/1/Home_Office_Research_Study_265_Reducing_alcohol_related_violence.pdf)

well as the criminal justice service<sup>74</sup>. However, meaningful overlap and integration between crime prevention and public health policy is still an area which could be improved upon, especially given the heavy emphasis in UK policy on “the responsibilities of alcohol producers and retailers (in terms of self-regulation of advertising, promotional strategies, and sales practices) and consequent initiatives – such as the introduction of Standards for the Management of Responsible Drinks Promotions, published by the British Beer and Pub Association, the leading representative of the brewing and pub sector (British Beer and Pub Association [BBPA], 2005)” (Measham, 2006:263-4). For example, a provision to consider public health implications in licensing is considered by many commentators as a positive step towards addressing the alcohol related harm and violence experienced on the back of irresponsible and excessive drinking as a result of the expansion of the night-time economy and increased trading hours for alcohol (which have been linked to increased consumption and associated harms, including violence (see Hobbs et al., 2003; Morleo et al 2009; Chikritzhs and Stockwell, 2002; Morleo et al., 2008; FPH, 2008; Sodeen and Shenker, 2008)). Whilst it is known that alcohol is a contributory factor in a significant proportion of violent offences, and a public health objective is included in the Scottish Licensing Act (The Licensing (Scotland) Act, 2005) to reduce alcohol-related harm and violence, this remains absent in the Licensing Act, 2003, for England and Wales, nor was this amended in a recent consultation on amending the Licensing Act, 2003, as called for by many commentators, as outlined in Chapter 2 (see Morleo et al. 2009; Morleo et al, 2007; FPH, 2008; Sodeen and Shenker, 2008). However, more recently, with the introduction of the Police Reform and Social Responsibility Act, 2011, Primary Care Trusts and Local Health Boards have been made responsible authorities within licensing authorities and, despite longstanding debate and opposition from the alcohol industry, the current coalition government is now exploring options for introducing minimum pricing in relation to the sale of alcohol (BBC, 2012). This is a measure that goes some way to restricting alcohol

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<sup>74</sup> See Government action plan ‘Saving lives. Reducing harm. Protecting the public. An action plan for tackling violence 2008-2011’ (HM Government, 2008) and The Government’s Alcohol Strategy (HM Government, 2012).

availability: an approach favoured by academics having reviewed an evidence base that routinely suggests that alcohol prices and taxes are inversely related to drinking, and that restricting alcohol availability is amongst one of the most effective policy options for reducing alcohol-related harm (see reviews by Alexander et al., 2009 and Room et al., 2005).

Bellis and Hughes (2011) argue that many current policies and interventions in the UK are simply aimed at creating environments which appear 'safe' for people to drink heavily; thus permitting drunkenness and reducing incentives to stay sober as well as displacing violence elsewhere and ignoring the overall health and social consequences associated with heavy drinking. They argue for an approach which addresses drunkenness rather than "pandering to the economic benefits of excessive alcohol use" (Bellis and Hughes, 2011:536), and suggest that "recent government policy has aspired to create public drinking environments that achieve the maximum economic benefits from the alcohol industry with minimal harm to drinkers" with the priority having been "to reduce acute harm associated with excessive alcohol use, in particular violence and disorder, rather than to reduce alcohol use *per se*", as seen in the Alcohol Harm Reduction Strategy for England (Bellis and Hughes, 2011:538).

Despite this backdrop, the government has focused much of its efforts in attempting to put the onus on individuals and get people to modify and monitor their own alcohol consumption by issuing recommended limits for alcohol consumption. However, these are indiscriminate blanket guidelines targeted at healthy adults with respect to health rather than behavioural implications and no such recommendations exist for younger people (although more recently recommendations suggesting no person under the age of 15 should drink at all were issued; DoH, 2009).

Much of the evidence in relation to public health highlights that policy levers aimed at reducing consumption at the population level (for example, taxations, availability and advertising restrictions) "are likely to result in an indirect, possibly substantial, reduction in violence, especially in cultures where the link between alcohol

consumption and violence is strong” (Graham and Livingston (2011:454). However, it is also acknowledged that the drinking context (where and with whom alcohol is consumed) and broader social factors also play a role (Graham and Livingston, 2011) and that modification of these environments can reduce harm, too. Indeed, in reviewing public health and crime prevention initiatives targeted at tackling and reducing youth violence aimed at the individual, situational and population level, Wood et al. (2010) find that there is robust evidence for the effectiveness of many interventions including:

- Preschool, parenting and family programmes;
- Youth support initiatives, including social development programmes and cognitive behavioural therapy;
- Interventions aimed at better managing nightlife environments (for example, improving venue management and providing training for bar staff);
- Restricting the availability of alcohol; and
- Multi-component interventions that address a range of risk factors at the same time.

(Wood et al., 2010:22).

Shepherd and Farrington (1993) examine assault as a public health problem and identify formal collaboration between epidemiologists, A&E doctors, family practitioners, criminologists and the police as necessary to coordinate criminal justice and public health approaches to prevent interpersonal violence. For example, they suggest that “educational and reforming measures could be initiated in A&E departments by doctors, psychiatric nurses, alcohol advisory centres and possibly the police and be developed in the community, so that all the necessary surgical, mental health and social services are freely available”. And that, “hospital and family practice based prevention programmes might be developed outside the criminal justice system altogether and might even become facilities to which the criminal justice system might refer some offenders” (Shepherd and Farrington, 1993:92). The authors also highlight that “in comparison with child abuse, the



causes, identification, prevention and management of assault involving adults are not yet established as a community health issue” and that a public health approach (focusing on early identification and immediate situational influences such as alcohol) can make significant contribution to decreases in violence and injury. Therefore, the aim would be to reduce crime and violence by promoting health, rather than through the negative aims of retribution, deterrence and incapacitation which dominate criminal justice responses and the situational crime prevention methods that have been the main focus of both US and UK governments (Shepherd and Farrington (1993:89).

## **8.6 Limitations of the current study and directions for future research**

In this thesis, it is argued that in order to deconstruct the alcohol-violence relationship it is necessary to critically examine both the development of expectations held towards alcohol as well as consumption patterns. To do this, a developmental life-course approach was employed to account for behavioural changes and changes in both beliefs and alcohol consumption patterns over time. This approach enables the analysis of pathways in and out of binge drinking and violent behaviours, aiming to establish causation and identify potentially effective points for intervention over the life course. Whilst they fall short of wholly meeting this objective, the models specified in this thesis are some of the first steps in this process of identifying associations between binge drinking and violent behaviour in late adolescence and early adulthood using self-report data from the OCJS. There are naturally shortcomings and limitations in the way in which the current analyses have been specified, which will be acknowledged in this section. This section will also point to other methods of study to further advance our knowledge in this area.

### **8.6.1 Measures and unobservable variable bias**

Secondary quantitative measurement tools are rarely specified exactly as the researcher would ideally want and, even if this is the case, then there are numerous problems and pitfalls associated with the measurement of complex

issues such as violent behaviour and alcohol consumption using summative survey questions, which ought to be acknowledged.

#### **8.6.1.1 Measuring alcohol consumption/drunkenness**

In the current study a proxy measure for binge drinking is used of 6/8 units in one day for females and males respectively which equates to twice the government recommended drinking limits. This measure is used in many national surveys as a standardised measure of binge drinking and is thus in some ways considered 'common currency'. Nonetheless, there are many problems associated with this measure (for example, recall, giving socially desirable answers and recanting rates in longitudinal studies) and there is ongoing debate about the definition of binge drinking and its conceptual meaning. Whilst it is not the intention here to go into these in depth a few key issues are worth noting (alongside those already noted in Chapters 2 and 4). Firstly, the recommended daily drinking guidelines (and thus associated binge drinking measures) were developed for adults based on health outcomes. This is to say, the relevance of such measures for assessing behavioural outcomes, especially amongst younger people, may not be as relevant. The likely amount one has to drink to greatly influence behaviour and/or decision-making may be higher than that for maintaining optimum liver health, or indeed less than for incurring liver failure. However, the dose-response relationship between behavioural outcomes is somewhat less developed than for health outcomes, given many complexities associated with individual susceptibility and measurement issues. Secondly, whilst the measure employed is thought to some extent to capture drinking to excess or 'binge drinking', it nonetheless tells us little about the level of drunkenness or intoxication of the individual and to what extent they may have had diminished responsibility for their actions (a key legal aspect to the relationship between alcohol consumption and violent offending). As these are subjective concepts they are also difficult to ascertain and potentially subject to distorted interpretation and memory given alcohol consumed, especially using quantitative survey measures. Thirdly, and finally, Greenberg noted in 1982 that existing research is limited in accounting for abnormal or festive events in which

drinking patterns may vary, as well as in establishing the quantity and type of alcohol consumed, level of intoxication and motivation for drinking amongst those who commit violence; research to date has yet to address some of these shortcomings.

#### **8.6.1.2 Measuring norms and attitudes**

Given the variation in behaviour whilst under the influence of equal amounts of alcohol in different cultures, Room and Rossow (2001) call for cross-cultural research into expectancies and experiences of alcohol and their impact on violence in order to identify patterns of relationship between alcohol and violence; models in this thesis provide some further empirical findings looking at this. The complexities of measuring norms and attitudes and their impact on behaviour are the focus of much psychological literature and will not be discussed in detail here. However, as alluded to above (see section 8.1.2), there are many complexities associated with defining and measuring such concepts and many varying typologies exist depending on the measures used to capture such concepts.

#### **8.6.1.3 Measuring violent behaviour**

Whilst violence can take many forms (see Chapter 2), the association between alcohol consumption and interpersonal assault as in the WHO classification (see also Chapter 2) was the focus of the current study. Whilst there are other conceptualisations of violence as well as many ways of measuring assault based on criminal or legal frameworks, the measure of assault adopted here corresponds to existing evidence that suggests this form of violence is most commonly associated with young people and alcohol consumption in line with a wider public health framework (see Chapter 4, section 4.3.1). Whilst the links between prior violent behaviour were controlled for in the models presented here, there are naturally links between current violent behaviour and previously violent victimisation (such as in the form of observing or being subject to domestic violence). Originally, efforts to control for such experiences were intended; however, concerns with the OCJS domestic violence victimisation module issued by the data collectors meant that this information was not available, as this may

have provided inaccurate results or results inconsistent with other research evidence. Thus, there is further work to be done researching prior violent victimisation and its impact on subsequent (alcohol-related) violent offending, as prior experience of violence may well also be associated with alcohol consumption if victims turn to alcohol as a coping method.

#### **8.6.1.4 Unobserved variables**

Whilst the current study concerns itself with individual behaviour, further contextual variables potentially impacting on alcohol consumption are not accounted for (for example, those measuring situational, personality and structural factors, such as living in a disadvantaged neighbourhood) despite having likely influences on the alcohol-violence relationship. In this instance, this was intentional to enable a focus on specific drinking patterns and their association with violent outcomes as well as to maintain parsimony in models, which might have been specified in numerous different ways. However, that is not to discount the influence of contextual and situational factors; potentially useful further work using the OCJS could look at further mediating factors associated with young people's routine activities, such as drinking locations and drinking amongst peer groups. Furthermore, whilst the specific focus of this thesis is unashamedly on violent behaviour, it is worth also noting that individuals often display a diverse portfolio of offending behaviour; that is, rather than specialise in one offence type, criminal careers often display a certain amount of versatility (see, for example, Piquero et al., 2007, Soothill et al., 2008 and Thornberry et al., 2003). The same may also be said of alcohol consumption – there is often an overarching context of wider substance misuse; that is, many who consume alcohol may also be involved in consuming illicit drugs such as cannabis or cocaine which may further impact on their behaviour or be symptomatic of wider substance abuse problems (for work on the combined consumption of alcohol and cocaine and its impact on violent offending, see Lightowlers, forthcoming). The decision taken to focus on alcohol here has many parallels with those given by Dingwall (2006:2) as a justification for a focus on alcohol in his book on criminal justice responses to beliefs held about the relationship between alcohol and crime:

There are a number of differences between alcohol and other substances.... First, despite comparatively high rates of illegal drug use in society, alcohol use remains far more prevalent. Second, the use of alcohol, unlike most other types of recreational drug, is also generally legal. This difference means that research into the link between other drugs and crime have to consider the fact that an illegal market is in operation which, by necessity, involves determining a suitable response. This is obviously an important topic in its own right but not one that has any direct bearing on alcohol and crime.

This legislative framework differs to the argument presented by Parker that alcohol needs to be situated in drug use more widely in order to prevent harm, however, once more this was intentional here, so as to subsequently comment on relevant policy responses (such as licensing) which, given legal sanctions in relation to alcohol, are not necessarily comparable or aligned with drugs policy<sup>75</sup>.

#### **8.6.1.5 Endogeneity**

Accepting the limitations associated with the measures employed here, as outlined above, there nonetheless remain concerns about the outcome (assault) and independent variables (for example, alcohol consumption) being associated (endogeneity). That is to highlight conceptual overlap (these behaviours may be related due to wider anti-social behaviour; see Farrington, 2003) or individual impulsivity, lack of 'self control' (Hirshi 1969) or tendency to take risks. In order to explore such explanations of violent behaviour, further research building on the current models and using the OCJS personality assessment items as a proxy for self control may be an interesting avenue for future research. A similar concern exists in relation to potential endogeneity between outcome and independent variable, as it is likely these are associated. However, this is somewhat circumvented by re-running the logistic regression models, which account for prior violent offending, in a multilevel framework which verifies the overall findings and conclusions.

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<sup>75</sup> The author notes there is ongoing debate about the legalisation of illicit drugs as a means of harm minimisation and crime reduction but this will not be discussed here.

## **8.6.2 Limitations of quantitative methods**

### **8.6.2.1 Limitations of survey data**

Employing secondary survey data has limitations associated with the available measures as outlined above but there are also problems, not only with the OCJS itself but the study of crime and alcohol consumption using surveys more generally. For example, problems concerning the measurement and disclosure, or crime and the accuracy of reported alcohol consumption, or of events that took place whilst under the influence of alcohol. Accepting these, the OCJS – whilst innovative and ambitious – aimed to do many things in one survey, not previously attempted in a national crime survey. Whilst trying to facilitate cross-sectional as well as longitudinal research it also tried to cover a vast array of topics associated with crime, including alcohol and drug consumption, psychological personality assessments, domestic violence victimisation and many more. However, in so doing it has resulted in problems with responses to some modules only being answered by subsamples and low item response to other variables. Furthermore, many of the variables (for example, the attitudinal statements in relation to alcohol consumption which this thesis tried to make use of) were not sufficiently theoretically grounded in relation to drinking and crime. Moreover, where efforts were made to devise questions relating to crime theory, these links were not documented.

The OCJS builds on an evidence base, which in England and Wales, is usually based on the prominent and internationally recognised victimisation survey – the British Crime Survey – and in many ways can be seen as its underdeveloped, underfunded sibling, which is no longer being conducted. There are, however, other quality longitudinal studies of offending behaviour being conducted in the UK, but none have national coverage (for example, the Cambridge Study of Delinquent Development, Edinburgh Study and the Peterborough Adolescent Development Study – PADS), and some are not yet available to researchers for secondary analysis (for example, PADS). The US has driven most of the development and pioneered longitudinal surveys of this kind with the UK lagging somewhat behind.

However, the former two studies would provide useful datasets for further longitudinal work on violent offending, as would the Ministry of Justice Prisoner survey (a longitudinal survey of prisoners in England and Wales) which is currently being conducted.

#### **8.6.2.2 Limitations of model specification**

The models in this study were specified with the aim of further elucidating findings on the alcohol-violence relationship. However, they do not adequately reflect the complexities of social behaviour, for example, not being able to explain ecological variation in alcohol related violence and having omitted other known risk factors for violent offending as outlined above. This is not a flaw with the statistical procedures *per se* but concerns operational weaknesses and potential errors. For example, models were not able to establish any causal relationships as they were not able to look at the sequencing of behaviours such as binge drinking and violence since these could not be linked in time: frequency of binge drinking was captured in the last month prior to being surveyed, whereas whether an individual had committed an assault offence was captured over the last 12 months prior to being surveyed. Furthermore, findings only look at a snapshot of behaviour over a two/three year period (given that binge drinking was not captured in the first sweep) and we cannot make inferences to wider criminal career trajectories or prior/subsequent behaviour that may have shaped drinking or violent behavioural patterns.

The models presented here, deliberately simplified for parsimony and testing of the specific effects of binge drinking and other explanatory variables, also do not factor in the interplay between structural factors impacting on the alcohol-violence relationship at different levels (for example, at the individual and societal level). This is to some extent a shortcoming of the modelling, but also due to constraints of the OCJS data, measures and a large number of missing responses to some items in the survey. Even so, the models presented here are unable to completely isolate the effects of binge drinking: results are subject to selection effects bias at the point of data collection. For example, given that those chosen for the survey represent people living in households in England and Wales, it thus necessarily

excludes those living in prison/young offenders institutions and/or those in hospital or care, who may be more likely to have offended or experience drinking problems. The self-selection of individuals who participated in the survey itself or attrition in the longitudinal sample may have also introduced bias, as it is possible that those engaged in high risk and offending behaviour are more likely to decline and/or drop out of the survey.

More sophisticated models (such as, examining transitions in levels of drinking and coterminous transitions in violent behaviour<sup>76</sup>) would go some way to addressing some of these limitations, however, quantitative measurements and proxies can invariably oversimplify complex multifaceted phenomena and the process by which behaviour and its meaning is socially constructed by individuals. Young people take an active role in shaping their exposure and response to risk and this is not always accounted for when examining structural factors (Case and Haines, 2008). Naturally, to illicit further detail on the narratives of individuals about their drinking and offending behaviour and further test specific theory, primary qualitative research would be necessary and may be a potential way of building on the quantitative research showcased here.

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<sup>76</sup> For example, Event History Analysis serves as another useful technique in the current study and is commonly used to model reoccurring events. It is useful to test theories of the relationship between drinking and violent offending, for example, by examining the relative risk (hazard or survivor functions) of violent behaviour given the onset of distinct drinking patterns. Event history models allow for a consideration of the duration between episodes, thus they can examine the relationship between the timing of prior events and their subsequent impact on the risk of future events. For example, effects of first event may impact on the risk of a second occurrence, as in the case of domestic burglary victimisation where the presence of an initial burglary increases the risk of a second event in the period immediately following the initial event (see Farrell and Pease, 1993). Thus, using Event History Analysis it is possible to account for time-varying risk within individuals based on prior events or experiences and may allow for an assessment of how alcohol consumption mediates the 'risk' of committing a violent offence by looking at risk in relation to the onset of distinct drinking patterns: "Event history analysis is used to study the duration until the occurrence of the event of interest, where the duration is measured from the time at which an individual becomes exposed to the 'risk' of experiencing the event" (Steele, 2005). Given that the OCJS only surveys individuals over a four-year period, using this method will be associated with a number of limitations concerning censoring, as the survey will miss observations that fall outside the observation period thus potentially leading to biased estimates in models. Suitable techniques to account for both left- and right-censoring, whilst making the best use of the available data, must therefore be adopted if this approach is to be used. Moreover, the 'risk set' in event history analysis will reduce in the model over time where individuals have previously committed violence and this may have an adverse effect of baseline hazard in subsequent years.



Furthermore, despite the useful findings presented here and the overall volume of research into alcohol consumption as a risk factor for aggressive or violent behaviour, protective factors remain relatively unexplored and unexplained, as do the processes associated with the onset, development and desistance in relation to alcohol consumption patterns and their association with violent behaviour. More precise studies of how alcohol consumption trajectories and violent behaviour are mediated by expectancies over adolescence and late adulthood have yet to be carried out.

## **8.7 Concluding comments**

The research reported here has focused on the relationship between alcohol consumption patterns and interpersonal assault. The findings confirm an association between binge drinking and assault outcomes, highlighting an increased risk with increased binge drinking frequency as well as the temporally proximal nature of this risk and the strength of this relationship across the period of late adolescence and young adulthood (using longitudinal data).

This study also identifies distinct groupings of individuals with definitive attitudes towards alcohol consumption and expected outcomes thereof, building on existing work in this area and lending empirical support to the hypothesis that some young people in the UK turn to alcohol as a coping mechanism. These findings allude to the need to consider targeting different groups in different ways in order to minimise alcohol-related harm and violence. Whilst there may be merit to situational crime prevention techniques, given the temporally proximal nature of the alcohol-violence relationship as outlined above, there may be additional merit in addressing and challenging beliefs held about alcohol consumption, motivations for consumption, expectations about drunken comportment, and social norms to reduce aggressive behaviour amongst those who frequently drink to excess.

Whilst the models run in this study are generalised to the population of late adolescents and young adults in England and Wales in general, individual variability should nonetheless be considered in violent behavioural trajectories.

However, some key developmental findings here suggest that having committed a prior violent offence is indicative of future violent offending of this kind (in line with existing literature) and that (temporal) variation in the probability of committing assault over time can be partially explained by levels of drinking over the period of late adolescence and early adulthood: suggesting also that there may be a distinct group of binge drinkers that continue to drink and who are more prone to violence when drunk. These findings emphasise the importance of considering both alcohol consumption and violent behaviour from a developmental stance, however, as discussed above, this is not to discount other potential situational and structural influences. Whilst it is important to consider individual developmental trajectories and routine activities, it is important not to forget that individuals are shaped by the environments and cultural settings in which they reside and grow up and are thus operating within the constraints of the opportunities and access to alcohol that are available to them. That is to say that both violent behaviour and drinking patterns are likely to be shaped by environmental factors at both the micro and macro level, for example, drinking practices will vary by venues and contexts and associated misdemeanour and criminal behaviour is also likely to be tailored to the occasion and setting, as MacAndrew and Edgerton highlighted back in 1969.

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