

**A violent mix? The association between concurrent alcohol and cocaine use and violence amongst young people in England and Wales**

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**Abstract**

**Aim** This study explored the association between concurrent alcohol and cocaine use and its predictive probability of self reported violent behaviour. **Methods** A series of logistic regression models were run on a sample of 3098 young people (aged 16 to 25) from a national self-report study. **Findings** Current cocaine use was identified as predictive of violent offending (Exp B = 2.363,  $p \leq .01$ ). Cocaine use was also more likely in those reporting heavy episodic drinking. Whilst findings suggested an additive risk for both heavy episodic drinking and cocaine consumption, there was no evidence of a multiplicative risk associated with concurrent use on the probability of assault outcomes. Results also suggest that heavy episodic alcohol drinking was mediated by experience of violent victimisation and having been involved in antisocial behaviour. **Conclusions** Findings suggest that whilst interventions aimed at reducing drinking or cocaine consumption are likely to have some effect in reducing offending behaviour, attention should also be given to other individual level factors such as prior violent victimisation and wider involvement in anti-social behaviour as these may be confounded as part of a wider substance misusing lifestyle or associated with violence as part as a wider repertoire of anti-social behaviour.

Keywords: alcohol, cocaine, violence

## **Introduction**

The use of alcohol by young people in the night-time economy and its association with violent behaviour is of public, political and scientific concern (Fagan, 1990; HM Government, 2012; Room & Rossow, 2001; Sumner & Parker, 1995 and WHO, 2006). Although lifetime alcohol prevalence has decreased since 2003 in younger school aged children (aged 11-15 years) in the UK (from 63% in 2003 to 45% in 2010; Fuller, 2011), the amount of alcohol consumed amongst recent drinkers (in the last week) remains relatively stable (12.9 units in 2010 - with values fluctuating between 11.6 units and 14.6 units since 2007, with no significant trend; Fuller, 2011). In the ESPAD Survey (Hibell et al., 2011) school pupils in the UK (aged 15-16) self-reported more frequent heavy episodic drinking and episodes of drunkenness than most of the European countries from which data was collected: over half (52%) had drunk five or more drinks on one occasion during the last 30 days compared to a European average of 39%. Just over a quarter of respondents (26%) had been drunk during the last 30 days compared to a European average of 17% (Hibell et al., 2012). Alcohol drinking amongst school pupils (aged 11 to 15) is associated with a number of other behaviours, such as tobacco smoking, illegal drug use, educational disengagement, involvement in criminality, and an increased likelihood of developing alcohol use disorders in later life (Fuller, 2011; Maxwell, Kniver & Phelps, 2007). Furthermore, although prevalence of weekly drinking amongst young adults (16-24) in the general population has fallen (from 70% to 60% amongst men aged 16 to 24 and from 62% to 53% in women aged 16 to 24), there was an overall increase in the proportion drinking in excess of recommended weekly limits for men and women in Great Britain from 1988 to 2006 (26% to 31% and 10 to 20% respectively; Smith & Foxcroft, 2009). Reviewers have suggested that young people's alcohol consumption is increasingly concentrated on high volume single drinking occasions (commonly referred to as 'heaving episodic' or 'binge drinking') (see

Sumner & Parker, 1995; Measham, 1996; Järvinen & Room, 2007). Indeed, it is such drinking patterns (heavy episodic drinking) that have been statistically associated with outcomes such as interpersonal assault rather than drinking frequency *per se* (see studies by Finney, 2004; Lightowlers, 2011, 2012; Matthews & Richardson, 2005; Room & Rossow, 2001; Shepherd, 1994).

The prevalence of powder cocaine use in the English and Welsh adult population increased significantly between 1996 and 2011/2012 (from 1.3% to 4.2% in those aged 16 to 59; Home Office, 2012) and cocaine is currently the second most frequently reported illegal drug used by young people in England and Wales (4.2% last year prevalence in 2011/12 amongst 16-24 year olds, Home Office 2012). However, little is known about the consequences of use with regards to risk behaviours and other adverse outcomes. Whilst cocaine use has been linked to violence in cohorts of males (Miller, Gold & Mahlr, 1991), criminal populations (Chermack & Blow, 2002) and emergency room patients (Vitale & Mheen, 2006) in the USA, little is understood about the association in other geographies. Furthermore, as many adult cocaine users also report drinking alcohol, either simultaneously (concurrent) or in the same use episode (concomitantly) (powder cocaine was used with alcohol on 91% of reported episodes according to the 2011/12 CSEW; Home Office, 2012), it is also important to explore the consequences of such polysubstance use.

Although there is a lack of evidence in this area, research has tended to the conclusion that polysubstance use is associated with increased risk of adverse outcome (e.g. Gossop, Manning and Ridge, 2006; Sumnall, Wagstaff & Cole, 2004). Previous studies have suggested that concomitant cocaine and alcohol use (amongst other drug combinations, such as cannabis and alcohol) is associated with violence-related injuries (Vitale & Mheen, 2006). Moreover, studies of adults in addiction treatment, found that both alcohol and cocaine use appeared to play a significant role in explaining violence<sup>1</sup> and that violent incidents increased in severity with

heavier alcohol and cocaine use (Macdonald, Erickson, Wells, Hathaway & Pakula, 2008). Such findings support other studies that have identified significant associations between the acute use of alcohol and cocaine, and the likelihood of violence (e.g. Boles & Miotto, 2003; Chermack & Blow, 2002; Friedman, 1998; Macdonald et al., 2005 cited in Macdonald et al., 2008). Whilst the precise nature of the relationship between alcohol, cocaine and violent behaviour is not yet known, studies suggest “a growing consensus that acute alcohol and cocaine effects are at least partially causally related to violence (Macdonald et al., 2003, 2005)” (McDonald et al., 2008: 202).

However, personality factors such as risk taking or aggression often mediate the association between substance use and violent behaviour, and violence as a consequence of substance use may be circumstantial or systemic rather than psychopharmacological in nature (see Fagan, 1990; Goldstein, 1985; Sumner & Parker, 1995). Indeed, Neale and colleague’s (2005) review found that the pharmacological effects of drugs (with the exception of alcohol) did not appear to account for much of the variation in violence once demographic factors and other correlates of violence (such as age, gender, neighbourhood and homelessness) were accounted for; suggesting individuals engage in violence for similar reasons that they engage in drug consumption – that is, as part of a wider lifestyle choice or as a result of being excluded from mainstream society. Therefore it is important that studies examining the relationship between substance use and violent outcomes aim to control for lifestyle factors/characteristics known to be associated with polydrug use such as relationship status, age, sex, as well participation in nightlife (Home Office, 2012), and individual factors known to be associated with violent offending, including low educational attainment, involvement in antisocial behaviour, prior violent victimisation, having delinquent peers and high levels of alcohol consumption (McVeigh et al., 2005).

Previous research has shown that use of either cocaine or alcohol is associated with increased consumption of the other substance (Boys, Dobson, Marsden & Strang 2002; Gossop et al. 2006) and there are some plausible psychopharmacological explanations for this (e.g. Montgomery et al., 2010). Furthermore, these combined consumption patterns have been associated with violent behaviour (see, for example, Doward, 2009). Whilst the physiological and somatic effects of alcohol and cocaine are not the focus of this paper, extant literature provides evidence of higher rates of alcohol and drug use amongst offending populations as well as higher rates of violence amongst those with drug/alcohol problems (see Chermack & Blow, 2002; MacDonald et al., 2008 for reviews). Heavier concomitant users of alcohol and cocaine (alcohol and cocaine use on the day of the violent incident) also report more serious forms of violence (e.g. assault; assault with a hard object; threatening with a knife or gun; and using a knife or gun) (Chermack & Blow, 2002; Denison, Paredes & Booth, 1997).

In this study we present a secondary analysis of young people's alcohol consumption patterns, cocaine use and violent behaviour using data from the 2006 Home Office Offending Crime and Justice Survey (OCJS; Home Office, 2008). These analyses focused on OCJS respondents over the age of 16 (maximum age 25) given the low prevalence of cocaine use in participants below this age (0.8%).

Based upon previous findings we hypothesised that self-reported heavy episodic drinking or cocaine use by young people would be associated with violent behaviour. We additionally hypothesised that there would be a relationship between self-reported violent behaviours and the frequency of heavy episodic drinking. As this study was unable to analyse concomitant alcohol-cocaine use (see Methods below), we were unable to hypothesise on the effects of this drug combination upon behaviour and so our investigation of this concurrent combination is explorative.

## Method

The 2006 Offending Crime and Justice Survey (Home Office) is a general population household survey which questions young people aged 10 to 25 about their offending behaviour as well as alcohol and drug consumption using (audio) computer assisted interviewing (CASI)<sup>2</sup>. Although the 2006 data is a few years old, this survey coincides within the period associated with the recent increased use of cocaine amongst young people in England and Wales (see Home Office, 2012) and is currently the most recent source of data on young people's offending *and* substance use. The OCJS uses a random probability sample design; namely, a multi-stage stratified random sample of individuals in English and Welsh households based on postcode districts and quarter-sectors as the primary sampling units (PSUs), stratified by police force area (PFA), region and district (based on population density and occupational profile) (Phelps, Maxwell, Anderson, Pickering & Tait, 2006). Post-hoc weighting is also applied to correct for differences in probability of selection, non-response and to match the makeup of population (young persons in England and Wales)<sup>3</sup>. Whilst the sampling strategy outlined is similar in design to other national household surveys, such as the Crime Survey for England and Wales (CSEW) it does not capture those in communal establishments (e.g. defence or educational establishments, hotels, hostels or guest houses, hospitals or residential homes). For example, homeless people, more serious offenders who are incarcerated in prison or young offenders institutes, or those with drug and alcohol problems that may be in hospital or care. However, studying a non-clinical and non-custodial sample is beneficial as it allows for assessment of general population behaviour and provides information on 'normative' behaviour and can thus help identify those at risk of violent offending in the general population.

Analyses were run on a sub-sample of those aged 16 to 25 (N=3098), taken from the original sample of 10 to 25 year olds (N=4951). The indicator of violent behaviour used in the analyses was self-reported perpetration of assault (both with and without incurring an injury to the other

party) in the previous 12 months. This measure was deemed appropriate as assault is the most common form of violence amongst adolescents and young adults and is the form associated most frequently with substance use in nightlife environments (Bellis, Hughes, Korf and Tossman, 2005; Bottoms & Wiles, 1997; Finney, 2004; Levi, 1997; McVeigh et al., 2005; Maguire & Brookman, 2005). Whilst there are a number of valid concerns associated with the self-report method for the disclosure of criminal behaviour (respondents may not wish to disclose such behaviour, may have limited or distorted recall or may inflate the severity of incidents) (see Farrington, 2001), it is nonetheless deemed a useful tool with which to explore crime not captured by official and judicial statistics. Indeed, the self-report method 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 & 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 & Krohn, 2000). Furthermore, efforts were made to address issues of recall in the OCJS, for example, by limiting recall periods to 12 months and psychometric and technical improvements have been made to the self-report survey method, such as internal validity checks and computer assisted interviewing techniques (see Home Office, 2005a and Home Office, 2005b).

A series of nested logistic regression models were run to identify predictors of this combined outcome, including two substance use variables, 'heavy episodic drinking' and use of powdered cocaine in the previous 4 weeks. Heavy episodic drinking was defined according to UK health policy as the frequency of drinking in excess of twice the UK Government recommended unit allowance for males (8 units/64g alcohol) and females (6 units/48g alcohol) (DH, 1995) in the last four weeks. The original variable was measured on a six-point frequency scale between 'most days' and 'less than once every couple of months'. However, having

examined the original distribution, these were collapsed into three categories (none – representing those who drank modestly but never exceeded twice the recommended daily allowance, low frequency (once to ten times a month; comprising over two thirds of those who drank once a month or more and perhaps representing those who exceeded twice the recommended daily limits up to twice a week and perhaps thus constituting a group of ‘weekend’ drinkers), and high frequency (eleven times a month or more; comprising a minority of drinkers (9.7%) exceeding twice the recommended daily limits more than twice a week) to aid interpretation and avoid categories with a small number of subjects. Participants reporting cocaine use in the previous four weeks were classed as current cocaine users; corresponding with the timeframe for which frequency of heavy episodic drinking was also asked of respondents.

Covariates included age, gender, heavy episodic drinking, cocaine consumption, violent victimisation (having been a victim of violence in the last 12 months), involvement in anti-social behaviour (ASB; “Behaviours asked about included public disturbances, complaints from neighbours, graffiti, bullying, racially aggravated attacks or threats, joy riding, and carrying weapons” (Phelps et al., 2007:15)) and frequenting pubs 2 or 3 times a month or more. Of the sub-sample aged 16 to 25 (N=3098) details of drinking behaviour were only available for 2939 respondents and so formed the subsample of interest here. However, a further 112 (3.8%) did not have responses to key covariates and so were excluded from logistic regression analyses resulting in a final subsample of 2827. Whilst a total of 8.8% of the available respondents aged 16 to 25 are excluded from the current study, weighting is thought to correct, at least in part, some of the problems associated with this missing data in this instance (rather than relying on more complex imputational techniques).

Initially the effects of heavy episodic drinking frequency on assault outcomes were modelled in one block of the regression analysis in order to examine whether an association existed

between these two variables. In the next block, the cocaine use variable was entered to assess whether it was associated with violent outcomes and also to assess if the alcohol-violence relationship was partially mediated by current cocaine consumption. Finally the additive effect of concurrent use of both alcohol and cocaine was assessed by introducing an interaction effect into the model and assessing the simultaneous influence of the two variables. A significant interaction effect would suggest potential moderation effects operating between the two independent variables (alcohol and cocaine consumption) on the outcome variable (assault); whereas a non-significant interaction would suggest that each variable contributed independently. Each model controlled for a number of individual level variables; namely, age, sex, ethnicity (reference category 'not white'), marital status (reference category 'not single'), being a victim of prior violence, educational attainment (having achieved at least A-levels [post-compulsory qualifications in England and Wales]), frequenting pubs and clubs two or three times a month or more and involvement in antisocial behaviour.

It should be noted that the OCJS only includes items suitable for the assessment of concurrent, and not concomitant, alcohol and cocaine use.

## **Results**

Of the 2006 sample aged 16-25 (N=3098), most (94.1%) reported drinking alcohol in the twelve months prior to being interviewed and of those that drank, most drank between once a week and 3 times a month (69.6%). The frequency of consuming six/eight units of alcohol in the last four weeks is displayed in tables 1 and 2. Many participants regularly exceeded these limits, with over half (52.6%) doing so up to ten times a month (see Table 2).

<<Table 1 About here>>

<<Table 2 About here>>

One in eight (12.5%) self reported ever having tried powder cocaine (n=339 cases); 7.8% had done so in the last year and a further 4.0% had done so in the previous four weeks (current use). Of those that had consumed cocaine in the previous year, over half (57.6%) classified their use as 'not frequent' (less than once a month), with almost a quarter (23.6%) describing their use as frequent (using cocaine once a month or more). The remaining respondents (18.8%) consumed cocaine approximately once a month. Nearly all of those who reported consuming cocaine in the last month, also reported heavy episodic drinking at least once a month (96.2%).

#### Logistic regression models

In Model 1 (Table 3) (without controlling for covariates) heavy episodic drinking frequency was significantly associated with assault, with more frequent heavy episodic drinking associated with larger B values (Exp B = 1.586 for doing so between one and ten times a month and Exp B = 3.372 for doing so more often). Model 2 included cocaine consumption in the last month, and this was also associated with assault; with current users being more than twice as likely to have committed an assault (Exp B = 2.363), controlling for their alcohol consumption patterns. The small attenuation of the heavy episodic drinking coefficients in Model 2 suggested that cocaine consumption partially mediated the relationship between heavy episodic drinking and assault outcomes, although this effect is small. Finally, in Model 3, the interaction effect of heavy episodic and current cocaine consumption was found to be non-significant; suggesting no additional effect of reporting both behaviours (concurrent use).

<<Table 3 About here>>

Backwards stepwise (conditional) regression was then used to identify individual level covariates associated with assault<sup>4</sup>. Five out of nine variables identified in the final model (reached in five steps;  $-2 \text{ Log likelihood} = 1351.816$ ;  $\text{Chi-square} = 335.943$ ;  $R^2 \text{ Nagelkerke} = .250$ ) were identified as significant covariates (sex, age, victim of violence, having been involved in antisocial behaviour and frequenting pubs 2 or 3 times a month or more) and were thus retained for further analyses. In the final model (see Table 4) the effects of these variables on assault outcomes were examined. Whilst current cocaine use was retained as significant (Exp B = 2.101,  $p < 0.001$ ), heavy episodic alcohol drinking was no longer significant, suggesting this is mediated by the experience of violent victimisation and having been involved in other antisocial behaviour<sup>5</sup>. In this model, males (Exp B = 1.473) and younger persons (Exp B = .857) were also more likely to have perpetrated assaults (see Table 5).

<<Table 4 About here>>

## **Discussion**

Although it is not possible to determine causation in the current study, both of our study hypotheses (see Introduction) were partly supported. Regression analysis indicated that heavy episodic alcohol use, cocaine use in the previous month, male sex, and younger age were significant predictors of self-reporting violent behaviour. However, heavy episodic drinking frequency use was no longer a significant predictor variable when controlling for violent victimisation and involvement in antisocial behaviour. We did not find an interaction between heavy episodic drinking and cocaine use with violent behaviour. Thus the current study does not provide evidence for an effect of concurrent alcohol and cocaine use on violent behaviour. Inclusion of cocaine consumption in the model only slightly reduced the coefficient of the heavy episodic drinking variable, thus suggesting that cocaine consumption should be considered an *additional* risk for assault factor alongside heavy episodic drinking. This conclusion is further supported by the complete attenuation of the effects of heavy episodic

drinking when controlling for additional covariates, leaving cocaine use as a significant covariate above and beyond these influences. Whilst the findings here align themselves with other findings suggesting only an additive effect of cocaine and alcohol on behaviour and crime (see MacDonald et al., 2008 for an overview), this secondary analysis was unable to analyse the effects of concomitant alcohol and cocaine use upon offending behaviour. In one study combined alcohol and cocaine use was associated with a five fold increase in the likelihood of homicidal thoughts and plans, (Salloum, Daley, Cornelius, Kirisci & Thase, 1996) and Chermack and Blow (2002) identified a significant interaction effect of proximal alcohol and cocaine consumption on violent behaviour in those accessing substance abuse treatment.

Whilst pre-clinical studies have suggested a pharmacological association between alcohol administration and aggression, despite popular opinion and media representation little comparable evidence exists in relation to cocaine (Hoaken & Stewart, 2003). Current frameworks describing the association between substance abuse and violent or aggressive behaviour present multiple mechanisms. These include pharmacological as well as socio-cultural effects, situational factors (the setting in which drug use occurs) and individual psychosocial factors (including aggressive behaviour, risk taking and/or the misuse of other substances) (see for example, Goldstein 1985; Fagan, 1990). Indeed, the psychopharmacological effects of drugs may account for a relatively small amount of interpersonal violence, once demographic factors and other correlates of violence are controlled for (see, Neale, Bloor & Weir. 2005). This is supported in the current study where heavy episodic use was no longer a significant predictor of assault once the effects of other individual level variables had been included in the analysis. Elsewhere such findings have been interpreted to suggest an association between drug use and a lifestyle characterised by exclusion by mainstream society (Neale, Bloor & Weir. 2005). It is also possible that drug users may be involved in criminal activities before they become drug users; that the relationship

between drug use and violence is bidirectional (Hein & Hein, 1998); or that violence and drug use are related by a third factor (such as a risk taking personality) (Hoaken & Stewart, 2003; Stanford, Greve, Boudreaux, Mathias & Brumbelow, 1996). Indeed, these variables may constitute systemic determinants and suggest that heavy episodic drinking and violent behaviour is symptomatic of a wider antisocial lifestyle (Farrington, 2003).

In their review of studies on the relationship between aggression and use of cocaine and/or alcohol, Denison et al. (1997) highlight that alcohol and cocaine use increase the likelihood of engaging in deviant or violent behaviour, with combined cocaine and alcohol abusers being more likely to have higher rates of criminal behaviour than those only using cocaine or those only using alcohol. They did not find, however, that cocaine use brought out aggressive tendencies that were not already there but that at times when participants were using cocaine they engaged in more criminal behaviour when they were also using alcohol (Denison et al., 1997). Furthermore, at times in their cocaine using careers when participants were also drinking to excess<sup>6</sup> they were more likely to be engaged in serious violent offending (Denison et al., 1997).

Unlike alcohol use, we found that cocaine remained a significant predictor of self-reported assault after controlling for other variables. Many authors have suggested that cocaine consumption, as it is a legally controlled substance, may be associated with violence in a more 'social-systemic' way than alcohol, for example, given violence used in obtaining resources for drugs, territorial struggles in the sale of drugs. Drugs may also be used instrumentally in facilitating criminal activity, for example, when individuals use drugs with the aim of gaining courage or confidence to intentionally perpetrate violent acts. For example, Ayres and Treadwell (2012) found that amongst members of groups associated with football hooliganism a mix of alcohol and cocaine was purposefully selected to give them confidence and clarity of mind so as to "perform as better and more ferocious fighters", both in the context of the football

firm as well as in their wider mainstream leisure pursuits within the night time economy (Ayres & Treadwell 2012: 87). Another explanation offered by an offender, suggested that cocaine was a preferable drug for facilitating violence, as opposed to Valium (diazepam), as it did not 'slow you down' (McKinlay, Forsyth & Khan, 2009). However, one of the limitations of our dataset is that we do not know the context of assault.

Estimates from the current study, using 2006 data, suggested that one in 8 young people have tried powder cocaine (12.5%). The Crime Survey for England and Wales periodically examines the prevalence of powder cocaine use in England and Wales and estimates generated in our study are higher than those generated by the CSEW (formerly the British Crime Survey) in 2006/07 for those aged 16-24; 11.2% had tried powder cocaine, 6.1% had done so in the last year and 3.2% had done so in the last four weeks (Murphy and Roe, 2007). This may be a feature of the slightly older sample size used here (16-25 year olds). Our study also revealed that the proportion of males consuming cocaine was higher than the proportion of females doing so, corresponding to findings obtained more recently in the CSEW that men were twice as likely as women to use powder cocaine (Hoare and Moon, 2010). Nearly all of those who had reported cocaine in the last month, were also frequent heavy episodic drinkers (at least once a month), in keeping with findings from other studies (see Ayres & Treadwell, 2012; Denison et al., 1997; Home Office 2012; Williams & Parker, 2001).

Whilst yielding interesting findings, no causal ordering of whether individual's alcohol consumption predated their cocaine use can be established in this study: the current study is limited in its ability to link alcohol and cocaine consumption temporally (for example, in the same use episode), or show whether these behaviours occurred before or after an incident of assault. This in turn makes it difficult to identify whether alcohol and cocaine are actually being consumed concomitantly or concurrently and/or at the time of the offence and limits conclusions as to whether these variables were instrumental in causing people to behave

violently. However, until recently (before the introduction of new questions in the most recent survey; 2011/12) the examination of simultaneous use in the Crime Survey for England and Wales had not been possible, examining only concurrent polydrug and polysubstance use. Findings from the current study suggest there is a subsample of alcohol and cocaine users who are likely to exhibit violent behaviour, however further work aimed at establishing the impact of temporally linked alcohol and cocaine consumption, employing longitudinal methods, is encouraged to tease out the nature of the relationship between combined alcohol and cocaine use and violent behaviour more specifically and to allow for claims about causality.

## **Conclusions**

Young people's behaviour and lives are complex and not all factors influencing their behaviour can be accounted for in the statistical models presented here. However, findings suggest that regular drinking in excess of the recommended limits is not only widespread, but that this behaviour significantly increases the likelihood of committing violent assault in the same year, with a monotonic increase in risk with increased frequency. These effects, however, are seemingly mediated by systemic determinants and lifestyle factors, which are potentially associated with all three behaviours (heavy episodic drinking, cocaine use and violent behaviour).

Current findings additionally highlight cocaine use as a risk factor for violent offending, when controlling for drinking behaviour. However there was no evidence of a multiplicative effect of the combination of alcohol and cocaine use, and such an effect should therefore not be assumed. Nonetheless, cocaine consumption does appear to be more likely amongst those that also engage in heavy episodic drinking. These findings suggest that alcohol and cocaine consumption patterns should be addressed as risk factors for violent behaviour, however, that caution should be issued in interpreting how combinations of alcohol and drug use may be

operating. Other study designs to test the effects of combined alcohol and cocaine use are, however, encouraged given an association found here between those using cocaine and regular heavy episodic drinking as well as in other studies (Ayres & Treadwell 2012; Home Office 2012). Nonetheless, the current findings suggest that interventions aimed at reducing drinking or cocaine consumption are likely to have an impact in reducing offending behaviour, but that in terms of the alcohol-violence relationship in particular due attention must also be given to other confounding factors such as prior violent victimisation and wider anti-social behaviour (e.g. Lightowlers, 2012).

In conclusion, this study offers some interesting insights into the extent and prevalence of both heavy episodic drinking and cocaine use amongst young people in England and Wales and the extent to which concomitant use is associated with violent offending, in the form of assault offences. Moreover, findings suggest caution should be issued in assuming a multiplicative effect of combined alcohol and cocaine use on likelihood of committing assault offences; from a behavioural, as opposed to a physiological standpoint.

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### **Declaration of interest**

The authors report no conflicts of interest.

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<sup>1</sup>“Experience of violence was measured by asking whether clients were personally involved (either as a perpetrator or a victim) in an incident in which someone was pushing, grabbing, hitting, kicking, threatening with a weapon or being physically aggressive in any other way in the past year (Wells, Graham, & West, 2000)” (McDonald et al., 2008:202-203).

<sup>2</sup> Audio-CASI allows respondents to listen to questions and possible answers via headphones before entering their response directly into a computer.

<sup>3</sup> The model presented in this paper was run both with and without the weights applied. The models did not differ in the pattern of findings they yielded; thus the weighted model will be presented here, as it optimises the representation of the target population.

<sup>4</sup> The variables entered into the modelling procedure were: being male, age, whether respondent was white or not, whether respondent was single or not, whether respondent had been a victim of violence, whether respondent had perpetrated ASB, whether the respondent visits a pub 2/3 times a month or more, whether the respondent visits a club 2/3 times a month or more and whether the respondent has received A-level qualifications or not.

<sup>5</sup> An additional modelling step was performed, although not presented here first examining the effect of introducing age and gender which did not mediate the heavy episodic drinking coefficient.

<sup>6</sup> Defined as an average of at least 4 ounces of pure alcohol per day.