Introduction

It is almost 20 years since the World Health Organization declared violence a major public health problem. The declaration raised the importance of understanding violence and aggression more fully in order to assist in taking steps to reducing it (Huesmann and Kirwil, 2007). Over the past century, psychological theories of aggression have moved on from the ‘frustration-aggression’ theory (Dollard et al., 1939), where frustration from thwarted goals was deemed to influence aggression. The revisions of Berkowitz (1989), and the work of Novaco (1975), saw the model changed to include anger as a mediating factor. The General Aggression Model (GAM, Anderson and Bushman, 2002) was then developed and drew from these early theories, emphasizing the role of cognitive and affective processes and the physiological effects of arousal in the outcome of aggression.

Cognition is pivotal in theoretical models describing the pathway to aggression or violence. In the GAM, cognition plays a crucial role in both the route (the present internal state, what the person is thinking about generally before a social encounter) and outcome process (the appraisal of the social encounter, the way a person interprets an event). Contemporary models of violence (e.g. Catalyst Model; Ferguson, Rueda, Cruz, Ferguson, Fritz & Smith, 2008) also indicate the importance of violent cognitions in the pathway towards violence. Anderson and Bushman (2002) suggest that cognition plays a part in violence and aggression through a combination of hostile thoughts and scripts. Hostile thoughts relate to accessible aggressive thinking drawn from the memory of the individual, these thoughts and the process of
rumination means that they become more readily, or chronically accessible. Scripts are slightly different, in that they may be less of a conscious activity and are developed through exposure and experience. It is argued that the greater level and frequency of exposure to violence, the stronger the associated scripts will become (Huesmann, 1998). So, individuals who have chronically accessible hostile thoughts are more likely to attribute a hostile intention from an ambiguous encounter; those who have been more exposed to violence, may automatically anticipate (or ‘short cut’) to violence being an appropriate response. These approaches to thinking are also referred to as ‘hostile attribution bias’ by Crick and Dodge (1994). A set of expectancies and explanations for the behavior of others which become cognitive ‘short-cut’ processes in pathway towards aggression and violence. This style of thinking in the GAM trigger the affect and arousal stimuli in the anticipated way, creating negative affect and increasing arousal.

Within psychological interventions, the importance of identifying and treating cognitions has been demonstrated by meta-analysis (Pearson et al., 2002), where interventions that failed to address cognitive elements were shown to be less effective. Collie et al., (2007) added further evidence in their review of violence interventions reporting the importance of focusing on cognition in order to enhance the effectiveness of interventions. This leaves the clinician with the dilemma of knowing cognition is important to include in intervention work, but with limited means of assessing violent thinking. Sexual offending research has addressed this issue and there are many validated measures of thinking available to be used with sexual offender populations (e.g. Abel et al., 1989; Bumby, 1996; Burt, 1980). The
measures of cognition in the treatment of sexual offending feed directly into the
design and evaluation of the sexual offender treatment programs offered in justice
settings in England and Wales. There is a need for violence offending research to
‘catch up’.

Walker (2005) noted that, although theories recognize the importance of cognition,
there has been little progress in ‘measuring’ violent thinking. He argued that whilst
there are numerous measures for anger (e.g. Novaco, 1994; 2003), hostility,
impulsivity, empathy and paranoia, there are a paucity of measures to adequately
identify the type of thinking that is related to violence specifically, rather than more
general antisocial or criminal thinking styles. Bowes and McMurran (2013) conducted
a systematic review that found only two measures of violent thinking that were
psychometrically robust, reliable and valid for use with forensic populations; The
Maudsley Violence Questionnaire (MVQ) (Walker, 2005) and the EXPAGG (Campbell
et al., 1992). The MVQ has also demonstrated predictive validity (Walker & Bowes,
2013) which informed our choice to use it in this study.

The MVQ explores violent thinking measuring two factors, ‘Machismo’ and
‘Acceptance’. Machismo relates to embarrassment over backing down from violence
or confrontations, justifying violence as a means of responding to threats or attacks
and violence as part of being a man (macho). Example items include; ‘Sometimes you
have to be violent to show that you are a man.’, ‘If I don’t show that I’m tough and
strong, people will think I’m weak and pathetic.’ Acceptance includes enjoying
violence (e.g. in films or sport) as well as recording those who have an objection to
violence, or reject violence as an acceptable behavior. Example items include; ‘It is
OK (or normal) to hit someone if they hit you first.’ ‘Fighting can make you feel alive
and ‘fired up’.’

The MVQ was originally developed for use with young people (16-18 years) in the UK
(Walker, 2005). It has also been used with adults. Warnock-Parkes, et al., (2008)
demonstrated that violent thinking related to both self-reported and officially
recorded violence in a secure health setting with a sample of mentally disordered
offenders. Walker and Bowes, (2013) demonstrated that violent thinking was
predictive of self-reported violence with an offender sample and with a small sample
of adult males with no offending history.

In addition to cognition, we know that alcohol has a significant role in criminal
violence. Around half of all violent crimes are alcohol-related (Flatley et al., 2010) and
73% of prisoners require intervention for their alcohol use (Bowes et al., 2009).
Alcohol (mis)use alone does not explain violence, but it has an important contributory
role, with meta-analyses suggesting it accounts for 25% of the variance of aggressive
behavior (Exum, 2006). McMurran et al. (2006) set out that there are numerous
explanations for alcohol-related aggression. They suggest that there are 11 major
areas, including; alcohol altering cognitive functioning, exacerbated trait aggression,
context, outcome expectancies and alcohol as an excuse for violence. All of these
issues have a significant overlap with violent thinking, the cognitive and emotional
experiences of individuals.
In Novaco’s angry aggression system, (Robins and Novaco, 1999) aggression is explained by the interaction of external and internal factors including; perceived provocation, cognitive appraisals, physiological arousal and learned behavioral responses. The internal factors are particularly pertinent to this study and to violent thinking. Individual factors including hostile attributions, anger arousal, alcohol outcome expectancies of aggression and impulsivity in social problem solving have all been shown to be influential on aggression (Dodge et al., 1990; Novaco, 2011; McMurran et al., 2002; Ramadan and McMurran, 2005). Alcohol mis-use and violent thinking are important to consider when exploring violent behavior.

The Alcohol Use Disorders Identification Test (AUDIT, Babor et al., 2001) is a reliable and valid measure of harmful alcohol use. The AUDIT can be used as a screening tool to explore whether participants would be suitable for intervention and what level of intervention may be required.

The current study explored the roles of alcohol misuse and violent thinking on self-reported violence in an adult (non-offender) population. It was expected that both factors (thinking and alcohol misuse) would demonstrate a positive associate with self-reported violence.

**Method**

**Participants**
The sample is comprised of 808 adult participants, 569 female and 239 male participants. The samples were drawn from student populations from one UK University (School of Health Sciences) and received credits for participating in research activities as they contributed to the final year dissertations of three students (Lewis, Hughes and Hyde). The mean age of the sample was 23.13yrs (SD 6.10, range 18-62). Ethnicity was reported by 377 (45.90%) of the participants; 340 (41.36%) reported their ethnicity to be White, 10 (1.21%) Asian, 4 Black, 2 Mixed race and 21 Other. Participants engaged in the study by completing the measures using a web-based tool called ‘Qualtrics’ which included both consent and debriefing sections. Data were analysed using SPSS v23.

Measures

Maudsley Violence Questionnaire (MVQ, Walker, 2005)

The MVQ is a reliable and valid (Walker, 2005; Walker and Bowes, 2013) 56 item self-report questionnaire that measures violent thinking. Participants rate whether the statements on the questionnaire are generally “true” or ‘false”. The MVQ has two subscales: Machismo (42 items) and Acceptance (12 items). Alpha coefficients measuring the reliability of the MVQ range from 0.74 to 0.93 (Walker, 2005; Walker and Bowes, 2013).

Self-Report Violence Scale

This scale is an adaptation of the Australian validated Self-Reported Delinquency Scale (Mak, 1993; Carroll et al., 1996) and uses only the items related to violence from this scale. It is a nine item scale where participants are asked to report how frequently
they have engaged in a range of violent behaviors over the past 12 months using a five point Likert scale to rate the frequency ranging from ‘Never’ to ‘More than once a Month’. The scale asks respondents to assess the frequency they have engaged in a number of violent behaviors (‘Purposely hurt or beaten someone up?’ ‘Used a weapon of some sort, e.g. knife, stick, chains or a bottle in a fight’). This scale has been used in a number of studies in the UK (e.g. Walker, 2005; Walker and Bowes, 2013). The self-report scale has also been used together, with officially recorded violence in previous studies (Warnock-Parkes et al., 2008, Walker and Bowes, 2013) and correlated with officially recorded violence, allaying some concerns over self-reported data.

Alcohol Use Disorder Identification Test (AUDIT, Babor et al., 2001).

The AUDIT is a reliable, valid and widely used method of screening for excessive drinking (Reinert and Allen, 2007). It is a 10 item questionnaire where participants are asked to rate the frequency of their drinking behavior (for 6 items), using a 5 item Likert scale ranging from ‘Never’ to ‘Daily or almost daily’ (scoring 0-4). For the other items, participants are asked to rate frequency and amount of alcohol use and then, whether they have experienced injuries or concern from others about their drinking, with three possible responses. The AUDIT records a score of 0-40 depending on the responses from participants with a variety of clinical interventions recommended depending on the scores of participants. For this study, we were interested as to whether the AUDIT was related to self-reported violence and used the score as an incremental scale for analysis.
Ethical approval for the studies comprising this article was provided by the Cardiff School of Health Sciences.

**Statistical analyses**

The current, relatively large sample study explores the reliability of the measure associated with self-reported violence with a general adult population (male and female). A power analysis from a previous study (Warnock-Parkes et al., 2008) identified that a sample size of 59 is appropriate to identify significant correlations ($r < 0.35$) with self-reported violence at the 0.05 level. As this study uses regression analysis, the larger sample size for the potential variables is appropriate and exceeds the recommendations from the previous power analysis. Forced enter logistic regression analyses is conducted to explore the best model for predicting the dependent variable, self-reported violence using the variables MVQ scores, gender, age and alcohol (mis)use. Separate regression analyses are presented for males and females in the study.

**Results**

**Reliability**

The MVQ factors internal consistency for this study demonstrate a Cronbach alpha of 0.92 for the Machismo factor and 0.82 for Acceptance. When separated by gender, the Machismo factor demonstrated a Cronbach alpha of 0.91 for women and 0.92 for men. Acceptance demonstrated a Cronbach alpha of 0.78 for women and 0.77 for men. Mean scores are reported in Table 1. Comparisons of mean scores from previous studies are included.
Table 1: Mean and standard deviation (SD) scores for MVQ factors and self-reported violence, AUDIT and Pearson’s R correlations with Self-reported violence.

The AUDIT scores in Table 1 are presented continuously, though the scores relate to clinical categories for diagnostic purposes when using the tool. The AUDIT identifies three categories of alcohol problems, low (7 or less), medium (8-15) and high level of alcohol problems (16 or more). DeMartini and Carey (2012) indicated that, when using the AUDIT with college students, a cut-off of 7 for males and 5 for females would be more appropriate. The mean scores above indicate that our sample fell in to the ‘medium level of alcohol problems’ (scores 8-15) and scores above 8 are recommended as indicators of hazardous and harmful alcohol use. However, as the majority of our sample are college students, these scores, being above 7, indicate ‘at-risk’ drinking (DeMartini and Carey, 2012).

Self-reported violence findings.

There were significant differences between male and female participants on their levels of self-reported violence, with males reporting more violence (t=5.33, df=754, p<0.001). There were significant correlations between all the measures and self-reported violence, the results of the Pearson’s correlations are shown in Table 1.

Regression
For the regression analysis, we identified one item that did not relate to a criminal act of violence (item 8, ‘Have you been involved in bullying another person?’) whereas all the others did. We therefore excluded this item. Levels of self-reported violence (SRV) across the sample were low and as a result our data was skewed which impacted on options for using traditional regression. We considered the most appropriate method to analyze the data (transform, mean/median split) and decided to select categorical data analysis. We categorized participants into those who had been violent ‘any violence’ and those who had not been violent (no violence). The variable was recoded and logistic regression was used. Separate regression models were used for male and female participants, both conducted using forced enter logistic regression models with the any violence/none groups as dependent variables and the factors identified as significant from the correlation analysis as covariates (MVQ Machismo, MVQ Acceptance and MVQ Audit). Results are presented in Table 2.

Table 2: Regression models by gender.

Table 2 about here

For the male participants, whilst all the variables were significant, only MVQ Machismo remained in the final regression model ($R^2=0.36$, standard error=0.05, $\beta=0.29$, $x^2=68.8$, $p<0.00$). Neither MVQ Acceptance nor the AUDIT significantly improved this model. The Nagelkerke R Squared value indicates that Machismo accounted for 36% of the variance. The Hosmer and Lemeshow test was, as desired, not significant ($p=0.45$). The classification table indicates that the model was 72.3%
accurate. The ExpB was 1.33, so for every 3 points a participant increased their score on the MVQ Machismo scale, they were twice as likely to report violence.

For women, whilst all the variables were entered, only MVQ Machismo was significant ($x^2=46.61$, df=1, $p<0.001$). The Nagelkerke R Squared indicates that Machismo accounts for 11.5% of the variance. The Hosmer and Lemeshow test was again, not significant ($p=0.34$) and the classification table indicates that the model was 62.9% accurate. The ExpB was 1.19.

Discussion

This study provides strong evidence that MVQ Machismo is an important factor in self-reported violence for both men and women. According to our study, Machismo is a unique predictor of self-reported violence. Alcohol is an important factor within this sample. Young, British people of both genders who report hazardous drinking also report more self-reported violence. Whilst our study failed to demonstrate that alcohol misuse was predictive of self-reported violence, the strong correlation between alcohol misuse and violence warrants further exploration, with both genders.

Machismo has previously been identified as a significant factor associated with male violence (e.g. Walker and Bowes, 2013; Warnock-Parkes et al., 2008) and this study with a large, adult sample provides further evidence for the importance of ‘Macho’ thinking in male violence. In this study Machismo accounted for a little over a third of
the variance in self-reported violence scores. The regression analysis also indicated that the MVQ was a good measure in terms of accuracy and, that for every three point increase in scores on Machismo, the likelihood of self-reporting violence doubles (over the previous 12 months).

The finding that Machismo, and not acceptance, was significant in female violence is not consistent with previous studies, where MVQ Acceptance had been shown to be more influential (Walker, 2005). Machismo accounted for a small proportion of the variance (11.5%) of self-reported violence, indicating the need for further research to identify the factors that are important in female violence. One problem with the MVQ (which was originally developed with violent males) is that several items use male gender specific terms related to ‘manliness’. These items may be more difficult for women to identify with and respond to. Whilst this study demonstrates that Machismo is a factor in female violence, there is more work to be done to explore the thinking patterns that are salient to female violence.

Overall, the study provides some support for the theoretical models of aggression and violence that highlight violent thinking as relevant; violent thinking is indeed pivotal to the behavioral outcome (violent behavior). The findings of the study also have some practice implications: There is now good evidence that the MVQ is a reliable measure of violent thinking and this allows clinicians to both measure the extent violent thinking is pertinent to service users and to help them design interventions to address violent thinking and therefore, violent behavior. The factors in the MVQ could
also be helpful in work with service users to formulate their use of violence and to
guide both the assessment and treatment work that follows.

The implications of this study have societal implications too. There are many
interventions considered to address problems associated with alcohol misuse,
including those aimed at addressing alcohol-related violence (e.g. the Cardiff Model,
Sheppard, 2007). These have been shown to be effective at an environmental level in
reducing the problems associated with alcohol-related violence. This study suggests
that there is also a need to address, at an individual level, the thinking associated with
violence, in order to reduce violence, more generally and, in order to reduce alcohol-
related violence.

The study has some limitations related to the self-selected sample and that the study
did not check the official criminal histories of participants, therefore there is an
assumption that the sample is representative of an adult, non-offender population.
The measures rely on the self-report and memory of participants in rating both their
thinking and behavior. The study did not employ a female specific measure of violent
thinking for women, although this is because the authors have been unable to find
such a measure in the literature. This is problematic because the majority of the
sample was female. Lastly, we do not have the ethnicity data for all the sample
(missing data) and the data we have indicates that >90% of the sample was white.
This may impact on the generalizability of the findings across different ethnic groups.

References:


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