

Alcohol, aggression and violence:  
*A critical examination of theories*

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RESEARCH – POLICY – EDUCATION – EVALUATION



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# 1 INTRODUCTION

In a study on the use of alcohol in the training of British Army Infantrymen, we encountered a sergeant who believed he could determine the age of Scotch whisky by how aggressive it made him feel. The older the Scotch, the greater the “aggressive potential” it built up, he said. Although most drinkers do not perform calculations of effect with such precision, it is a commonly held belief that alcohol causes aggression.

Many people believe that tabloid headlines and statistics about drunken violence confirm this. There is no question that, in some societies, there is a strong correlation or association between alcohol and some forms of violence, but what most lay observers fail to understand is that *causation* is not demonstrated by correlation.<sup>1</sup> The real question is: what exactly is the nature of the link between alcohol and aggression – is it direct or indirect; is it chemical, cultural or environmental?

This question is not merely academic: the implications are quite serious. If alcohol does indeed *cause* aggression, government controls on sales, increases on tax and other prohibitive measures could be seen as justified; if, on the other hand, alcohol is merely used as an excuse for violent behaviour, is a side-effect of violence, or is even a moderating influence on aggression itself, government efforts would be better spent on social education, health promotion, and sanctions on violent individuals rather than sanctions on the substance.

The conclusion of this literature review is that alcohol can, *in certain cultures and situations*, be a facilitator of aggression *if* aggression is there to begin with, both in the individual and in the cultural environment. It does not produce it where it doesn't already exist.

The strongest evidence against a causal connection between alcohol and violence can be found if one simply unfolds the arguments using commonsense logic: worldwide, many more people drink alcohol and are *not* violent than drink alcohol and commit violent acts. More sober people commit violent acts than inebriated people. To suggest that alcohol causes violence is as illogical as to suggest that, since domestic violence is strongly associated with marriage, marriage causes domestic violence, and should therefore be curtailed or banned. The causality between alcohol and violence lies, as with marriage, in the personal, cultural, and environmental context of the relationship.

This paper will therefore review the empirical evidence documented in scientific literature that attempts to prove or disprove a causal link between alcohol and aggression or violence.<sup>2 3</sup> A summary of the main arguments can be found in the following section.

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<sup>1</sup> Renfrew, John, W. (1997)

<sup>2</sup> It must be noted that aggression and violence are quite distinct: aggression can be either a positive or a negative feature of human nature; aggressive displays can be highly ritualised means of *avoiding* violence (See: Marsh, P (1978)), and extreme acts of violence can be committed without obvious aggression. This paper will consider the role of alcohol in both human aggression and violence.

## 2 EXECUTIVE SUMMARY

### 2.1 EVIDENCE FOR

Several models have been proposed to explain the apparent association between drinking and aggression. Below are the most popular explanations used to establish a causal relationship between alcohol and aggression. Many of the following theories are backed up with strong evidence to associate alcohol with violence, but not, as we shall see, to prove that alcohol is the direct cause of violence. Each theory will be explained in more detail in the sections to follow.

- 1) **Availability theory:** that the availability of alcohol causes an increase in violence. It has been demonstrated statistically that greater availability of alcohol may be associated with an increase in violence (on an aggregate level), but only in those countries that have ‘an attendant culture of violence,’ or in which people expect alcohol to cause violence. It does not prove that alcohol causes violence.
- 2) **Alcohol myopia or the ‘salience’ hypothesis:** alcohol causes ‘tunnel vision,’ focusing a drinker’s concentration on one ‘salient’ or most important aspect of a situation. This reduction in the perceptual field, combined with conditions of real or imagined hostile provocation, can lead some individuals (most notably males with an aggressive or anti-social predisposition) to respond with violence. Alcohol myopia in itself, however, does not cause aggression.
- 3) **Cognitive impairment:** Alcohol-induced cognitive impairment can lead a person to misinterpret or misjudge social cues and over-estimate levels of threat. This, the theory maintains, increases the likelihood of a violent response. But cognitive impairment by alcohol can also lead to mirth and amiability.
- 4) **Disinhibition:** In many northern and western societies, alcohol is believed to be a ‘disinhibitor:’ a substance that ‘unleashes’ primal urges such as aggression. Alcohol is thought to weaken the brain’s ‘restraints’ on impulsive and violent behaviours, and cause the controlling socialisation and ritualisation of natural urges to unravel. This theory fails to recognise that inhibitions are rules that we follow and break only when we believe we have licence to, and, as such, are socially, not chemically determined. Alcohol does not cause disinhibition but is a symbol that gives people licence to behave in an uninhibited way.
- 5) **Reduced anxiety (anxiolysis theory):** Alcohol reduces anxiety. Drinkers are therefore more likely to be aggressive because they are less anxious about the consequences of violence, so the theory goes. This theory rests on the fallacious and unproven assumption that aggression is the underlying human condition. Unfortunately for the proponents of this theory, many experiments have also shown that alcohol is just as likely to increase anxiety as to reduce it.

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<sup>3</sup> Also overlooked is the fact that alcohol-related violence is not associated with alcohol consumption *per se*, but only with alcohol intoxication (Wells et al (2000)).

- 6) **Pharmacological effects:** many scientists have tried to prove that alcohol's effect on hormones and neurotransmitters (testosterone and serotonin, for example) lead to aggressive behaviour. The evidence for a direct chemical, neuronal or hormonal relationship between alcohol consumption and acts of aggression, however, remains circumstantial. It can be shown that alcohol can lower serotonin levels, for example, but it has not been proven that this will result in aggressive behaviour.

## 2.2 EVIDENCE AGAINST

The evidence *against* a causal relationship between alcohol and aggression comes mainly from studies of the following:

- 1) **Beliefs and expectancies:** the belief that alcohol causes aggression increases the likelihood of an aggressive response.
- 2) **Cross-cultural comparisons of the use of alcohol:** alcohol is only associated with aggression in those societies that make a cultural connection between alcohol and violence.
- 3) **Inebriation and self control:** there is empirically tested evidence that inebriated people have considerable self-control over aggressive responses if they have an incentive and/or social reason to behave non-violently.
- 4) **Male-female differences in aggressiveness after drinking:** alcohol appears to increase aggression only in men who subscribe to a 'macho culture' anyway. According to some experiments, women, who are less aggressive than men to start with, become even less aggressive under the influence of alcohol, unless they are very strongly and persistently provoked.
- 5) **The aggressive personality:** people with aggression-related disorders are more likely to drink. Violent or aggressive behaviour cannot be predicted by alcohol consumption. Alcohol consumption, on the other hand, can be predicted by a history of aggressive behaviour or by a belief that alcohol will cause such behaviour. (In other words, people with violent tendencies choose to drink).
- 6) **Deviance disavowal:** in some cultures, alcohol offers an excuse for disinhibited, deviant or aggressive behaviour.
- 7) **Drinking environment:** a drinking environment that is tolerant to aggression, or is poorly managed, causes a greater incidence of violence among drinkers.

## 3 RESEARCH FINDINGS: EVIDENCE *FOR*

### 3.1 AVAILABILITY THEORY

Several researchers have claimed to have found a causal link between alcohol and violence by ‘mapping’ the density of alcohol sales outlets in an area over time, and comparing that to the area’s homicide rate. Parker and Rebhun (1995) surveyed 256 American cities and published their results in a book, entitled “Alcohol and Homicide: a deadly combination of two American traditions.”<sup>4</sup> They found that a combination of poverty and alcohol-availability correlates with elevated homicide rates.<sup>5</sup> Strangely enough, though, the same researchers found that the correlation varies according to race and choice of beverage. Three years after the cities survey, Parker (same as above) and Cartmill (1998) found a negative association with wine consumption among white Americans. That is, the higher the consumption, the lower the homicide rate.<sup>6</sup>

The alleged ‘homicidal’ side-effect of alcohol also differs according to the beverage: the “aggression potential” of spirits is greater, apparently than wine. Beer is, according to these researchers, also positively associated with homicide, but only among ‘non-white’ Americans.<sup>7</sup>

The fact is often overlooked that the psychoactive ingredient in all alcoholic drinks – ethanol – is exactly the same. The difference between alcoholic beverages lies in cultural variation in use, and in the effects that are *believed* to result from consumption of various products. Cross-cultural studies of drinking confirm that the association of violence with a particular beverage type is due to the expectation of effects rather than the pharmacological properties of the type of drink.<sup>8</sup>

These studies do show that density of retail outlets selling alcohol is a strong predictor of homicide rates. It is conceivable that the density of hot-dog stands or pawn shops in American cities would also have a positive correlation with homicide rates. Also, the study does not indicate whether the homicides were committed by people who had bought and consumed alcohol from these retail outlets. It must be noted, however, that the only areas studied were in North American cities. Is it true also for European cities, where alcohol is sold not only in most shops but also, in some cities, from vending machines at train and subway stations?<sup>9</sup>

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<sup>4</sup> Wouldn’t the combination of homicide with anything – even stamp-collecting – be as deadly? And if homicide is indeed “an American tradition,” surely it will continue with or without alcohol, much like Thanksgiving or the Superbowl.

<sup>5</sup> Parker R. N. and Rebhun, L.A. (1995)

<sup>6</sup> Parker R. N. and Cartmill, R.S. (1998)

<sup>7</sup> Ibid

<sup>8</sup> Smart, R.G. (1996)

<sup>9</sup> A more recent study of levels of alcohol consumption and violence in European countries finds stronger correlation between alcohol and violence in northern than in southern European countries (Nordström et al, (2001)). An earlier study by the same authors found that there was an association between alcohol and homicide, but only for spirits consumed in private (Nordström et al (1998)). Although it might now be considered from another era, *The Pub*

The researchers who conducted the survey of homicide rates and alcohol outlets in the United States claim to have controlled for confounding factors that could affect the homicide rate, such as population density and poverty, but what they failed to control for is the prevalence in the culture of expectation of violence after drinking, or a culture of the *acceptability* or *inevitability* of violence. Ease of access to alcohol in societies that have a permissive or even reverent attitude to violence, and a belief that alcohol causes violence, will correlate, no doubt, with a greater incidence of violence. It has been suggested that a violent lifestyle in itself will lead to a greater consumption of alcohol.<sup>10</sup> One could argue that violence causes drinking, not the other way around, and that the concentration of alcohol retail outlets in certain areas of America is a symptom of a culture of violence, not the cause of it.

The fallout from the Parker study has been widespread. In California, alcohol retailers have been denied licences in areas of “liquor-store saturation.”<sup>11 12</sup> An article in Mother Jones magazine cites Parker as saying he hopes that communities are empowered by his research to “prevent alcohol outlets and the attendant culture of violence from overrunning their neighbourhoods.”<sup>13</sup>

The choice of the word ‘attendant’ assumes that alcohol outlets are directly responsible for the culture of violence. America certainly has a culture of violence, but this was equally evident – if not more so – during prohibition, and cannot be attributed to the presence of alcohol retail outlets.

If Parker and his colleagues are truly concerned about the perpetuation of the “tradition of homicide” in American cities, they would be advised to focus on the tolerance (and glorification) of violence itself, rather than the tolerance of alcohol.

In the next section, we will look at the direct effect of a tolerant attitude to violence on the incidence of alcohol-related violence.

## **3.2 ALCOHOL MYOPIA**

According to the alcohol myopia, or ‘salience’ hypothesis, alcohol consumption causes a reduction in the perceptual field, so that the drinker’s attention is narrowed to focus on what he or she perceives to be the salient or most important aspects of a

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*and the People* (1943) reported an *inverse* correlation between the number of pubs per 2000 of population and convictions for drunkenness; that is, the more pubs per head of population, the fewer the convictions of drunkenness. (Mass Observation (1943))

<sup>10</sup> See, for example, Condry & Condry (1976); Bland (1998); von der Phalen et al (2002).

<sup>11</sup> Alaniz, M.L. (1998)

<sup>12</sup> A policy to reduce availability in poor areas could be construed as a racist and paternalistic approach: a poor Latino man is forced to walk 6 blocks to buy a can of beer after a hard day’s work, because, if a liquor store were conveniently located any closer to his apartment, he might be incited to commit homicide?

<sup>13</sup> Sinha, M (1995)

situation and to neglect or ignore other information.<sup>14</sup> Some have called this the drinker's 'tunnel vision.'

Although we have probably all encountered the 'myopic' drinker who focuses obsessively and annoyingly on one person or activity, studies of pilots who fly under the influence of alcohol provide a more detailed illustration of alcohol myopia in action.<sup>15</sup>

In the Billings study, moderate doses of alcohol were found not to affect a pilot's ability to handle the aircraft in the normal way, but the alcohol did seem to reduce the frequency with which the pilots performed other important tasks, such as checking the weather forecasts and fuel levels. Alcohol myopia caused them to concentrate on the one task that they felt was the most important: flying the plane.

Other studies have suggested that alcohol myopia may explain the frequency of unprotected sex among people who, sober, would always use a condom. Two studies found that alcohol consumption decreases the likelihood that subjects will use a condom. The results were explained in terms of alcohol myopia: despite considering unprotected sex to be foolish, irresponsible and risky, the benefits of having sex were, 'in the moment,' the sole focus of their attention under the influence of alcohol.<sup>16</sup>

But alcohol myopia cannot be said to increase risk-taking behaviour in general. For example, women who are concerned about avoiding pregnancy might, after drinking, have a myopic focus on finding and affixing the condom rather than completing the act of intercourse, as was found in an investigation by the Kinsey Institute in America.<sup>17</sup>

The sergeant quoted at the beginning of this paper was marching along with the traditional association of alcohol and aggression among fighting men. Contrary to what he might believe, however, the historical use of alcohol before battle probably had more to do with the usefulness of alcohol myopia than it had to do with aggression. It is true that numerous histories report the use of alcohol in battles. But if the gin and rum rations were doubled before the battles of Waterloo and Trafalgar, it was undoubtedly not to unleash the troops' aggression, as this would have been dangerously counter-productive, but to calm panic in the face of battle. As alcohol myopia, or 'tunnel vision,' restricts incoming information to the brain, and causes intense focus on only one thing at a time, troops who had downed their ration were able to concentrate calmly and obsessively on the repetitious loading and firing of rifles or canons, and not on the fearsome approaching enemy.<sup>18</sup>

Alcohol myopia cannot be said to cause aggression or violence, but if a drinker had an antecedent aggressive or violent intent, alcohol might concentrate this intent into an abnormally focused purpose, and result in a greater application of force than would result from an outburst by the same person sober. It has been found that intoxication

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<sup>14</sup> Steele & Josephs (1990)

<sup>15</sup> Billings et al (1973)

<sup>16</sup> MacDonald et al (1996)

<sup>17</sup> Kinsey Institute, [www.kinseyinstitute.org](http://www.kinseyinstitute.org)

<sup>18</sup> Longford, E. (1982)

will not increase the frequency of violent incidents or crimes, but it can increase the severity of those acts.<sup>19</sup>

### 3.3 COGNITIVE IMPAIRMENT

Research has shown that alcohol intoxication can temporarily impair several aspects of higher brain functioning, such as:

- planning
- intellectual ability
- linguistic ability
- attention
- memory.<sup>20</sup>

The theory is that such alcohol-induced cognitive impairment causes a person to misinterpret or misjudge social cues, over-estimate levels of threat, and respond with uncharacteristic violence.<sup>21</sup> The escalation that so often accompanies drunken violence may be attributable to the drunken person's insensitivity to 'cues' that would tell a sober person that the victim wants to stop fighting.<sup>22</sup>

It is not in question that high concentrations of alcohol disrupt the brain's ability to filter, to process and interpret information, and to communicate. But an impaired ability to interpret social or interpersonal information does not necessarily result in aggressive behaviour. Alcohol makes it 'easier' for already aggressive people to behave aggressively, by reducing their ability to think and reason effectively. Reducing these cognitive abilities in non-aggressive people, however, does not normally result in aggressive reactions, but much more commonly in laughter, amiability, lethargy, confusion, amorousness, sadness, etc.

Concepts or beliefs about alcohol may also influence the perception of threat from others. One successfully replicated experiment found that participants who associated alcohol with amiable concepts perceived less aggressive intent in others. Conversely, those who associated alcohol with aggressive concepts perceived more aggressive intent.<sup>23</sup> In other words, the perception of external threat is defined not by chemistry but by individual and cultural beliefs. A person's belief that alcohol causes aggression makes it more likely that he will interpret other drunken people to have aggressive intent. This then increases the likelihood that he will respond with inappropriate force. So the *belief* that alcohol causes aggression is, in fact, what results in aggression.

There is considerable evidence from many fields associating deficits in or damage to the frontal-lobe area of the brain with decreased self-regulation of behaviour, or 'disinhibition.'<sup>24 25</sup> Experiments have found that individuals with prefrontal

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<sup>19</sup> Hillbrand et al (1991)

<sup>20</sup> Gibbs (1986); Pernanen (1976; 1991); Peterson et al (1990); Dougherty et al (1999)

<sup>21</sup> Miczek, K.A. et al (1997)

<sup>22</sup> Leonard (1989)

<sup>23</sup> Lange (2002)

<sup>24</sup> Cummings (1995); Moffitt & Henry (1989)

<sup>25</sup> Hecaen & Albert (1978)

dysfunction respond more aggressively to provocation, and cannot inhibit this response, even when promised rewards or threatened with punishment.<sup>26</sup> Because alcohol is known to affect this area of the brain, it was assumed that the aggressive behaviour of subjects whose frontal lobes were temporarily affected by alcohol would mirror that of ‘damaged’ subjects. Contrary to the hypothesis, however, experiments showed that even highly intoxicated individuals (who performed well on cognitive tests – i.e. who had normally functioning frontal lobes before drinking) “had no difficulty inhibiting their aggression” when a monetary reward was offered. In other words, although alcohol impairs cognitive abilities, in people of normal intelligence this impairment does not interfere with the ability to inhibit aggression.

### 3.4 DISINHIBITION

Most people believe that alcohol is a ‘disinhibitor’: that is, a substance that reduces or lessens our natural inhibitions. But what are ‘inhibitions’?

Inhibitions are defined as “standards for acceptable behaviour which are transmitted by the culture and internalized by the individual.”<sup>27</sup> Humans do have ‘built-in,’ or biologically ‘hard-wired’ inhibitions – behaviours that our evolutionary programming causes us to find instinctively wrong and ‘unnatural:’ incest and cannibalism, for example, are ultimate ‘taboos’ in nearly all human societies. These ingrained inhibitions are rarely broken, even by the most intoxicated of people. But when people say that alcohol is a disinhibitor, they do not mean that a few drinks will cause us to sleep with our mothers or eat each other: they are talking not about biological inhibitions, but social or cultural inhibitions. Most inhibitions are socially, not chemically determined.

“The cultural expression of inhibition” one anthropologist writes “... is rules.”<sup>28</sup> Inhibition merely means *following the rules*. Disinhibition is *breaking the rules*. There are written and unwritten, spoken and unspoken rules for nearly every waking act we perform.

Although some researchers claim that there is a physiological element to alcohol’s effects – i.e. reduced anxiety about consequences, explained further below – it is the ‘rules’ of the society that determine the character of the ‘disinhibited’ behaviour that might follow from these effects.

Many people claim that, when intoxicated, they act in ways they normally wouldn’t when sober. They attribute this ‘uncharacteristic’ behaviour to some chemical property of alcohol that ‘loosens’ their inhibitions – as if our normal social behaviour were held together by a rusted bolt that needed ‘freeing’ every once in a while with a special oil: alcohol. Alcohol is seen as a chemical ‘liberator’ of our innermost urges. But in respect of breaking the social rules, alcohol is more like the mistletoe that hangs in a doorway at Christmas time. If one finds oneself alongside another person

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<sup>26</sup> Lau & Pihl (1996); Lau et al (1995)

<sup>27</sup> George & Norris (1991)

<sup>28</sup> Fox, R (1994)

under the mistletoe, one is *expected* to break the normal social code of conduct and kiss a stranger. Mistletoe does not *cause* kissing. It is, like alcohol, a symbolic object we use to allow us to break or reverse the rules at times of celebration.

This special alcohol ‘licence to transgress’ is so ingrained in our society that it has, in itself, become a rule. When intoxicated, we are *expected* to alter our behaviour and engage with the crowd in varying degrees of promiscuity, vandalism, public displays of affection, loud and boisterous behaviour, dancing, sex, and other activities that are normally under fairly strict social constraint. Individuals who remain the same, drunk or sober, are at these special occasions regarded with mistrust or contempt, like a sourpuss who refuses to kiss his employee under the mistletoe, abiding by the social code when all around him are breaking it. It is the ‘restrained’ drunks who are then breaking the social rules.

Anthropologists tell us that periods of celebratory rule-breaking are a necessary feature of a rule-bound society. Episodes of ‘cultural remission,’ as they call it, actually serve to remind us of the rules, by allowing us to break them only on special occasions, a few times a year.<sup>29</sup> In ancient times, such rule-breaking events included the Bacchanalia or Saturnalia ‘orgiastic’ festivals: today we have Mardi Gras or New Year’s Eve, for example. But we also have ‘Happy Hour,’ and the traditional Friday or Saturday ‘night out.’ Weekly celebratory drinking has become a feature of western culture. Drinking alcohol is so closely associated with celebration that many of us have to invent an excuse to celebrate before we can allow ourselves to open a bottle – and celebration is associated with extravagant behaviour.

Disinhibition among intoxicated individuals is hard to predict because it is socially determined, and social rules differ from group to group. George and Norris (1991) explain that inhibitions are social rules about behaviour that are internalised by each person; but since the process of ‘internalisation’ is highly individual and not visible, whether ‘disinhibition’ has occurred at all or not is highly subjective, and dependant on who is observing and interpreting the behaviour. “The grayness of such judgments,” say the authors, “coupled with expectations about alcohol’s powers, yields a wide berth for blaming ... misbehaviors on alcohol rather than the person.”<sup>30</sup>

Some scientists, however, claim that this behavioural unpredictability is a property inherent in the alcohol itself, and have put forward the theory of ‘selective disinhibition’ as another means of attributing bad behaviour to alcohol. According to several researchers investigating alcohol’s effect on sexual behaviour, alcohol causes a “discriminative disengagement of self-evaluative processes.”<sup>31</sup>

Proponents of this theory have made an unfortunate choice of terms. *Selective*, by definition, implies a degree of conscious choice – which, contrary to the theory, is precisely what does occur.

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<sup>29</sup> Fox, K. (1999)

<sup>30</sup> George & Norris (1991)

<sup>31</sup> Marlatt & Rohsenow (1980); Lang (1985); Hull & Bond (1986); Crowe & George (1989)

We have been somewhat conditioned in our culture to expect a drug to affect all users in a similar way; this is what drug companies tell us should happen. Marketing drugs would be impossible if, on the box, the caution regarding possible side-effects were to read “depending on what you believe.”

The multiplicity of effects and behaviours that result from drinking is more readily recognised in other cultures than in our own. The ancient Aztecs, for example, honoured a pantheon of gods collectively known as ‘400 Rabbits,’ who were all descended from Two Rabbit, the supreme God of ‘pulque’ (an alcoholic drink from the same plant that produces tequila). The 400 sons of Two Rabbit represented the almost limitless variety of possible behavioural effects intoxication.<sup>32</sup>

### **3.5 REDUCED ANXIETY (ANXIOLYSIS THEORY)**

The thrust of the reduced-anxiety argument is that aggressive or violent behaviour by drinkers is a direct result of alcohol’s dual ability to stimulate and calm. Alcohol stimulates behaviour, and reduces anxiety about the consequences.

Under the influence of alcohol, the normal physiological responses to danger or to the threat of punishment, such as increased heart rate and other ‘arousal cues,’ say Hoaken et al, “...can be seen as ‘reminders’ of the socialization process; arousal means threat, and threat means punishment. Thus, fear should adaptively inhibit the types of behaviours that might initiate an aggressive interaction ... as anxiety cues are reduced, individuals may be more likely to engage in behaviour that has been previously associated with punishment or threat.”<sup>33</sup>

The main problem with this theory is that many studies conclude that alcohol does *not* relieve anxiety,<sup>34</sup> and some indicate that drinking may *increase* anxiety about social approval or disapproval.<sup>35</sup>

The symptoms of an aggressive response (increased heart rate, stimulation) are quite similar to the effects of alcohol. One theory holds that drinkers attribute the physical effects of alcohol to an aggressive response – that is, they interpret the feelings as being caused by aggression – and become aggressive ‘by default.’<sup>36</sup> While this may be true, and is of great interest, particularly in studying young males’ response to alcohol, it does not prove that alcohol causes aggression, as the response to physical sensation in this respect is a socially ‘learned’ phenomenon, not a universal or automatic reaction. This ‘interpretation’ of physical sensation is also dependent on previous experience: in a young non-violent person who has not experienced the ‘highs’ associated with aggressive behaviour, the sensation of increased heart-rate may be interpreted as excitement caused by love or camaraderie. Sumner and Parker, after an exhaustive review of the evidence, concluded that “there is nothing ... to

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<sup>32</sup> Anawalt, P.R. (1997)

<sup>33</sup> Hoaken et al (2003)

<sup>34</sup> Tucker et al (1982); Lisman et al (1983); Pihl & Smith (1983)

<sup>35</sup> Abrams & Wilson (1979); Caudill et al (1987)

<sup>36</sup> Hoaken et al (2003)

support the idea that people who have been drinking heavily are likely to attack others simply because their aggressive impulses have been unleashed.”<sup>37</sup>

David Warburton of Reading University, who conducted experiments on alcohol and cognition, found that alcohol lowers the impact of words that have threatening connotations, such as ‘cancer,’ as opposed to neutral words such as ‘cover,’ by altering the brain’s ‘word-processing’ speed.<sup>38</sup> A second study showed that alcohol also enhances our “mood-congruent memory” – that is, our capability to remember ‘happy’ words. These two studies suggest that alcohol can ‘dampen’ our perception of threat and perhaps exaggerate our perception of happiness, but neither of these effects can be shown to lead directly or inevitably to aggression.

### 3.6 PHARMACOLOGICAL CAUSES

Several scientists have tried to find a chemical answer for alcohol-related aggression by studying the effect of alcohol on the hormones and neurotransmitters involved in the pathways to aggression, of which the most important are testosterone and serotonin.

There is definitely a strong association between alcohol, serotonin and testosterone, and between serotonin, testosterone and violence, but it is not a direct one.

The temptation to create a causal link between aggression and testosterone is strong: phrases such as “flooded with testosterone” are often used to describe aggressive young men. The evidence that testosterone *causes* aggression, however, is undermined by the same flaws that plague some studies on alcohol and behaviour: poor measurement, reverse causality, and poor experimental design.<sup>39</sup> There is sound evidence, however, to show that testosterone levels rise and fall depending on “an individual’s perceived status in social hierarchy.”<sup>40</sup>

First, alcohol reduces levels of testosterone.<sup>41</sup> Second, the situational and environmental factors in which aggression takes place, and a person’s recollection of previous experience of aggression (winning or losing fights, for example), all seem to correlate more strongly with acts of aggression than levels of testosterone.<sup>42</sup>

The same argument holds for serotonin. Many scientists have observed that

- A) aggression is associated with lower levels of serotonin, and that
- B) alcohol consumption, in the long term, or in certain regions of the brain, can lower serotonin levels.<sup>43</sup>

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<sup>37</sup> Sumner M. & Parker H. (1995)

<sup>38</sup> Warburton, D. (1999)

<sup>39</sup> Goldstein, J. S. (2001)

<sup>40</sup> Ibid

<sup>41</sup> Eriksson et al. (1994); Chopra et al (1973); Ylikahri et al (1974)

<sup>42</sup> Simpson, K. (2001)

<sup>43</sup> Although many studies indicate that alcohol increases serotonin (Moeller & Dougherty (2001)).

Many scientists have therefore inferred that B must cause A.

For example, Phil and LeMarquand write that alcohol's effect on serotonin "increases the likelihood of violent behaviour." They argue that aggression is a 'default response' triggered by:

1. cognitive disorganisation (confusion),
2. disinhibition, and
3. lowered levels of serotonin,

all of which can be induced by alcohol.<sup>44</sup>

This theory, however, rests on a presumption that aggression is the normal underlying state in all humans, and that inhibition, cognition and high levels of serotonin form a kind of 'dam' that holds aggression at bay. If the dam is breached, aggression will come flooding forth. Most professional observers of human behaviour and psychology would not agree that aggression is a "fundamental default response," as the authors claim, or that latent violence is the universal human condition.

Serotonin and testosterone, say other scientists, are *consequences* of behaviour, not causes of it.<sup>45 46</sup> For example, in primate groups, serotonin levels are proportionate to status or rank: roughly speaking, the higher up the male, the greater his level of serotonin. By manipulating rank, one can change the serotonin levels. If the status of a monkey within the troop is artificially elevated, his serotonin levels will rise. Similarly, in an all-male fraternity, officers were found to have serotonin levels 25% higher than recent initiates to the group. Among primates, it is the dominant or 'high-serotonin' males who are *more likely* to attack other males or predators.<sup>47</sup> To imply that low levels of serotonin 'cause' aggressive behaviour is to reverse the natural order.

It has been demonstrated, however, that the aggressiveness of human subjects who *already* have chronically and abnormally low levels of serotonin (such as Type II alcoholics,<sup>48</sup> those diagnosed with Anti-Social Personality Disorder (ASPD), and those with frontal-lobe dysfunction) may be exacerbated by alcohol, making these subjects even more violent.<sup>49</sup> This will be discussed further in section 4.5.

In animal experiments, it was found that when monkeys are given access to alcohol, those who choose to drink the most are those with very low serotonin levels – often the most subordinate members of the troop (who are also more likely have been neglected or abandoned when young).<sup>50</sup> These monkeys already display poor impulse control and aggressive tendencies and become more aggressive after drinking.

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<sup>44</sup> Pihl, R.O. & LeMarquand, D. (1998)

<sup>45</sup> For a review of the relationship between testosterone and male aggression, see Zitzmann & Nieschlag (2001)

<sup>46</sup> See, for example; McGuire & Raleigh (1986)

<sup>47</sup> *ibid*

<sup>48</sup> Higley & Linoila (1997)

<sup>49</sup> Moeller et al (1998) & (2001)

<sup>50</sup> Higley et al (1996)

Increased aggression after drinking also occurs in socially-dominant male squirrel monkeys who already exhibit high testosterone levels and aggressive behaviour.<sup>51</sup> In other words, in both humans and non-human primates, if serotonin is pathologically low, or if testosterone is abnormally high, alcohol may contribute to the pre-existing aggressive tendencies. Alcohol was not found to increase aggression in the 'middle range' of the population (the majority) that has normal levels of serotonin and testosterone.<sup>52</sup>

Several researchers have concluded that alcohol and aggressiveness among young men may be a feature of normal development, rather than a pharmacological phenomenon. The most significant and recurring predictors of alcohol-related aggression are youth and maleness. Increase in age results in a decrease in testosterone, an increase in serotonin, and a natural fading of aggressiveness.<sup>53</sup>

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<sup>51</sup> Miczek et al (1994)

<sup>52</sup> Miczek et al (1997)

<sup>53</sup> Dabbs & Hargrove (1997); Harris (1996); von der Pahlen et al (2002)

## 4 RESEARCH FINDINGS: EVIDENCE AGAINST

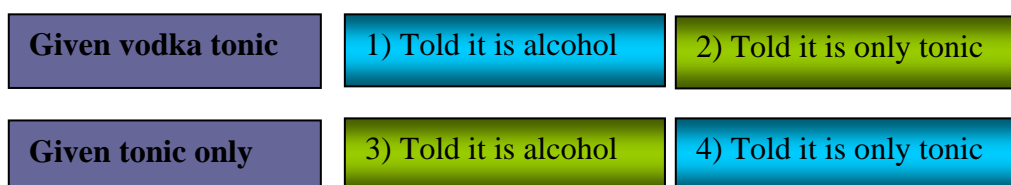
“For centuries, human beings have taught each other what alcohol does – for example that it loosens inhibitions, enhances mood, and relieves anxiety. Nevertheless, the only effect on behaviour which is convincingly demonstrated by the research is the reduction of skills and performances.”<sup>54</sup>

### 4.1 BELIEFS AND EXPECTATIONS

If people believe that they are consuming an alcoholic drink, they will almost invariably behave as if they were actually under the influence, even if the drink contains no alcohol at all.<sup>55</sup> A 1992 study found that the level of disinhibition among drinkers varies with expectancies and social setting, but not with the actual beverage content.<sup>56</sup>

One recent study found that people who associate alcohol with aggression are more likely, when inebriated, to perceive the actions of others as having “aggressive intent.”<sup>57</sup> A survey of 339 college students found a strong correlation between the belief that alcohol intoxication causes violence and the experience of alcohol-related violence.<sup>58</sup>

Since the late 1960s, numerous experiments with human subjects have been conducted, purporting to demonstrate a dose-response relationship between alcohol and aggression. But few of these experiments took into account the influence of the subjects’ expectations of alcohol’s effects. In 1973, Alan Marlatt designed a ‘blind-test’ method for eliminating the confusing ‘placebo effect’ from alcohol experiments, so that the actual effect on aggression could be measured.<sup>59</sup> In his design, subjects are split into four groups, all of whom are given a substance to drink.



Although it can still leave room for error, the Marlatt method, if properly administered, minimises the chance that results could be attributed to expectation. In one early experiment using the Marlatt method, 96 individuals were tested on their

<sup>54</sup> Fekjaer, Hans O (1992)

<sup>55</sup> Southwick et al (1981)

<sup>56</sup> Fromme et al (1992)

<sup>57</sup> Lange, J.E. (2002)

<sup>58</sup> Quigley et al (2002)

<sup>59</sup> Marlatt et al., (1973); see also Rohsenow, D.J. (1981).

aggressive response to provocation. The provocation consisted of insulting remarks, to which the drinkers could respond by delivering an electric shock to their hidden opponent. Levels of aggression increased among individuals who *believed* that they had consumed alcohol. Whether or not they had actually ingested alcohol made very little difference.

Although several subsequent experiments challenged these results, the methods were not (according to Fekjaer) robust enough to eliminate the expectancy effect. In one experiment, for example, the drinks administered to subjects contained 15% alcohol by volume. At these concentrations, it would be impossible to 'fool' participants that the drink was non-alcoholic, and as Marlatt had already proved, if the subject knows he is drinking alcohol, he will behave in a more aggressive manner.<sup>60</sup>

By the end of the 1980s, scientists were fairly convinced that suggestion and expectancy were key factors in alcohol-related behaviours.<sup>61</sup> It was not until two decades later that experiments began to investigate how individual differences might affect the alcohol-aggression relation.<sup>62</sup>

It must be noted that all laboratory-based experiments to measure alcohol-related aggression should be regarded with some suspicion. It cannot be assumed that aggressive responses produced in a sterile laboratory environment bear any similarity to those found in the social and situational contexts in which those responses would normally occur. Giving invisible opponents electric shocks by remote control is about as far removed from real-world aggression as one can get.

## 4.2 CROSS-CULTURAL EVIDENCE

If increased aggression were a psychopharmacological effect of alcohol, one would expect to see this reproduced in any culture, under any conditions. On the contrary, cross-cultural studies have found that many societies, tribes, and culturally distinct groups around the world consume large quantities of alcohol with no evidence of increased aggression. In an anthropological study that surveyed 46 societies worldwide, alcohol was found to be associated with aggression in only one fifth of these societies.<sup>63</sup> Other more recent surveys confirm these findings.<sup>64</sup>

A recent worldwide survey of literature on drinking found that:

*Societies with generally positive beliefs and expectancies about alcohol (variously defined as 'non-temperance,' 'wet,' 'Mediterranean' or 'integrated' drinking-cultures) experience significantly fewer alcohol-related problems; negative or inconsistent beliefs and expectancies (found mainly in*

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<sup>60</sup> Fekjaer, (1992)

<sup>61</sup> Young et al (1980), (1982)

<sup>62</sup> Giancola, (2002) [Journal of Studies on Alcohol].

<sup>63</sup> MacAndrew & Edgerton (1969)

<sup>64</sup> See, for example: Heath (1983 & 1998); (Marshall M (ed) (1979); Room & Collins, (1982); Critchlow (1986)

*'Temperance,' 'dry,' 'Nordic' or 'ambivalent' drinking-cultures) are associated with higher levels of alcohol-related problems.*<sup>65</sup>

In an international survey, Americans expected a stronger relationship between alcohol and aggression than respondents from other countries.<sup>66</sup> In general, countries in which there is a cultural expectation that alcohol makes people aggressive have a higher level of alcohol-related violence than countries in which alcohol is considered to be a far more 'neutral' substance.<sup>67</sup>

In western societies, many people like to see alcohol as providing a temporary 'time out' from social rules. All societies need these temporary 'time outs,' but not all use alcohol as the facilitator. MacAndrew and Edgerton postulate that this 'time out' from the cultural rules can create an artificial, or 'fantasy' environment, in which the drinkers' expected intoxicated behaviours can materialise. The expectation becomes a self-fulfilling prophecy.<sup>68</sup>

In recent studies by Galahad SMS Ltd., group discussions about alcohol with children in UK schools confirmed that, long before they have tasted alcohol and experienced its effects, children as young as 5 believe they know exactly how drunks behave, and delight in imitating this behaviour. When asked if they had ever seen someone act this way when drunk, most said they had not. When asked how they knew, therefore, that this constituted 'drunken behaviour', many said that they had learned this from watching parents or older relatives themselves 'act out,' or imitate the consequences of drunkenness. The deliberate hilarity of these adult sketches also taught them that being drunk was funny.<sup>69</sup> It is society that teaches people how to behave when drunk.

### **4.3 INEBRIATION AND SELF-CONTROL**

An often-overlooked question is: How much self-control do inebriated people really have? Some experiments testing this have had surprising results.

The classic design for a test of alcohol's effects on the aggressive response in humans usually involves a 'competition' with a hidden opponent. The subject is usually not told the true purpose of the experiment, but instead told that the test is about 'reaction times.' Aggression is measured by the frequency, duration or intensity of 'electric shocks' given to the 'hidden' (non-existent) opponent, or by the length of loud blasts of noise directed at the "opponent."<sup>70</sup>

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<sup>65</sup> Fox, K (1999)

<sup>66</sup> Lindman & Lang (1994)

<sup>67</sup> Heath (1995)

<sup>68</sup> Bjork, and Dougherty (1998)

<sup>69</sup> Focus groups with children were conducted during evaluations studies of alcohol education programmes.

<sup>70</sup> It is overlooked in many such experiments that the effect of alcohol myopia, and not increasing aggression, may be causing subjects to concentrate more intently on shocking their unseen opponent.

In 1998, a cunning variation on the classic alcohol-aggression experiments was added by Hoaken and colleagues, who realised that in none of these tests were subjects given an alternative to the aggressive response.

Hoaken decided to test subjects' ability to 'control' or inhibit their aggressive response when under the influence. This team of scientists first replicated an experiment that invariably results in increased aggression by intoxicated subjects, but then added an alternative to the aggressive response, and an incentive (money) to choose the non-aggressive option. They found that the majority of subjects could control their responses fairly well, and that the subjects with "above-average cognitive abilities" (i.e. more intelligent) had near-perfect control of their aggression, even when severely intoxicated.<sup>71</sup>

Bushman and Cooper analysed 30 experiments with human subjects and concluded that alcohol may *facilitate* aggression, but only when combined with physiological and psychological factors. They also note that the studies that report more significant increases in aggression after drinking invariably either fail to control for subject or administrator, or do not allow a non-aggressive alternative.<sup>72</sup> If experiments do not offer the non-aggressive alternative, researchers are now somewhat obliged to point this out, as Giancola has, in a recent alcohol-aggression experiment, in which "subjects could not elect to not shock their opponents."<sup>73</sup>

In another experiment, scientists found that while intoxicated men tend to display greater aggression towards other men, they can remain perfectly controlled in their behaviour towards women, indicating a significant degree of control over their aggressive response.<sup>74</sup>

Bailey et al also found that intoxicated subjects could easily control their aggressive responses if they knew that they were being filmed.<sup>75</sup>

Young and Phil found that the experimenter could improve intoxicated subjects' responses on mental and motor-coordination tests merely by asking them to "try to stay sober." They also found that in group settings, the subjects who believed they had ingested more alcohol than others around them would be more self-controlled and 'sober' than those who thought they were drinking the same amounts as others in the group.

One researcher found that when intoxicated subjects, taking part in an experiment designed to provoke aggressive behaviour, were given 'cues' to good behaviour, they subsequently behaved in a self-aware and non-aggressive way.<sup>76</sup> Similar findings on the ability of intoxicated subjects to exert high levels of self control have been reported by Jeavons and Taylor (1985), who found that displays of aggression can be significantly reduced if bar owners make explicit that they expect drinkers to behave

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<sup>71</sup> Hoaken et al (1998)

<sup>72</sup> Bushman, B.J. & Cooper, H.M. (1990)

<sup>73</sup> Giancola (2002) September article

<sup>74</sup> Giancola & Zeichner (1995)

<sup>75</sup> Bailey et al (1983)

<sup>76</sup> Taylor (1986)

in a non-aggressive manner, and also provide explicit non-aggressive ‘norms’ of behaviour, to re-direct the inebriated person’s attention to the socially-approved conduct. An unexpected finding of this experiment was the discovery that inebriated subjects could conform to these explicit rules of good behaviour even when the rules were broken by their sober partners.<sup>77</sup>

## 4.4 MALE-FEMALE DIFFERENCES

The anthropologist Robin Fox writes, in an essay on ‘the Human Nature of Violence,’ that it is as illogical to search for the ‘causes’ of violence as it is to seek the ‘causes’ of sex. The human *potential* for aggression, he argues, is as natural in our evolutionary history as the potential for sex, especially among young males. Young males at puberty, Fox explains, experience an increase in levels of testosterone, which rise to 30 times pre-puberty levels. Fox argues that we do not need to look to alcohol to explain why young men are aggressive, violent and often criminal.

Sumner and Parker remind us that much of known crime is committed by young males, as is the great majority of all violent crimes.<sup>78</sup> But co-occurrence of drinking with crime or violence does not necessary imply that alcohol has caused the crime. “In the case of young men,” say Sumner and Parker, “one could, in theory, just as well argue that crime causes drinking or that both drinking and crime are the result of other factors, such as youth and maleness.”<sup>79</sup> Alcohol may *appear* to be the cause of violence, but this is primarily due, in our society, to the disproportionate amount of drinking by already aggressive and energetic young males.<sup>80</sup>

Aggressive displays by young males are natural<sup>81</sup> but, historically, real violence has been ‘inhibited’ through socialisation and ritualisation. The real ‘causal’ question, Fox says, is not “Why do so many young men act so violently?” but “How do so many cultures manage, through initiation, intimidation, sublimation, bribery, education, work, and superstition, to stop them and divert their energy elsewhere?” If, in our society, we see a disproportionate amount of brawling by young males, it is not because alcohol has caused them to behave this way, but because

- 1) young men have always been and will no doubt always be aggressive, competitive and territorial, and
- 2) our social rules governing their behaviour under the influence of alcohol are at best weak and at worst may encourage aggression. Rules of ‘macho’ behaviour can change: drink-driving, for example, was seen by some as a test of manliness not so long ago. Change was brought about, not by banning cars or alcohol, but mainly through fostering extreme social disapproval of drink-driving behaviour.

But what of women? Recent news reports indicate that women in the UK, both young and old, are drinking more.<sup>82</sup> Does this mean that incidents of alcohol-related

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<sup>77</sup> Jeavons & Taylor (1985)

<sup>78</sup> Sumner, M. and Parker, H. (1995)

<sup>79</sup> Ibid

<sup>80</sup> Makkai & McAllister (1998)

<sup>81</sup> See: Tiger (1971); Marsh (1978)

<sup>82</sup> Alcohol Concern (2002)

aggression among women will also increase? Is there a male-female difference in the alcohol-aggression response?

White et al (1993) puzzled over the discrepancy between two observations:

- 1) the level of alcohol use by women, especially young adult women, is not largely different from that of men, yet
- 2) women commit far fewer violent crimes.<sup>83</sup>

The results of a study by Hoaken and Pihl (2000) show that sober women manifest considerable aggression when highly provoked, *more* aggression even than sober men. Alcohol seemed to have a slight ‘dampening effect’ on women’s aggressive response under high provocation: they were less aggressive when intoxicated than they were when sober.<sup>84</sup>

The most interesting finding in this and other studies is that aggression in women bears more relation to the nature and level of the provocation than to the amount of alcohol consumed.<sup>85</sup>

Another laboratory experiment, designed to measure the influence of ‘personality-trait anger’ on the alcohol-aggression relationship, found that under “Under high provocation, alcohol increased aggression only for men with higher trait anger scores. Alcohol had no effect on female aggression, regardless of anger levels.”<sup>86</sup>

Several studies with women drinkers also contradict the popular notion that alcohol reduces anxiety and loosens inhibitions. Drinking can make some women more anxious and more inhibited.<sup>87</sup>

## 4.5 THE AGGRESSIVE PERSONALITY

A review of studies from the 1950s to 1990 recognised a strong “correlational relationship” between alcohol and violent crime, but had to conclude that “the nature of the evidence prohibits the establishment of a causal link.”<sup>88</sup> A 1995 review of alcohol studies, by Sumner and Parker, also found “no evidence from biological research to support the commonsense notion that alcohol unleashes some pre-existing aggressive or sexual impulse.”<sup>89</sup> Post-millennium studies have continued to investigate the complex interplay of social, situational, biological and psychological factors involved in the alcohol-aggression relationship, without being able, conclusively and directly, to link the ethanol to the violence. Yet despite this wealth of research, as Fox (1999) points out, “simplistic assumptions” about cause and effect continue to influence government policy and legislation.<sup>90</sup>

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<sup>83</sup> White et al (1993)

<sup>84</sup> Hoaken & Pihl (2000)

<sup>85</sup> Ibid; see also Bettancourt and Miller (1996)

<sup>86</sup> Giancola (2002)

<sup>87</sup> George and Norris (1991); Kinsey Institute;

<sup>88</sup> Murdoch et al (1990)

<sup>89</sup> Sumner & Parker (1995)

<sup>90</sup> Fox, K. (1999)

Politicians and non-scientists can be partly forgiven for making these “simplistic assumptions.” If an inquiry into the relationship between alcohol and violence begins by looking at headline-grabbing crime statistics such as the ones below, a direct causal link can appear plausible:

- ❑ *50 – 80% of all violent crime committed by an intoxicated person [Taylor & Leonard 1983]*
- ❑ *Violent offenders more likely to be heavy drinkers [Welte and Miller 1987]*

Although both the above statements are true, a closer examination of three decades of scientific experimentation and inquiry into the alcohol-aggression link indicates that it is wrong to conclude that alcohol has *caused* this violence. Most lay observers fail to grasp the basic scientists’ mantra “correlation is not causation.”<sup>91 92</sup>

There is a connection between alcohol and violence: of this, there is no doubt. The question is: Is this connection one of cause and effect, of correlation, or of coincidence? It is certainly not a direct causal one. The solid connection between alcohol and aggression that has come out of this research review is:

Drinking can *facilitate* aggression if all of the following three conditions apply:

- 1) the drinker is ‘pre-disposed’ to aggression; *and*
- 2) the intoxicated person is subjected to high levels of provocation; *and*
- 3) the drinking occurs in an environment in which a tolerance of aggressive behaviour and cultural expectations of alcohol-related violence are prevalent.

This section will look at the evidence for the first point.

Many people will ask: If alcohol doesn’t cause aggression, why do so many people seem to be involved in fights after drinking? The answer is: so many people don’t. A simple head-count of all drinkers on any given day compared to all violent incidents indicates that only a tiny minority of drinkers engage in violence after drinking. We get the impression that many more do, because statistics tell us that a large percentage of violent crimes are committed by people who have been drinking. This, according to some researchers, is not because drinking causes people to be violent, but because violent people drink. ‘Hyper-aggressivity’ exists in only 1% of the population,<sup>93</sup> and Anti-Social Personality Disorder (ASPD) in 3% of males, but since individuals with these disorders are more likely to commit violent crimes,<sup>94</sup> and also to drink, it is their behaviour that grabs the headlines.

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<sup>91</sup> Renfrew, John, W. (1997)

<sup>92</sup> Also overlooked is the fact that alcohol-related violence is not associated with alcohol consumption *per se*, but only with alcohol intoxication: see Wells et al (2000).

<sup>93</sup> Fox, R. (1994)

<sup>94</sup> One study found that people with ASPD were 21 times more likely to develop alcohol or drug dependence (Regier et al (1990)).

Digging deeper into the relationship between alcohol and the aggressive person, one finds that the cause of aggression lies with the person, not the drink. White *et al* found that it is aggressiveness that is a fairly reliable predictor of alcohol consumption, not the other way around.<sup>95</sup> Similarly, McMurran *et al* confirm that ‘impulsivity predicts both heavy drinking and aggression in males.’ McMurran *et al* (2002) and Gerald and Higley (2002) found this to be true for both humans and rhesus monkeys.<sup>96</sup> In one study, alcoholics were found to have high levels of “repressed aggression.”<sup>97</sup> Whalen *et al* (2001) found that alcohol intake was elevated among adolescents with “aggressive and depressive dispositions.”<sup>98</sup>

From 1991 to 1998, three key experimental studies examined the way in which a ‘predisposition’ to aggression interacts with alcohol consumption. Two out of the three studies found that men who score high on ‘hostility inventory’ tests were more aggressive when intoxicated than when sober.<sup>99</sup> But the third found that men with high ‘dispositional aggressivity’ were actually *less* aggressive when intoxicated than when they were sober.<sup>100</sup> Another experiment unexpectedly found that men who have high levels of ‘dispositional aggressivity’ were more aggressive sober than a control group of men with the same trait who were intoxicated.<sup>101</sup>

In 1999, Dougherty *et al* incorporated objective measures comparing baseline aggression to aggression during intoxication, and found that “a subject’s behavioural response to alcohol was largely dependent on her or his willingness to aggressively respond to provocation *in the absence of alcohol*.”<sup>102</sup>

Several studies have examined the relationship of alcohol to violent sexual assault by males. It has been demonstrated that the expectancy of sexual arousal among males is greater if they have consumed alcohol or an alcohol placebo.<sup>103</sup> In a study of 132 rape victims, however, it was found that the most aggressive assaults were perpetrated either by sober men, or by men who had consumed extremely high levels of alcohol – in other words, the two ends of the spectrum.<sup>104</sup>

A study comparing the links between aggressivity, alcoholic symptoms and depressive symptoms among male patients at an accident and emergency department found that depressive symptoms linked three times more strongly to aggressivity than did alcoholic symptoms. Another study of adolescents found that adolescents with both depressive and aggressive dispositions tended to have elevated alcohol intake.<sup>105</sup> In studies with primates, it has been shown that separation stress, which causes

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<sup>95</sup> White *et al* (1993)

<sup>96</sup> Gerald & Higley 2002

<sup>97</sup> Eher *et al* (2000)

<sup>98</sup> Whalen *et al* (2001)

<sup>99</sup> Bailey & Taylor (1991); Moeller *et al* (1998)

<sup>100</sup> Pihl *et al* (1997)

<sup>101</sup> *Ibid*

<sup>102</sup> Dougherty *et al* (1999)

<sup>103</sup> George & Norris (1991)

<sup>104</sup> Abbey, *et al* (2002)

<sup>105</sup> Whalen *et al* (2001)

anxiety and fearfulness in the young, also causes the same primates as adults to become aggressive and to consume more alcohol.<sup>106</sup>

In conclusion, people who have underlying problems such as anger, depression, anti-social disorders, anxiety disorder, etc., are more likely both to drink alcohol and to be 'hyper-responsive' to its effects. There is no clear evidence, however, to suggest that drinking alcohol at moderate levels will induce aggressivity in individuals who are not predisposed to it.

## 4.6 DEVIANCE DISAVOWAL

The deviance disavowal hypothesis asserts that alcohol is used as an excuse by those wishing to carry out a deviant act – including acts of violence. The blame for the act can then be shifted from the individual to the drink.

Gelles (1974), for example, explains that, “individuals who wish to carry out violent acts become intoxicated *in order to carry out the violent act.*”<sup>107</sup>

Support for the deviance disavowal hypothesis comes partly from research that suggests that very little drunken aggression is 'impulsive'. Research has indicated that much drunken aggression occurs as a 'postponed reaction' to provocation, insult or demeaning treatment that predates the time of intoxication.<sup>108</sup> In other words, many people who engage in drunken violence began drinking in an already agitated or angry state.

A more recent (2002) review by Zhang *et al* also challenges the 'disinhibition' theory of alcohol-related violence (viewing drunken aggressors as 'victims of alcohol') and instead clearly demonstrates that alcohol's role in violent acts is one that the offender “plans and expects.”<sup>109</sup>

Some experiments demonstrate that many people may not plan their drinking and deviance concurrently, but, under the influence of alcohol, will allow themselves to indulge in deviant acts, knowing that they can use alcohol to excuse their behaviour both to others and *to themselves* if there is guilt involved in the act.<sup>110</sup>

## 4.7 DRINKING ENVIRONMENT

One of the key factors in alcohol-related aggression and violence is the context in which drinking takes place. Those drinking environments that are characterised by

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<sup>106</sup> Heinz (1999)

<sup>107</sup> Gelles (1974)

<sup>108</sup> Zillmann & Bryant (1990)

<sup>109</sup> Zhang et al (2002)

<sup>110</sup> George and Norris (2001); Scully and Marolla (1984)

encouragement of violence, tolerance of violence, or expectation that violence is likely are all strongly associated with violent incidents.<sup>111</sup>

In 2000, an intrepid group of researchers attempted to respond to Parker's accusation that researchers were not incorporating theoretical developments into studies of the causal relationship between alcohol and aggression or violence. By observing over 100 incidents of aggression or violence in bars, Graham et al (2000) tried to evaluate 36 explanations (out of an apparently possible 50)<sup>112</sup> derived from previous research on alcohol-related aggression that try to account for the positive association between alcohol and aggression.

The 36 theoretical explanations they used fell into four main categories of 'causes':

- 1) effects of alcohol,
- 2) effects of the drinking environment,
- 3) personality, attitudes or other expectations of the individual, and
- 4) societal attitudes, expectations and values.

The results of the study showed that the majority of violent incidents in bars occurred due to the overlap of alcohol myopia – one of the side-effects of inebriation – and a drinking environment that was permissive or tolerant of violence. Alcohol myopia, as we have seen, is the intense obsession about one thing (person, object, task) that occurs at moderate to high levels of alcohol consumption: a kind of tunnel vision, focusing only on what the individual sees as important. If this effect of alcohol is experienced in a violent atmosphere, the focus may well turn to an offensive or defensive response.

Aggressive behaviour, whether accompanied by drinking or not, rarely manifests as a single isolated act, but rather as a process. Several researchers have identified key variables, in the *escalation* of aggressive behaviour by drinkers, which either aggravate and increase the aggression, or defuse and decrease it. The key variables that escalate drunken aggression can all be found in drinking environments that are noisy, cramped and badly maintained,<sup>113</sup> and in which a tolerance or expectation of violence is the norm.<sup>114</sup>

One study found a measurable decrease in aggressive behaviour after changes were made to a bar's physical environment and its policy regarding aggression.<sup>115</sup> Room (1993) argues that drunken violence is more likely to escalate in situations where the social rules are not clear.<sup>116</sup>

Laboratory experiments have fairly uniformly shown that, when strongly provoked, intoxicated people react more aggressively than sober people.<sup>117</sup> As several studies have also found that alcohol consumption itself increases in environments and

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<sup>111</sup> Graham et al (1980)

<sup>112</sup> Graham, Wells & West (1997)

<sup>113</sup> Homel & Clark (1994)

<sup>114</sup> Graham et al. (1980)

<sup>115</sup> Homel et al (1997)

<sup>116</sup> Room (1993)

<sup>117</sup> Taylor & Leonard (1983)

situations that are 'high-risk' for violence,<sup>118</sup> it is important that drinking environments be designed and managed in ways that minimise the atmosphere of aggression.

Efforts achieving measurable and replicable success in reducing violence in and around bars<sup>119</sup> include:

- ❑ addressing closing-time issues of transport and rides for those who have been drinking
- ❑ codes of practice for bar owners
- ❑ risk-assessments for bars<sup>120</sup>
- ❑ training door and security staff
- ❑ co-operative 'pub-watch' schemes for dealing with troublemakers<sup>121</sup>
- ❑ training servers in responsible practice and attitude<sup>122</sup>
- ❑ training servers in prevention and management of conflict.<sup>123</sup>

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<sup>118</sup> Murdoch et al (1990)

<sup>119</sup> Hauritz et al. (1998)

<sup>120</sup> Homel et al (1997)

<sup>121</sup> MCM Research (1990)

<sup>122</sup> Gliksman et al (1993)

<sup>123</sup> Marsh & Fox-Kibby (1992)

## 5 CONCLUSION

There is no direct chemical effect of alcohol on the brain that induces aggressive or violent behaviour. By reducing the ability to take in information, alcohol reduces our 'perceptual field' and may increase the risk of misinterpretation of social cues. In some individuals, this may increase the risk of an aggressive response to perceived insults or hostility. It has been found, however, that this reaction is most likely to occur in individuals who already have latent anti-social or violent tendencies. For the vast majority, self-control is possible *even in states of severe intoxication*. Legal penalties should take this into consideration.

The *belief* that alcohol causes aggression increases the likelihood that aggressive acts will occur while people are drinking. This should be countered with innovative alcohol education targeting these beliefs. Blaming alcohol for crime and violence may allow governments to avoid responsibility for social problems. Such 'scapegoating' is a disservice to society. An intense focus by government on the minority of negative consequences associated with drinking also helps to create the general impression that such consequences are inevitable.

Persistently blaming alcohol for the violence that men do conveniently ignores the responsibility of parents, teachers and governments to train, channel and contain young men's natural competitive and aggressive impulses. Blaming the alcohol allows men to avoid adult responsibility and socialisation.

## 6 RECOMMENDATIONS

Based on the results of this review, measures to reducing alcohol-related violence should focus on:

### 6.1 EDUCATION

Cardinal Wolsey (1471-1530) warned: "Be very, very careful what you put into that head, because you will never, ever get it out." This should be heeded when educating people about the effects of alcohol. At the moment, most alcohol education encourages and reinforces deviance disavowal and other excuses for violent behaviour, and perpetuates the belief that alcohol causes violence. As Robin Room concluded:

*To change this belief involves undoing one of the most durable legacies of the temperance movement, and it is no light undertaking. By now the power of alcohol to make a person mean, vicious and violent is deeply entrenched in song, story and consciousness. Such a redefinition is thus a matter for a sustained campaign of consciousness-changing, and not for a season of thirty-second television spots.*<sup>124</sup>

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<sup>124</sup> Room (1980)

Reversing this trend will require the re-education of all sections of the population: adults, doctors, police, teachers, parents and pupils.

There is a need for:

- Programmes that challenge assumptions, and restore control and responsibility for behaviour to the individual – i.e. that remove the ‘drunkenness’ excuse for anti-social behaviour.

It has been demonstrated that drinkers who alter their understanding and expectation of the effects of alcohol also reduce their alcohol consumption.<sup>125</sup> McMurrin and others have advocated the inclusion of “expectancy-challenge” techniques in future alcohol education and treatment.<sup>126</sup>

A Home Office report recently concluded that: “the importance of the drinking culture cannot be underestimated. Any alcohol educational initiative must start from the premise that alcohol use is inherently social. As a result, why people drink and their attitudes to drinking are as important as how and when they drink.”<sup>127</sup>

- Targeted, mandatory alcohol education for offenders such as:
  - those in prison for drink-related crime;
  - those who have received police warnings or cautions for being ‘drunk and disorderly’;
  - those young people who are assessed as ‘at-risk,’ due to drink-related delinquent acts or school exclusion, etc.

Education for those who have committed alcohol-related violent offences should focus as much on the aggression (through anger- and stress-management, for example) as on the use of alcohol.

Scott et al (1999) recommend “identifying and incorporating effective self-regulating cues into educational programmes ... could be used strategically as [a] means for preventing physical assaults. ... the identification of such cues among young impulsive men may be most efficacious for prevention strategies.”<sup>128</sup>

## 6.2 SOCIAL INTOLERANCE CAMPAIGNS

As Sumner and Parker concluded: “The use of alcohol as an excuse (for violence) should be undermined by a campaign carrying the message that people, not alcohol, are responsible for what they do when they have been drinking.”<sup>129</sup>

<sup>125</sup> Darkes & Goldman (1993)

<sup>126</sup> McMurrin (2001)

<sup>127</sup> Deehan, Ann (1999) Alcohol & Crime: taking stock. Policing and Reducing Crime Unit. Crime Reduction Series paper 3. RDS. Home Office. Pg. Vi

<sup>128</sup> Scott et al (1999)

<sup>129</sup> Sumner & Parker (1995)

The methods used in campaigns to raise community intolerance of drink driving should be studied to assess their applicability to campaigns against public displays of aggression. Methods of transmission of cultural norms should also be studied in countries with high alcohol consumption but low incidence of alcohol-related aggression.

### **6.3 ASSISTANCE**

More available and accessible 'low-intensity' assistance programmes should be made available for problematic drinkers and drinkers who are repeatedly banned from licensed establishments due to aggression or violence.

### **6.4 LEGAL PENALTIES**

Intoxication should not be tacitly accepted as a mitigating factor in violent incidents, if anything, harsher legal penalties should be enforced for those crimes of violence committed under the influence of alcohol.

### **6.5 SERVER TRAINING**

Mandatory training for publicans and servers of alcohol should include:

- ❑ Alcohol education (to achieve an understanding of the relationship between alcohol and aggression)
- ❑ Techniques to prevent and resolve conflict
- ❑ Calming techniques

Giancola et al (2002) urge prevention and intervention campaigns to focus on helping both drinkers and servers of alcohol "to identify and minimise factors and situations producing the risk of aggression."<sup>130</sup>

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<sup>130</sup> Giancola et al (2002)

## 7 REFERENCES

- Abbey, A., McAuslan, P., Ross, L. T., and Zawacki, T. (1999). Alcohol expectancies regarding sex, aggression, and sexual vulnerability: reliability and validity assessment. *Psychology of Addictive Behaviours* **13**, 174-182.
- Abbey, A., Clinton, A. M., McAuslan, P., Zawacki, T., and Buck, P. O. (2002). Alcohol-involved rapes: Are they more violent? *Psychology of Women Quarterly* **26**, 99-109.
- Abel, E. L., Strasburger, E. L., and Zeidenberg, P. (1985). Seasonal, monthly and day-of-week trends in homicide as affected by alcohol and race. *Alcoholism: Clinical and Experimental Research* **9**, 281-283.
- Abrams, D. B. and Wilson, G. T. (1979). Effects of alcohol on social anxiety in women: Cognitive versus physiological processes. *Journal of Abnormal Psychology* **88**, 161-173.
- Alaniz, M. L. (1998). Alcohol availability and targeted advertising in racial/ethnic minority communities. *Alcohol Health and Research World* **22**.
- Alcohol Concern. 100% Proof. Research for Action on Alcohol. 2002.
- Allamani, A., Cipriani, F., Cottino, A., Sorbini, M., and Morettini, A. Economical, cultural and health aspects of alcohol consumption in Italy. [International Meeting on Cultural, Economic & Health Aspects of Alcohol Consumption in Southern Europe, Florence, 27 February - 1 March]. 1995. 27-2-1995.
- American Psychiatric Association (1994). 'Diagnostic and Statistical Manual of Mental Disorders.' The APA: Washington DC.
- Anawalt, P. R. (1997). Flopsy, Mopsy and Topsy: interpretation of the rabbit symbol in Aztec iconography. *Natural History* **106**, 24-26.
- Bacaner, N., Kinney, T. A., Biros, M., Bochert, S., and Casuto, N. (2002). The relationship among depressive and alcoholic symptoms and aggressive behaviour in adult male emergency department patients. *Academic Emergency Medicine* **9**, 120-129.
- Bachman, R. and Peralta, R. (2002). The relationship between drinking and violence in an adolescent population: does gender matter? *Deviant Behaviour: An Interdisciplinary Journal* **23**, 1-19.
- Bailey, D. S., Leonard, K. E., Cranston, J. W., and Taylor, S. P. (1983). Effects of alcohol and self-awareness on human physical aggression. *Pers. Social Psychol. Bull* **9**, 289-295.
- Bailey, D. S. and Taylor, S. P. (1991). Effects of alcohol and aggressive disposition on human physical aggression. *Journal of Research in Personality* **25**, 334-342.

- Bard, M. and Zacker, J. (1971). Assaultiveness and alcohol use in family disputes: Police perceptions. *Criminology* **12**, 281-292.
- Barros, H. M. T. and Miczek, K. A. (1996). Neurobiological and behavioural characteristics of alcohol-heightened aggression. In 'Aggression and Violence: Genetic, Neurobiological, and Biosocial Perspectives.' (Eds D. M. Stoff and R. B. Cairns.) (Lawrence Erlbaum Associates: Mahwah, NJ.)
- Bennett, T. (1990). Links between drug misuse and crime. *Br J Addict* **85**, 833-835.
- Berry, M. S. and Brain, P. F. (1986). Neurophysiological and endocrinological consequences of alcohol. In 'Alcohol and aggression.' (Ed P. F. Brain.) pp. 19-54. (Croom Helm: Dover, N.H.)
- Berry, M. S. and Smoothy, R. (1986). 'A critical evaluation of claimed relationships between alcohol intake and aggression in infra-human animals.' In: *Alcohol and Aggression*. (Ed P. F. Brain.) pp. 84-137. Croom Helm: Dover, NH.
- Bettancourt, A. B. and Miller, N. (1996). Gender differences in aggression as a function of provocation: a meta-analysis. *Psychological Bulletin* **119**, 422-447.
- Billings, C. E. and et al (1973). Effects of Ethyl Alcohol on Pilot Performance. *Aerospace Medicine* **44**, 379-382.
- Bjork, J. M. and Dougherty, D. M. (1998). Differences in alcohol expectancy between aggressive and non aggressive. *Alcoholism: Clinical and Experimental Research* **22**, 1943-1950.
- Bland, J. (1998) About Gender: Testosterone and Aggression. [[www.gender.org.uk](http://www.gender.org.uk)]
- Brown, G. L. and Linnoila, M. I. (1990). CSF serotonin metabolite (5-HIAA) studies in depression, impulsivity, and violence. *J Clin Psychiatry* **51**, 31-43.
- Bushman, B. J. and Cooper, H. M. (1990). Effects of alcohol on human aggression: An integrative research review. *Psychological Bulletin* **107**, 341-354.
- Bushman, B. J. (1997). 'Effects of alcohol on human aggression: Validity of proposed explanations.' In *Recent Developments in Alcoholism*. M. Galanter (ed) pp. 227-243. Plenum Press: New York.
- Buss, A. H. (1961). *The Psychology of Aggression*. Wiley: New York.
- Casswell, S. and Zhang, F. (1998). Impact of liking for advertising and brand allegiance on drinking. *Journal of Addiction* **93**, 1209-1217.
- Caudill, B. D., Wilson, G. T., and Abrams, D. B. (1987). Alcohol and self-disclosure: Analyses of interpersonal behaviour in male and female social drinkers. *Journal of Studies on Alcohol* **48**, 401-409.
- Cheong, J. and Nagoshi, C. T. (1998). Effects of sensation seeking, instruction set, and alcohol/placebo on aggressive behavior. *Alcohol* **17**, 81-86.

- Chermack, S. T. and Giancola, P. R. (1997). The relation between alcohol and aggression: an integrated diopsychosocial conceptualization. *Clinical Psychology Review* **17**, 621-649.
- Chikritzhs, T. and Stockwell, T. (2002). The impact of later trading hours for Australian public houses (hotels) on levels of violence. *Journal of Studies on Alcohol* **63**, 591-599.
- Chopra, I. J., Tulchinsky, D., and Greenway, F. L. (1973). Estrogen-androgen imbalance in hepatic cirrhosis: Studies in 13 male patients. *Ann. Intern. Med.* **79**, 198-203.
- Cloninger, C. R. (1981). Inheritance of alcohol abuse: Cross-fostering analysis of adopted men. *Arch Gen Psychiatry* **38**, 861-868.
- Collins, J. J. (1988). Suggested explanatory frameworks to clarify the alcohol use/violence relationship. *Contemp Drug Prob* **15**, 107-121.
- Collins, J. J. (1989). Alcohol and interpersonal violence: Less than meets the eye. In 'Pathways to Criminal Violence.' (Ed M. E. Wolfgang.) pp. 49-67. (Sage Publications: Newbury Park, CA.)
- Condry, J. and Condry, S. (1976). 'Sex Differences: A study in the Eye of the Beholder.' In *Myths of Gender, Biological Theories about Women and Men*. A. Fausto Sterling (ed) p. 150. Basic Books: New York.
- Cook, P. J. and Moore, M. J. (1993). 'Economic perspectives on reducing alcohol-related violence.' In *Alcohol and Interpersonal Violence*. S. E. Martin.(ed) pp. 193-212. NIAAA Research Monograph No 24: Rockville, MD.
- Cookson, H. M. (1992). Alcohol use and offence type in young offenders. *British Journal Criminology* **32**, 352-360.
- Corvo, K. (2000). Variation by race in children's alcohol expectancies. *Journal of Substance Abuse* **11**, 1-5.
- Critchlow, B. (1986). The powers of John Barleycorn: beliefs about the effects of alcohol on social behaviour. *American Psychologist* **41**, 751-764.
- Crowe, L. C. and George, W. H. (1989). Alcohol and human sexuality: Review and integration. *Psychological Bulletin* **105**, 265-272.
- Cummings, J. L. (1995). Anatomic and behavioural aspects of frontal-subcortical circuits. *Ann.N.Y.Acad.Sci* **769**, 1-13.
- Cummings, T. M. and Neal, M. T. (2000). The concepts of aggression and substance dependence. *Journal of Substance Use* **4**, 220-226.
- Dabbs, J. M. J., Jurkovic, G. J., and Frady, R. L. (1991). Salivary testosterone and cortisol among late adolescent male offenders. *Journal of Abnormal Psychology* **19**, 469-478.

Dabbs, J. M. and et al (1991). Salivary testosterone and cortisol among late adolescent male offenders. *J Abnorm Child Psychol* **19**, 469-478.

Dabbs, J. M. Jr. and Hargrove, M. F. (1997). Age, testosterone, and behaviour among female prison inmates. *Psychosom.Med.* **59**, 477-480.

Darkes, J. and Goldman, M. S. (1993). Expectancy challenge and drinking reduction: Experimental evidence for a mediational process. *Journal of Consulting and Clinical Psychology* **61**, 334-353.

De Garine, I. and De Garine, V. (2001). *Drinking: Anthropological Approaches*. Berghahn Books: New York.

Deehan, A. (1999) Alcohol and Crime: Taking stock. *Crime Reduction Research Series: Paper 3*. London, Home Office.

Dougherty, D. M., Bjork, J. M., Bennett, R. H., and Moeller, F. G. (1999). The effects of a cumulative alcohol dosing procedure on laboratory aggression in men and women. *Journal of Studies on Alcohol* **60**, 322-329.

Dougherty, D. M., Moeller, F. G., Steinberg, J. L., and et al (1999). Alcohol increases commission error rates for a continuous performance test. *Alcoholism: Clinical and Experimental Research* **23**, 1342-1351.

Eher, R., Windhaber, J., Rau, H., Schmitt, M., and Kellner, E. (2000). Styles of interpersonal conflict in patients with panic disorder, alcoholism, rheumatoid arthritis and healthy controls: a cluster analysis study. *Psychiatric Praxis* **27**, 189-194.

Epstein, J. A. and Botvin, G. J. (2002). The moderating role of risk taking tendency and refusal assertiveness on social influences in alcohol use among inner city adolescents. *Journal of Studies on Alcohol* **63**, 456-459.

Eriksson, C. J. P., Fukanaga, T., and Lindman, R. (1994). Sex hormone response to alcohol. *Nature* **369 30 June**.

Fagan, J. (1990). 'Intoxication and Aggression.' In *Crime and Justice*. M. Tonry and J. Q. Wilson (eds). pp. 241-320. Univ Of Chicago Press: Chicago.

Fagan, J. (1993). 'Set and setting revisited: Influences of alcohol and illicit drugs on the social context of violent events.' In *Alcohol and interpersonal violence: fostering multidisciplinary perspectives*. NIAAA Research Monograph No. 24.' S. E. Marting (ed). pp. 161-191. US Government Printing Office: Washington DC.

Fagan, J. and Wilkinson, D. L. (1998). 'The Social Contexts and Functions of Adolescent Violence.' In *Violence in American Schools*. D. S. Elliott, B. A. Hamburg, and K. Williams (eds). pp. 89-121. Cambridge University Press: Cambridge.

Fagan, J. A. and Wilkinson, D. L. (1998). 'Guns, Youth Violence and Social Identity in Inner Cities.' In *Crime and Justice: A Review of Research* (Volume 24 on Youth Violence.) M. Tonry and M. Moore (eds). pp. 105-188. University of Chicago Press: Chicago.

- Fagan, J. A. and Wilkinson, D. L. (1998). Situational Contexts of Adolescent Violence in New York City. *Revue Europeenne des Migrations Internationales* **14**, 63-76.
- Fakjaer, H. O. (1992). 'The Psychology of Getting High' [available on the Internet at [www.rhodium.ws/pharmacology](http://www.rhodium.ws/pharmacology)] or in Norwegian: "Alkohol og narkotika – myter og virkelighet" Gyldendal, Oslo.
- Fincham, F. and Barling, J. (1979). Effects of Alcohol on Moral Functioning in Male Social Drinkers. *J Genetic Psychol* **134**, 79-87.
- Fox, K. (1993). *Pubwatching with Desmond Morris*. Alan Sutton Publishing: Gloucestershire.
- Fox, K. (1999) *Social and Cultural Aspects of Drinking*. London, Amsterdam Group. [Available at [www.sirc.org](http://www.sirc.org)].
- Fox, K. *Alcohol and Violence* (1999). Social Issues Research Centre. London, Amsterdam Group. [Available at [www.sirc.org](http://www.sirc.org)].
- Fox, R. (1994). 'The Human Nature of Violence.' In *The Challenge of Anthropology: old encounters and new excursions*. pp. 87-94. Transaction Publishers: New Brunswick.
- Fromme, K. and Dunn, M. E. (1992). Alcohol Expectancies, Social and Environmental Cues as Determinants of Drinking and Perceived Reinforcement. *Addict Behav* **17**, 167-177.
- Fromme, K., Stroot, E., and Kaplan, D. (1993). Comprehensive effects of alcohol: development and psychometric assessment of a new expectancy questionnaire. *Psychological Assessment* **5**, 19-26.
- Galavski, T., Blanchard, E. B., and Veazy, C. (2002). Intermittent explosive disorder and other psychiatric comorbidity among court-referred and self-referred aggressive drivers. *Behaviour Research and Therapy* **40**, 641-651.
- Geertz, C. (1993). *The Interpretation of Cultures*. Fontana Press: London.
- Gelles, R. J. (1974). *The Violent Home*. Sage: Beverley Hills, C.A.
- George, W. H. and Norris, J. (1991). Alcohol, Disinhibition, Sexual Arousal, and Deviant Sexual Behaviour. *Alcohol, Health and Research World* **15**, 133-138.
- Gerald, M. S. and Higley, J. D. (2002). Evolutionary underpinnings of excessive alcohol consumption. *Addiction* **97**, 415-425.
- Giancola, P. R. and Zeichner, A. (1995). Alcohol-related aggression in males and females: Effects of blood alcohol concentration, subjective intoxication, personality, and provocation. *Alcohol Clin Exp Res* **19**, 130-134.
- Giancola, P. R. (2002). Irritability, acute alcohol consumption and aggressive behaviour in men and women. *Drug and Alcohol Dependence* **68**, 263-274.

Giancola, P. R. (2002). The influence of trait anger on the alcohol-aggression relation in men and women. *Alcoholism: Clinical and Experimental Research* **26**, 1350-1358.

Giancola, P. R., Helton, E. L., Osborne, A. B., Terry, M. K., Fuss, A. M., and Westerfield, J. A. (2002). The effects of alcohol and provocation on aggressive behaviour in men and women. *Journal of Studies on Alcohol* **63**, 64-73.

Giancola, P. R. (2002). Alcohol related aggression in men and women: the influence of dispositional aggressivity. *Journal of Studies on Alcohol* **63**, 708.

Giancola, P. R. (2002). Alcohol-related aggression during the college years: theories, risk factors and policy implications. *Journal of Studies on Alcohol* 129-139.

Gibbs, J. (1986). 'Alcohol consumption, cognition and context: examining tavern violence.' In *Violent transactions: the limits of personality*. A. Campbell and J. J. Gibbs (eds). Blackwell: Oxford.

Gliksman, L., Single, E., McKenzie, D., Douglas, R., Brunet, S., and Moffat, K. (1993). The role of alcohol providers in prevention: an evaluation of a server intervention programme. *Addiction* **88**, 1189-1197.

Goldstein, J. S. (2001). *War and Gender: How Gender Shapes the War System*. Cambridge University Press:

Graham, K. and et al (1979). Effects of Alcohol on Moral Judgement. *J Abn Psychol* **88**, 442-445.

Graham, K., La Roque, L., Yetman, R., Ross, T., and Guistra, T. (1980). Aggression and bar room environments. *Journal of Studies on Alcohol* **41**, 277-292.

Graham, K., Wells, S., and West, P. (1997). A framework for applying explanations of alcohol-related aggression to naturally occurring aggressive behaviour. *Contemporary Drug Problems* **26**, 625-666.

Graham, K., Leonard, K. E., Room, R., Wild, T. C., Pihl, R. O., Bois, C., and Single, E. (1998). Current directions in research on understanding and preventing intoxicated aggression. *Journal of Addiction* **93**, 659-676.

Graham, K., West, P., and Wells, S. (2000). Evaluating theories of alcohol-related aggression using observations of young adults in bars. *Journal of Addiction* **95**, 847-863.

Graham, K., West, S., and Wells, S. (2000). Evaluating theories of alcohol-related aggression using observations of young adults in bars. *Addiction* **95**, 847-863.

Graham, K. and Wells, S. (2001). Aggression among young adults in the social context of the bar. *Addiction Research and Theory* **9**, 193-219.

Gustafson, R. (1984). Alcohol, frustration and direct physical aggression: a methodological point of view. *Psychological Reports* **55**, 959-966.

- Gustafson, R. (1993). What do experimental paradigms tell us about alcohol-related aggressive responding? *J Stud Alcohol* **11**, 20-29.
- Gustafson, R. (1994). Alcohol and Aggression. *J Offender Rehabil* **21**, 41-80.
- Hare, R. D. (1983). Diagnosis of antisocial personality disorder in two prison populations. *American Journal of Psychiatry* **140**, 887-890.
- Harris, M. B. (1996). Aggressive experiences and aggressiveness: Relationship to ethnicity, gender and age. *J.Appl.Social Psychol.* **26**, 843-870.
- Hauritz, M., Homel, R., Mcilwain, G., Burrows, T., and Townsley, M. (1998). Reducing violence in licensed venues through community safety action projects: the Queensland experience. *Trends and Issues in Crime and Justice*. Australian Institute of Criminology. December 1998. **101**.
- Heath, D. (1983). 'Alcohol and Aggression. A "Missing Link" in World-Wide Perspective.' In *Alcohol, Drug Abuse and Aggression*. Gottheil et al. (eds) pp. 89-103. Charles C Thomas: Springfield, Illinois.
- Heath, D. B. (1995). *International Handbook on Alcohol and Culture*. Greenwood: Westport, Conn.
- Heath, D. B. (1998). 'Cultural variations among drinking patterns.' In *Drinking Patterns and their Consequences*. M. Grant and J. Litvak. (eds). Taylor & Francis: Washington.
- Hecaen, H. and Albert, M. L. (1978). *Human Neuropsychology*. (Wiley: New York.)
- Heinz, A. (1999). Serotonergic dysfunction after social isolation- implications for the development of aggressiveness and alcohol dependence. *Nervenarzt* **70**, 780-789.
- Herd, G. (1982). 'Alcohol use and abuse and the urban adjustment of Sambia masculine identity.' In *Through a Glass Darkly: Beer and Modernization in Papua New Guinea*. Ed M. Marshall. (ed). pp. 227-241. Institute of Applied and Economic Research: Boroko, Papua New Guinea.
- Higley, J. D. and et al (1996). A nonhuman primate model of type II excessive alcohol consumption? Part 1. Low cerebrospinal fluid 5-hydroxyindoleacetic acid concentrations and diminished social competence correlate with excessive alcohol consumption. *Alcohol Clin Exp Res* **20**, 629-642.
- Higley, J. D. and Linnoila, M. (1997). 'A nonhuman primate model of excessive alcohol intake: Personality and neurobiological parallels of type I and type II-like alcoholism.' In *Recent Developments in Alcoholism*. M. Galanter (ed). pp. 192-219. Plenum Press: New York.
- Hillbrand, M., Foster-Hilliard, G., and Hirt, M. (1991). Alcohol abuse, violence and neurological impairment: a forensic study. *Journal of Interpersonal Violence* **6**, 411-422.

- Hingson, R., Heeren, T., and Zakocs, R. (2001). Age of drinking onset and involvement in physical fights after drinking. *Pediatrics* **108**, 872-877.
- Hoaken, P. N. S., Giancola, P. R., and Pihl, R. O. (1998). Executive cognitive functions as mediators of alcohol-related aggression. *Alcohol and Alcoholism* **33**, 47-54.
- Hoaken, P. N. S. and Pihl, R. O. (2000). The effects of alcohol intoxication on aggressive responses in men and women. *Journal of Studies on Alcohol* **35**, 471-477.
- Hoaken, P. N. S., Assad, J.-M., and Pihl, R. O. (2003). Cognitive functioning and the inhibition of alcohol-induced aggression. *Journal of Studies on Alcohol* **59**, 599-607.
- Hoaken, P. N. S., Campbell, T., Stewart, S. H., and Pihl, R. O. (2003). Effects of alcohol on cardiovascular reactivity and the mediation of aggressive behaviour in adult men and women. *Alcohol and Alcoholism* **38**, 84-92.
- Hommel, R., Tomsen, S., and Thommeny, J. (1992). Public drinking and violence: not just an alcohol problem. *Journal of Drug Issues* **22**, 679-697.
- Hommel, R. and Clark, J. (1994). The prediction and prevention of violence in pubs and clubs. *Crime Prevention Studies* **3**, 1-46.
- Hommel, R., Hauritz, M., Wortley, R., Mcilwain, G., and Carvolth, R. (1997). 'Preventing alcohol-related crime through community action: the Surfers Paradise Safety Action Project.' In *Policing for Prevention: reducing crime, public intoxication and injury*. Crime Prevention Studies. Ed R. Hommel (ed). pp. 35-90. Criminal Justice Press: New York.
- Hull, J. G. and Bond, C. F. (1986). Social and behavioural consequences of alcohol and expectancy: A meta-analysis. *Psychological Bulletin* **99**, 347-360.
- Hunt, G. P. and Laidler, K. J. (2001). Alcohol and violence in the lives of gang members. *Alcoholism: Clinical and Experimental Research* **25**, 66-71.
- Jeavons, C. M. and Taylor, S. P. (1985). The control of alcohol-related aggression: redirecting the inebriate's attention to socially appropriate conduct. *Aggressive Behaviour* **11**, 93-101.
- Jeavons, C. M. and Taylor, S. P. (1985). The control of alcohol-related aggression: Redirecting the inebriate's attention to socially appropriate conduct. *Aggress.Behav.* **11**, 93-101.
- Kelly, J. F., Myers, M. G., and Brown, S. A. (2002). Do adolescents affiliate with 12 step groups? A multivariate process model of effects. *Journal of Studies on Alcohol* **63** , 293-304.
- Kelly, T. H., Cherek, D. R., Steinberg, J., and Robinson, D. (1998). Effects of provocation and alcohol on human aggressive behaviour. *Drug and Alcohol Dependence* **21**, 105-112.

- Lang, A. R. and et al (1975). Effects of Alcohol on Aggression in Male Social Drinkers. *J Abn Psychol* **84**, 508-518.
- Lang, A. R. (1983). 'Drinking and Disinhibition: Contributions From Psychological Research.' In *Alcohol and Disinhibition. Nature and Meaning of the link*. R. Room and G. Collins (eds). pp. 48-90. Research Monograph No. 12 NIAAA: Rockville, Md.
- Lang, A. R. (1985). The social psychology of drinking and human sexuality. *Journal of Drug Issues* **15**, 273-289.
- Lang, A. R. and Sibrel, P. A. (1989). Psychological perspectives on alcohol consumption and interpersonal aggression. *Criminal Justice and Behaviour* **16**, 299-324.
- Lang, A. R. and Michalec, E. M. (1990). 'Expectancy effects in reinforcement from alcohol.' In *Why People Drink. Parameters of Alcohol as a Reinforcer*. W. M. Cox (ed). pp. 193-232. Gardiner Press Inc: New York.
- Lange, J. E. (2002). Alcohol's effect on aggression identification: A two-channel theory. *Psychology of Addictive Behaviours* **16**, 47-55.
- Lau, M. A., Pihl, R. O., and Peterson, J. B. (1995). Provocation, acute alcohol intoxication, cognitive performance, and aggression. *J.Abnorm.Psychol.* **104**, 150-155.
- Lau, M. A. and Pihl, R. O. (1996). Cognitive performance monetary incentive, and aggression. *Aggress.Behav.* **22**, 417-430.
- Lenke, L. Belligerent "drinking cultures" - cause or consequence? 24th Annual Alcohol Epidemiology Symposium, Florence, June. 1998. Florence, 24th Annual Alcohol Epidemiology Symposium. 1-6-1998.
- Leonard, K. E. (1989). The impact of explicit aggressive and implicit nonaggressive cues on aggression in intoxicated and sober males. *Personality and Social Psychology Bulletin* **15**, 390-400.
- Levine, H. G. (1981). The vocabulary of drunkenness. *Journal of Studies on Alcohol* **42**, 1038-1051.
- Levine, H. G. (1992). 'Temperance cultures: Concern about alcohol problems in Nordic and English-speaking cultures.' In *The Nature of Alcohol and Drug-Related Problems: Society for the Study of Addiction Monograph No. 2*. M. Lader, G. Edwards, and D. C. Drummond (eds). Oxford University Press: Oxford.
- Lindman, R. E. and Lang, A. R. (1994). The alcohol-aggression stereotype: A cross-cultural comparison of beliefs. *Int J Addict* **29**, 1-13.
- Lisman, S. A. and Keane, T. M. (1983). 'Feeling depressed, angry, shy, sexually aroused? - Why not have a drink?' In *Stress and Alcohol Use*. L. A. Pohorecky and J. Brick (eds). pp. 185-202. Elsevier

- Longford, E. (1982). *Wellington: the Years of the Sword*. Academy Chicago Publishers: Chicago.
- MacAndrew, C. and Edgerton, R. B. (1969). *Drunken Comportment: A Social Explanation*. Aldine: Chicago.
- MacAndrew, C. (1983). 'Commentary.' In *Alcohol and Disinhibition. Nature and Meaning of the link*. R. Room and G. Collins (eds). pp. 212-213. Research Monograph No 12 NIAAA: Rockville, Md.
- MacDonald, T. K., Zanna, M. P., and Fong, G. T. (1996). Why common sense goes out the window: effects of alcohol on intentions to use condoms. *Personality and Social Psychology Bulletin* **22**, 763-775.
- MacDonnell, M. F. and Ehmer, J. (1969). Some effects of ethanol on aggressive behaviour in cats. *Quarterly Journal of Studies in Alcohol* **30**, 312-319.
- MacDonnell, M. F., Fessock, L., and Brown, S. H. (1971). Aggression and associated neural events in cats: Effects of p-chlorophenylalanine compared with alcohol. *Quarterly Journal of Studies on Alcohol* **32**, 748-763.
- Makkai, T. and McAllister, I. (1998) *Patterns of Drug Use in Australia*. Canberra, Commonwealth Department of Health and Family Services, Canberra.
- Marlatt, G. and Rohsenow, D. (1980). 'Cognitive Processes in Alcohol Use: Expectancy and the Balanced Placebo Design.' In *Advances in Substance Abuse: Behavioural and Biological Research*. N. Mello (ed). pp. 159-199. JAI Press: Greenwich CT.
- Marlett, G. A., Demming, B., and Reid, J. B. (1973). Loss of Control Drinking in Alcoholics: An Experimental Analogue. *J Abn Psychol* **81**, 233-241.
- Marsh, P. (1978). *Aggro: The Illusion of Violence*. JM Dent & Sons: Guildford, Surrey.
- Marsh, P. and Fox Kibby, K. (1992). *Drinking and Public Disorder*. The Portman Group: London.
- Marshall, M. (1979). *Beliefs, Behaviours and Alcohol Beverages: A cross-cultural survey*. Ann Arbor: The University of Michigan Press: Michigan.
- Marshall, M. (1983). 'Four hundred rabbits': An anthropological view of ethanol as a disinhibitor. In *Drinking and Disinhibition: Nature and Meaning of the Link*. NIAAA Research Monograph No. 12. United States Government Printing Office: Washington D.C.
- Martin, S. E. and Bryant, K. (2001). Gender differences in the association of alcohol intoxication and illicit drug abuse among persons arrested for violent and property offences. *Journal of Substance Abuse* **13**, 563-581.
- Mass Observation. (1943) *The Pub and the People: A Worktown Study*. London, Victor Gollancz, Ltd.

- McGuire, M. T. and Raleigh, M. J. (1986). Behavioural and Physiological Correlates of Ostracism. *Ethology & Sociobiology* **7**, 187-200.
- MCM Research. *Conflict and Violence in pubs*. 1990. Oxford.
- McMurrin, M. and Hollin, C. R. (1989). Drinking and delinquency: another look at young offenders and alcohol. *British Journal of Criminology* **29**, 386-394.
- McMurrin, M. (1991). Young offenders and alcohol-related crime: what interventions will address the issues? *Journal of Adolescence* **14**, 245-253.
- McMurrin, M. (2001). A framework for the treatment of alcohol-related aggression and violence. *Journal of Substance Use* **6**, 139-144.
- McMurrin, M., Blair, M., and Egan, V. (2002). An investigation of the correlations between aggression, impulsiveness, social problem-solving, and alcohol use. *Aggressive Behaviour* **28**, 439-445.
- Miczek, K. A. and et al (1994). 'Alcohol, drugs of abuse, aggression, and violence.' In *Understanding and Preventing Violence Vol 3*. A. J. Reiss and J. A. Roth (eds). pp. 377-570. National Academy Press: Washington DC.
- Miczek, K. A., DeBold, J. F., Van Erp, A. M., and Tornatzky, W. (1997). 'Alcohol, GABA<sub>A</sub> benzodiazepine receptor complex, and aggression.' In *Recent Developments in Alcoholism*. M. Galanter (ed). pp. 139-172. Plenum Press: New York.
- Moeller, F. G., Dougherty, D. M., Lane, S. D., Steinberg, J. L., and Cherek, D. R. (1998). Antisocial personality disorder and alcohol-induced aggression. *Alcoholism: Clinical and Experimental Research* **22**, 1898-1902.
- Moeller, F. G. and Dougherty, D. M. (2001). Antisocial personality disorder, alcohol, and aggression. *Alcohol Research and Health* **25**, 5-11.
- Moffitt, T. E. and Henry, B. (1989). Neuropsychological assessment of executive functions in self-reported delinquents. *Devel. Psychopathol.* **1**, 105-118.
- Murdoch, D. and Pihl, R. O. (1988). The influence of beverage type, BAL and sex of interactor on female bar patrons' verbal aggression. *International Journal of Addictions* **23**, 953-966.
- Murdoch, D., Pihl, R. O., and Ross, D. (1990). Alcohol and crimes of violence: present issues. *International Journal of the Addictions* **25**, 1065-1081.
- Norris, J., Davis, K. C., George, W. H., Martell, J., and Heiman, J. R. (2002). Alcohol's direct and indirect effects on mens self-reported sexual aggression likelihood. *Journal of Studies on Alcohol* **63**, 688-695.
- Norstrom, T. (1998). Effects on criminal violence of different beverage types and private and public drinking. *Addiction* **93**, 689-699.
- Norstrom, T. (2001). Alcohol and mortality: the post-war experience in the EU countries. *Addiction* **96**.

- Pagelow, M. D. (1984). *Family Violence*. Praeger: New York.
- Paglia, A. and Room, R. (1998). Alcohol and aggression: general population views about causation and responsibility. *Journal of Substance Abuse* **10**, 199-216.
- Parker, R. N. (1993). The effects of context on alcohol and violence. *Alcohol Health and Research World* **17**, 117-122.
- Parker, R. N. and Rebhun, L. A. (1995). *Alcohol and Homicide: a deadly combination of two American traditions*. State University of New York Press: Albany, NY.
- Parker, R. N. and Auerhahn, K. (1998). Alcohol, Drugs, and Violence. *Annu. Rev. Sociol.* **24**, 291-311.
- Parker, R. N. and Cartmill, R. S. (1998). Alcohol and homicide in the United States 1934-1995 - or one reason why U.S. rates of violence may be going down. *Journal of Criminal Law and Criminology* **88**, 1369-1398.
- Parks, K. A. and Miller, B. A. (1997). Bar victimization of women. *Psychology of Women Quarterly* **21**, 509-525.
- Pedersen, W. C., Aviles, F. E., Ito, T. A., Miller, N., and Pollock, V. E. (2002). Psychological experimentation on alcohol-induced human aggression. *Journal of aggression and violent behavior* **7**, 293-312.
- Pernanen, K. (1976). Alcohol and crimes of violence. In *Social Aspects of Alcoholism*. B. K. Kissin and H. Begleiter (eds). Plenum: New York.
- Pernanen, K. (1982). 'Theoretical aspects of the relationship between alcohol use and crime.' In *Drinking and Crime: perspectives on the relationships between alcohol consumption and criminal behaviour*. J. Collins (ed). Tavistock: London.
- Pernanen, K. (1991). *Alcohol in Human Violence*. Guildford Press: London and New York.
- Peterson, J. B., Rothfleisch, J., Zelazo, P. D., and Pihl, R. O. (1990). Acute alcohol intoxication and cognitive functioning. *J.Stud.Alcohol* **51**, 114-122.
- Pihl, R. O. and Smith, S. (1983). On Affect and Alcohol. In *Stress and Alcohol Use*. L. A. Pohorecky and J. Brick (eds). pp. 203-225. Elsevier
- Pihl, R. O., Lau, M. L., and Assaad, J. (1997). Aggressive disposition, alcohol, and aggression. *Aggress.Behav.* **23**, 11-18.
- Pihl, R. O. and Lemarquand, D. (1998). Serotonin and aggression and the alcohol-aggression relationship. *Alcohol and Aggression* **33**, 55-65.
- Polivy, J. and Herman, C. P. (1976). Effects of Alcohol on Eating Behaviour: Influence of Mood and Perceived Intoxication. *J Abn Psychol* **86**, 601-606.

- Quigley, B. M., Corbett, A. B., and Tedeschi, J. T. (2002). Desired image of power, alcohol expectancies, and alcohol-related aggression. *Psychology of Addictive Behaviours* **16**, 318-324.
- Regier, D. A., Farmer, M. E., Rae, D. S., and et al (1990). Comorbidity of mental disorders with alcohol and other drug abuse: Results from the Epidemiologic Catchment Area (ECA) Study. *Journal of the American Medical Association* **264**, 2511-2518.
- Renfrew, J. W. (1997). *Aggression and its Causes: A Biopsychosocial Approach*. Oxford University Press: New York.
- Robins, L. N. (1996). *Deviant Children Grown Up*. Williams & Wilkins: Baltimore.
- Rohsenow, D. J. and Marlett, G. A. (1981). The Balanced Placebo Design: Methodological Considerations. *Addict Behav* **6**, 107-119.
- Room, R. *Alcohol as an Instrument of Intimate Domination*. [Paper presented at the Annual Meeting of the Society for the Studies of Social Problems]. 1980. NYC.
- Room, R. and Collins, G. *Alcohol and Disinhibition: Nature and Meaning of the Link*. Research Monograph No 12 . 1982. Berkeley/Oakland, California, NIAAA.
- Room, R. (1993). 'Alcohol and Crime: What kinds of links, and can we break them?' In *Alcohol and Crime - Proceedings of a Mental Health Foundation Conference*. Ed J. Russell (ed). pp. 1-6. Mental Health Foundation: London.
- Room, R. and Rossow, I. (2001). The share of violence attributable to drinking. *Journal of Substance Use* **6**, 218-228.
- Rossow, I. (1996). Drinking patterns and their consequences: report from an international meeting. *Addiction* **91**, 1651-1661.
- Rossow, I., Pape, H., and Wichstrom, L. (1999). Young, wet and wild? Associations between alcohol intoxication and violent behaviour in adolescence. *Addiction* **98**, 1017-1031.
- Samarasinghe, D. (1992). Removing the Magic of Drugs. *World Health Forum* **13**, 368-371.
- SAMHSA: *National Household Survey on Drug Abuse: Main Findings 1997*. 1999. Rockville MD. Department of Health and Human Services.
- Scott, K. D., Greenfield, T. K., and Schafer, J. (1999). The role of alcohol in physical assault perpetration and victimisation. *Journal of Studies on Alcohol* **60**, 528-536.
- Scully, D. and Marolla, J. (1984). Convicted Rapists, Vocabulary of Motive: Excuses and Justifications. *Social Problems* **31**, 530-544.
- Simpson, K. (2001). The role of testosterone in aggression. *McGill Journal of Medicine* **6**, 32-40.

- Sinha, M. (1995). Daiquiris and Drive-bys.' Mother Jones. [www.motherjones.com]
- Smart, R. G. (1996). Behavioral and Social consequences related to the consumption of different beverage types. *Journal of Studies on Alcohol* **57**, 77-84.
- Soloff, P. H., Lynch, K. G., and Moss, H. B. (2000). Serotonin, impulsivity, and alcohol use disorders in the older adolescent: a psychobiological study. *Alcoholism: Clinical and Experimental Research* **25**, 1609-1619.
- Southwick, L. and et al (1981). Alcohol-Related Expectancies Defined by Phase of Intoxication and Drinking Experience. *J Cons Clin Psychol* **49**, 713-721.
- Spunt, B., Goldstein, P., Brownstein, H., Fendrich, M., and Langley, S. (1994). Alcohol and homicide: Interview with prison inmates. *J Drug Issues* **24**, 143-146.
- Steele, C. and Joseph, R. A. (1990). Alcohol Myopia: its prized and dangerous effects. *Americal Psychologist* **45**, 921-933.
- Sumner, M. and Parker, H. (1995) *Low in Alcohol: A review of international research into alcohol's role in crime causation*. London, The Portman Group.
- Taylor, S. and Gammon, C. B. (1975). Effects of type and dose of alcohol on human physical aggression. *Journal of Personality and Social Psychology* **32**, 169-175.
- Taylor, S. P., Gammon, C. B., and Capasso, D. R. (1976). Aggression as a function of the interaction of alcohol and threat. *J.Pers.Social Psychol.* **34**, 938-941.
- Taylor, S. P. and Leonard, K. E. (1983). 'Alcohol and human physical aggression.' In *Aggression: Theoretical and Empirical Reviews*. Vol 2. Issues in research.' R. G. Green and E. I. Donnerstein (eds). pp. 77-101. Academic Press: New York.
- Taylor, S. P. (1986). 'The regulation of aggressive behaviour'. In *Advances in the study of aggression Vol 2*. R. J. Blanchard and D. C. Blanchard (eds). pp. 91-119. Academic Press: San Diego CA.
- The Kinsey Institute. 2003: [www.indiana.edu/~kinsey](http://www.indiana.edu/~kinsey)
- Tiger, L. (1971). *Men in Groups - A controversial look at all-male societies*. Panther Books Ltd: London.
- Tomsen, S. (1989) *Alcohol, violent crime and social power. Seminar on Alcohol and Crime, Perth, Western Australia*. . Perth. 4-4-1989.
- Tucker, J. A. and et al (1982). Alcohol's Effect on Human Emotions: A review of the stimulation/depression hypothesis. *Int J Addict* **17**, 155-180.
- Virkkunen, M. (1994). CSF biochemistries, glucose metabolism, and diurnal activity rhythms in alcoholic, violent offenders, fire setters, and healthy volunteers. *Arch Gen Psychiatry* **51**, 20-27.
- Virkkunen, M. and et al (1995). Serotonin in alcoholic violent offenders. *Ciba Foundatin Symposium* **194**, 168-182.

Virkkunen, M. and Linnoila, M. (1996). 'Serotonin and glucose metabolism in impulsively violent alcoholic offenders.' In *Aggression and Violence*. D. M. Stoff and R. B. Cairns (eds). pp. 87-100. Lawrence Erlbaum: Mahwah, NJ.

Voas, R. B., Johnson, M., and Lange, J. (2002). Permission to cross the border: effective policy reduces high risk drinking by marines. *Journal of Studies on Alcohol* **63**, 645-648.

Von Der Pahlen, B., Sarkola, T., Seppa, K., and Eriksson, C. J. P. (2002). Testosterone, 5-dihydrotestosterone and cortisol in men with and without alcohol-related aggression. *Journal of Studies on Alcohol* **63**, 518-526.

Walter, M. A. (1982). 'Drink and be merry for tomorrow we preach: alcohol and the male menopause in Fiji.' In *Through a Glass Darkly: Beer and Modernization in Papua New Guinea*. M. Marshall (ed). pp. 433-436. Institute of Applied and Economic Research: Papua New Guinea.

Warburton, D. M. (1999). 'Pleasure for Health.' In *Alcohol and Pleasure*. S. Peele and M. Grant (eds). pp. 11-23. Taylor & Francis Group: Philadelphia.

Weiner, M. D., Pentz, M. A., Turner, G. E., and Dwyer, J. H. (2001). From early to late adolescence: alcohol use and anger relationships. *Journal of Adolescent Health* **28**, 450-457.

Wells, S. and Graham, K. (2003). Aggression involving alcohol: relationship to drinking patterns and social context. *Addiction* **98**, 33-42.

Wells, S., Graham, K., and West, P. (2000). Alcohol related aggression in the general population. *Journal of Studies on Alcohol* **61**, 626-632.

Welte, J. W. and Miller, B. A. (1987). Alcohol use by violent and property offenders. *Drug and Alcohol Dependence* **19**, 313-324.

Whalen, C. K., Jamner, L. D., Henker, B., and Delfino, R. J. (2001). Smoking and moods in adolescents with depressive and aggressive dispositions: Evidence from surveys and electronic diaries. *Health Psychology* **20**, 99-111.

White, H. R., Brick, J., and Hansell, S. (1993). A longitudinal investigation of alcohol use and aggression in adolescence. *Journal of Studies on Alcohol (special issue on alcohol and aggression)*.

White, R. H., Brick, J., and Hansell, S. (1993). A longitudinal investigation of alcohol use and aggression in adolescence. *Journal of Studies on Alcohol* **54**, 62-77.

Yates, D., Hadfield, J. M., and Peters, K. (1987). Alcohol consumption of patients attending two accident and emergency departments in North West England. *Journal of the Royal Society of Medicine* **80**, 486-489.

Ylikahri, R., Huttunen, M. O., Harkonen, M., Soderling, S., Onikki, S., Karonen, S. L., and Adlercreutz, H. (1974). Low plasma testosterone values in men during hangover. *Steroid Biochem.* **5**, 655-658.

Young, J. A. and Pihl, R. O. (1982). Alcohol Consumption and Response in Men Social Drinkers. The Effects of Causal Attributions Concerning Relative Response Control. *J Stud Alc* **43**, 334-351.

Young, R. A. and Pihl, R. O. (1980). Self-control and the effects of alcohol intoxication. *J Stud Alcohol* **41**, 567-571.

Zack, M. (1997). Drunk or Sober? Learned conformity to a behavioural standard. *J Stud Alcohol* **58**, 495-501.

Zhang, L., Wieczorek, W. F., and Welte, J. W. (1997). The nexus between alcohol and violent crime. *Alcoholism: Clinical and Experimental Research* **21**, 1264-1271.

Zhang, L. N., Welte, J. W., and Wieczorek, W. W. (2002). The role of aggression-related alcohol expectation in explaining the link between alcohol and violent behaviour. *Alcohol and Violent Behaviour* **37**, 457-471.

Zillman, D. and Bryant, J. *Effects of ethanol intoxication before versus after provocation on aggressive behavior*. 1990. Unpublished manuscript, University of Alabama.

Zitzmann, M. and Nieschlag, E. (2001). Testosterone levels in healthy men and the relation to behavioural and physical characteristics: Facts and constructs. *Europ.J.Endocrinol.* **144**, 183-197.