Interpersonal and Abandonment Issues in Alcohol Use, Abuse and Dependence

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The Role of Interpersonal Factors in Alcohol Use and Abuse

Abstract

Many psychological theories of alcohol use and dependency suggest that individuals drink alcohol to reduce negative emotion. However, existing theories are not adequate to fully explain the origins or the nature of that emotion. This paper emphasises the importance of interpersonal factors in alcohol problems. The effectiveness of treatments addressing these issues supports their relevance. Within the domain of interpersonal issues, this review addresses the role of loneliness and suggests a specific role for abandonment issues. A cognitive schema-focused model suggests that alcohol abuse may be characterised by the presence of pathological abandonment schemata. Schema theory would provide an explanation for how adverse early interpersonal experiences can have an influence on later functioning (particularly within relationships). Based largely on the eating disorder literature and similarities between these two disorders, it is hypothesised that the activation of such schemata leads to 'escape' behaviour (consumption of alcohol). It is also hypothesised that schema-relevant information (threats) will lead to escape behaviour only when they are processed at a preconscious level. The review concludes by discussing the need for alcohol research to investigate the role of abandonment schemata and preconscious processing of information relevant to these schemata. Research in this area could have important implications for the treatment of alcohol abuse and dependency.

The role of interpersonal factors in alcohol use and abuse

Alcohol abuse and dependence represent a major public health problem (Roth & Fonagy, 1996). Tens of thousands of people die from alcohol and alcohol-related diseases, and the associated medical costs are tremendous. Despite the impact of alcohol on society, there remains a lack of comprehensive models concerning the aetiology and maintenance of alcohol problems. Although numerous models have been proposed, they fail to account for many of the variables found to be important in alcohol problems, and therapies remain inadequate.

This paper aims to explore the importance of a factor that is often neglected in the understanding of alcohol abuse – interpersonal factors. It will discuss the role of negative emotion in alcohol abuse, and will then focus on distal and proximal interpersonal antecedents that might contribute to this negative emotion. The main focus will be on negative interpersonal issues, as these appear to be of critical importance in problematic drinking. The paper then discusses the role of loneliness and a specific role for abandonment fears as antecedents to alcohol abuse. Lastly, clinical and research implications are suggested. Initially, it is necessary to outline the clinical picture of alcohol problems, and to give a brief overview of models of causation.

Clinical picture of alcohol abuse/dependence

There are many terms that are used to describe problematic drinking. This paper will use the DSM-IV (American Psychiatric Association, 1994) definitions of alcohol abuse (maladaptive pattern of drinking leading to significant and persistent impairment in daily functioning or distress) and alcohol dependence (similar levels of

disruption, with the addition of tolerance and/or withdrawal). For ease of communication, 'problem drinking' or just 'drinking' will be used to encompass both of these terms. The prevalence of alcohol abuse and dependence is difficult to establish, due to different definitions used in studies and the fact that many individuals do not seek treatment. However, Warheit & Auth (1993) report six-month prevalence rates for alcohol dependence as being between 4.5 and 6.1 per cent, with significantly higher rates for men than women (9.0 vs. 1.5 per cent), and a greater prevalence in younger age groups. Similarly, Sobell & Sobell (1993) estimate that five per cent of the general population would receive a diagnosis of alcohol abuse or dependence, whilst a much larger proportion would have non-clinical problems with alcohol.

Alcohol is frequently associated with other psychiatric disorders. In a review of the literature, Regier, Farmer & Goodwin (1992) found co-morbid rates of depression as being between 30 and 40 per cent, and anxiety as 20 per cent. Alcohol abuse has also been shown to have extensive co-morbidity with personality disorders, particularly antisocial and dependent personality disorders (Marchiori, Loschi, Marconi, Mioni & Borgherini, 1999). However, it is not clear to what extent the psychiatric problems are an underlying cause of drinking or are a consequence of excessive consumption. Regardless of the direction of the association, the presence of a comorbid substance abuse problem is likely to significantly decrease the chances of treatments for psychiatric problems being successful. Having outlined the clinical features of alcohol abuse and dependence, the following section will review the main models (both non-psychological and psychological) that have been proposed to account for these disorders.

Non-psychological models of alcohol abuse

Several non-psychological models have been proposed to explain alcohol abuse and addiction. A socio-cultural perspective views the price, availability and acceptability of alcohol as playing an important part in levels of alcohol consumption (see Edwards, Marshall & Cook, 1997 for review). Biological models emphasise the importance of genetic and physiological processes as causes of alcoholism. The most popular biological model is the disease model (Gelling, 1960). This model views alcoholics as possessing a progressive disease (culminating in loss of control), due to a genetically transmitted chemical imbalance that renders them incapable of drinking in moderation. Alternatively, the addictive model views the cause of alcohol problems to be in the addictive, pharmacological properties of alcohol itself. These theories imply that the only effective treatment would be abstinence. Criticisms of these models include the fact that some (non-medical) treatments have been found to be effective and allow controlled drinking. In addition, there is no role for potential learning, cognitive or psychosocial factors in these models, even though it is clear that these factors greatly contribute to alcohol abuse and dependence. Psychological theories of alcohol abuse and dependence take more account of these factors. Some of these theories will now be outlined.

Psychological models of alcohol abuse

Psychological theories of drinking are many and varied. Broadly speaking these can be divided into psychodynamic, personality, behavioural, cognitive and interactional (developmental) theories.

Psychodynamic theories

Psychoanalytic theories (e.g., Blume, 1966) suggest that the aetiology of alcoholism can be found in unresolved, unconscious conflicts that originate during early childhood. A fixation at the oral stage of development, due to parental deprivation, has been the most common hypothesis (and is supported by dependency, immaturity and low tolerance for frustration being common personality characteristics in alcoholics). The act of drinking is thought to be symbolic of the desire to return to the comfort and security of feeding from the mother. In other words, alcohol acts as a relief from anxiety experienced in adulthood as a result of early experience. Psychoanalytic theories have been the subject of much criticism and reviews suggest that they are not supported by the literature (Thombs, 1999). It cannot be said that all drinkers consume alcohol to relieve negative emotion. Therefore, a more complex model is needed.

Personality theories

Personality factors have long been thought to play a part in understanding drinking and alcoholism (Cox, 1987). Although the theory that there is a specific 'addictive personality' is now largely disproved, some personality traits (e.g., a tendency to experience anxiety or depression, or antisocial traits) do appear to predispose individuals to heavy drinking (see Edwards et al., 1997 for review). Such people are motivated to drink in order to control their negative affective states. For those with vulnerable personality traits, alcohol is especially reinforcing and continual drinking to control affect results in greater negative affect when sober (see Blane & Leonard, 1986). Thus, the progression is that individuals drink increasing amounts to regulate negative affect.

Behavioural and cognitive theories

Bandura (1969) suggested that all drinking is governed by principles of learning, cognition and reinforcement. Social learning theory views alcohol use and abuse as a method of coping with the demands of the environment, particularly when conditions overwhelm effective coping ability and reduce one's perceptions of efficacy (Abrams & Niaura, 1987). Using alcohol to cope with negative psychological states leads to psychological dependence.

The tension-reduction hypothesis is also based on behavioural learning principles, and explains drinking as "the existence of a tension state that energises the response and the relief of tension provided by alcohol, reinforces the drinking response" (Cappell & Herman, 1972, pp.33-34). A critical examination of this hypothesis was conducted by Cappell (1975), who concluded that the tension reduction theory was not tenable as a single factor explanation, but is valid as a crucial component of more complex models, such as the stress response dampening (SRD) model. The SRD model argues that alcohol dampens the physiological stress response, subjectively alleviating stress and thereby reinforcing drinking in other stressful situations (Sher, 1987). Non-pharmacological cognitive effects (e.g., expectancies) are considered to be important within this model. Expectancies have been developed into a cognitive theory of alcohol abuse (Goldman, Brown, Christiansen & Smith, 1991). Expectancy theory emphasises the importance of positive expectancies about the effects of drinking in the initiation and maintenance of alcohol abuse.

Expectancies have also been linked to craving. The construct of craving is central to many explanations of addictive behaviour, and there is a widely held notion

that cravings prompt substance abuse (see Thombs, 1999). Marlatt (1987) proposes that cravings may be triggered by the positive expectation of pleasure provided by alcohol. Within this model, certain stimuli (paired with past pleasurable consequences), elicit craving. Rather than expectancy of a positive state, other models propose that cravings are triggered by the dysphoric state associated with abstinence from a desired substance (Jellinek, Isbell, Lundquist, Tiedbout, Duchene, Mardones & MacLeod, 1955). As both models are supported by evidence, it is likely that they may both play a part in problematic drinking. However, they have been criticised by some (e.g., Tiffany, 1990), who contend that drug use frequently occurs without being prompted by craving.

Other cognitive theories including the self-awareness theory (Hull, 1981) and the alcohol myopia theory (Steele & Josephs, 1988) suggest that alcohol consumption limits one's ability to process threat. Although these models have received empirical support (e.g., Hull & Young, 1983), they fail to explain why some people are more likely to need to escape from threat (and hence develop drinking problems).

Interactional theories

Interactional theories integrate various models, viewing behaviour as a function of the person, environment and behaviour. Several interactional theories have been proposed, all being more or less developmental in approach. They have contributed particularly to understanding the initiation of drinking behaviour.

Problem behaviour theory (Jessor & Jessor, 1977) views drinking behaviour within the context of other problem behaviours, the origins of which are in socialisation and in psychosocial unconventionality. It considers drinking and problem drinking as being on a continuum, with proneness to drinking increasing during adolescence. Jessor (1983) has provided some support for this model,

although there were methodological weaknesses in his study. In contrast, Zucker's (1979) developmental model focuses on how the family environment of the child influences later drinking. Based on the findings of a series of studies, he proposes that there is a disturbance in three areas: parental deviant behaviour (including alcohol abuse); parental disinterest and lack of involvement with the child; and lack of affectionate and supportive interaction between child and parents. Zucker (1979) argues that these familial conditions are likely to have begun early in childhood, before the onset of drinking.

Summary

The theories outlined above indicate that researchers have conceptualised alcohol use and abuse in many different ways. Researchers have viewed alcohol consumption as a product of biological, personality, conditioning and environmental influences. It is the psychological, functional aspect of alcohol use that will provide the focus for this review. Alcohol use can be understood in terms of its antecedents (both predisposing and proximal factors) and its consequences (both short-term and long-term). This functional perspective treats the behaviour (alcohol consumption) as a function of its antecedents and consequences (e.g., Owens & Ashcroft, 1982). The antecedents provide the necessary setting conditions for the behaviour, and the short-term consequences serve to reinforce the behaviour.

Many of the psychological theories suggest that the function of alcohol consumption is to cope with or relieve negative emotion. Recent empirical research (inspired by these models) investigating negative emotion as an antecedent to alcohol abuse will now be reviewed in order to determine the importance of negative emotion in more problematic drinking. It will then be argued that interpersonal factors, loneliness and abandonment fears may account for much of this negative affect.

The role of negative emotion in alcohol use and abuse

Alcohol researchers have frequently posited a relationship between emotional state and alcohol consumption. Theoretically (e.g., within social learning theory), alcohol would be expected to alleviate negative mood states in the short term, but prolonged and heavy use of alcohol to cope would be expected to increase negative mood in the long term. Although some research has investigated the long-term psychological consequences of drinking on mood (e.g., Sexton, Lipton & Nilssen, 1999), the majority of psychological research has concentrated on mood as an antecedent to drinking, and it is the current status of this research that will be the focus of this section. The discussion will conclude by outlining studies that have manipulated mood experimentally in order to investigate its effect on drinking behaviour.

The relationship between alcohol use and depression has been widely documented in the literature. Zack, Toneatto & MacLeod (1999) have shown that the intensity of negative affect is significantly greater in psychiatric outpatients with an alcohol use disorder than in those without an alcohol use disorder (although the causal direction of this finding is unknown). Research has consistently revealed that a substantial percentage of drinkers report drinking to relieve negative emotion (Cooper, Russell, Skinner, Frone & Mucker, 1992), and negative affect has been found to be the most common antecedent of relapse in problem drinking (e.g., Vuchinich & Tucker, 1996). In addition to depression, increased alcohol consumption has been found among individuals experiencing feelings of tension (Brown, Goldman & Christiansen, 1985), anxiety (Wills & Shiffman, 1985), boredom (Orcutt, 1984) and anger (Tivis, Parsons & Nixon, 1998).

In addition to managing negative emotion, research indicates that individuals

use alcohol to enhance positive emotional experience (e.g., Windle & Windle, 1996). Several authors (e.g., Cooper, 1994) have suggested that individuals' drinking is primarily motivated by positive or negative reasons, and that these represent phenomenologically distinct behaviours. In a study of students, Williams & Clark (1998) found that coping motives resulted in higher levels of drinking and drinking problems than enhancement (positive) drinking. Cooper, Frone, Russell & Mudar (1995) found that enhancement and coping motives had unique antecedents and consequences. They found that 'copers' (compared to 'enhancers') were significantly more depressed and held significantly stronger expectations for tension reduction. It is thought that reliance on alcohol to cope may contribute to further deterioration in adaptive coping and to an increased psychological dependence on alcohol to meet one's needs. In contrast, individuals who drink primarily for positive reasons are thought to engage in normative behaviour (and do not use alcohol to cope), thus this behaviour should not be related to drinking problems. Although these studies appear to provide support for the social learning theory of alcohol abuse, Cooper (1994) found that general coping strategies (other than using alcohol to cope) failed to predict alcohol consumption and related problems. Thus, this theory may not be adequate to explain the findings. Although the above research suggests that drinkers may be predisposed to drink for either enhancement or coping reasons, it is important to note that most people who drink for one reason, also drink for the other.

In contrast to research which suggests that alcohol use and problem use represent a continuum and are influenced by the same psychosocial factors (e.g., Shedler & Block, 1990), Colder & Chassin (1999) found evidence to suggest that the correlates of problem alcohol use were different from those of moderate use. They found that moderate use was associated with socialisation specific to alcohol and

with unconventionality. In contrast, problem use was associated with fundamental family disruptions, poor parenting, stressful life events and psychological distress. Similarly, Crowe, Philbin, Richards & Crawford (1998) found that greater alcohol involvement was related to lower affect and feelings of social isolation within the family. This research suggests that adolescent alcohol abuse may develop out of a lack of attachment or commitment to the family. Jurich, Polson, Jurich & Bates (1985) argue that adolescent substance abusers "lack recognition, love and trust (in their families)" (p. 145). Although the direction of causality is not always established in these studies, they suggest that problematic family environments predate and predispose to adolescent alcohol involvement.

Gender differences in emotion and alcohol use

In a study of 1069 drinkers in the normal population, Klein & Pittman (1993) have found gender significantly influences the relationship between alcohol use and emotional state. Women reported greater alcohol consumption when they experienced positive affective states, while men drank heavily in response to positive and negative emotional states. This is consistent with other research that has shown that men cite more escapist reasons for drinking (Cooper et al., 1992), and may explain the higher rate of alcohol abuse by men. However, other research has found a stronger relationship between coping motives and problematic drinking among females (Sexton et al., 1999). These contradictory findings may be due to different methodologies employed within the studies (e.g., populations studied), but the relationship between gender and reasons for drinking remains unclear.

To summarise, studies suggest that negative mood impacts on alcohol consumption. However, they do not give a detailed understanding of the mechanisms involved in this process. A small number of studies have investigated the relationship

between negative mood and alcohol abuse in more detail, by manipulating mood experimentally. These studies will now be outlined.

Experimental studies of negative mood and alcohol craving/consumption

A variety of alcohol-related cues have been examined experimentally and have been found to evoke alcohol craving (e.g., Rohsenow, Monti, Rubonis, Sirota, Niaura, Colby, Wonshel & Abrams, 1994). However, less research has examined the effects of induced negative emotion on craving or drinking. In studies by Litt, Cooney, Kaden & Gaupp (1990) and Willner, Field, Pitts & Reeve (1998), hypnotic induction of a negative mood (relative to elated or neutral mood groups) was found to elicit craving for alcohol among alcoholic subjects and recreational drinkers. Cooney, Litt, Morse, Bauer & Gaupp (1997) conducted a further study to assess the effects of induced negative moods in abstinent alcoholic individuals. Fifty men participated in a guided verbal imagery procedure designed to induce negative moods, and were then exposed either to their favourite alcoholic drink or to water. Results indicated that negative affect imagery led to increased reporting of a desire to drink. They also found that those who were most reactive to the negative mood were more anxious and depressed, and were more likely to drink in situations associated with unpleasant emotions. These individuals with higher levels of psychopathology may be more likely to use alcohol to self-medicate. The authors conclude that depressed mood may contribute to the initiation of drinking through increasing craving.

Zack et al. (1999) studied 36 problem drinkers and found that individuals with higher psychiatric distress and a stronger bias to drink in negative affective situations were more influenced by negative affective cues (i.e., made faster lexical decisions to alcohol words preceded by negative affective rather than neutral words)

than individuals with low psychiatric distress. The results indicate a functional difference between problem drinkers with high and low psychiatric distress. This is consistent with other research (e.g., Rubonis, Colby, Monti, Rohsenow, Gulliver & Sirota, 1994), which suggests that differential sensitivity to negative affect may predispose problem drinkers with high psychiatric distress to relapse in negative affective states.

The above findings have been explained mainly in terms of conditioning or memory models. Conditioning models view alcohol craving as being a conditioned response to negative mood (Jellinek et al., 1955) or positive expectation of pleasure (Marlatt, 1987). According to these theories, if an individual (particularly those with higher psychopathology and thus more opportunity to associate negative mood and drinking) frequently pairs mood and drinking, they may become responsive to mood alone.

Although it is possible that a conditioning model could explain these responses to mood induction, these models do not explain why some individuals are more likely to experience negative emotion and to use alcohol to escape from it. They fail to explain why only some individuals develop alcohol abuse. Non-associative explanations should not be ruled out (e.g., individual differences in responses to coping with stress). In addition, although learning theory would predict that individuals with more severe dependence should show greater cue reactivity, Cooney et al. (1997) found no connection between these variables, suggesting that learning theory does not fully explain the processes involved. Furthermore, learning theory would predict that repeated exposure of cues (conditioned stimuli) without alcohol consumption should lead to habituation of the conditioned response. However, in a treatment study of alcoholics, Stasiewicz, Gulliver, Bradizza, Rohsenow, Torris &

Monti (1997) found that longer exposure to negative emotional cues was associated with greater craving and negative emotional responses. Although they concluded that longer exposure times might be necessary, it may be that the theory is inadequate.

Memory network models have also been used to explain the effects of mood on craving and drinking (e.g., Stacy, 1995). Although the precise mechanisms are not known, Bower's (1987) theory of spreading activation may provide an explanation. In this model, negative mood is thought to activate emotion nodes, which in turn activate associated memories. This is hypothesised to heighten negative mood and may lead to increased drinking.

Summary of the role of negative emotion in alcohol use and abuse

Research strongly suggests that negative emotion is an important (proximal) antecedent to problematic drinking, particularly for those with higher levels of psychopathology (distal antecedent). However, existing models (e.g., conditioning) appear to be somewhat inadequate to fully explain drinking in response to negative emotional states. With the exception of some disruption to family processes, there has been little consideration of the distal and proximal antecedents to the negative emotion. The following discussion focuses on interpersonal issues, and argues that such factors may be crucial in offering an explanation of negative emotion.

The role of interpersonal factors in alcohol use and abuse

The study of interpersonal aspects of drinking and drinking problems is fairly recent, and draws from different theoretical models. Prior to the 1960's, the majority of models (with the exception of the psychodynamic) and treatments of alcoholism were individual-centred, making little contribution to the understanding of the interpersonal contexts of alcoholism. For example, the tension reduction hypothesis

(Cappell & Herman, 1972) emphasised the effects of alcohol on stress, without considering the external sources of that stress.

Since then, studies of interpersonal issues have been conducted with both social drinkers and alcohol abusers. Studies of alcohol use and abuse have investigated both the consequences (short- and long-term) of alcohol consumption on interpersonal behaviours and the interpersonal antecedents (predisposing and precipitating) to alcohol consumption. It is the research investigating antecedents and short-term consequences that will be concentrated on in this review, as these factors are directly related to the function of the behaviour. However, there will initially be a brief outline of the longer term interpersonal consequences of alcohol consumption.

Longer term interpersonal consequences of drinking

Alcohol consumption has been associated with both positive and negative consequences, for the individual and for other people. In terms of positive consequences, studies have found that chronic alcoholics are more likely to initiate conversation when drinking than when sober (e.g., Nathan, Titler, Lowenstein, Solomon & Rossi, 1970). They have also found that alcohol results in more positive couple interaction and allows for a wider expression of feeling (Steinglass, 1981). However, other research has shown that alcohol can make communication more negative (Jacob, Ritchey, Cvitkovic & Blane, 1981). These contradictory findings may be due to methodological differences between the studies (e.g., in the amount of alcohol consumed). It appears that larger amounts of alcohol can make communication more negative. It is unclear whether these interactional changes are purely consequences of alcohol use or indeed are antecedents to use and abuse.

In terms of negative interpersonal consequences, alcohol has been viewed as a facilitator of violent behaviour and crime in social drinkers (George & Marlatt, 1986)

and has been linked to increased risk for victimisation (Pernanen, 1991). Alcohol use has also been found to have negative effects on relationships and families. Women married to men with severe drinking problems frequently attempt to end their relationships (Orford, Guthrie, Nicholls, Oppenheimer, Egert & Hensman, 1975), and heavy drinking has been found to increase divorce rates (Caces, Harford, Williams & Hanna, 1999). In general, studies have found that children of alcoholics are more likely than controls to have school problems, antisocial behaviour, drinking problems, lower self esteem, more emotional detachment, higher anxiety, more social aggression and more psychosomatic symptoms (see Bennett & Wolin, 1985).

In summary, although there do appear to be some perceived positive consequences of alcohol consumption for interpersonal relationships, research suggests that heavier use is mainly associated with longer term negative interpersonal consequences. However, the cross-sectional nature of many of these studies precludes inferences of causality. These hypothesised negative consequences may, in fact, be antecedents to alcohol use and abuse. It is to these antecedents that this review will now turn. Initially, predisposing (distal) childhood factors (e.g., abuse and parental loss) will be discussed, followed by a review of precipitating (proximal) factors to alcohol use and abuse (e.g., difficulties in adult relationships). The immediate consequences of alcohol use will be highlighted as part of this discussion, as they are directly linked to the antecedents and the function of this behaviour. The review of interpersonal antecedents will conclude with an outline of the outcome of treatments that focus on interpersonal issues.

Distal interpersonal antecedents to drinking

Child abuse. A substantial amount of literature suggests that childhood maltreatment, trauma and other adverse life events may contribute to the

development of alcohol use disorders. High rates of sexual abuse have been observed among women with alcohol use disorders. Miller, Downs & Testa (1993) found that women in treatment for alcohol use disorders had a higher rate of childhood maltreatment than women in treatment for other disorders. In a study of 597 female adolescents in treatment for substance abuse, Edwall, Hoffman & Harrison (1989) found that 35% reported a history of sexual victimisation. Clark, Lesnick & Hegedus (1997) studied 183 adolescents with alcohol dependence or abuse and found that, compared to a matched group of individuals in the normal population, these adolescents were six to 12 times more likely to have a history of physical abuse, and 18 to 21 times more likely to have a sexual abuse history. Sexual abuse was more common in females, and physical abuse was more common in males.

In community samples, sexual abuse histories have also been associated with more alcohol consumption and higher rates of alcohol use disorders (Widom, Ireland & Glynn, 1995). In a study of 122,824 adolescents in the general population, Harrison, Fulkerson & Beebe (1997) found that physical and sexual abuse were associated with an increased likelihood of alcohol use in both males and females. Use of multiple substances and earlier use were highly elevated among those who had suffered both physical and sexual abuse. Therefore, clear links are seen between abuse and problem drinking in adolescents and adults in community and clinical populations.

The mechanism for the relationship between trauma and adolescent alcohol use disorders remains relatively unexplored. However, it is known that abuse victims often feel guilty and angry, and experience intrusive recollections of the trauma. They are often incapable of dealing with the intense emotions that abuse experiences generate, and report using drugs to cope with and escape from these painful emotions

(Terr, 1991). Alcohol consumption may be a means of emotional self-regulation that promises instantaneous effects and provides a sense of self-control (Labouvie, 1986). It has been suggested that the effects of mood-altering substances are similar to the dissociative strategies that many victims of child abuse use to distance themselves from their traumatic experiences (Hussey & Singer, 1993). Substance abuse may offer "a temporary but potentially useful avenue for dealing with psychological distress" (Hussey & Singer, 1993, p.96), although ultimately such self-medication may impede the development of healthy coping skills and interfere with functioning.

To summarise, although these studies were cross-sectional (and thus preclude inferences of causality), the results suggest that trauma is strongly associated with alcohol use disorders. As adults with alcohol use disorders preceded by childhood trauma tend to be treatment resistant (Brady, Killeen, Saladin, Dansky & Becker, 1994), a greater understanding of these relationships is important. Other factors that often occur in the context of abuse (such as neglect) may moderate the associations found (Finkelhor, 1994). Indeed, other adverse childhood factors (particularly those that have involved a loss) have also been associated with later alcohol problems. These will now be reviewed.

Parental death. Although many studies have examined the relationship between childhood parental loss and adult psychopathology (e.g., Parker, 1992), only a few have examined the relationship between parental death and alcohol dependence. The studies that have been conducted have yielded mixed results. In a study of 929 male alcoholic patients, Hilgard & Newman (1963) found that a significantly higher proportion had experienced the death of their mother or father compared to controls. DeJong, Harteveld & Wielen (1991) found that significantly more alcoholics than drug addicts had lost their fathers. However, in a study of

female twins, Tennent (1988) found that childhood parental loss through separation (but not through death) was significantly more common among alcoholics than controls. These discrepancies may be due to low statistical power of smaller studies, the children's age at the time of parental loss, or the use of different diagnostic criteria for alcoholism. However, it appears that childhood parental death may be a significant risk factor for the development of alcoholism, although it may not influence drinking as much as separation or divorce (e.g., McLanahan & Sandefur, 1994). The discussion will now turn to these latter factors.

Parental separation and divorce. It has been argued that parental divorce does not increase alcohol consumption in later life (e.g., Tucker & Friedman, 1995). However, many of these studies were conducted with small, restricted samples (e.g., adults of the same age). There is a stronger body of evidence that concludes that adult problem drinking is more common where there is parental divorce. In a large national survey, Wolfinger (1998) found that parental divorce greatly increases men's likelihood of being problem drinkers, but that parental remarriage offsets this effect. Hope, Power & Rodgers (1998) conducted a large follow-up study of 11,407 33-year-olds, and found a strong and consistent relationship between parental separation and divorce and problem drinking (consumption and associated problems). The results were not mediated by differences in marital status or socio-economic circumstances, indicating more direct pathways between parental divorce and alcohol consumption. Hope et al. (1998) did not find a relationship between parental death and subsequent drinking. This indicates that it may be the environmental factors that surround separation and divorce (e.g., the conflict, neglect and abuse, parental hostility, distress, disruption and self-blame) that are the important predictive factors of later alcohol abuse, rather than the loss itself. Although there is evidence from studies of

primates (e.g., Higley, Hasert, Suomi & Linnoila, 1991) that separation from the mother in the early stages of life can lead to increased levels of alcohol consumption (providing some support for attachment theory and later psychopathology), this study found no increased drinking in those whose parents divorced before they were aged four. The fact that these results were consistent across measures (e.g., amount consumed and problem drinking) provided more evidence of their robust nature.

Two main theories have been put forward to explain why parental divorce may lead to increased alcohol consumption in offspring. The first relates to social control. Family routine is inevitably disrupted after a divorce (Wallerstein & Kelly, 1980). Divorced parents often experience distress and have less time to spend with children, thus parental control is likely to be decreased. The second theoretical perspective attributes alcohol consumption to the psychosocial maladjustment that can result from divorce. There is little doubt that parental divorce often has profound psychological consequences for children (Hetherington, 1993), and some psychosocial effects often persist into adulthood, including poor mental health and difficulty in intimate relationships (Amato, 1996). However, Wolfinger (1998) found that social control and psychosocial adjustment alone could not adequately explain their findings.

Characteristics of parental rearing. Several authors have underlined the importance of parental rearing styles on the development of alcoholism (e.g., Bernardi, Jones & Tennant, 1989). For example, Marchiori et al. (1997) found that alcoholics had lower scores on maternal and paternal care than non-alcoholics. Research in this area is largely based on retrospective memories of parental rearing in addicts, which may limit its reliability. However, several authors have found that alcoholics (compared to a normal population) report considerably higher levels of

parental rejection (e.g., ignoring needs) and considerably lower levels of emotional warmth (less affection and security) from both parents (e.g., DeJong et al., 1991). Some researchers believe that attachment to parents should act as a barrier to deviance (e.g., Hirschi, 1969) and studies have found that closeness to mother (Zhang, Welte & Wierczorek, 1999) or father (e.g., Curran & Chassin, 1996) are significant protection factors against adolescent drinking.

Summary of distal antecedents to alcohol use and abuse. These studies emphasise the importance of distal antecedents and family processes (e.g., abuse, separation, divorce and style of parental interaction) in adult problem drinking. Childhood antecedents may initiate a sequence of events with potentially long-term consequences. Although theories have been put forward to explain these associations (e.g., problems with attachment or social control), these do not appear sufficient to fully account for the associations found. Research has also investigated more proximal interpersonal antecedents to drinking (often difficulties in adult relationships). It is to these factors that the discussion will now turn.

Proximal interpersonal antecedents to alcohol use and abuse

Research has shown that proximal interpersonal antecedents to drinking include adverse life events, marital problems and loss of spouse. This literature will now be reviewed, to be followed by a discussion of treatments for alcohol abuse that focus on these issues.

Adult relationships and current stressful life events. Adverse life events have been found to be common antecedents of alcohol consumption and abuse. Several studies (e.g., Baer, McLaughlin, Burnside, Polcorny & Garmezy, 1987) have found positive correlations between heavy alcohol use and recent stressful life events. Johnson & Pandina (1993) have found that individuals with more frequent

interpersonal stressors (e.g., divorce, illness in the family, personal concerns) report more alcohol-related problems. Other factors (e.g., a close friend dying, arguments with the family, a relationship breaking up, not being accepted by peers) have also been found to be significantly more common in alcohol use disorder groups (e.g., Clark et al., 1997).

In a study of alcoholics, Hore (1971) found that one third of stressful life events were disturbances in interpersonal relationships, such as quarrels with spouses or lovers. They found that 100 per cent of these interpersonal stress events were followed by a drinking relapse within two weeks, whereas the percentage of relapses following other types of stressors was considerably lower. Similarly, Cummings, Gordon & Marlatt (1980) reported that social pressures or interpersonal conflicts were the primary antecedent of 36 per cent of relapses in a group of men who had been in treatment for alcoholism.

Although these studies have relied on retrospective accounts by adults, the results suggest that negative interpersonal life events are strongly associated with alcohol use disorders and important in understanding the development and course of these disorders. It appears that the combination or number of adverse events is likely to contribute to the initiation or chronicity of alcohol related problems.

Divorce or separation. Marital status has been shown to relate to variations in alcohol consumption. A consistent finding in the alcohol literature is that divorced or single people tend to drink more heavily than those who are in stable marriages (e.g., Luoto, Poikolainen & Uutela, 1998). Temple, Fillmore, Hartke, Johnstone, Leino & Motoyoshi (1991) conducted a meta-analysis, and found that moving in status from married to single (through divorce, death or separation) was associated with an increase in quantity of alcohol consumed for all age and gender groups. Hallberg

(1993) found that alcohol use was more common among men who had experienced more than one divorce.

Similarly, in a study of 12, 250 adults, Power, Rodgers & Hope (1999) found that divorced individuals had the highest alcohol consumption levels and married people (including cohabitess) had the lowest. Men and women marrying for the first time showed a dramatic decline in heavy drinking, indicating that there appears to be a protective effect of marriage. Overall, heavy drinking decreased between the ages of 23 and 33. However, drinking increased among individuals who divorced (most strikingly for recent divorcees), with more than a third of recently divorced men drinking more than 35 units per week. It was established that the lower consumption of alcohol among married men was not related to parental responsibility. The strength of this study is in the use of prospective data on drinking and marital status. However, the findings cannot be generalised to older age groups.

Death of spouse. In a study of 57 recently widowed and 57 matched married older men, Byrne, Raphael & Arnold (1999) found that the recently widowed men reported significantly greater frequency and quantity of alcohol consumption than the married men. Indeed, a significantly higher proportion of the widowers reported a hazardous level of consumption. They suggest that this may be due to loss of spousal care. This study conflicts with the findings of Saunders, Aasland, Babor, de la Fuente & Grant (1993), who reported that there was no significant difference between rates of drinking among married men and men who had been widowed for three years. It is possible that the excess alcohol consumption of recently widowed men diminishes in the time following the bereavement. These studies were obviously limited by the focus on older men, and the results cannot be generalised to younger individuals or to females.

Characteristics of alcoholics' adult relationships. Suman & Nagalakshmi (1997) gave 40 alcoholics and their spouses the Interpersonal Checklist (a checklist which provides a classificatory system for 16 types of interpersonal behaviour; Leary, 1957), and found that the alcoholics would like their spouses to be higher on the Love dimension. They concluded that there appears to be a "basic core of insecurity and lack of self-confidence in the alcoholics, which requires the spouse to be secure" (p. 50). It was thought that drinking may be used to overcome social concerns about interpersonal relatedness. Pearson & Anderson (1985) argue that unresolved conflict within the alcoholic's marriage is perpetuated by the inability of the alcoholic to engage in appropriate expressions of affection. It has also been reported that high interpersonal dependency is strongly associated with alcoholism (Mills, 1995). These studies have all been conducted with males, precluding generalisation of these findings to females.

Summary of proximal factors in alcohol use and abuse. Research suggests that problems in interpersonal adult relationships (e.g., arguments, separation, divorce, death of spouse) are extremely frequent and important antecedents to problem drinking. It also appears that certain characteristics of individuals (e.g., insecurity in relationships) may also increase vulnerability to problems.

The implications of the discussion so far are that treatments need to focus on interpersonal issues (both past and present). Studies of interpersonal factors on the consumption of alcoholics have had an impact on the development of treatment programs and there has been increasing recognition of the importance of social factors in the maintenance and relapse of alcohol abuse. A brief review of these treatments will now follow.

Evidence from the treatment of interpersonal issues

Even the best treatments for alcohol abuse and dependency have a relatively poor prognosis (Roth & Fonagy, 1996). Psychodynamic therapy, stress management, motivational interviewing and cognitive therapy appear to be inadequate treatments for individuals with alcohol dependency, although they may help to address abuse when the dependence has been addressed. In contrast, there is relatively good evidence for treatments addressing interpersonal, marital and family difficulties. Social skills training focuses beyond the alcohol problem itself to other areas of functioning relating to drinking (e.g., interpersonal problem situations and forming and maintaining relationships). Reviews (e.g., Miller et al., 1993 & Holder, Longabaugh, Miller & Rubonis, 1991) have found social skills training to be one of the most effective treatments for alcohol abuse.

Studies have generally found that involvement of a significant other leads to a reliable improvement in treatment outcome, compared to individual-focused treatment (e.g., McCrady, Noel, Abrams, Stout, Fisher-Nelson & Hay, 1986). In reviewing a number of controlled studies, Holder et al. (1991) found good evidence for the effectiveness of marital therapy on drinking and drinking-related problems. He found that these treatments were more effective than standard CBT and stress management, and concluded that marital therapy and social skills training were desirable modalities in terms of predicted effectiveness and cost. In general, studies support the importance of focusing on relationship issues in addition to the drinking problem itself.

Few studies have reviewed treatments that explicitly address distal antecedents to alcohol abuse (e.g., psychodynamic therapy), although Holder et al.

(1991) found some evidence for the effectiveness of psychotherapy in such cases. Therefore, the impact of addressing these factors on alcohol abuse is not clear.

Overall summary of the role of interpersonal factors in alcohol use and abuse

Both distal and proximal interpersonal events have been found to relate to increased drinking. To date, few models have been put forward that have explicitly accounted for the processes involved and why people turn to alcohol at particular times. It may be that people use alcohol as a means of escaping from negative emotion and coping at these times. One interpersonal factor that has not been discussed in depth in this field is the role of loneliness. Loneliness follows a number of these interpersonal events and life crises (such as divorce and bereavement). A substantial amount of literature has directly addressed the link between loneliness and alcohol abuse. It is to these factors that the discussion will now turn.

The role of loneliness in alcohol use and abuse

Loneliness is defined as: "an enduring condition of emotional distress that arises when a person feels estranged from, misunderstood or rejected by others and/or lacks appropriate social partners for desired activities, particularly activities that provide a sense of social integration and opportunities for emotional intimacy" (Rook, pp. 418; cited in McWhirter, 1990). Mijuskovic (1988) argues that each human being is essentially and intrinsically lonely. He argues that the fear of loneliness and the desire to escape isolation constitute the ultimate primary motivational principle in man. Similarly, Fromm-Reichmann (1959) stated that all anxiety is a response to the anticipated loss of love and approval by significant people. She proposed that the fear of loneliness (and loneliness in its own right) plays

a much more significant role in the dynamics of mental disturbance than is acknowledged.

The link between loneliness and alcohol abuse has been discussed in psychological literature since the 1950's. However, the discussion about loneliness and alcohol abuse has mainly concerned theoretical reflections and anecdotal observations. The following quote by an anonymous alcoholic reflects this link:

> "thousands of us remember feeling isolated even when we were among a lot of happy people. We often felt a deep sense of not belonging..the effect (of alcohol) momentarily helped us to behave sociably or temporally assuaged our inner loneliness..but when the effect wore off, we were left feeling more left out. When we feel lonesome, and any urge for a drink strikes, it seems to have special speed and strength." (Alcoholics Anonymous, 1983)

Systematic empirical studies of loneliness and alcohol abuse are sparse. Although some theories of alcohol abuse (e.g., psychodynamic, social learning) acknowledge the importance of fundamental affiliative needs, no theory has explicitly and systematically considered loneliness. Loneliness and deficiencies in social relationships have been described as both antecedents and consequences of drinking. Although the following review will concentrate on loneliness as an antecedent to drinking (including factors that it is associated with and its origins), loneliness as a long-term consequence of drinking will first briefly be mentioned.

Loneliness as a consequence of alcohol abuse

Increasing isolation and loneliness can be related to individuals' choices to cut themselves off from friends who do not drink heavily (Schilit & Gomberg, 1987). This narrowing of social contacts can lead to loneliness, which can be a motive for additional drinking and may in turn, trigger more rejection (Gomberg & Schilit, 1985).

Loneliness as an antecedent to alcohol abuse

Alcohol abuse and social support. Social and family support has often been associated with positive mental health and positive effects on outcome. In a study by Schilit & Gomberg (1987), alcoholic women reported less social support than non-alcoholics when growing up and at present, indicating that difficulties in social support may precede as well as result from alcohol problems. However, Rook (1984) demonstrated that companionship and intimacy play a far more important role than social support in sustaining well being (this will be discussed at a later point). Most researchers agree that loneliness is not directly related to the degree of social isolation in the external sense, but has more to do with cognitive factors (particularly perceived deficits in the quality of one's social relationships). Weiss (1982) has distinguished between the lack of contacts in social life (social loneliness) and the absence of an intimate attachment (emotional loneliness). A distinction can also be made between different types of loneliness, particularly transient (acute) and chronic loneliness. Whereas negative interpersonal events may result in acute loneliness, the literature has focused on associations between chronic loneliness and problem drinking. This literature will now be reviewed.

Does loneliness result in alcohol problems? Several reports have indicated that alcoholics feel more lonely than most other clinical groups studied. In a study of

the general population, Lamont (1979) found that those who drank more or had been treated for alcohol abuse were the most lonely. In addition, alcohol abusers exhibit significantly stronger feelings of social isolation and loneliness than non-abusers (Page & Cole, 1991). Furthermore, in a study of alcohol abusers, Akerlind, Hornquist & Hansson (1987) found that among 86 medical, social and psychological variables, "feelings of loneliness" were the most significant predictor of a less satisfactory prognosis. Klein & Pittman (1993) also found that, out of ten emotions, loneliness was the only one to be significantly associated with larger amounts of beer consumption in men in the normal population. These studies suggest a strong association between loneliness and increased alcohol consumption, although it is not clear whether loneliness preceded or was a consequence of this consumption.

However, other studies of non-clinical individuals have shown that feelings of loneliness are strongly correlated with alcohol problems (adverse consequences, coping functions) but were not strongly related to level of alcohol consumption (Sadava & Thompson, 1986). They report that loneliness may be a vulnerability factor to alcohol problems, resulting in more serious consequences of drinking at similar consumption levels. Sadava & Thompson (1986) suggest that while lonely people do not drink more, they may react differently to alcohol and interpret their situation differently. Lonely individuals may be more prone to making evaluative reactions to information relevant to the self (perceiving threat) and alcohol serves to reduce this tendency.

Are there gender differences? In terms of gender, reports are mixed. Medora, Woodward & Florell (1984) found that female alcoholics were more lonely than male alcoholics. They suggested that women in our society may be more sensitive or may find it more acceptable than men to express feelings of loneliness. However, there is

a lack of supporting evidence for these explanations, particularly as other studies have found no gender differences (e.g., Barretta, Dantzler & Kayson, 1995).

What is loneliness associated with in alcoholics? In a series of studies of alcohol abusers, Akerlind and colleagues (Akerlind et al.,1987; Hornquist & Akerlind, 1987) found that loneliness was not correlated with the external social situation (e.g., amount of contacts, social network). Instead, they found it to be more closely associated with lack of self esteem, poor current mood and dissatisfaction with the quality of existing relationships. They found that abusers who were more lonely had poorer psychological well-being and showed a greater general discontent and dissatisfaction. Feelings of indolence, insecurity and perceived negative treatment from others were the most pronounced characteristics of the lonely abusers. Levin & Stokes (1986) argue that high loneliness scores reflect a general tendency to negative affect and to "evaluate themselves and their relationships negatively". In addition, Paloutzian & Ellison (1982) found that loneliness was highly associated with dissatisfaction in loving situations, as well as with more socially orientated dissatisfaction in marriage. Depression, hostility and mistrust of others have all been related to problem drinking and loneliness (O'Leary, O'Leary & Donavan, 1976).

To summarise, it is not entirely clear from the literature reviewed whether loneliness precedes or is a consequence of abuse. However, as there appears to be no linear covariation with abuse duration, the idea that loneliness is a precipitant of abuse is strengthened. Loneliness seems to interfere with nearly all domains of life. It appears to encompass a great variety of other negative conditions within the individual, which brings to the fore the central role that human communion plays in an individual's life. The following section reviews literature that offers an explanation as to the origins of these feelings of loneliness.

Distal antecedents to loneliness in alcohol abuse

Early childhood experiences. In a pioneering article, Bell (1956) theorised that man is basically a social being, dependent on others for survival. He said that the absence of loneliness is essential for well being. Bell (1956) stated that as a consequence of adverse interpersonal experiences in early upbringing, a large proportion of people grow up to be 'lone wolves', with an inability to trust other people. Although they have the same needs of intimacy as other people, they have been denied the sense of security provided by close relationships. In times of stress, they cannot rely on others but may turn to dependence on chemicals to make themselves insensitive to discomfort and to escape from their awareness of separateness, aloneness and associated anxiety and hostility. Bell (1956) regards loneliness as the most important single factor in the development of drug addiction. More recently, others have also proposed that drinking is a means of coping with feelings of isolation and loneliness (e.g., Segal, 1987).

Separation issues. Mijuskovic (1988) theorises about the connection between separation anxiety and loneliness and their relation to adolescent drinking disorders. He suggests that traumatic issues and conflicts, initially centred in the infant's sense of separation from the mother, are later reexperienced and revived during the critical period of adolescence. He proposes that adolescence is the time when the child is confronted with a sense of separation from the family, thus feelings of separation and abandonment from early childhood and associated feelings of anxiety culminate. Adolescents no longer feel secure within the "identity" of a family unit and may have feelings of rejection. Mijuskovic (1988) argues that as a result of these forms of anxiety and stress, they feel an intense need to belong, and crave intimacy with peers. The lonely adolescent often sees drinking as a solution to his or her sense of

alienation. Unfortunately, there is little evidence to support Mijuskovic's (1988) theory.

The treatment of loneliness in alcohol abusers

Systematic treatment studies of alcohol abuse with the main emphasis on loneliness are rare, and outcomes have been mixed. Akerlind & Hornquist (1992) focussed on loneliness in treatment of alcohol abusers (by increasing social contacts), but found no difference in outcome, relative to normal treatment. However, another evaluation of group counselling with the emphasis on loneliness (for a non-clinical group with early manifestations of heavy drinking) showed positive treatment effects. Medora et al. (1984) emphasise that loneliness should be focused on in group treatment, to help patients accept or cope with their loneliness.

Summary

There are clinical, theoretical and empirical indications of loneliness as an antecedent to alcohol problems. Reports demonstrate that alcoholics do feel more lonely than most other groups and that this loneliness is connected with a more general psychopathology and negative perception about oneself and one's relations to other people. Research suggests that early family upbringing and separation issues may underlie the vulnerability of loneliness and alcohol abuse. Although the causal pathways remain unclear, there may be an increasing reliance on alcohol to alleviate the pain connected with loneliness. These factors indicate that there needs to be enhanced attention to loneliness in research and treatment of alcohol abuse. Although treatments that focus on loneliness do not appear to be successful, many of these have focused on increasing social contacts. As research suggests that improvement may be more likely if the quality of relationships and companionship are addressed (Rook, 1984), this lack of success may not be surprising.

The role of abandonment fears in alcohol abuse

The review so far suggests that early adverse interpersonal experiences are key factors in the aetiology of alcohol use and misuse. These childhood experiences might play an important role in the individual's interpersonal functioning in adulthood (e.g., mistrust, low self-esteem, high perception of threat). These factors are likely to precipitate and maintain alcohol problems. There is also evidence to suggest that interventions that target interpersonal functioning are among the most effective in treating alcohol abuse. Although some theories of alcohol abuse (e.g., psychodynamic theories) emphasise the importance of early experience (including separation issues and family adversity), few models explicitly identify how early adverse experience can have an effect on current functioning in interpersonal relationships, and how this may result in alcohol abuse.

One theoretical model that might account for early interpersonal adversity and later impaired functioning in alcohol abusers, is the cognitive schema-focused model (Young, 1999). This model focuses on early maladaptive schemata (unconditional beliefs about oneself in relation to the environment) which are thought to develop in childhood as a result of adverse relational experiences. The maladaptive schemata are hypothesised to impact on later psychopathology. When triggered by schema-relevant information, they can result in high levels of disruptive affect. The primacy of negative emotion, loneliness, separation issues and interpersonal difficulties found in alcohol use disorders suggests that, of the schemata described by Young (1999), abandonment beliefs may be central in alcohol abuse. These beliefs pertain to significant others not being able to continue to provide emotional support and protection. The relevance of abandonment schemata to other psychopathology will now be reviewed.

Abandonment schemata and other psychopathology

Abandonment fears have been linked to a range of other psychopathologies, including depression (Mahler, 1966), schizophrenia (Searles, 1965) and eating disorders (Patton, 1992). The subliminal psychodynamic activation (SPA) experimental method has been used in many of these studies (Silverman, 1983). The SPA paradigm involves using a tachistoscope to present brief (4 milliseconds) experimental and control stimuli (words) to individuals. The experimental stimuli are designed to activate unconscious fears that are hypothesised to influence behavioural pathology. It is claimed that the subliminal presentation of stimuli bypasses defensive processes, which might act to restrict the affect-laden unconscious fears from conscious awareness, thus allowing a direct measure of the behavioural impact of the cues (Silverman, 1983).

Studies using the SPA paradigm have found that subliminal abandonment cues (e.g., "I am losing mummy") raise levels of psychopathology in individuals with schizophrenia (e.g., Litwack, Wiedermann & Yager, 1979), whereas symbiotic unification messages (e.g., "mummy and I are one") lead to improvements in functioning (e.g., Bornstein, 1990). In the field of eating pathology, Patton (1992) presented either a subliminal abandonment cue ("mama is leaving me") or a neutral cue ("mama is loaning it") to non-clinical women and found, in a subsequent bogus taste discrimination task, that women with higher eating disordered attitudes ate significantly more if they had been exposed to the abandonment message. In a similar study, Meyer & Waller (1999) removed the relationship context (mother) from the cues and presented a single subliminal abandonment cue to non-clinical women. They also found that women ate significantly more after being exposed to the abandonment cue (lonely) than after other cues (neutral, positive, other negative,

food-related). These findings suggest that even relationship-independent abandonment information can influence eating behaviour.

Although researchers have tended to view these findings within a psychodynamic framework, conceptual problems have been found with this explanation (Bornstein, 1990). More recently, researchers have preferred to consider the phenomena of preconscious processing of subliminal cues within a cognitive framework (e.g., Wells & Matthews, 1994). The studies of eating reviewed above support cognitive models which suggest that overeating may be associated with a subconscious reduction in awareness (escape) of negative emotions (e.g., Lacey, 1993), threat and meaningful thought (Heatherton & Baumeister, 1991).

How do abandonment threats get processed?

Research in eating disorders suggests that abandonment information only influences eating behaviour when presented subliminally rather than supraliminally (e.g., Patton, 1992). This is in accordance with a recent meta-analysis (Bornstein, 1990), which emphasises the greater impact of cues when presented below conscious levels of awareness. The greater response following preconscious cues suggests that the relevant level of cognitive processing of abandonment information is likely to be schematic, since this is the level of processing least amenable to conscious report (Young, 1999). Cognitive theories suggest that preconscious processing is functional, allowing rapid identification of abandonment-threat information and thus permitting fast counter-threat responding (implementation of escape behaviours) to reduce activation and block conscious awareness of intolerable schema level abandonment cognitions and associated affect (e.g., Meyer & Waller, 1999). The findings suggest that fears related to abandonment impact on psychopathology even though they are not available to consciousness.

Abandonment fears and alcohol use

As yet, the role of abandonment schemata in alcoholic psychopathology is empirically undetermined. This omission in the literature may be surprising. The relevance of abandonment fears has been highlighted throughout this review and, as previously noted, studies have found that negative emotion, loss, separation, lack of close early relationships, current relationship problems, divorce and loneliness are common antecedents to alcohol misuse. In addition, loneliness has been found to be associated with other psychopathology (low self-esteem, negative bias to threat) in alcohol abusers, which can also be understood in terms of abandonment issues and the schema model.

The omission is also surprising given that alcohol misuse is strongly associated with bulimic behaviour (in which abandonment issues have been found to be relevant; Meyer & Waller, 1999). There are a significant number of women in whom both disorders coexist. Consumption of large amounts of alcohol have been noted among women with bulimia (Bushnell, Wells & Oakley-Browne, 1996), and bulimic symptomology has consistently been reported in female problem drinkers (Dawe & Staiger, 1998). Evans & Lacey (1992) found that 75 per cent of women being treated for alcohol problems had other impulsive problems (e.g., self harm, eating). The two disorders share common characteristics (e.g., a failure of impulse control, a compulsion to engage in the behaviour, a sense of loss of control). This suggests that these disorders may be governed by similar underlying processes (have the same underlying function). It has been hypothesised that they may both function to escape from negative emotion (Heatherton & Baumeister, 1991). Alcohol use may also accomplish an escape from self-awareness by interfering with complex cognitive functioning, so that unpleasant implications are blotted from awareness (Steele &

Josephs, 1988).

Summary

The review so far has shown a role for negative, interpersonal, loneliness and abandonment issues in alcohol use and abuse. It outlines how the schema-focused model may explain the processes involved. The following discussion focuses on the implications this has for treatment and research.

Implications and future directions

This section firstly addresses the clinical implications of the research outlined above, including the potential use of relationship-orientated and schema-orientated therapies. It then addresses further research needs.

Therapeutic implications

As raised above, reviews suggest that treatments for alcohol abuse and dependency have limited effectiveness (Roth & Fonagy, 1996). These treatments largely have an individual focus or are medical. There are only a small number of studies of psychodynamic therapies, so few conclusions can be drawn about the potential value of this therapy. There is some evidence that therapies may be more effective if they focus primarily on interpersonal issues or factors other than the alcohol use. For example, social skills training and marital therapy are among the most effective treatments (Holder et al., 1991). This highlights the importance of focusing on interpersonal issues. As the literature suggests that loneliness is a common negative emotion triggering drinking and that it is the quality rather than the quantity of relationships that is important, treatments which focus to a greater extent on improving the quality of relationships, may be beneficial.

Research is needed to determine whether treatments for alcohol abuse could

be improved by focusing on schema content. If abandonment schemata are found to be central, treatments might include targeting fears of abandonment at a schema level. The operation of core beliefs and schemata (Young, 1999), which are not targeted in conventional CBT, may account for why this therapy is not always successful. However, as yet there are no studies of schema-focused therapy for alcohol abuse to support this argument.

Studies of eating disorders suggest that the facilitation of eating by subliminally presented abandonment information could be countered by the subliminal presentation of contradictory, counter-schematic information (Barter, 1999) deactivating the abandonment schemata. Therefore, the preconscious presentation of unification cues might play a role in the broader cognitive behavioural treatment of bulimic behaviours, and the same method may be applied to alcohol abuse.

Research questions

There is a need to explore the content of schemata in alcohol psychopathology. This research would be in line with recent cognitive models (e.g., Padesky, 1994) in which schemata are seen as crucial components. Abandonment schemata may be among many that are important in alcohol psychopathology. The content of schemata can be explored consciously (using Young's schema questionnaire). Alternatively, studies using the subliminal psychodynamic activation (SPA) paradigm could be used to investigate the response to schema-related subliminal cues (e.g., abandonment, defectiveness) in individuals with alcohol problems.

In particular, research is needed to investigate whether abandonment information leads to escape behaviour (drinking) in alcohol abuse populations.

Results will help determine the primacy of abandonment schemata in alcohol psychopathology (as well as possible functional similarities between over-eating and alcohol abuse). Research will need to determine whether abandonment schemata are activated at a preconscious or conscious level of cognitive processing. This information will have a direct affect on assessment and treatment.

It is also important to determine the importance of early childhood experiences on the formation of maladaptive schemata, in individuals with alcohol abuse problems. The literature suggests that early adverse interpersonal experiences are important in the development of alcohol problems. Longitudinal studies investigating the content of schemata before and during alcohol problems should help to determine the direction of causality (i.e., whether maladaptive schemata are indeed present before alcohol problems). This research will be important in determining the role of interpersonal issues, and whether these issues should be incorporated into models of alcohol abuse and dependence.

Conclusion

This review has discussed the role and importance of interpersonal factors in alcohol abuse. The effectiveness of treatments addressing these issues supports the suggestion that these factors should be a component of a broader multi-factorial psychological theory. Within the domain of interpersonal issues, this review has suggested a specific role for loneliness and abandonment issues. A cognitive schema-focused model suggests that alcohol abuse may be characterised by the presence of pathological abandonment schemata. The role of abandonment schemata and preconscious processing of information relevant to these schemata require study. Research in this area may have important implications for the treatment of alcohol abuse and dependence.

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Empirical Paper

The Impact of Subliminal Abandonment Cues on Drinking Behaviour

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Prepared as if for submission to Addiction (see appendix 2 for instructions to authors)

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Running head

Subliminal cues and drinking

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The Impact of Subliminal Abandonment Cues on Drinking Behaviour

Abstract

Aims: This study examines the hypothesis that subliminally presented abandonment cues lead to greater drinking and craving than other negative cues, and that both these cues will lead to greater drinking and craving than neutral cues. It is also hypothesised that this effect will be greater for those who normally drink in more negative affective situations. **Design**: The study employed a between subjects design. The independent variables were cue type and negativity of drinking and the dependent variables were amount drunk and craving. **Setting**: All participants were university undergraduates. **Participants**: Sixty non-clinical females volunteered to take part and were randomly allocated to conditions. **Measurements**: A tachistoscope was used to present the cues. A taste-discrimination task (involving two glasses of the same non-alcoholic beer) was employed as the measure of consumption, and craving was measured on a 0-10 rating scale. The Inventory of Drinking Situations was used to identify negative affective drinking situations. **Findings:** There was a trend towards the predicted effect in the group as a whole. Among the individuals who normally drank in more negative situations, subliminal abandonment or negative cue presentation led to significantly greater drinking than neutral cue presentation. For these individuals, abandonment cue presentation also led to greater craving than the neutral cue. **Conclusions:** The clinical implications of the findings are that therapies for alcohol abuse might be improved by focusing on schema content. As the effect is not specific to abandonment cues, other schemata may be important. Further research is necessary to replicate and elaborate these findings before such recommendations can be more firmly made.

The Impact of Subliminal Abandonment Cues on Drinking Behaviour

Psychological models of alcohol abuse and addiction have traditionally been either behavioural or psychodynamic. Behavioural theories suggest that alcohol abuse is a learned response to relieve negative emotion (e.g., tension reduction theory; Cappell & Herman, 1972) but do not consider the origins of the negative emotion. In contrast, psychodynamic theories (e.g., Cox, 1987) suggest that drinking results from negative early experience, but have not provided an adequate explanation of how these experiences result in alcohol abuse. Although cognitive theories are emerging (e.g., expectancy theory; Goldman et al., 1991), reviews suggest that the treatment of alcohol abuse (including cognitive behaviour therapy) has remained inadequate (Roth & Fonagy, 1996).

It is well acknowledged that negative emotional states often precede drinking (Klein & Pittman, 1993). Although much literature suggests that non-problematic drinking is on a continuum with problematic drinking, recent research has suggested that a subgroup of individuals are particularly likely to drink in negative emotional states, and that these individuals are more likely to develop drinking problems (Williams & Clark, 1998). Further evidence comes from experimental studies which have found that induced negative mood leads to greater craving for alcohol (Cooney et al. 1997), and negative affective cues lead to greater activation of alcohol concepts (Zack, Toneatto & MacLeod, 1999), among those who drink more in situations associated with unpleasant emotions. For these people in particular, alcohol appears to serve the function of escaping or blocking intolerable negative emotion (Cooper et al., 1995). Conditioning (Poulos et al., 1981) and memory network models (Bower, 1987) have been offered to explain these effects, although these models fail to fully explain why some individuals are

more prone to developing drinking problems.

The roles of different negative mood states have been considered. Depression and anxiety have been found to be common antecedents of problem drinking (Cooney et al., 1997), particularly for females (Pitkanen, 1999). Less empirical attention has been paid to the interpersonal basis of the mood state. Negative emotional factors may be a consequence of interpersonal experiences, and such adverse interpersonal experiences have frequently been found to be both distal and proximal antecedents of alcohol use. Distal antecedents of alcohol problems include child abuse (Harrison, Fulkerson & Beebe, 1997), parental separation and divorce (Hope, Power & Rodgers, 1998), and adverse parental interaction (Marchiori et al., 1997). Such childhood antecedents may initiate a sequence of events with potentially long-term effects. Research has suggested that problems in interpersonal adult relationships are also common proximal antecedents to problem drinking. Such problems include arguments (Hore, 1971), separation and divorce (Power, Rodgers & Hope, 1999), and death of spouse (Byrne, Raphael & Arnold, 1999). It also appears that certain characteristics of individuals (e.g., insecurity in relationships) may increase vulnerability to alcohol problems (Suman & Nagalakshmi, 1997). Treatments that focus on interpersonal issues have been found to be very successful. For example, reviews suggest that social skills training and marital therapy are among the most effective treatments for alcohol abuse (Holder et al., 1991). However, to date, theories that have been put forward to explain the influence of early adverse interpersonal experience on alcohol abuse (e.g., problems with attachment or social control; Higley et al., 1991) do not appear to be adequate (Wolfinger, 1998). In addition, few theories (if any) explicitly account for proximal interpersonal difficulties in alcohol abuse.

One potential factor that has not been discussed in depth is the role of loneliness. This is surprising, given that clinical experience suggests that loneliness follows a number of interpersonal events and life crises (such as divorce and bereavement). Some researchers (e.g., Akerlind & Hornquist, 1992) have made a distinction between chronic loneliness (which is preceded by distal factors) and acute loneliness (which is precipitated by more proximal factors). Acute loneliness can be seen as a crucial negative emotion which follows negative life events and is often likely to be associated with abandonment feelings (see below). Acute loneliness following interpersonal events (such as divorce) is not well researched in the field of alcohol abuse. However, chronic loneliness has frequently been associated with alcoholism (Akerlind & Hornquist, 1992). Research has demonstrated that alcoholics feel more lonely than members of most other groups (Sadava & Thompson, 1986). In alcohol abusers, loneliness is connected with a more general psychopathology, including low self-esteem, negative perception of oneself and poor relations with other people (Levin & Stokes, 1986). It has frequently been suggested that alcohol abusers are more unhappy with the quality rather than the quantity of their relationships (Rook, 1984). Many have theorised that early family upbringing and separation issues may underlie the vulnerability of loneliness and alcohol abuse (Mijuskovic, 1988). Although the causal pathways remain unclear, there may be an increasing reliance on alcohol to manage, escape or alleviate the pain connected with loneliness, as well to ease social contacts and cope with social anxiety. Mijuskovic (1988) theorises that the most important underlying factor conditioning all alcoholism is the feeling of loneliness and the desire to escape it.

One theoretical model that might account for the impact of early

interpersonal adversity and later impaired interpersonal functioning in alcohol abusers is the cognitive schema-focused model (Young, 1999). According to this model, early adverse interpersonal events are linked to later psychopathology (e.g., relationship difficulties, low self-esteem) through the impact on cognitive and emotional developmental pathways, or early maladaptive schemata (EMS). Research investigating the content and structure of schemata in psychopathology is still in its infancy and schemata in alcohol psychopathology have not been explored to date. This is clearly an important area however, as schemata are crucial components of current theoretical cognitive models (Padesky, 1994). The lack of early close relationships and the primacy of loneliness, loss, separation and interpersonal difficulties found in alcohol use disorders suggests that, of the schemata described by Young (1999), abandonment beliefs may be central in this disorder (although other schemata may also be important).

The potential role of abandonment issues and schemata in alcohol abuse is also highlighted by the strong association found between alcohol misuse and bulimic behaviour (where abandonment schemata have been found to be relevant; Waller et al., 2000). A thirty per cent overlap has been found between disordered eating and alcohol problems (Peveler & Fairburn, 1990). The two disorders share common characteristics (e.g., poor impulse control, a compulsion to engage in the behaviour and a sense of loss of control), suggesting that they may be governed by similar underlying processes (and may have the same underlying function). It has been suggested that they may both function to allow escape from negative emotion (Heatherton & Baumeister, 1991).

Research in the area of eating disorders has suggested that information relevant to feelings of loneliness and abandonment is processed at a preconscious

level. Studies have used tachistoscopes to present cues too rapidly (usually 4 ms) to be detected or reported at a conscious level (Dixon, 1981). Using this paradigm, several studies of non-clinical women have demonstrated that the subliminal presentation of abandonment information (e.g., "mama is leaving me" or the word 'lonely') leads to more eating than neutral or other emotional cue words (e.g., Meyer & Waller, 1999; Patton, 1992). This effect is not found for words presented supraliminally, suggesting that such information is processed via preconscious routes (Patton, 1992). This is consistent with reviews that have emphasised the greater behavioural impact of cues when presented below the conscious level of awareness (Bornstein, 1990).

The above research suggests that behavioural effects are stronger when abandonment information is processed at a preconscious level. This is compatible with the view that the cognitive processing involved is likely to be schematic (the level that is least amenable to conscious report). To support this view, it has been found that bulimic women have relatively high pathological core beliefs regarding abandonment fears (Waller et al., 2000). According to schema theory (Young, 1999), abandonment cues will activate abandonment schemata. Such activation may trigger eating behaviour preconsciously, serving to avoid experiencing the intolerable negative emotion produced (Meyer & Waller, 1999). However, the few studies that have specifically investigated the effects of subliminal processing on mood, have yielded mixed results. Patton (1992) for example, found no difference in self-reported change in mood between women who had been presented with a neutral or an abandonment cue. In contrast, Tyrer (1984) found changes in self-reported feelings of anxiety after individuals were presented with subliminal emotive words on a tachistoscope task.

Given the relevance of interpersonal (and potential abandonment) issues in alcohol abuse, and the strong association between alcohol and over-eating (in which abandonment schemata have been found to be relevant), research is needed to determine the primacy of abandonment schemata in alcohol psychopathology. The current study aimed to investigate the effects of subliminal abandonment cues on craving (an important predictor of substance abuse; Marlatt, 1987) and drinking behaviour. It was hypothesised that a subliminally presented abandonment cue ('lonely') would lead to a greater amount of beer consumed and to greater craving than another subliminally presented negative cue ('depressed'), and that both of these negative cues would lead to a greater amount of beer consumed and greater craving than a neutral cue ('gallery'). It was also hypothesised that this effect would be greater for those who drink more in negative affective situations. In addition, the effect of these subliminal cues on mood states was examined, to determine whether any effect on drinking is precipitated by mood change.

Method

Design

This study employed a between-subjects experimental design, and used a non-clinical population. The participants were randomly assigned to one of three experimental conditions: abandonment cue; general negative cue; or neutral cue. Thus, the independent variable was the type of subliminal cue. The dependent variables were: the amount of (non-alcoholic) beer consumed in a taste discrimination task; and the degree of craving experienced, following exposure to the subliminal cue.

Participants

The participants were 60 female psychology undergraduates. They were all volunteers, recruited via the university research scheme. The students received a small fee and participation credits for taking part. Each individual was randomly allocated to one of the three conditions (20 per group), was exposed to one subliminal cue, and was then asked to make a taste discrimination between two (identical) glasses of beer. Table 1 shows descriptive statistics for each group, including mean age, and scores on the measures outlined below. There were no significant differences between groups on any of these variables.

Insert Table 1 about here

Measures

UWIST Mood Adjective Checklist (UMACL: Matthews, Jones & Chamberlain, 1990). The UMACL (appendix 6) is a measure of present mood, with satisfactory psychometric properties. It comprises of three subscales: Hedonic Tone, Energetic Arousal and Tense Arousal, and a composite General Arousal scale. Low scores on the Hedonic Tone subscale indicate a more depressed mood state, whereas high scores on the Energetic Arousal and Tense Arousal subscales indicate higher levels of energy and tension, respectively. Change in mood was scored by taking the total post-cue score of each subscale from the equivalent pre-cue subscale score. In this way, higher difference scores on the Hedonic Tone subscale indicate decreased happiness, whereas higher difference scores on the Tense Arousal and Energetic Arousal subscales indicate increased levels of tension and energy, respectively.

Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993). The AUDIT (appendix 7) is a screening instrument for hazardous and harmful alcohol consumption. This ten item self-report questionnaire covers the domains of alcohol consumption, drinking behaviour and alcohol related problems. It has a cut-off score of eight, above which a strong likelihood of harmful drinking is indicated. The AUDIT has good external and discriminant validity and may be used with a non-clinical population. In this study, the AUDIT was used as a measure of previous and current drinking status (alcohol consumption and related behaviour).

Inventory of Drinking Situations- Short Form (IDS-42; Annis, Graham & Davis, 1987). The IDS-42 (appendix 8) measures frequency of drinking behaviour in specific drinking related situations. It has good internal consistency and validity. It contains eight subscales, measuring different drinking situations. High scores on each subscale indicate frequent heavy drinking over the past year for the situations assessed. The subscales can be collapsed into two higher order factors- positive affective situations (e.g., " when everything was going well") and negative affective situations (e.g., "when I was angry at the way things had turned out") (Annis et al., 1987). These factors were used in this study. Factor scores were obtained by totalling the scores of the relevant subscales, and calculating a percentage score. Thus, higher percentage scores on each factor represent more positive affective and negative affective situations, respectively.

Mill Hill Vocabulary Test (Raven, Raven & Court, 1997). This test was used to examine level of vocabulary comprehension, to ensure that the groups were comparable in ability.

Beck Depression Inventory (BDI; Beck, 1988) and Beck Anxiety Inventory (BAI, Beck, 1990). These measures were used to gain information about general levels of depression and anxiety within the groups (over the previous two weeks).

Procedure

The study received the appropriate ethical clearance. Initially, the true purpose of the study was not made clear (to reduce the impact of expectancy effects). Participants were told that the experiment involved four stages: completing a short questionnaire, a test of word recognition, a taste discrimination task; and the completion of the remaining questionnaires. No overt connection was made between the tasks, and the taste discrimination task was conducted in a different room to the subliminal processing task, to minimise the influence of demand characteristics. This procedure is similar to that used by Roehich & Goldman (1995).

In the first part of the trial, participants were asked to complete the UWIST Mood Adjective Checklist. In the second part of the study, participants completed the subliminal processing task. Consistent with the study conducted by Meyer & Waller (1999), 'gallery' was used as the neutral cue and 'lonely' as the abandonment cue. For the present study, 'depressed' was used as the general negative cue. These words were matched for frequency of English usage (using the criteria of Johansson & Hofland, 1989). In addition, the two negative words were matched for negative valence (–2) by asking 20 individuals unrelated to the study to rate ten negative emotion words (from –2 to 0). A tachistoscope was used to provide very brief presentations of the stimuli. The participants were told that a word would flash up very quickly at the centre of the tachistoscope screen (between four white dots) and that, although it would be very hard to see, they would later be

asked to try and identify it. At the beginning of the task, a mask slide was visible (an array of jumbled figures) with the fixation box (2 cm high and 10 cm wide) consisting of a rectangular array of four white circles. The single cue (a word in font 18, lower case, against a white background, at a distance of 34 cm) was presented for a duration of 4 ms, at the centre of the fixation box. Immediately following exposure to the stimuli, the mask slide was again visible (for five seconds). The cue was presented ten times at five-second intervals. These parameters and exposure times are consistent with previous studies (e.g., Meyer & Waller, 1999; Patton, 1992).

A presentation time of 4 msec was chosen because Patton (1992) and Dauber (1984) have shown that participants are not aware of the semantic content of a message presented for this time period. In order to confirm that the words were not available to conscious report in this study, participants were asked (at the end of the experiment) if they had recognised the word presented in the subliminal processing task. More specifically, they were asked (in this order): what was the word? (none of the participants could do this correctly); what did the word mean? (no correct responses); and to point to the synonym of the word they saw (from a choice of five words, beginning with the same letter and of similar word length to the synonym of the word they saw) (25% success rate); to point to the word they saw (from a choice of five words, beginning with the same letter and of similar word length to the word they saw) (26.7% success rate). Given that random guessing would yield an accuracy of 20%, the latter two scores indicate a level that is only slightly higher than chance. Statistical analyses (using a binomial test) revealed that these levels were not significantly different from chance, suggesting that there was no conscious awareness of the cues used or their meaning.

The third stage of the study was a taste discrimination task, similar to that used by Patton (1992) and Roehich & Goldman (1995). Participants were presented with two cups of identical non-alcoholic beer (234ml per cup). They were not told the beers were identical. Participants were asked to drink enough from each of the two cups until they were able to decide which was the sweeter of the two. Although a time limit of two minutes was imposed, all participants were able to make a decision within this time. Participants were then asked to rate how much of a craving they had to drink on a 0-10 scale (with 0 = no craving and 10 = extreme craving).

Following this stage, participants were asked to complete a second UMACL (to obtain retrospective mood ratings post-cue), the AUDIT, IDS, Mill Hill Vocabulary Test, BDI and BAI. Finally, it was explained that the participants would be debriefed about the true purposes of the research, once all the trials were complete. All agreed that this was acceptable. They were told that they would receive a letter explaining the full aims and findings of the study. They were given a contact number and told to contact the experimenter if they had any questions.

Data analysis

As the data were normally distributed, parametric tests were used throughout. The first hypothesis was addressed by comparing both the amount of beer drunk and the level of craving across the different conditions, using analysis of variance. The second hypothesis was addressed by performing a two-way analysis of variance to investigate the interaction between cue and negative affective situations, and then splitting the group into those who drink in more and less negative affective situations, and performing one-way analysis of variance on each subset of data. One-tailed tests were used to explore both of these directional

hypotheses. The exploratory examination of the effect of the cues on mood states was addressed by comparing hedonic tone and tense arousal differences (UWIST subscale scores) between the different conditions, using one-way analyses of variance.

Results

Table 2 shows the amount drunk and the craving levels of the women, under each of the three conditions. It also shows the results of the one-way analyses of variance, comparing these variables. The first hypothesis was that the abandonment cue would lead to a greater amount of beer consumed and to greater craving than the depressive cue, and that both these cues would lead to greater beer consumption and greater craving than the neutral cue. The results showed that although there were no significant differences for craving or total amount drunk, there was a trend towards the predicted effect for both these variables.

Insert Table 2 about here

The second hypothesis was that the above effect would be greater for those who drink more in negative affective situations. To investigate this hypothesis, the IDS variable 'negative affective situations' was split at the median (14.67), to create the variables "more negative affective situations" and "less negative affective situations". Table 3 shows the amount drunk and craving for each condition, for individuals who drink in more and less negative situations. It also shows the

significant interaction (two-way ANOVA) between more and less negative affective situations and condition, for total amount drunk. The same interaction approached significance for craving.

Insert Table 3 about here

The interactions indicated that the effect of condition on consumption and craving should be investigated separately among individuals who drink in more negative affective situations and those who drink in less affective situations. Therefore, one-way ANOVAs were performed on these two subsets of data. Analysis revealed that for those who drink in less negative affective situations, no significant differences were found between the conditions for amount drunk ($\underline{F}$ = 0.24, NS). However, among those who drink in more negative affective situations, significant differences were found between the conditions for total amount drunk ($\underline{F}$ = 4.66, $\underline{p} < 0.05$). Post hoc analyses (using the Scheffe test) revealed that those who were presented with the abandonment or the negative cue drank more than those presented with the neutral cue (mean difference = -20.0, $p < .05$; mean difference = -20.3, $p < .05$; respectively). With regard to craving, no significant differences were found between the conditions for those who drink less in negative affective situations ($\underline{F}$ = 0.23, NS). However, among those who drink in more negative affective situations, significant differences were found between the conditions ($\underline{F}$ = 2.99, $\underline{p} < 0.05$). Post hoc analyses indicated that being presented with the abandonment cue led to greater craving than the neutral cue (mean difference = 2.38, $p < .05$). Those presented with the negative cue ('depressed') did not differ

significantly from either of the groups (abandonment: mean difference = 0.83, NS; neutral: mean difference = 1.56, NS).

Exploratory analysis of impact on mood

Table 4 shows the mood ratings of the women, the results of one-way analyses of variance and post hoc comparisons. Pre- and post-cue changes in hedonic tone and tense arousal were significantly different between the conditions. Pairwise comparisons (Scheffe) showed that the women who had been presented with the abandonment cue had a significant deterioration in hedonic tone (became less happy) relative to those who had been presented with the neutral cue. The women who had been presented with the depressed cue did not differ significantly from the other two groups. In addition, the women who had been presented with either the abandonment or depressed cue had a significant increase in tense arousal, compared to those who had been presented with the neutral cue. There was no significant difference between the conditions for energetic arousal.

Insert Table 4 about here

Pearson's correlations were performed to investigate whether mood change was associated with craving or amount drunk. However, no significant correlations were found (craving and hedonic tone difference, r = .09, NS; craving and tense arousal difference, r = -.10, NS; total amount drunk and hedonic tone difference, r = .06, NS; total amount drunk and tense arousal difference, r = -.03, NS). In addition, there was no significant association of post-cue mood (absolute level of mood, rather than a change in mood) with amount drunk or craving.

Discussion

There is much evidence that suggests that subliminal abandonment cues can have an effect on eating psychopathology. This experimental study investigated whether these subliminal abandonment cues could also have an effect on alcohol consumption and craving. This question is of interest, given the functional similarities between over-eating and alcohol consumption and the relevance of abandonment issues in alcohol psychopathology. However, the first hypothesis (in which no account was taken of reported drinking patterns) did not receive clear support. Although there was a trend towards the predicted effect, no significant differences were found for craving or amount drunk between the women who had been presented with the neutral, negative and abandonment cues. However, further exploration of the data revealed that among the individuals who normally drink in more negative affective situations, being presented with the abandonment or the negative cue led to greater beer consumption than being presented with the neutral cue. For this subset of individuals, those who were presented with the abandonment cue also had greater craving than those presented with the neutral cue.

These findings are consistent with the literature which suggests that individuals in the normal population who drink primarily to manage negative mood and those who drink primarily to enhance positive mood are fundamentally different (Sexton, Lipton & Nilssen, 1999). Those drinking primarily to manage negative mood are more prone to the development of drinking problems (Windle & Windle, 1996) and are more likely to be affected by negative cues (Zack, Toneatto & MacLeod, 1999). The failure of the results to reach significance across the whole sample may therefore reflect the fact that the association between these cues and drinking relates only to this subset of the sample.

The results suggest that for these more negative drinkers, any negative cues lead to increased drinking, and that the effect is not specific to abandonment cues. The cognitive behavioural (schema-focused) model offers a potential explanation for these findings. In this model, preconscious negative information activates related schemata (Young, 1999), and subsequent escape behaviours are used to block conscious awareness of the schema-level information. The results are not consistent with the hypothesis that it is abandonment schemata specifically that are being activated. Other schemata may be of equal or greater importance in alcohol use and abuse. Thus, it appears that drinking may have an escape function from negative emotion, but only in more negative drinkers. Given that negative drinkers are more likely to develop drinking problems, it is likely that this is a common phenomenon in a clinical population.

This blocking of negative emotion can be understood in terms of negative reinforcement within an operant conditioning paradigm, where alcohol reduces the experience of an aversive state (and thus is likely to be repeated in similar circumstances). The finding that the effect of negative cues is specific to more negative drinkers is consistent with this explanation, as it suggests that drinking and craving are conditioned responses to negative affect (Marlatt, 1987).

Bower's network theory (1981) may also offer an explanation of these findings. This theory hypothesises that events are represented in memory as configurations made up of associative connections between various nodes needed to describe the event. Activation spreads from one node to another. Bower (1987) states that each distinct emotion has a specific node in memory, which "collects together many other aspects of the emotion that are connected to it" (p.11). The theory states that memory is biased towards material that is congruent with mood at

retrieval. The mood state increases the general level of activation of nodes associated with it, and material so activated will thus be favoured. In this way, subliminal negative cues may activate a negative emotion node, which in turn will activate memories associated with this node. Thus, negative emotion is heightened, leading to the increased drinking. More research is needed to determine which theory offers the best explanation of these results.

In terms of the limitations of this study, the lack of a control drink should be considered. This omission means that it is difficult to establish that the greater drinking and craving following negative cues in the more negative drinkers was related to 'alcohol' consumption rather than drinking per se. Although previous studies have found that other drinks (e.g., tea and coffee) are not related to mood to the same extent as alcohol (Steptoe & Wardle, 1999), future studies would be advised to use a control drink. Similarly, although individuals were unable to discern that the beer was non-alcoholic, the study should be replicated with alcoholic beer to determine if there are differential effects on mood.

Although previous subliminal processing experiments have also used decision-making tasks as dependent variables (to avoid participants discovering the true nature of the experiment; Roehrich & Goldman, 1995), this taste-discrimination task may have influenced desired beer consumption by increasing anxiety (due to the need to make a decision). Future studies might investigate the use of an alternative drinking task (e.g., an unrestricted drinking task, as used in subliminal studies of eating; Meyer & Waller, 1999). In addition, consumption may have been limited by beer not being a preferred drink (several women commented about this). As theories suggest that craving is quite specific (Marlatt, 1987), an exploration of drink preference and/or use of a preferred drink although time

consuming, may be beneficial in future studies.

The relevance of abandonment schemata in this population may be explored further by investigating the impact of alternative abandonment-related cues (e.g., cues regarding a relationship; Patton, 1992) on drinking behaviour. Preferably, a positive emotion word should also be used, to strengthen the argument that any effects are specific to negative cues rather than any emotional activation. Other schemata may be explored by using different schema-relevant cues. Alternatively, conscious report methods could be used (e.g., Young's Schema Questionnaire; Young, 1994) to investigate schema content in alcohol disorders.

It is evident that this study needs replication and elaboration before it can be hypothesised to have any clear clinical implications. However, the increased drinking and craving following the subliminal cues suggests that schematic processing may be relevant in alcohol disorders (as this is the level least amenable to conscious report). The operation of schemata, which are not necessarily targeted in CBT, may account for why this therapy is not always successful. Treatments targeting schemas (e.g., schema- focused therapy; Young, 1994), or subliminal 'unification' cues (which may serve to counteract and deactivate schemata preconsciously; Barter, 1999), may be more effective for alcohol disorders. In addition, this study supports the contention that individuals who drink more in negative affective states are more sensitive to negative cues, and are perhaps more vulnerable to problematic drinking. It is possible that a tachistoscope may be a more accurate assessment tool for identifying individuals most at risk of developing alcohol problems than self-report.

Interestingly, the women had significantly lowered mood following the abandonment cue, compared to those who had been presented with the neutral cue.

In addition, the women who had been presented with either the abandonment or depressed cue had significantly greater tense arousal following these cues. Thus, even though the meaning of the stimuli does not enter awareness, it is analysed unconsciously and evokes consciously experienced affect. This supports the theory that schemata are being activated. However, the lack of association between mood and drinking indicates that the relationship between these variables needs further exploration.

To conclude, this study has suggested that subliminal negative cues impact on drinking among individuals who drink more in negative situations. This might be explained by a schema-focused model of alcohol abuse (in which preconscious negative information activates certain schemata, and where alcohol is used to block conscious awareness of that schema-relevant information). However, the findings do not support the specific relevance of abandonment cues or schemata. This study needs to be replicated and elaborated (particularly with more negative drinkers or a clinical population), in order to determine the relevance and content of schemata in alcohol abuse and to show whether treatments could be enhanced by focusing on schema content.

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Table 1- Means and standard deviations of the three groups: age, vocabulary scores (Mill Hill), depression (BDI) and anxiety (BAI) scores, drinking amount (AUDIT) and drinking situations (IDS)

	Subliminal cue used			ANOVA	
	Neutral	Depressed	Abandonment	F	P
N	20	20	20		
Age (years)	21.70	21.50	20.50	0.62	NS
(SD)	(3.83)	(4.65)	(1.99)		
Mill Hill	57.70	58.70	56.75	0.60	NS
(SD)	(3.77)	(6.88)	(5.78)		
BDI	8.40	7.75	5.50	0.80	NS
(SD)	(7.88)	(9.05)	(5.55)		
BAI	9.00	10.85	8.05	0.59	NS
(SD)	(6.50)	(10.61)	(6.86)		
AUDIT	10.85	14.10	15.40	3.07	NS
(SD)	(3.62)	(7.33)	(6.37)		
IDS (positive)	39.35	39.90	49.02	3.13	NS
(SD)	(12.88)	(17.07)	(10.30)		
IDS (negative)	13.27	17.71	19.07	1.23	NS
(SD)	(9.95)	(15.74)	(10.19)		

Table 2- Amount of beer consumed (ml) and craving (0-10) following exposure to subliminal cues, including tests of significant differences (one-way ANOVA)

	Subliminal cue used			ANOVA	
	Neutral	Depressed	Abandonment	F	P
Amount drunk (ml)	33.7	40.4	42.8	1.87	.09
(SD)	(14.5)	(13.7)	(14.8)		
Craving (0-10)	3.40	3.70	4.70	2.14	.07
(SD)	(2.30)	(2.08)	(2.21)		

Table 3- Amount of beer consumed (ml) and craving (0-10) following exposure to subliminal cues for individuals who drink in more and less negative affective situations (including tests of significant interactions).

	Subliminal cue used						2-Way ANOVA		
	Neutral		Depressed		Abandonment		Cue	IDS	Cue * IDS
	M	(SD)	M	(SD)	M	(SD)	F	F	F
Amount drunk									
Less negative situations	N= 12		N=11		N=7				
	39.5	(13.08)	36.4	(9.16)	38.6	(9.43)	2.80	0.01	4.24**
More negative situations	N=8		N=9		N=13				
	25.0	(12.7)	45.3	(17.0)	45.0	(17.0)			
Craving									
Less negative situations	N=12		N=11		N=7				
	3.58	(2.19)	3.0	(2.10)	3.29	(1.70)	1.14	3.35	2.13+
More negative situations	N=8		N=9		N=13				
	3.00	(2.56)	4.56	(1.81)	5.38	(2.14)			

+ $p < .10$, ** $p < .01$

Table 4- Mood ratings (UWIST subscales) following exposure to subliminal cues, including tests of significant differences (one-way ANOVA and post hoc comparisons).

	Subliminal cue used					
	Neutral (N)	Depressed (D)	Abandonment (A)	ANOVA F	P	Multiple Comparisons* Scheffe
UWIST scales						
Hedonic Tone difference (pre and post cue)	-1.20	0.10	0.80	4.60	.02	N<A
(SD)	(2.46)	(1.62)	(2.02)			
Tense Arousal difference (pre and post cue)	1.60	-0.05	-0.50	9.25	.001	N>D=A
(SD)	(1.35)	(1.32)	(2.09)			
Energetic Arousal difference (pre and post cue)	-0.9	-0.01	0.35	2.03	NS	
(SD)	(1.37)	(1.17)	(1.31)			

* p< .05 where listed

Critical Overview

Critical Overview

Due to unforeseen circumstances (i.e., my main supervisor leaving and course staff no longer condoning my research), this dissertation was planned and initiated very late (i.e. December, 1999). Many of the following limitations were thought about but unavoidable, due to the lack of available time, and difficulty obtaining participants. One of the major limitations was the lack of a control drink. Originally the experiment employed six conditions, three of which included the use of a control drink (lemonade). However, as a minimum of 15 participants per condition was required, this would have meant recruiting 90 participants. After a considerable amount of time and effort trying to recruit participants (which included offering money etc), it was decided that the study would be stronger by eliminating the control drink conditions and recruiting more subjects to the beer conditions. Low alcohol lager was originally proposed, however the ethics committee would not allow this without subsequent blood testing and other precautions, thus non-alcoholic beer was used. Although no one was able to tell that the beer was non-alcoholic, the study should be replicated with alcoholic beer before specific conclusions can be made with regard to alcohol abuse.

A similar problem was the lack of a positive emotional cue. This limited the ability to say that any conclusions were due to the impact of negative emotional cues, rather than any emotional valence. Although it would have been preferable to include a positive emotion word, this would have required recruiting more participants. A within-subjects design was considered (which would have allowed for a more controlled study). However, this was not considered possible due to the possibility of order or contamination effects (i.e. triggering of schemata) if subjects were presented with more than one cue.

In addition, I originally planned to make comparisons between genders. However, after piloting the experiment with both genders, it appeared that the drinking behaviour of males was somewhat different to that of the females (e.g. they were drinking larger amounts). It was therefore thought that the study would again be more robust by only including females (thus conclusions are only generalisable to females), and suggesting that the study should be replicated with males.

An unforeseen limitation was the lack of individuals who drank predominantly for negative reasons in the sample. The original plan was to allocate an equal number

of predominantly positive and predominantly negative drinkers to each of the conditions, then compare these two groups on the dependent variables. However, although it was thought (based on studies which have found that approximately 30% of individuals in the normal population drink predominantly for negative reasons) that the sample would include a significant proportion of negative drinkers, piloting revealed that most participants drank predominantly for positive reasons. Therefore, the study was limited to a comparison of higher and lower negative drinkers, although the higher negative drinkers were still primarily positive drinkers. Despite this, the two groups showed different drinking patterns in response to the different cues. It is likely that these differences would have been accentuated had the negative group been more negative. The lack of negative drinkers in this sample is important for future studies to consider, and may suggest that the student population includes a greater proportion of positive drinkers than the general population.

These limitations can be reframed in a more positive light. They can be seen as part of the research process which involved narrowing down an ideal project into a workable one. The end result was a tight neat study which directly addressed a specific theoretical question. By using an experimental design and a student population, I was able to manipulate variables and recruit a reasonable number of participants to each condition.

I have learnt the difficulties of planning and conducting research within a restricted time period. I have also learnt the difficulties associated with being supervised by two people who offer different (and sometimes opposing) ideas, and having to come up with a workable research hypothesis in an unfamiliar area. I realise that this is not the ideal way to carry out research. However, more positively, I learnt a considerable amount about the area of alcohol abuse. My interest in this area developed during the research process, particularly in relation to the inadequacies of treatments and the need for better models. Having an interest in interpersonal issues in relation to psychopathology and also in schema-focussed therapy, I saw the importance of conducting research investigating the application of these ideas to the field of alcoholism. I am pleased to say that I have not been completely put off the idea of conducting research in the future!

Appendices

Appendix 1

Guide for Authors- Clinical Psychology Review

CLINICAL PSYCHOLOGY REVIEW

INSTRUCTIONS TO AUTHORS

AIMS AND SCOPE: *Clinical Psychology Review* publishes substantive reviews of topics germane to clinical psychology. Its purpose is to help clinical psychologists keep up-to-date on relevant issues outside of their immediate areas of expertise by publishing scholarly but readable reviews. Papers cover diverse issues, including: psychopathology, psychotherapy, behavior therapy, behavioral medicine, community mental health, assessment, and child development.

Reviews on other topics, such as psychophysiology, learning therapy, and social psychology, often appear if they have a clear relationship to research or practice in clinical psychology. Integrative literature reviews and summary reports of innovative ongoing clinical research programs are also sometimes published. Reports on individual research studies are not appropriate.

SUBMISSION REQUIREMENTS: All manuscripts should be submitted to Alan S. Bellack, Department of Psychiatry, The University of Maryland at Baltimore, School of Medicine, 685 West Baltimore Street, Suite 618, Baltimore, MD 21201-1549, USA. Submit three (3) high-quality copies of the entire manuscript: the original is not required. Allow ample margins and type double-space throughout. Papers should not exceed 50 pages (including references). One of the paper's authors should enclose a letter to the Editor, requesting review and possible publication; the letter must also state that the manuscript has not been previously published and has not been submitted elsewhere. One author's address (as well as any upcoming address change), telephone and FAX numbers, and E-mail address (if available) should be included; this individual will receive all correspondence from the Editor and Publisher.

Papers accepted for *Clinical Psychology Review* may not be published elsewhere in any language without written permission from the author(s) and publishers. Upon acceptance for publication, the author(s) must complete a Transfer of Copyright Agreement form.

COMPUTER DISKS: Authors are encouraged to submit a 3.5" HD/DD computer disk to the editorial office. Please observe the following criteria: (1) Send only hard copy when first submitting your paper. (2) When your paper has been refereed, revised if necessary, and accepted, send a disk containing the final version with the final hard copy. If the disk cannot be converted, the hard copy will be used. (3) Specify what software was used, including which release, e.g., WordPerfect 6.0a. (4) Specify what computer was used (IBM compatible PC, Apple Macintosh, etc.). (5) The article file should include all textual material (text, references, tables, figure captions, etc.) and separate illustration files, if available. (6) The file should follow the general instructions on style/arrangement and, in particular, the reference style of this journal as given in the Instructions to Contributors. (7) The file should be single-spaced and should use the wrap-around end-of-line feature, i.e., returns at the end of paragraphs only. Place two returns after every element such as title, headings, paragraphs, figure and table call-outs. (8) Keep a back-up disk for reference and safety.

TITLE PAGE: The title page should list (1) the article; (2) the authors' names and affiliations at the time the work was conducted; (3) a concise running title; and (4) an unnumbered footnote giving an address for reprint requests and acknowledgments.

ABSTRACT: An abstract should be submitted that does not exceed 200 words in length. This should be typed on a separate page following the title page.

STYLE AND REFERENCES: Manuscripts should be carefully prepared using the *Publication Manual of the American Psychological Association*, 4th ed., 1994, for style. The reference section must be double spaced, and all works cited must be listed. Avoid abbreviations of journal titles and incomplete information.

Reference Style for Journals:
Raymond, M. J. (1964). The treatment of addiction by aversion conditioning with apomorphine. *Behavior Research and Therapy, 3*, 287–290.

For Books:
Barlow, D. H., Hayes, S. C., & Nelson, R. O. (1984). *The scientist practitioner: Research and accountability in clinical and educational settings*. Elmsford, NY: Pergamon.

TABLES AND FIGURES: Do not send glossy prints, photographs or original artwork until acceptance. Copies of all tables and figures should be included with each copy of the manuscript. Upon acceptance of a manuscript for publication, original, camera-ready photographs and artwork must be submitted, unmounted and on glossy paper. Photocopies, blue ink or pencil are not acceptable. Use black india ink and type figure legends on a separate sheet. Write the article title and figure number lightly in pencil on the back of each.

PAGE PROOFS AND OFFPRINTS: Page proofs of the article will be sent to the corresponding author. These should be carefully proofread. Except for typographical errors, corrections should be minimal, and rewriting the text is not permitted. Corrected page proofs must be returned within 48 hours of receipt. Along with the page proofs, the corresponding author will receive a form for ordering offprints and full copies of the issue in which the article appears. Twenty-five (25) free offprints are provided; orders for additional offprints must be received before printing in order to qualify for lower publication rates. All coauthor offprint requirements should be included on the offprint order form.

Appendix 2

Guide for Authors- Addiction

Addiction

Guidance to Authors

The editorial staff will be most grateful for your assistance in relation to the matters listed below. Please follow this guidance carefully when preparing a submission.

General matters

Addiction is a refereed journal. Its goal is to serve international and interdisciplinary scientific and clinical communication, to strengthen links between science and policy, and to stimulate and enhance the quality of debate. Submissions are sought which are not only technically competent, but are original and contain information or ideas of fresh interest to our international readership. Books and major reports may be submitted for review, and material for the News and Notes section is welcomed. We seek to serve the developing as well as the developed world. We aim to handle submissions courteously and promptly, and welcome dialogue with our contributors and readers. We regret that we are not able to return manuscripts.

Ethical standards

Manuscripts are accepted on the understanding that they are subject to editorial revision. Submissions must be accompanied by a signed statement from all authors saying that: (a) the material has not been published in whole or in part elsewhere; (b) the paper is not currently being considered for publication elsewhere; (c) all authors have been personally and actively involved in substantive work leading to the report, and will hold themselves jointly and individually responsible for its content; (d) all relevant ethical safeguards have been met in relation to patient or subject protection, or animal experimentation. This statement must also declare sources of funding, direct or indirect, and any connection with the tobacco, alcohol or pharmaceutical industries. With regard to points (a) and (b): if data from the same study are reported in more than one publication, this should be stated in the manuscript and/or covering letter to the editor, along with a clear explanation as to how the submitted manuscript differs, and copies of closely related manuscripts reporting these data should be enclosed. If at any stage during the handling of their submission, authors decide to withdraw it, we ask them to notify the editor.

Length

Submissions should be double spaced and clearly legible. There is no maximum length for articles. We ask authors to be as concise as possible and will negotiate with you personally and sympathetically if we feel shortening would improve communication. Case reports are welcomed but should not be more than 6 pages. Letters should not be more than 2 pages.

Layout

Please submit four copies of each manuscript. They should be typed on one side of the paper, double spaced, with margins of at least 25 mm. The first sheet should contain the title of the paper, a short title not exceeding 45 characters, names of authors, the address where the work was carried out, and the full postal address of the author who will check proofs and receive correspondence and offprints. The second sheet should contain only the title, names of authors, and an abstract. Please send one extra loose copy of the abstract with submissions. The entire manuscript, including all references, tables, figures, and any other material, should be numbered in one sequence from the title page onwards. Please put at the bottom of the title page the *total* number of pages and, if possible, include a word count for the text and references (excluding title and abstract pages, tables and figures). Footnotes to the text should be avoided where possible.

Abstract

In the case of research reports, abstracts should use the following headings: Aims, Design, Setting, Participants, Intervention (experimental trials only), Measurements, Findings, and Conclusions. The findings should be clearly listed because it is the list of findings that will form the main basis for the editorial decision. Each finding will be evaluated in terms of its **importance if true** and the **confidence that can be placed on it** given the evidence. In the case of other types of paper, there are no formal requirements for the structure of abstracts but it must be clear from the abstract what conclusions are being drawn because evaluation of these will be central to the refereeing process. Abstracts should normally be no more than 250 words.

References

These may be submitted in either the Harvard or Vancouver systems. When following the *Harvard system* references should be indicated in the typescript by giving the author's name, with the year of publication in parentheses, e.g. Smith (1984); if there are three authors Smith, Green & Jones (1984) on the first citation and Smith *et al.* (1984) subsequently; or if there are more than three authors Smith *et al.* (1984) throughout. If several papers from the same authors and from the same year are cited, (a), (b), (c), etc. should be put after the year of publication. References should be listed at the end of the paper in alphabetical order. Examples are:

ABRAMS, D. B. & WILSON, G. T. (1979) Effects of alcohol on social anxiety in women: cognitive versus physiological processes, *Journal of Abnormal Psychology*, 88, 161–173.

BLANE, H. T. & LEONARD, K. E. (1987) *Psychological Theories of Drinking and Alcoholism* (New York, Guilford Press).

When following the *Vancouver system* references should be numbered consecutively in the order in which they are first mentioned in the text. Identify references in text, tables, and legends by arabic numerals (in parentheses). References cited *only* in tables or in legends to figures should be numbered in accordance with a sequence established by the first mention in the text of the particular table or illustration.

The references should be listed in numerical order at the end of the paper. Examples are:

1. COTTON, N. (1987) The familial incidence of alcoholism, *Journal of Studies on Alcohol*, 40, 89–116.
2. MERIKANGAS, K. R. (1989) Genetics of alcoholism: a review of human studies, in: WETTERBERG, L. (Ed.) *Genetics of Neuropsychiatric Diseases*, pp. 21–28 (London, Macmillan).

Whatever referencing system is adopted, titles of journals should not be abbreviated. All authors should be included. The reference list should not be needlessly profligate and should only include items that are retrievable through standard bibliographic sources. Where foreign language papers or books are cited, the title in English needs to be included in brackets after the foreign language version.

Illustrations

These should not be inserted in the text but each provided separately and numbered on the back with Figure numbers, title of paper and name of author. Illustrations should be prepared about twice their final size. Three copies of all figures must be submitted. All photographs, graphs and diagrams should be referred to as Figures and should be numbered consecutively in the text in Arabic numerals (e.g. Fig 3). The approximate position of each illustration should be indicated in the text. A list of captions for the figures should be submitted on a separate sheet and should make interpretation possible without reference to the text. Captions should include keys to symbols.

Tables

These should be typed on separate sheets and their approximate position in the text should be indicated. Units should appear in parentheses in the column heading but not in the body of the table. Words or numerals should be repeated on successive lines 'ditto' or 'do' should not be used. Tables should not be ruled.

Proofs

Proofs are supplied for checking and making essential corrections, not for general revision or alteration. Proofs should be corrected and returned to the publisher within 3 days of receipt.

Offprints

Fifty offprints of each paper are supplied free. Additional copies may be purchased and should be ordered when the proofs are returned. Offprints, together with a complete copy of the relevant journal issue, are sent about three weeks after publication.

Refereeing

Papers will normally be sent by the Regional Editor for review to an Assistant Editor who will solicit referees' reports and make a recommendation to the Regional Editor. The regional editor will make a decision on the paper and communicate this with the authors. The Regional Editor or the Assistant Editor may return a paper unrefereed if in their judgement it is not suitable for the journal because of serious methodological limitations, the topic addressed or problems with reporting.

Appendix 3

Ethical Approval Letter

University of Southampton

Department of Psychology

University of Southampton
Highfield
Southampton
SO17 1BJ
United Kingdom

Telephone +44 (0)23 8059 5000
Fax +44 (0)23 8059 4597
Email

8th September 2000

FAO Liz Hickson
Clinical Psychology Department
University of Southampton
Highfield, Southampton
SO17 1BJ

Dear Liz,

Re: Application for Ethical Approval

I am writing to confirm that your ethical application titled "The impact of emotion upon drinking behaviour: the role of subliminal visual processing of abandonment cues" has been given approval by the department.

Should you require any further information, please do not hesitate in contacting me on (023) 80 593995.

Yours sincerely,

Miss Kathryn Smith
Ethical Secretary

Appendix 4

Information Sheet

Participant Information Sheet

We are asking students if they would be willing to help with some research conducted by Liz Hickson (Trainee Clinical Psychologist: Supervisor Dr Anne Waters). The study has four stages. At first, it is necessary that you do not know the main aims of the study. However, all participants will be sent a letter following completion of the study, explaining it's true nature.

Stage 1 will involve the completion of a short questionnaire. Stage two will involve asking you to complete a visual recognition task, testing your ability to perceive stimuli. You will be exposed to very brief presentations of words in the centre of a screen and asked if you could read the words. Stage three involves a drinking discrimination task and will involve the consumption of a small amount of lager. The final stage involves the completion of six short questionnaires. In total, the study will take approximately 35 minutes to complete.

All the information given by you will be kept strictly confidential. You are free to withdraw any information provided for the study, and free to stop participating at any time without having to give a reason.

Do you have any questions?

Thank you for your assistance,

Liz Hickson
Trainee Clinical Psychologist

Appendix 5

Consent Form

CONSENT FORM

A study of visual processing and drinking

Participant's name: .....

Please complete the following:

	Please cross out as necessary
Have you read the information sheet?	Yes / No
Have you had an opportunity to ask questions and discuss the study?	Yes / No
Have you received satisfactory answers to all your questions?	Yes / No
Have you received enough information about the study?	Yes / No
Do you understand what you will be asked to do?	Yes / No
Do you understand that you are free to withdraw from the study:	
at any time?	Yes / No
without having to give a reason?	Yes / No
Do you agree to take part in this study?	Yes / No
Do you understand that the nature of the study will be explained after all the data has been collected?	Yes / No

I, ..., hereby consent to participate in the study named above, about which I have received written information.

I understand that I will receive course credits for participating in this study? Yes / No

Signed..... Date.....

Appendix 6

UWIST Mood Adjective Checklist

UWIST MOOD ADJECTIVE CHECKLIST

Name: Sex: Date today:

Time of day completed: Date of birth:

Does the adjective describe your present mood?

	Definitely	Slightly	Slightly Not	Definitely Not
1. Happy	1	2	3	4
2. Dissatisfied	1	2	3	4
3. Energetic	1	2	3	4
4. Relaxed	1	2	3	4
5. Alert	1	2	3	4
6. Nervous	1	2	3	4
7. Passive	1	2	3	4
8. Cheerful	1	2	3	4
9. Tense	1	2	3	4
10. Jittery	1	2	3	4
11. Sluggish	1	2	3	4
12. Sorry	1	2	3	4
13. Composed	1	2	3	4
14. Depressed	1	2	3	4
15. Restful	1	2	3	4
16. Vigorous	1	2	3	4
17. Anxious	1	2	3	4
18. Satisfied	1	2	3	4
19. Unenterprising	1	2	3	4
20. Sad	1	2	3	4
21. Calm	1	2	3	4
22. Active	1	2	3	4
23. Contented	1	2	3	4
24. Tired	1	2	3	4

Appendix 7

Alcohol Use Disorders Identification Test

AUDIT

Please circle the answer that is correct for you

1. How often do you have a drink containing alcohol?

NEVER	MONTHLY OR LESS	2–4 TIMES MONTH	2-3 TIMES A WEEK	4 OR MORE TIMES A WEEK

2. How many drinks containing alcohol do you have on a typical day when you are drinking? (note that by 'a drink' we mean ½ pint of beer, a single of spirits, a glass of wine)

1 OR 2	3 OR 4	5 OR 6	7 – 9	10 OR MORE

3. How often do you have 6 or more drinks on one occasion?

NEVER	LESS THAN MONTHLY	MONTHLY	WEEKLY	DAILY OR ALMOST DAILY

4. How often during the last year have you found it difficult to get the thought of alcohol out of your mind?

NEVER	LESS THAN MONTHLY	MONTHLY	WEEKLY	DAILY OR ALMOST DAILY

5. How often during the last year have you found that you were not able to stop drinking once you had started?

NEVER	LESS THAN MONTHLY	MONTHLY	WEEKLY	DAILY OR ALMOST DAILY

6. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

NEVER	LESS THAN MONTHLY	MONTHLY	WEEKLY	DAILY OR ALMOST DAILY

7. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

NEVER	LESS THAN MONTHLY	MONTHLY	WEEKLY	DAILY OR ALMOST DAILY

8. How often during the last year have you had a feeling of guilt or remorse after drinking?

NEVER	LESS THAN MONTHLY	MONTHLY	WEEKLY	DAILY OR ALMOST DAILY

9. Have you or someone else been injured as a result of your drinking?

NO	YES, BUT NOT IN THE LAST YEAR	YES, DURING THE LAST YEAR

10. Has a relative or friend or a doctor or other health worker been concerned about your drinking or suggested you cut down?

NO	YES, BUT NOT IN THE LAST YEAR	YES, DURING THE LAST YEAR

Appendix 8

Inventory of Drinking Situations

Please note highlighted questions are those used in the short form (IDS-42).

OVER THE PAST YEAR

		I DRANK HEAVILY			
		Never	Rarely	Frequently	Almost Always
1.	When I felt that I had let myself down	1	2	3	4
2.	When I had trouble sleeping	1	2	3	4
3.	When I felt confident and relaxed	1	2	3	4
4.	When I was sad at the memory of something that had happened	1	2	3	4
5.	When I convinced myself that I was a new person and could take a few drinks	1	2	3	4
6.	When I remembered how good it tasted	1	2	3	4
7.	When I had an argument with a friend	1	2	3	4
8.	When I was out with friends and they stopped by a bar for a drink	1	2	3	4
9.	When I wanted to heighten my sexual enjoyment	1	2	3	4
10.	When other people didn't seem to like me	1	2	3	4
11.	When I was lonely	1	2	3	4
12.	When I was tired	1	2	3	4
13.	When I was enjoying myself	1	2	3	4
14.	When I couldn't seem to do things I tried to do	1	2	3	4
15.	When I started to believe that alcohol was no longer a problem for me	1	2	3	4
16.	When I got a bottle of my favorite booze as a prize or present	1	2	3	4
17.	When there were fights at home	1	2	3	4
18.	When I was in a social situation in which I had always drunk in the past	1	2	3	4
19.	When I was relaxed with a good friend and wanted to have a good time	1	2	3	4
20.	When someone close to me was suffering	1	2	3	4

		I DRANK HEAVILY			
		Never	Rarely	Frequently	Almost Always
21.	When I was afraid that things weren't going to work out	1	2	3	4
22.	When I felt drowsy and wanted to stay alert	1	2	3	4
23.	When everything was going well	1	2	3	4
24.	When I felt that there was nowhere left to turn	1	2	3	4
25.	When I wondered about my self-control over alcohol and felt like having a drink to try it out	1	2	3	4
26.	When I passed by a liquor store	1	2	3	4
27.	When I felt uneasy in the presence of someone	1	2	3	4
28.	When I was at a party and other people were drinking	1	2	3	4
29.	When I wanted to feel closer to someone I liked	1	2	3	4
30.	When other people interfered with my plans	1	2	3	4
31.	When I felt under a lot of pressure	1	2	3	4
32.	When I was in physical pain	1	2	3	4
33.	When I was feeling on top of the world	1	2	3	4
34.	When I felt empty inside	1	2	3	4
35.	When I felt confident that I could handle a few drinks	1	2	3	4
36.	When I began to think how cool and satisfying a drink would be	1	2	3	4
37.	When there were problems with people at work	1	2	3	4
38.	When someone in the same room was drinking	1	2	3	4
39.	When good friends dropped by and I was full of good feelings	1	2	3	4
40.	When I felt unsure that I could measure up to other people's expectations	1	2	3	4

		I DRANK HEAVILY			
		Never	Rarely	Frequently	Almost Always
(41)	When I was angry at the way things had turned out	1	2	3	4
(42)	When I felt nauseous	1	2	3	4
(43)	When I felt satisfied with something I had done	1	2	3	4
44.	When I was bored	1	2	3	4
(45)	When I started to think that just one drink could cause no harm	1	2	3	4
(46)	When I unexpectedly found a bottle of my favorite booze	1	2	3	4
(47)	When someone criticized me	1	2	3	4
(48)	When I was in a restaurant and the people with me ordered drinks	1	2	3	4
(49)	When I was out with friends "on the town" and wanted to increase my enjoyment	1	2	3	4
(50)	When pressure built up at work because of the demands of my supervisor	1	2	3	4
51.	When nothing I did seemed right to me	1	2	3	4
52.	When I felt exhausted	1	2	3	4
53.	When I was feeling content with my life	1	2	3	4
54.	When everything was going badly for me	1	2	3	4
55.	When I started to think that I would never know my limits with alcohol unless I tested them	1	2	3	4
56.	When I saw something that reminded me of drinking	1	2	3	4
57.	When I felt sexually rejected	1	2	3	4
58.	When I was offered a drink and felt awkward about refusing	1	2	3	4
59.	When I was having a good conversation with someone and wanted to recount some really good stories	1	2	3	4
60.	When I felt jealous over something which someone had done	1	2	3	4

		I DRANK HEAVILY			
		Never	Rarely	Frequently	Almost Always
61.	When I felt confused about what I should do	1	2	3	4
62.	When my stomach felt like it was tied in knots	1	2	3	4
63.	When something good happened and I felt like celebrating	1	2	3	4
64.	When I began to feel fed up with life	1	2	3	4
65.	When I wanted to prove to myself that I could take a few drinks without becoming drunk	1	2	3	4
66.	When I suddenly had an urge to drink	1	2	3	4
67.	When other people around me made me tense	1	2	3	4
68.	When I met a friend and he/she suggested that we have a drink together	1	2	3	4
69.	When I wanted to celebrate with a friend	1	2	3	4
70.	When I felt under a lot of pressure from family members at home	1	2	3	4
71.	When I felt no one really cared what happened to me	1	2	3	4
72.	When I felt jumpy and physically tense	1	2	3	4
73.	When I wanted to celebrate special occasions like Christmas or birthdays	1	2	3	4
74.	When I started to feel guilty about something	1	2	3	4
75.	When I started to think that I was finally cured and could handle alcohol	1	2	3	4
76.	When I was in a situation in which I was in the habit of having a drink	1	2	3	4
77.	When I was unable to express my feelings to someone	1	2	3	4
78.	When someone pressured me to "be a good sport" and have a drink	1	2	3	4
79.	When I was having fun with friends and wanted to increase our enjoyment	1	2	3	4
80.	When I felt that I needed courage to face up to someone	1	2	3	4

		I DRANK HEAVILY			
		Never	Rarely	Frequently	Almost Always
81.	When I was depressed about things in general	1	2	3	4
82.	When I felt shaky and sick	1	2	3	4
83.	When I felt that things were going to work out well for me at last	1	2	3	4
84.	When I was troubled and I wanted to think more clearly	1	2	3	4
85.	When I decided to test my willpower by showing that I really could stop after one or two drinks	1	2	3	4
86.	When I saw an advertisement for my favorite booze	1	2	3	4
(87)	When other people treated me unfairly	1	2	3	4
88.	When I was invited to someone's home and they offered me a drink	1	2	3	4
(89)	When I was enjoying myself at a party and wanted to feel even better	1	2	3	4
(90)	When I was not getting along well with others at work	1	2	3	4
91.	When I felt unsure of myself and wanted to function better	1	2	3	4
92.	When I had a headache	1	2	3	4
93.	When I felt happy at the memory of something that had happened	1	2	3	4
94.	When I thought of the chances I had missed in life	1	2	3	4
95.	When I started to think that I wasn't really hooked on alcohol	1	2	3	4
96.	When I passed by a bar	1	2	3	4
97.	When I felt rejected by friends	1	2	3	4
98.	When my boss offered me a drink	1	2	3	4
99.	When I was enjoying a meal with friends and felt that a drink would make it even more enjoyable	1	2	3	4
100.	When I felt that someone was trying to control me and I wanted to feel more independent	1	2	3	4

Appendix 9
Feedback letter to participants

Dear participant,

RE: Research Study ' A study a visual processing and drinking'

Thank you once again for participating in the above study.

You may remember that it was explained to you at the beginning of the study that the exact nature and aims of the study would be described when all the data had been collected. The study has now been completed. I am therefore writing to you to explain the purposes of the study in more detail.

Background to the study

Studies have found that negative emotional states often precede drinking (particularly for some drinkers) and that drinking alcohol may serve the function of escaping from these mood states. Although depression and anxiety states have been found to be common antecedents to drinking, less research has concentrated on feelings of loneliness and abandonment as precipitators to drinking. This may be surprising, given that single people, drinking at home, divorce and conflict with others have all been found to be risk factors to problematic drinking. Research in the field of eating disorders has suggested that feelings of abandonment trigger eating behaviour and the subliminal (a level below awareness) presentation of the word 'lonely' leads to increased eating. Given the potential relevance of abandonment and the similarities between reasons for binge eating and drinking, it is likely that abandonment feelings may also trigger increased drinking behaviour.

Aims of the study

The general aim of the study was to determine the impact of a subliminally presented abandonment cue on drinking behaviour. More specifically, it was hypothesised that a subliminally presented abandonment cue would lead to greater craving and consumption of beer than another negative cue, which in turn would lead to greater craving and consumption of beer than a neutral cue. It was also hypothesised that this effect was more pronounced for those who usually drink more in negative mood states.

The study had five stages. The first stage required you to complete a questionnaire to explore your current mood. In stage 2, you were asked to complete a visual processing task, otherwise known as a subliminal processing task. This task involved the presentation of a subliminal cue. A tachitistoscope was used to present this cue. Each participant was either presented with the word 'lonely', 'depressed', or 'gallery'. After

this task, participants were asked to complete a taste discrimination task, which involved deciding which of two cups of beer was sweeter. It was thought that those who were presented with the word 'lonely' would drink more in total at this stage, particularly if they usually drink to escape negative emotion. The final two stages involved the completion of further questionnaires to determine: frequency of drinking, typical drinking situations and mood, and a test of recognition of the subliminally presented words.

Findings

No significant differences were found for craving or amount drunk between the women who had been presented with the neutral, negative or abandonment cues. However, further exploration of the data revealed that among the individuals who normally drink in more negative affective situations, being presented with the abandonment or the negative cue led to greater beer consumption than being presented with the neutral cue. For this subset of individuals, those who were presented with the abandonment cue also had greater craving than those presented with the neutral cue.

These findings are compatible with literature which suggests that individuals who drink primarily to manage negative mood and those who drink primarily to enhance positive mood maybe fundamentally different. The results suggest that for more negative drinkers, any negative cues lead to increased drinking, and that the effect is not specific to abandonment cues. A cognitive behavioural (schema-focused) model offers a potential explanation for these findings. In this model, preconscious negative information activates related schemata (negative core beliefs) and subsequent escape behaviours (drinking) are used to block conscious awareness of the schema-level information. It was concluded that further research needs to be performed to replicate and elaborate on these findings, before they have firm implications for treatment.

If you would like to know more about this research, please contact me at the Training Course of Clinical psychology, Psychology Department, Building 44, University of Southampton.

Once again, many thanks,

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