

Incorporating Coping into an Expectancy Framework for Explaining Drinking Behaviour

Penelope A. Hasking^{*,1} and Tian P.S. Oei²

¹*School of Psychology, Psychiatry & Psychological Medicine, Monash University, Melbourne, Australia*

²*School of Psychology, University of Queensland, St. Lucia, Australia*

Abstract: Expectancy Theory has offered much in the way of understanding alcohol use and abuse, and has contributed greatly to prevention and treatment initiatives. However although many cognitive-behavioural treatment approaches are based on expectancy constructs, such as outcome expectancies and self-efficacy, high relapse rates imply that expectancy theory may be too narrow in scope, and that additional variables need to be examined if a comprehensive understanding of drinking behaviour, and better treatment outcomes, are to be achieved. We suggest that the coping strategies an individual employs present one such set of variables that have largely been neglected from an expectancy framework. Although coping skills training is routinely used in prevention and treatment of alcohol problems, coping research has suffered from a poor theoretical framework. In this paper we review the existing research relating expectancies, self-efficacy and coping to drinking behaviour and propose a model which explains both social and dependent drinking, by incorporating coping into an expectancy theory framework. We also outline research and clinical implications of the proposed model.

Keywords: Drinking behaviour, alcohol expectancies, self-efficacy, coping.

Despite years of research and many recent advancements in theories and treatments of alcohol problems, alcohol use and abuse are still major problems worldwide and remain of utmost concern to health professionals, and to society in general. Yet, despite an abundance of research, little is known about the mechanisms underlying problem drinking. Many factors have been linked to the decision to consume alcohol and the volume of alcohol consumed, however the relative contribution of such factors is largely unclear. At present, cognitive-behavioural approaches offer a promising treatment option, however despite increasing knowledge of the cognitive and behavioural determinants of drinking behaviour, relapse rates are unacceptably high. If cognitive and behavioural treatment strategies are to be more successful, research needs to identify cognitive and behavioural factors which are related to different drinking patterns and tailor prevention and treatment packages to capitalise on these differential relationships.

Social cognitive theory has offered much in the way of explaining drinking behaviour. Specifically, proponents of expectancy theory, which is derived from social cognitive theory, have repeatedly related cognitions such as alcohol outcome expectancies and self-efficacy to drinking in both social and clinical samples. However although many cognitive-behavioural treatment approaches are based on these central constructs, high relapse rates imply that expectancy theory may be too narrow in scope, and that additional variables need to be examined if a comprehensive understanding of drinking behaviour, and better treatment outcomes, are to be achieved. We suggest that the coping strategies an individual employs present one such set of variables that have largely

been neglected from an expectancy framework. Although coping skills training is routinely used in prevention and treatment of alcohol problems, coping research has suffered from a poor theoretical framework. Incorporating coping into an expectancy framework allows an examination of how cognitive and behavioural factors work together to determine drinking behaviour, fostering more comprehensive understanding of aetiology and maintenance of drinking problems and optimal cognitive-behavioural treatment approaches.

The central purpose of this paper is to propose a model that can effectively describe the drinking behaviour of both social and dependent drinkers, by incorporating coping into expectancy research. Our model is based on the existing evidence relating expectancies, self-efficacy and coping to drinking behaviour but, of particular note, proposes that the interactions between these constructs and coping behaviour is paramount to a complete understanding of both social and problem drinking behaviour. Specifically, we speculate on the nature of these interactions and describe how these complex relationships may explain both social and dependent drinking. Thus our model proposes that the same cognitive and behavioural factors determine both problem and non-problem drinking behaviour, allowing a clearer understanding of the continuum of alcohol use, abuse and dependence.

As social cognitive theory, and more specifically expectancy theory, is central to the development of our model, this paper outlines the key concepts underlying these theories prior to presenting our model. Next we examine the existing work relating coping strategies to drinking behaviour. Central to our model is the notion that complex interactions between expectancies, self-efficacy and coping strategies can describe drinking behaviour in both clinical and non-clinical samples. Consequently we present empirical research which has examined such interactions, and use this research as the basis for our model. Finally we propose a model of the de-

*Address correspondence to this author at the School of Psychology, Psychiatry & Psychological Medicine, Monash University, Caulfield East VIC 3145, Melbourne, Australia; Tel: + 61 3 9903 1148; Fax: +61 3 9903 2501; E-mail: Penelope.Hasking@med.monash.edu.au

velopment and maintenance of drinking problems that explicitly provides a role for all three constructs, and outline the research and clinical implications that arise from the model.

SOCIAL COGNITIVE THEORY

Social cognitive theory [1-3] is a general theory of behaviour that serves to integrate behavioural and cognitive explanations for human behaviour. As such, there are three key components that underlie social cognitive theory. First, social cognitive theory proposes that individuals learn from their social environment in both direct and indirect ways. That is, an individual may learn behaviour by personally experiencing reward and punishment, or by vicarious reinforcement and modelling of another's behaviour. A second key component of social cognitive theory is the role cognitions play in determining behaviour. While traditional learning theories argue that an individual learns by associating different events, social cognitive theorists argue that cognitions mediate the influence of environmental stimuli in determining behaviour [3-5]. That is, cognitive appraisal of an event may change how an individual behaves in a particular situation. Further, beliefs an individual holds regarding the event, the potential outcome, and their ability to perform a given behaviour will also influence the action taken by an individual. Third, Bandura [3,6] stipulates that environmental influences, internal personal factors such as cognitions, affect and biological events, and behaviour operate as interacting determinants of behaviour, that exert bidirectional influences on each other. Further, in describing this reciprocal determinism, Bandura [6] posits that these influences are not equally weighted, and that their influence will vary under different circumstances and for different behaviours.

As the emphasis on cognition in determining human behaviour has increased, social cognitive theorists too, have increasingly emphasised the importance of individual processes rather than environmental events in governing behaviour [7]. As internal personal factors that interact with and influence both the environment and behaviour, cognitions provide a means by which an individual can exert control over their behaviour. That is, cognitions provide a link between environmental influences and behavioural outcomes.

In his social cognitive model Bandura [1-3] emphasised two cognitive constructs thought to be integral to alcohol use: outcome expectancies and self-efficacy expectancies. Outcome expectancies and self-efficacy appear to provide a direct link between environmental factors and behaviour. For example, if an individual has a stressful day at work (an environmental factor) and believes alcohol will reduce tension (outcome expectancy), the individual is more likely to drink (behaviour). Likewise, if an individual finds himself or herself in an environment where alcohol is available, and has a low self-efficacy for refusing alcohol, they are more likely to drink. In general, positive expectancies are related to an increase in drinking, while a heightened self-efficacy is related to decreased drinking.

It is also possible that behaviours that are not directly related to alcohol consumption may impact on drinking behaviour. The coping strategies an individual uses to minimise stress may represent one set of behaviours that interact with

cognitive variables to govern drinking behaviour. An individual who copes with stress by drinking alcohol and holds the belief that alcohol will reduce stress, is likely to consume more alcohol than someone who engages different coping strategies or holds different alcohol-related cognitions. Other coping strategies, such as behavioural disengagement [8] and seeking social support [9] have also been associated with alcohol consumption. Although coping can consist of cognitive and behavioural strategies, the inclusion of coping into cognitive research will further advance our understanding of how cognitive and behavioural constructs work together to determine alcohol use.

Consequently, social cognitive theory offers a framework whereby environmental factors, cognitions and behavioural strategies can interact to determine how an individual behaves in a certain situation. The following section of this paper provides an overview of expectancy theory, with a focus on the association between alcohol-related cognitions and drinking behaviour. Next, coping strategies are introduced as a set of variables, including behavioural factors, which may interact with these alcohol-related cognitions, to more fully explain both social and dependent drinking patterns.

AN OVERVIEW OF EXPECTANCY THEORY

Grounded in social cognitive theory, expectancy theory focuses on the cognitive variables thought to mediate environmental stimuli and drinking behaviour. Expectancy theory proposes that rather than behaviour being governed by actual consequences of performing a behaviour, the consequences an individual *expects* to experience (outcome expectancies) are sufficient to determine behaviour. Self-efficacy expectancies reflect the self-regulatory mechanisms by which an individual exhibits control over their behaviour [6]. As a self-referential construct, perceived self-efficacy acts as a cognitive mechanism which influences behaviour in a number of ways; including influencing the settings an individual is likely to approach and the choice of activities an individual engages in [2]. Although self-efficacy is related to coping, the constructs are clearly distinct, as self-efficacy informs the choice of coping strategy adopted [2]. For example, an individual who believes they are able to engage in problem-solving strategies is more likely to adopt such coping mechanisms. As such, individual differences in both outcome and self-efficacy expectancies are thought to explain resulting differences in behaviour, including alcohol consumption.

Expectancy theory argues that an individual's alcohol consumption will depend on the outcomes they expect to gain from drinking. Thus if an individual expects reinforcing effects from alcohol consumption, expectancy theory stipulates they will drink in a pattern to maximise these reinforcing effects [10,11]. Likewise if negative consequences are expected, an individual will engage in drinking behaviour that will minimise these aversive consequences, such as consuming less alcohol, or drinking less frequently.

However, outcome expectancies may not necessarily be a true representation of the actual outcomes of drinking. For example, a male may believe alcohol will enhance his sexual performance. While small quantities of alcohol may have an enhancing effect, larger quantities actually inhibit sexual

performance. Therefore, the expectancy beliefs a person holds are more meaningful than the actual experiences that may result from direct learning processes, supporting the role of cognitions in governing drinking behaviour. The extent to which an individual believes in these expected outcomes is paramount to expectancy theory. A substantial amount of research, discussed in detail later, supports the influence of outcome expectancies in governing drinking behaviour [10].

Although expectancy research has historically considered outcome expectancies, others have argued that the subjective valuation of drinking outcomes is equally as important, and that valuation of outcomes may interact with outcome expectancies [12,13]. Crucial to this argument is the notion that regardless of the outcome expectancies held, an individual must value the outcome if they are to engage in drinking behaviour. Research utilising a subjective expected utility framework, in which the multiplicative effects of likelihood estimates and subjective evaluations are examined, has revealed mixed results, particularly when the effects of positive and negative outcome expectancies are examined [14,15]. Although subjective valuations are no doubt important in determining alcohol consumption, due to the limited, and mixed, evidence which simultaneously examines outcome expectancies and subjective valuations, subjective valuation of drinking outcomes has not been included in the proposed model.

Bandura [2] postulated that in addition to outcome expectancies, behaviour is governed by self-efficacy expectancies. That is, an individual's belief in their ability to successfully perform a behaviour in order to gain the expected outcome will have an impact on whether they choose to engage in that behaviour. Recently, researchers have applied this notion specifically to alcohol research, re-defining self-efficacy expectancies as resistance or refusal self-efficacy, or a person's belief in their ability to refuse alcohol at a given time [11,15-17]. Accordingly, if a person has little belief in their ability to refuse a drink, they are more likely to engage in drinking behaviour. Conversely if a person is confident in their ability to refrain from drinking, they are less likely to consume alcohol. Thus outcome and self-efficacy expectancies are viewed as causal determinants of drinking behaviour.

Alcohol Outcome Expectancies

The pioneering work of Mark S. Goldman, Sandra Brown and colleagues has resulted in immense interest in the relationship between outcome expectancies and drinking behaviour. The relationship between positive expectancies and drinking behaviour has consistently been found in a variety of samples, including adolescents (e.g., [18]), university students [19,20], social drinkers [21-23] and dependent drinkers [14,24,25-28]. Beliefs in the positive consequences arising from alcohol use have also been shown to differentiate drinking patterns in undergraduate students [18], reflect different relationships in heavy and light drinkers [29], differentiate social and dependent drinkers [30-32], and predict treatment outcome for dependent drinkers [33].

Research focusing on outcome expectancies has increased over the last two decades, with a growing interest in how beliefs about alcohol can impact on treatment outcome. In an early study of the effects of outcome expectancies on

relapse, Brown [24] reported a consistent negative relationship between reinforcement expectancies, abstinence and number of alcohol-problem free days in the subsequent year. A later study also revealed expectations related to social facilitation and global positive expectancies to be significantly related to alcohol consumption in a sample of inpatient alcoholics [34]. More recently, expectancies were noted to change for individuals enrolled in a 4-week abstinence-focused treatment program [35], and change in expectancies during treatment has been related to number of days to the first drink after treatment [26] and drinking status at three-month follow-up [14]. Expectancies have also been shown to differ across different relapse situations [36].

Although the understanding of how expectancies are related to relapse is important, if an understanding of the role expectancies play in governing drinking behaviour for both social and dependent drinkers is to be achieved, research also needs to address drinking patterns in community drinkers. This is especially true given that expectancies differ between problem and non-problem drinkers [18], suggesting generalisation from one sample to another is not appropriate.

Research that has addressed this issue, has generally found evidence to support the relationship between expectancies and drinking behaviour. Wall *et al.* [19] found expectancies to predict the intention to drink 'too much' in a sample of university students, while expectancies have also been found to differentially predict problem and non-problem drinking patterns [18], and to be related to long-term alcohol use patterns in college students [37]. Likewise, in community samples, positive expectancies have been related to increased drinking and desire to drink on stressful days [38] and have been found to differentially predict volume and frequency of alcohol consumed in community and dependent drinkers [31].

Although there is an abundance of evidence that appears to support the role of expectancies in predicting drinking behaviour across a range of samples, the findings are not as conclusive as they first appear. Inconsistencies in the definition and measurement of expectancies, different outcome measures and different samples make comparison across studies difficult. For example, motivational models of alcohol use have been proposed, which on closer examination include an expectancy component [39,40]. Cox and Klinger [40] proposed that motivation is the final determinant of alcohol consumption, and that other variables found to influence drinking behaviour do so by allowing individuals to form expectations about affective changes that result from drinking. These outcome expectancies then form the basis of a motive to drink. Cox and Klinger further suggest that people decide to drink or not based on whether positive outcome expectancies (related to affect change) outweigh the consequences they expect as a result of not drinking. This logic, as presented by Cox and Klinger is difficult to delineate from expectancy theory. Yet, theorists maintain motivation and expectancies are separate constructs [41] and clear delineation of these constructs is required if conclusions are to be drawn from the literature.

We suggest, in line with Cox and Klinger [40], that outcome expectancies influence the decision to consume alcohol, and that for some people the final influencing factor is a motive to drink. However, the overlap in Cox and Klinger's

motivational model of alcohol use and expectancy theory can make comparison of studies difficult, when different terms are used to suggest similar constructs. Similarly to Cox and Klinger, we argue that conscious decision-making may be a salient factor in the drinking behaviour of social drinkers, but those dependent on alcohol may be governed by more implicit conditioned responses [11,42]. Finally, while Cox and Klinger [40] specify that expectations concerning affect change are important in forming motives to drink, we suggest that other expectancies (e.g., cognitive change, expectations of dependence) are equally as important in governing drinking behaviour. The focus of the current paper is on expectancies, rather than motives for drinking; however, we acknowledge that drinking motives also have a salient role to play in determining the drinking patterns of individuals.

An additional issue in expectancy research concerns the nature of expected outcomes. Most research has restricted the study of expectancies to positive outcome expectancies, on the operant principle that positive outcomes will result in an increased likelihood of engaging in that behaviour. Yet, it is becoming increasingly clear that negative alcohol expectancies are as important, or even more important, than positive alcohol expectancies in predicting drinking behaviour. The work of Jones and McMahon has been pivotal in emphasising the differential roles of positive and negative expectancies. These researchers have found negative expectancies to differentiate lone and group drinkers [25], discriminate satisfaction with current drinking patterns in social drinkers [43], and predict abstinence and relapse in problem drinkers [14,26-28]. Others who have specifically included negative expectancies in their research have found similar results. Expectations of aggression, risk [19], affect change, and impaired control [21,31] have all been related to drinking behaviour in social and dependent drinkers.

Finally, researchers have used different outcome measures in assessing the relationship between outcome expectancies and drinking behaviour. Some have assessed volume of alcohol consumed, while others used a combined measure of volume and frequency of drinking. Still others have assessed alcohol-related problems or have used expectancies to differentiate those who drink socially from those who abuse alcohol. Recent research suggests that cognitive factors may be differentially related to frequency and volume of alcohol consumption [22,31,32]. Hence designs that use a composite measure of drinking, or assess only one consumption measure may be limited in their explanatory power.

Although there is a general consensus that outcome expectancies are related to drinking behaviour, expectancies alone are insufficient to fully describe the range of alcohol consumption. Consequently theorists have recently re-visited Bandura's original proposition that expectancies and self-efficacy work in concert to govern behaviour.

Self-Efficacy Expectancies

Most research that has included refusal self-efficacy as a variable of interest has focussed on the role of self-efficacy in predicting relapse. Here self-efficacy has emerged as a particularly salient variable, often having greater predictive power than other cognitive variables assessed [44-46]. For example, in examining coping and self-efficacy in relation to post-treatment outcome, Maisto, Connors, and Zywiak [47]

recently found that although both coping and self-efficacy predicted outcome twelve months after treatment, only self-efficacy was related to alcohol-related consequences.

Refusal self-efficacy has been related to time-to-first-drink and time-to-relapse [48] and has been shown to increase during treatment and 6-month follow-up [49]. Others have shown post-treatment drinking refusal self-efficacy to predict treatment outcome, lapse and relapse [50-53]. Self-efficacy has also been shown to discriminate abstainers from those who relapse [46].

Comparatively little research has investigated drinking refusal self-efficacy outside a relapse model. This is surprising, given the potential of self-efficacy to explain both social and dependent drinking behaviour, and the prevalence of self-efficacy and refusal training in primary prevention programs. The few studies which have investigated self-efficacy in predicting drinking patterns, have yielded promising results. Refusal self-efficacy is an important predictor of drinking and intention to drink alcohol in children [54] and adolescents [55-57]. Ellickson and Hays [15] used a longitudinal design to predict teenagers' alcohol and drug use from cognitive and social variables, including resistance self-efficacy. The authors concluded that regardless of whether the participants had experience with alcohol and drug use, resistance self-efficacy was predictive of drug and alcohol use nine months later.

In addition to demonstrated salience in clinical and adolescent samples, drinking refusal self-efficacy has been related to frequency of alcohol consumption in university students [44]. Refusal self-efficacy has demonstrated ability to discriminate problem and non-problem drinkers [17,23] and high and low risk drinkers in community samples [32]. Finally, refusal self-efficacy appears to differentially predict volume and frequency of drinking in community and dependent drinkers [16,22,31,58,59].

In 1978 Bandura [2] emphasised the distinction between outcome expectancies and self-efficacy expectancies, suggesting that both should be assessed in situations where they are thought to vary. In describing drinking behaviour, examination of individual variation in these cognitive constructs may provide the key to understanding what differentiates a social drinker from a dependent drinker. Furthermore the way these variables work together may be crucial to an understanding of the factors related to problem drinking.

While both outcome expectancies and self-efficacy expectancies have been found to predict alcohol consumption, Bandura [2] suggests that self-efficacy expectancies are more salient than outcome expectancies in governing behaviour. Likewise, expectancy theory would suggest that the level of refusal self-efficacy is the more salient variable in describing drinking patterns, as it is impaired control that defines a dependent drinker. Yet, rather than assuming a weighted linear relationship in which self-efficacy is the primary determinant of behaviour, these variables are likely to interact in predicting drinking behaviour.

The Interaction Between Alcohol Expectancies and Self-Efficacy Expectancies

Just as environmental stimuli, internal processes and behaviour interact and influence each other in determining be-

haviour, so too do the cognitions which comprise these internal personal processes. In interacting with outcome expectancies, self-efficacy expectancies are thought to moderate the effect of expectancies. Specifically, those with strong positive outcome expectancies and a high refusal self-efficacy will drink less than those with strong positive expectancies and a low refusal self-efficacy. An interactive relationship allows for self-efficacy to be the more salient determinant of behaviour, as proposed by Bandura [2], by moderating the effect of outcome expectancies.

An interaction between outcome expectancies and self-efficacy has consistently been found in a variety of drinkers. The combination of strong positive expectancies and lowered self-efficacy has consistently been shown to predict higher alcohol consumption, while weak expectancies and high self-efficacy are related to lowered alcohol consumption [11]. This relationship has been demonstrated to classify high and low risk drinkers [32] and to differentially predict volume and frequency of alcohol consumption in community and dependent drinkers [22,31].

Studies that have not specifically examined the interaction between outcome expectancies and refusal self-efficacy also lend support to the nature of this interaction. In 1999 Skuttle [60] showed that self-efficacy was related to perceived benefits of drinking, and Brown *et al.* [35] reported self-efficacy and expectancies to be negatively correlated in a treatment-seeking sample. These results are encouraging and suggest refusal self-efficacy needs to be an integral component of future research.

Social cognitive theory proposes that behaviour is determined by the interaction between environmental, cognitive and behavioural processes. While expectancy theory has resulted in a greater understanding of the independent and interactive effects of the cognitive determinants of alcohol use, it is not an exhaustive theory of drinking behaviour. The following section discusses one of the key limits of expectancy theory, and offers a conceptualisation of drinking behaviour that includes both cognitive and behavioural factors.

The Limits of Expectancy Theory

Reciprocal determinism [3,6] suggests that human behaviour is the result of the bi-directional effects of environmental, cognitive and behavioural factors. While expectancy theory attempts to describe drinking behaviour by identifying individual differences in alcohol-related cognitions, the behavioural factors that influence alcohol consumption are largely ignored. Although individual differences in alcohol-related cognitions play a key role in determining alcohol consumption, an understanding of the mechanisms underlying drinking behaviour requires a more integrated approach, which includes behavioural determinants of drinking.

In particular, the role of coping in governing drinking behaviour has largely been ignored from an expectancy perspective. While refusal self-efficacy is closely related to coping, and has been defined by some as the belief an individual has in their ability to cope with a situation, self-efficacy does not reflect the specific cognitive and behavioural strategies an individual employs to minimise their stress. Inclusion of the coping strategies used by individuals not only allows examination of the interaction between cognitions and be-

haviours that are thought to govern drinking, but also encourages the distinction between self-efficacy and coping. Specifically, although refusal self-efficacy largely represents cognitive coping (i.e., the perceived ability to cope with drinking and high risk situations), the concept of coping is much broader and can include both cognitive and behavioural strategies to address not only drinking related situations but stressful events more generally.

Most of the coping literature has focussed on how individuals respond to stress and trauma [61]. In fact, coping is usually defined as the cognitive and behavioural strategies used to manage stress [62]. While coping researchers differ in their views, most suggest that coping strategies can be categorised as those that attempt to address the source of the stress (problem-focussed coping), those that attempt to deal with the emotional response to stress (emotion-focussed coping), and those that attempt to avoid the problem (avoidant coping). Prevailing theory suggests that problem-focussed coping strategies are related to more positive health outcomes, while avoidant strategies have been related to more detrimental outcomes including substance abuse [63].

Although based on the stress and resilience literature, the same principles can be extended to the study of coping and alcohol consumption. For example, those who use alcohol to cope with stress (an avoidant coping strategy) are likely to drink more than those who employ problem-focussed coping strategies. Studies investigating this proposition have produced equivocal results (e.g., [64,65]) however, the premise is widely held. In fact, when examining the relationship between coping and drinking, coping-related drinking is often the only coping strategy assessed.

Yet it is not only drinking to cope that has been related to an increase in alcohol consumption. Researchers have suggested that use of other avoidant coping strategies, such as denial, are also related to drinking behaviour [8,9]. Although the mechanism by which coping strategies lead to alcohol use is rarely examined, it could be argued that in utilising avoidant coping strategies an individual is not actively dealing with the source of the stress, hence the problem is not being solved and will most likely continue to create stress. As an individual becomes aware that the coping strategy they have employed has failed, they are likely to experience a sense of failure, impaired control or helplessness. One way in which these feelings may be managed or minimised is by consuming alcohol. Although drinking to minimise such feelings may be viewed as drinking to cope, the individual may report drinking for tension reduction or affect regulation, rather than drinking to cope per se. Regardless of the mechanisms underlying this relationship, individuals who report greater alcohol use also tend to report use of more avoidant coping strategies [8,9,31].

It must also be noted that for individuals who do not primarily drink to cope, other drinking motives must be evident. These could include a range of reasons for drinking such as social influences or expectations of increased confidence. For example, an individual who tends to cope by avoiding stressors may do so by socialising with friends (rather than actively tackling the source of stress). In this situation a person may drink alcohol for social reasons. Although the reason for drinking is related to social factors, a relationship between avoidant coping and drinking will be evident for

this person. As such it is imperative to examine other factors which may influence the relationship between coping strategies and drinking behaviour, particularly when examining coping strategies other than drinking to cope.

Outcome and self-efficacy expectancies may be two factors that can clarify the relationship between coping and alcohol use, as coping is related to both cognitive constructs as well as alcohol consumption [66]. For example, drinking to cope with stress implies an expectation that alcohol will relieve stress. Likewise, in the above example, if an individual drinks to minimise a sense of failure or helplessness, they must expect that drinking will have an effect on these emotions. In these examples the cognitive expectations held by the individual inform the behavioural coping strategy utilised. While the initial effects of drinking may produce such tension-reducing effects, the expectation and anticipation, rather than the physical effect of these consequences is likely to drive coping behaviour. Further, Bandura [6] suggested that individuals high in self-efficacy would be more likely to adopt problem-focussed coping strategies. Hence a combination of expectancies, self-efficacy and coping strategies may contribute to the diversity in drinking behaviour.

The inclusion of coping in expectancy research is necessary in clarifying the mechanisms underlying drinking behaviour, and may serve to clarify some of the discrepancies found in the expectancy literature. More specifically, as many coping strategies are conceptualised as behavioural efforts employed to minimise stress, the inclusion of coping in expectancy research allows for the inclusion of behavioural factors in determining drinking behaviour. By assessing alcohol-related cognitions, and both cognitive and behavioural coping strategies, a more specific test of the interactions between cognitive and behavioural determinants can be performed. Investigation of these interactions and the differential relationships that may be found in different types of drinkers suggests a more complete test of the social cognitive approach to alcohol use.

COPING AND DRINKING BEHAVIOUR

Bandura [67] paved the way for theorists to consider drinking as a maladaptive coping strategy; however, results of studies testing this assertion are contradictory. A longitudinal study investigating the differential roles of social and coping reasons for drinking among adolescents, found that coping reasons for drinking were not related to drinking at all, while social reasons for drinking were [64].

Conflicting results show that in the absence of more adaptive coping strategies, a reliance on alcohol to cope does predict drinking behaviour [68]. Drinking to cope was found to be the only coping strategy to predict alcohol consumption in university students [65], while a more recent longitudinal study found that drinking to cope was predictive of long term alcohol consumption and drinking problems in a community sample [69]. Drinking to cope with negative affect has also been shown to predict DSM-IV alcohol-use disorders in a sample who did not meet criteria for alcohol abuse at the commencement of the study [70].

More generally, maladaptive or avoidant coping strategies have been related to increased alcohol consumption. This relationship has been found in a range of samples in-

cluding adolescents [71,72], community drinkers [73], and clinical samples [74,75]. Moreover, task- or problem-focused coping has been related to a decrease in alcohol use [19].

Again, these results are not always consistent. Avoidant coping has been found to predict alcohol-related consequences, but not alcohol consumption, in university women [76]. Low (rather than high) levels of avoidant coping have also been related to both increased frequency and volume of alcohol consumption in university students, especially when combined with a low level of emotion-focussed strategies [8]. This finding prompted the authors to suggest that a lack of *any* coping strategy may be predictive of drinking. This was later supported by Moser and Annis [61] who reported that the number of coping strategies, rather the type of strategy employed, was the most significant predictor of abstinence in treated dependent drinkers twelve weeks after completion of treatment. Further, of the types of coping strategies assessed in this study only behavioural avoidance was successful in terminating a relapse episode.

Emotion-focussed strategies have been conceptualised by some researchers as avoidant coping strategies [77], as they do not attempt to resolve the problem causing stress. As such, prevailing coping theory would suggest the use of emotion-focussed coping would be positively related to drinking. However, the opposite has often been found [69,72,78,79]. Likewise, abstainers have been found to employ emotion-focussed strategies [80]. Thus, research supporting the presumption that avoidant coping is related to increased drinking is mixed.

The tendency to classify coping into three broad categories of problem-focussed, emotion-focussed, and avoidant coping has attracted criticism from a number of sources. First, as previously mentioned, some suggest that emotion-focussed coping is a form of avoidance [77]; thus, the distinction between these coping strategies may not be warranted. Second, some have argued that the reliance on this taxonomy is too broad and does not allow a detailed investigation of the range of coping strategies people may employ [81].

In response, researchers have investigated specific coping strategies in relation to alcohol use, rather than using more general descriptions of coping. Use of social support [9], self blame, detachment, wishful thinking, keeping to oneself [67], denial, mental disengagement, behavioural disengagement, and drug and alcohol disengagement [8,31,32] have all been related to alcohol consumption.

The disagreement over the number of coping strategies that should be assessed is not purely conceptual. Different questionnaires designed to assess coping report different factor structures based on the taxonomy employed by the researchers. Some assess coping in terms of three broad functions of coping while others assess a wide range of coping strategies. Additional problems arise in trying to relate coping to drinking behaviour. Using drugs or alcohol is customarily perceived as a form of avoidant coping, and alcohol or drug use is customarily included on avoidant coping factors assessed by questionnaires. However studies that relate using alcohol to cope to drinking behaviour are limited by the fact that the predictor and criterion variables are often dependent on each other. Thus, in such studies suggesting

that those who drink to cope consume more alcohol is a tautology rather than an aetiological explanation of drinking behaviour [82]. This is most problematic with samples who primarily see their drinking as a coping strategy, but is also cause for concern when attempting to establish the relationship between other avoidant coping strategies (in which drinking to cope may be included) and drinking behaviour. Notably, although situation-specific measures of coping have been developed (e.g., [83]), no coping measures specifically examine coping in relation to drinking situations.

Consequently, if coping is to be established in the description of drinking behaviour it is suggested that a range of coping strategies is assessed. If the investigation of coping and alcohol is not restricted to drinking to cope, the above methodological concerns are minimised. Furthermore, by not conforming to the taxonomy of problem-focused, emotion-focussed, and avoidant coping, an examination of the varied coping strategies related to drinking can be achieved, and may result in clarifying the inconsistencies found in the research.

INCLUDING COPING IN AN EXPECTANCY FRAMEWORK

The application of expectancy theory and coping theory to alcohol use can be seen in Marlatt and Gordon's [33] influential model of relapse of addictive behaviours, and in cognitive-behavioural treatment approaches. Marlatt and Gordon [33] proposed that after a period of abstinence, being in a high-risk situation without an effective coping strategy would result in an individual having a low self-efficacy for their ability to cope with the high-risk situation. Given that an individual has positive outcome expectancies concerning alcohol, this lack of self-efficacy heightens the chance that the individual will engage in drinking. This initial lapse leads to the abstinence violation effect, where individuals question their ability to abstain from alcohol. This process is likely to result in a full relapse to drinking. Hence, Marlatt and Gordon's [33] model explained how outcome expectancies, self-efficacy, and coping interact to predict relapse of addictive behaviours. Although based on solid theory, the application of expectancy theory to describing alcohol use, rather than relapse, is an emerging field of inquiry.

Just as coping, outcome expectancies and self-efficacy are thought to work in concert to determine relapse behaviour [33], they may also work in conjunction to govern the decision to drink and the volume of alcohol consumed once this decision has been made. Individual processes such as beliefs about the outcome of drinking, beliefs in the ability to refuse a drink, and coping strategies can explain much of the individual variation in drinking patterns. More importantly, these three constructs have the potential to explain both social and dependent drinking behaviour, although the relationships between these variables may differ according to drinking patterns.

Expectancy theory suggests a combination of positive outcome expectancies and lowered refusal self-efficacy results in higher alcohol consumption. Yet these cognitive processes have the potential to influence coping strategies, and coping can influence these cognitions. An individual with the belief that alcohol will help relieve tension, and an inability to refuse alcohol, is likely to cope with stress by

drinking. In turn, by drinking to cope with stress, the individual learns to expect alcohol to relieve tension. In the absence of more adaptive coping strategies, the individual may come to exhibit impaired control over drinking. This combination of coping strategies, outcome expectancies, and self-efficacy suggests a high-risk pattern of behaviours and cognitions that may describe the acquisition of a drinking problem.

Given that expectancies and refusal self-efficacy are known to interact in predicting drinking behaviour, it seems logical to suppose that interactions may exist between expectancies and coping, self-efficacy and coping, or that a three-way relationship may exist. For example, those who employ avoidant coping strategies, possess strong positive expectancies, and low self-efficacy may drink more than those who employ active coping strategies, possess weak positive expectancies, and a high self-efficacy for refusing alcohol.

As suggested by reciprocal determinism [3,6], the nature of these relationships may depend on individual circumstances. Thus the way in which outcome expectancies, self-efficacy expectancies, and coping interact may differ according to drinking pattern. By examining the nature of these interactions in social and dependent drinkers a more complete description of determinants of both social and dependent drinking may be obtained.

While this provides a conceptual overview of the relationships between environmental factors, alcohol-related cognitions, coping strategies and drinking behaviour, the bi-directional relationships suggested by reciprocal determinism mean it is impossible to statistically test this fully saturated model. However, while the complete model cannot be tested, it is possible to examine select sections of the model. Specifically, it is possible to determine how expectancies, self-efficacy, and coping strategies may interact to predict alcohol consumption. Further, it is possible to determine how these relationships differ across samples of drinkers, as would be predicted by social cognitive theory.

Some promising research investigating the interactions between expectancies and coping has laid the groundwork for conceptualising interactions between the factors governing alcohol use. In 1988 Cooper, Russell and George [78] included coping, drinking to cope, and alcohol expectancies in a model predicting alcohol consumption. In this study, coping was independently able to predict drinking behaviour in dependent drinkers and this effect was moderated by positive outcome expectancies. A later study reached similar conclusions [68], where an interaction between coping and positive expectancies was predictive of alcohol-related problems. That is, those who held strong positive expectancies and used avoidant coping strategies reported more drinking problems than those who held weak expectancies, for whom no relationship with coping was found. These results were later replicated in a sample of adolescent drinkers [84], and by Cooper, *et al.* [39] who found a similar interaction in predicting drinking to cope in adults and adolescents.

A more recent study, however, reported findings that conflict with those of Cooper *et al.* [39,68,78]. Armeli *et al.* [38] used a diary method to examine the association between stress, coping, expectancies, and drinking behaviour. In this study, coping was not found to predict alcohol consumption

or desire to drink and it was suggested avoidant coping might provide a buffer to stress, lowering the amount of alcohol consumed on stressful days. Furthermore, no interaction was observed between coping and positive expectancies. However, an interaction was noted between negative outcome expectancies and avoidant coping: a positive relationship between avoidant coping and number of drinks was observed for those with strong negative expectancies, while the reverse was found for those with weak negative expectancies.

Evans and Dunn [79] replicated and expanded Cooper *et al.* [68] study by including a measure of self-efficacy. In this study, positive expectancies and self-efficacy independently predicted alcohol consumption. However, contrary to the results reported by Cooper *et al.* [68], no interaction was found between expectancies and coping. Despite including coping, expectancies, and self-efficacy in the study, the interaction between all three constructs was not assessed.

Miller, Westerberg, Harris, and Tonigan [85] predicted relapse using high-risk situations, coping, self-efficacy, positive expectancies and the abstinence violation effect, in a test of Marlatt and Gordon's [33] relapse prevention model. While the overall model did explain a significant portion of the variance in predicting relapse, the authors reported that only coping and the abstinence violation effect were significant independent predictors of relapse six months after participants entered treatment. Inclusion of positive and negative outcome expectancies or self-efficacy did not significantly improve the model. This further highlights the need to include coping in expectancy research that aims to describe drinking behaviour, yet the interactions between these variables were not assessed in Miller *et al.*'s [85] study. These studies provide a promising introduction to the concurrent investigation of the cognitive and behavioural factors that determine drinking behaviour. However, equivocal results and the failure of most studies to simultaneously examine coping, outcome expectancies, and self-efficacy or the interactions between all three constructs limit their explanatory power.

In response to the mixed outcomes in previous research, and the need to simultaneously examine outcome expectancies, self-efficacy, and coping, this laboratory has conducted a series of studies with both dependent and social drinkers [31,86-88]. In all studies we assessed positive and negative outcomes expectancies, drinking refusal self-efficacy across a range of situations, and a variety of cognitive and behavioural coping strategies. Importantly we examined both the two-way and three-way interactions between these variables in differentially predicting the volume and frequency of drinking in both types of samples.

Overall, our results suggest that drinking is a complex behaviour, with differential relationships between the predictor and criterion variables being observed for each type of sample. Coping strategies emerged as a significant predictor of frequency of drinking in the alcohol-dependent group, while drinking refusal self-efficacy was a key predictor in the community group. More interestingly, the interactions between outcome expectancies, self-efficacy, and coping strategies were found to differentially predict frequency and volume of drinking in each type of sample, with a three-way

interaction between all variables emerging in the prediction of volume of alcohol consumed in the community group.

The results of these studies suggest that a tendency to cope with stress by engaging avoidant coping behaviours is related to the decision to drink alcohol, particularly for those dependent on alcohol. Theoretically, this is not surprising. Avoidant coping strategies, by definition do not effectively resolve the source of stress. Consequently, individuals may be more tempted to drink to cope with stress, once their favoured coping strategies fail. The resulting sense of learned helplessness may reinforce a belief in alcohol-dependent individuals that they lack the ability to effectively cope with stressful situations, and reinforce drinking as a method of alleviating these negative feelings.

Another notable finding was that drinking refusal self-efficacy was a key factor in determining both the decision to drink and the volume consumed by community drinkers [31,86]. This supports Bandura's [2] proposition that self-efficacy is a key factor in the self-regulation of behaviour, and his suggestion that self-efficacy expectancies are likely to be more salient than outcome expectancies in determining behaviour. Although outcome expectancies have a role to play in governing drinking behaviour, in the community group, this was moderated by self-efficacy. Thus, a high level of refusal self-efficacy may be the key factor in preventing social drinkers from becoming problem drinkers.

Finally, these studies revealed the complex nature of the interactions between outcome expectancies, self-efficacy, and coping in governing drinking behaviour. In general, it appears that these interactions represent the overarching effects of behavioural coping in alcohol-dependent drinkers and drinking refusal self-efficacy in social drinkers. However, this is a simplification of a complex behaviour, evidenced by the three-way interaction found between all variables in the community sample [31,86]. This not only highlights the need to include behavioural factors, such as coping strategies, into an alcohol expectancy framework, but underscores the importance of examining both cognitions and behaviour when adopting a social cognitive approach to drinking behaviour.

The above studies are empirical in nature, and although adding to our understanding of how cognitive and behavioural factors interact to govern drinking behaviour, they have not yet been incorporated into a sound theoretical framework. In the next section we propose a model that incorporates our understanding of outcome expectancies, self-efficacy, and coping in governing drinking behaviour and specifically articulates a role for the complex interactions between these variables.

A MODEL OF AETIOLOGY AND MAINTENANCE OF DRINKING BEHAVIOUR

Social cognitive theory provides a general framework for understanding drinking behaviour. However, a complete understanding of drinking behaviour would require examination of the interactions between all possible environmental factors, cognitions, and behaviours related to alcohol consumption, and examination of the vast array of drinking behaviour between abstinence and dependence. Further, even if such an undertaking were conducted, each individual would

react to their environment in different ways, resulting in the need to examine these interactions for every individual.

While this would enhance the prevention and treatment of alcohol problems for each individual, this approach is obviously impractical. By examining the more salient variables involved in governing drinking behaviour, social cognitive theory can provide a more parsimonious approach. However, it is important to emphasise that such approaches are generalisations, not descriptions of an individual's behaviour.

The recent studies conducted by this laboratory [31,86,88] were consistent in the finding that coping, specifically behavioural avoidant and emotion-focussed coping, is an integral factor in the decision to drink alcohol in dependent drinkers, while drinking refusal self-efficacy is a key component in limiting drinking behaviour in social drinkers. In each sample, these key factors moderated the effect of alcohol expectancies. In addition, coping strategies moderated the effect of drinking refusal self-efficacy in the alcohol dependent group, while self-efficacy moderated the effect of using alcohol to cope in the community group. While it is not possible to determine a causative direction in these relationships from the studies presented, it is possible to speculate on the mechanisms which govern drinking behaviour in social and dependent drinkers.

In both social and dependent drinkers, environmental factors play a role in governing drinking behaviour. Factors such as a family history of drinking, peer influence and social norms are known to be related to alcohol consumption. However, rather than having a direct effect on drinking behaviour, social cognitive theory stipulates that cognitions mediate this relationship. The observed differences in alcohol-related cognitions and coping in social and clinical drinkers suggests different cognitive and behavioural pathways maintain drinking in these samples.

A high level of self-efficacy for refusing alcohol is the key cognition proposed to mediate environmental effects and drinking behaviour for social drinkers. For social drinkers, a belief in the ability to resist drinking across a number of situations will influence the effect of environmental factors, and will moderate the effects of positive outcome expectancies and avoidant coping strategies. The path maintaining social drinking supports Bandura's [2] assertion that self-efficacy is a salient determinant in human behaviour and that self-efficacy reflects the self-regulatory mechanism by which people exert control over their behaviour. Thus the proposed cognitive and behavioural pathway maintaining social drinking is almost a direct replication of Bandura's original conceptualisation of human behaviour.

However, the path leading to high risk or dependent drinking differs somewhat from Bandura's conceptualisation of social cognitive theory. While Bandura proposed that cognitions mediate the relationship between environmental factors and behaviour, it appears that for dependent drinkers cognitions play only a minor role. Rather, the behavioural coping strategies employed by these drinkers appear to be the key factor which governs drinking behaviour. We propose that cognitions do mediate the relationship between environmental factors and drinking, as Bandura suggested,

but that for dependent drinkers this is an indirect relationship, moderated by avoidant coping strategies.

One particular area which requires clarification is the direction of causation implied in the above pathways. Throughout this discussion it has been implied that avoidant coping will result in high risk drinking while high self-efficacy will result in low-risk drinking behaviour. It is equally likely that the direction of causation is the reverse. That is, those who have an established alcohol problem tend to avoid their problems, while those who drink socially have confidence in their ability to resist drinking. In reality, the true relationship is likely to be bi-directional, with each factor contributing differentially to drinking behaviour in certain situations. This in itself, accords with the concept of reciprocal determinism and social cognitive theory, but does not aid in the understanding of the aetiology and maintenance of problem drinking.

By expanding the social cognitive model, it is possible to speculate on the mechanisms involved in the aetiology and maintenance of dependent drinking. Fig. 1 presents a schematic outline of how outcome expectancies, self-efficacy, and coping may work together to maintain drinking behaviour. The key features of Fig. 1 are the primary role coping plays in the prediction of dependent drinking, and the key role of drinking refusal self-efficacy in predicting community drinking. Yet, rather than a relatively simple model where cognitions mediate the relationship between environmental factors and behaviour, a three-phase process with a continual learning process offers a better description of the factors governing dependent drinking.

The first phase describes the adoption of avoidant coping behaviours. Based on social cognitive theory, it is suggested that environmental factors are mediated by cognitions in determining coping behaviour. These environmental factors could consist of a number of aspects such as family history or an environmental stressor such as a relationship problem. In an individual dependent on alcohol, the cognitions mediating these environmental effects may be negative cognitions regarding the ability to effectively solve the problem causing stress, a low self-esteem, low motivation, or any number of cognitions related to coping. These negative cognitions may lead the individual to adopt avoidant coping behaviours, rather than attempting to actively resolve the source of stress. While this pathway has not been examined in expectancy research to date (and is thus represented by a dotted line), based on Bandura's [1,3,6] notion that cognitions mediate environmental factors to influence behaviour, and the bulk of research supporting this proposition, it seems a viable pathway for the development of coping behaviours. Naturally, future research investigating this pathway would be beneficial to the understanding of how coping behaviours are developed.

The second phase describes how coping, alcohol expectancies, drinking refusal self-efficacy and drinking behaviour are related, and outlines a continuous learning cycle, which reinforces the use of alcohol. Use of avoidant coping behaviours to minimise a stressful situation results in two outcomes, not depicted in Fig. 1. First successful avoidance of the problem reinforces the use of avoidant coping strategies. Second, a failure to address the source of stress may

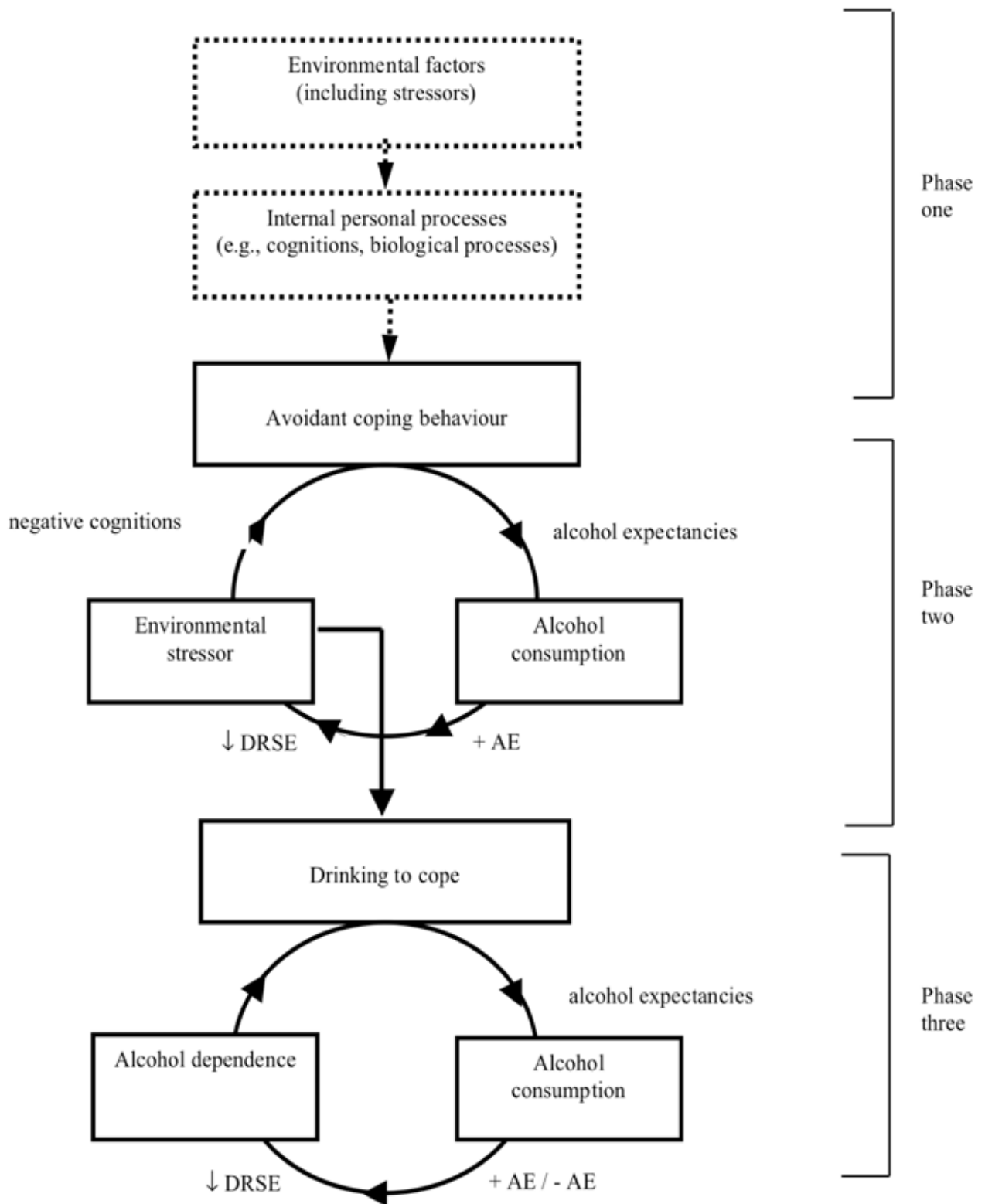


Fig. (1). Dependent drinking is acquired and maintained through a continuous cycle of cognitive and behavioural factors.

Legend: ↓ DRSE: lowered drinking refusal self-efficacy; + AE: positive alcohol expectancies; - AE: negative alcohol expectancies.

Example: A stressful day at work, or fight with a partner, could lead to heightened anxiety, and associated negative thoughts, which may facilitate an avoidant coping style in an effort to avoid the precipitating stressor (Phase 1). Coupled with expectations of the tension-reducing properties of alcohol, this person is more likely to drink, reinforcing these expectancies in the short term. The reinforcing effects of alcohol will lead to decreased self-efficacy for refusing alcohol in similar stressful situations (Phase 2). If this pattern continues, this individual may begin to use alcohol to cope with stress in the absence of more adaptive coping strategies. Continued drinking will elicit both positive and negative alcohol expectancies, which coupled with a continued decline in refusal self-efficacy and a loss of control over drinking will lead to alcohol dependence (Phase 3).

ultimately exacerbate the problem, leading to an increase in stress and other negative outcomes, such as a depressed mood.

The results of our studies indicate that use of avoidant coping behaviours is related to an increased frequency of drinking. This decision to drink may arise if an individual holds a belief in the positive outcomes related to drinking. This belief will mediate the relationship between the negative consequences arising from avoidant coping and drinking behaviour. Which expectancies are operating to influence drinking behaviour will depend on the environmental stressor and the consequences of avoidant coping. For example, if use of avoidant strategies to cope leads to a depressed mood, a belief that alcohol will result in an elevated mood will lead to greater alcohol consumption. Likewise, a belief in the tension-reducing properties of alcohol will lead to greater alcohol consumption when an individual is experiencing stress. The short-term reinforcing properties of alcohol will reinforce the positive outcome expectancies and lead to a lowered self-efficacy for refusing alcohol, when faced with a similar situation. Faced with a novel stressor, or when the original stressor is encountered again, the cycle continues.

Based on the results of our studies, it is suggested that individuals who maintain high drinking refusal self-efficacy at this stage will limit the volume of alcohol they consume, and hence limit the social and psychological consequences of alcohol consumption. However, as self-efficacy for refusing alcohol diminishes, alcohol consumption and the related negative consequences increase. This process may describe the aetiology of alcohol abuse, where an individual continues to drink alcohol despite experiencing negative psychological and social consequences.

In the third phase of the model depicted in Fig. 1, the continuous reinforcement of drinking behaviour established in step two leads to alcohol dependence. With the reinforcement of positive alcohol expectancies, and a diminished drinking refusal self-efficacy, an individual may begin to adopt drinking to cope as their primary coping strategy. A belief that alcohol will help an individual cope with a situation leads to an increased alcohol consumption, and a continued decline in refusal self-efficacy.

Our results suggest negative expectancies may also play a role in this phase. In our 2002 study [31], negative expectancies were observed to independently predict volume of alcohol consumption in dependent drinkers, but did not predict volume or frequency of alcohol consumption in social drinkers. Likewise negative expectancies were found to interact with venting emotion in predicting both volume and frequency of drinking in the dependent sample [88], but interacted only with drinking refusal self-efficacy in the social drinkers [86]. Consequently, the development of negative expectancies may be a key factor in alcohol dependence. As an individual becomes aware they are losing control over their drinking, the expectation of dependence may in turn lead to a lowered self-efficacy for refusing drinking. The resulting sense of helplessness reinforces alcohol consumption as an avoidant coping strategy. In such a way, alcohol problems may develop and be maintained.

In this third phase, dependence and the consequences arising from alcohol dependence, such as the loss of a job,

financial strain, and relationship problems are additional environmental stressors an individual encounters. With an increase in the number of environmental stressors, use of alcohol to cope with stress increases. Thus, use of avoidant coping behaviour leads to an increased frequency of drinking behaviour, as suggested by our findings. Likewise, the decline in drinking refusal self-efficacy, established at phase two, results in dependent drinkers lacking the self-regulatory mechanism social drinkers use to limit the volume of alcohol consumed. At this point alcohol consumption is integral to both the environmental stressors and coping behaviours. This explains why it is often difficult to distinguish the environmental factors, alcohol consumption, alcohol-related cognitions, and drinking to cope in samples dependent on alcohol.

The continuous cycle of environmental stressors, avoidant coping behaviours, alcohol-related cognitions, and drinking behaviour depicted in Fig. 1 is in accordance with Bandura's conception of social cognitive theory, where environmental factors, cognitions, and behaviours influence each other. As such, the model is an extension of earlier expectancy and coping models that have been examined from a social cognitive perspective. Alcohol expectancies and drinking refusal self-efficacy have previously been implicated in the aetiology of alcohol dependence (e.g., [11]), however to date the exact role these variables play in governing drinking behaviour is unclear. Likewise, avoidant coping strategies have been found to predict drinking behaviour, and researchers have suggested that the primary use of avoidant coping is involved in the development of drinking problems (e.g., [70]).

However, the model depicted in Fig. 1 builds on previous expectancy and coping research to provide a more specific conceptualisation of how coping strategies, alcohol outcome expectancies, and drinking refusal self-efficacy may be involved in the aetiology and maintenance of alcohol dependence. Further, this model allows for the same factors to govern drinking behaviour for social drinkers, those who abuse alcohol, and those dependent on alcohol. Although the relationships between these variables differ according to drinking status, the model allows for the conceptualisation of pathways from social to dependent drinking. In addition, different sections of the model may be used to explain social drinking (phase 1 & 2), alcohol abuse (phase 2), or dependent drinkers (phase 3), separately.

Although the model depicted in Fig. 1 focuses on the role of coping, outcome expectancies, and self-efficacy in governing drinking behaviour, the contribution of other factors should not be ignored. Personality variables, family history, peer influences, co-morbid psychological problems, and other psycho-social variables may also play a role in governing drinking, either directly or through their mediating or moderating effect on expectancy constructs.

Similarly, an individual's capacity to engage in cognitive analysis will influence their level of self-efficacy and consequently the amount of alcohol consumed. For example, individuals exhibiting cognitive impairment may not be able to accurately interpret the consequences of their drinking. This will in turn effect their expectations concerning alcohol consumption, their motivation to reduce drinking, and their self-efficacy to do so. Naturally, this has repercussions for cognitive-behaviour-based treatment programs, suggesting they

would be most efficacious with individuals possessing a moderate level of cognitive capacity. This poses the question of how to address alcohol consumption in severely dependent individuals who have developed cognitive impairment as a result of their excessive drinking. However, such an issue is beyond the scope of this discussion.

The model depicted in Fig. 1, while not making specific reference to them, allows for the effects of personality, family history of drinking, peer influences, co-morbid psychological problems, perceived value, opportunity, motivation and capacity to engage in a behaviour, and a host of other correlates of drinking, by incorporating them into the various environmental effects related to drinking, and the internal personal processes that Bandura proposed mediate environment and behaviour. It should also be noted that although our studies examined the interactive effects of outcome expectancies, self-efficacy, and coping it is equally likely that mediated relationships between these factors also govern drinking behaviour. Indeed, although not explicitly assessed in our work, the model depicted in Fig. 1 suggests that the relationship between stressors and drinking is mediated by both internal personal processes and avoidant coping behaviour, and that the relationship between environmental stressors and alcohol use is mediated by drinking to cope. Likewise we have suggested that the relationship between negative outcome expectancies and drinking may be mediated by drinking refusal self-efficacy, such that in problem drinkers, an expectation of dependence may limit self-efficacy for refusing alcohol. Such mediating effects have previously been considered [89-91]; hence, the focus here was to examine the relatively under-researched moderating effects. However it is clear that further research examining both mediating and moderating influences would further clarify how social cognitive constructs are related to drinking behaviour in different groups of drinkers.

As noted previously, parsimonious models of drinking behaviour must, by definition, represent generalisations of human behaviour. While the model depicted in Fig. 1 may serve as a starting point for conceptualising how alcohol-related cognitions and behaviour influence the aetiology and maintenance of drinking behaviour, it is not suggested that this model can describe the drinking behaviour of every individual. Consequently, although such a model may guide research and treatment, it does not replace the need to tailor treatment options to the individual. Specifically, the results of our research have suggested a salient role for avoidant coping strategies, resulting in a model which maybe more applicable to drinkers who are primarily motivated by drinking to cope. Such a focus, while not excluding drinkers who are motivated to drink by other factors (such as social enhancement), limits the applicability to other drinking groups. Further research with a more specific focus on drinking motives may clarify how coping, outcome expectancies, drinking motives, and self-efficacy interact to govern drinking behaviour in a wider range of drinkers. Likewise, the samples for our work came from adult social and dependent drinkers. Further research is required to determine whether similar relationships hold in adolescent drinkers, who arguably have less experience with alcohol and different alcohol expectancies [91,92]. Examination of adolescent samples may expand the model to include factors related to the initia-

tion of drinking behaviour, and experimental alcohol use by young people.

CLINICAL IMPLICATIONS

The debate between abstinence focused treatment and controlled drinking programs is ongoing [93-97], and largely stems from the paradigm adopted by clinicians. Yet, regardless of the approach employed, high relapse rates are a disappointing reality of all treatment programs. Research investigating factors thought to contribute to the aetiology and maintenance of problem drinking has provided the groundwork for more effective treatment programs, and the inclusion of expectancy change, refusal skills training, and coping skills training are integral components of many cognitive-behavioural programs.

Although expectancy change, refusal skills, and coping skills training are already included in many treatment programs for those dependent on alcohol, the results of the studies presented here suggest a more tailored approach to their inclusion. Specifically, coping skills training appears to have a role in preventing the decision to drink, while refusal skills appear to limit the volume of alcohol consumed once the decision to drink has been made. Consequently, coping skills training may be better incorporated in abstinence focused programs, while refusal skills training may make an effective contribution to education concerning low risk drinking behaviour and controlled drinking treatment programs.

These suggestions are supported by several prevention and treatment outcome studies. Moser and Annis [61] reported that the number of coping strategies employed by dependent drinkers predicted the occurrence of relapse episodes. Specifically, the authors reported that an individual who utilised two coping responses had approximately an 80% chance of remaining abstinent, while those who used no coping strategies had approximately an 8% chance of remaining abstinent. Individuals who reported using three or more coping strategies were found to have close to a 100% chance of remaining abstinent in a relapse crisis. Likewise, Davila, Sanchez-Craig, and Wilkinson [98] recently reported that use of coping strategies recommended by the authors significantly influenced abstinence and frequency of drinking in heavy drinkers. These findings lend support to the proposition that coping strategies are integral to governing the decision to drink, and that coping skills training may be a useful tool in abstinence-focussed treatment programs.

Refusal skills training has become an integral component to many primary prevention and rehabilitation programs. In an evaluation of a North American prevention program, Komro, Perry, Williams, Stigler, Farbaksh, and Veblen [99] found refusal self-efficacy to be a significant predictor of alcohol use at a three year follow-up. Similar results were recently reported by Epstein, Griffin, and Botvin [57]. These authors investigated the impact of competence skills (measured as decision making and self-efficacy) on alcohol use in adolescents. Using longitudinal structural equation modelling the authors reported self-efficacy to be a significant predictor of psychological wellness which in turn predicted alcohol consumption at two year follow-up. These findings suggest that not only is self-efficacy a key variable in influencing short-term alcohol use, but that when targeted in a prevention program these effects may be long lasting.

While refusal skills training is often included in rehabilitation programs, and post-treatment self-efficacy is related to treatment outcome (e.g., [50,100]), the relationship between self-efficacy and controlled drinking is rarely examined. Outcome studies for controlled drinking programs are relatively rare and most studies report treatment outcome in terms of abstinence. However the limited research investigating the role of self-efficacy in controlled drinking outcomes does support the proposition that refusal skills training may limit the volume of alcohol consumed. In 1991 Sitharthan and Kavanagh [49] specifically investigated the role of self-efficacy in the success of a controlled drinking program. The controlled drinking program resulted in significant reductions in the daily alcohol consumption of the participants. Participants consumed an average of 11.3 standard drinks per day before treatment and 2.2 standard drinks per day at the six month follow-up. The authors reported that self-efficacy at the end of treatment significantly predicted alcohol consumption over the next six months. Similar results have been observed with a controlled drinking program conducted by correspondence [52].

Although the current studies suggest alcohol expectancies have an indirect relationship to alcohol consumption in community and clinical samples, results of previous studies revealing the effective contribution of expectancy change to treatment programs should not be overlooked. Until further research is conducted investigating the more tailored treatment approaches discussed above, clinicians should continue to address outcome expectancies, coping strategies, and refusal skills in prevention and treatment programs.

DIRECTIONS FOR FUTURE RESEARCH

Although the research to date is promising, understanding of the factors underlying drinking behaviour requires further investigation of the relationships between coping, outcome expectancies, and refusal self-efficacy. Furthermore, the ability of these variables to interact in governing different patterns of drinking behaviour, such as the frequency and volume of alcohol consumption requires investigation. In addition, based on the available evidence, it cannot be assumed that the relationships between factors underlying drinking are the same for social and dependent drinkers. The inclusion of a sample dependent on alcohol and a sample of social drinkers is required in order to examine the differential relationships that may be found for different drinking patterns. As noted above the conceptualisation and measurement of coping has met with considerable scrutiny, and as yet no measure has been developed to assess coping in those dependent on alcohol. Development of a coping measure that is reliable and valid in both social and dependent drinkers would be an invaluable addition to the field and would no doubt inform both theory development, empirical investigation, and treatment outcomes.

Further investigation of the factors underlying drinking behaviour would result in three primary outcomes. First, examining the interactions between cognitive and behavioural determinants of alcohol consumption will allow a more complete test of social cognitive theory and the way in which reciprocal determinism may be applied to drinking

behaviour. Second, by examining these relationships, factors that differentiate social and dependent drinkers may be identified, and a more specific conceptualisation of how social cognitive theory may explain the aetiology and maintenance of drinking behaviour may be obtained. Finally, identification of such factors, and a clearer understanding of the aetiology and maintenance of problem drinking will ultimately lead to more efficacious prevention and treatment programs.

Following Bandura's notion of reciprocal determinism it is expected that such research will reveal that the nature of these interactions will differ for different types of drinkers. For social drinkers, the self-regulatory mechanism of refusal self-efficacy is likely to explain drinking patterns and moderate the effects of outcome expectancies and coping. Dependent drinkers are defined by a lack of control over their drinking and consequently exhibit a lower refusal self-efficacy. This lack of self-efficacy may moderate the effects of outcome expectancies and coping; however, it is also expected that the absence of adaptive coping strategies will be a more salient predictor of drinking patterns in this group than in the community drinkers.

A comprehensive examination of the expectancy-drinking relationship requires clear definition of terms and delineation of similar constructs, such as drinking motives. Likewise, positive and negative expectancies require separate examination. In addition, frequency and volume measures of alcohol consumption are required in order to establish a comprehensive understanding of alcohol use and abuse. Finally, inclusion of subjective valuation of drinking outcomes, and how these valuations interact with expectancies would further our understanding of the cognitive mechanisms underlying drinking behaviour.

SUMMARY

Grounded in social cognitive theory, expectancy theory provides a framework for conceptualising alcohol use and abuse by identifying individual differences in alcohol-related cognitions. However, although expectancy theory has the potential to describe aspects of drinking behaviour, it does not account for the effect of behavioural factors such as individual coping strategies. By including coping in an expectancy framework it is possible to gain a better understanding of drinking behaviour. The interactive effects of outcome expectancies, self-efficacy, and coping were discussed within the framework of reciprocal determinism and the limited research investigating the combined effects of these variables was reviewed. It was proposed that the understanding of drinking behaviour requires investigation of both the independent and combined effects of all three variables.

Including coping strategies in an expectancy framework will foster investigation of how cognitive and behavioural determinants of drinking behaviour interact, allowing a more complete test of social cognitive theory constructs. The conceptual model presented here, based on social cognitive theory, further describes how outcome expectancies, self-efficacy expectancies, and coping strategies work together to differentiate social and problem drinkers. Accordingly, factors may be identified which will lead to more efficacious prevention and treatment of alcohol problems.

Learning Objectives:

- To understand the current literature on alcohol expectancies, self-efficacy and coping and how these variables govern drinking behaviour.
- To encourage the inclusion of coping in expectancy research.
- To acknowledge that coping has historically suffered from a poor theoretical framework, and to suggest a new model by including coping within an expectancy framework. It is hoped that the new model can achieve greater understanding of the factors related to alcohol use, abuse and dependence.

Future Research Questions:

- How do coping, alcohol expectancies and refusal self-efficacy interact to govern different drinking patterns?
- How do we assess coping in a sample dependent on alcohol?
- How can the complex interplay between coping, alcohol expectancies and self-efficacy be used in prevention, early intervention and treatment initiatives?

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