ALCOHOL OUTCOME EXPECTANCIES AND CONSUMPTION : THE MODERATING EFFECT OF SUBJECTIVE EXPECTANCY EVALUATIONS IN YOUNG AND MATURE ADULT SOCIAL DRINKERS.

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THESIS SUMMARY

Alcohol consumption is explained within a social learning theory framework by alcohol motivations. Alcohol outcome expectancies represent one representation of such motivations within which positive alcohol outcome expectancies represent motivation to consume and negative alcohol outcome expectancies represent motivation to restrain.

There has been no shortage of research demonstrating the association between expectancy and consumption.

More recently, and also derived from the social learning theory framework, the role of subjective evaluations of alcohol expectancies has been explored and just as 'expectancy' has its association with consumption, so does 'value'. However, the claim is that the relationship between expectancy and value is not just additive, it is also multiplicative. Although this is well recognised, it had not been properly (in statistical terms) demonstrated until recently (Needham 1996).

However, little conclusions could be made about the relative contribution of the positive and negative multiplicative terms to the association with consumption because the negative and positive components of the questionnaire adopted were developed in quite non-equivalent ways. To be specific: the positive component was the Alcohol Expectancy Questionnaire (Brown and collegues - see review chapter) developed with college students and the negative component was the Negative Alcohol Expectancy

Questionnaire (Jones and collegues - see review chapter) developed with dependent drinkers in treatment.

This thesis takes advantage of the Comprehensive Effects of Alcohol Questionnaire (Fromme et al 1993) in which the positive and negative components were equivalently developed. Thus for the first time proper and relative contributions of the positive and negative expectancy x value multiplicative composites could be assessed.

In students, both the positive and negative multiplicative composites were significant components of the consumption model. In adults, however, it was only the positive term that was significant.

Thus strong evidence that multiplicative composites represent an important feature of models of consumption is provided. Suggestions are offered as to why the negative term was not significant in adults and these relate to the need to develop questionnaires appropriate to subjects' ages and/or experience of the drinking environment.

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To my loving husband for his invaluable encouragement, guidance, and protection.....and in remembrance of my mother for everything.

DECLARATION

I declare that this thesis is my own work carried out under normal terms of supervision.

Tarane - Taghavi Larijani

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CHAPTER ONE

ALCOHOL PROBLEMS

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CHAPTER ONE

The research worker must build his research upon the knowledge accumulated by previous researches, a major goal of the review of the literature is to establish this foundation.

(Borg, 1963, p.326)

ALCOHOL PROBLEMS

This chapter briefly introduces the fact that there are alcohol-related problems in society. It is not meant to be a comprehensive review. It is meant only to illustrate the type of problems that occur.

In many parts of the world today alcohol misuse, problem drinking and alcoholism are large and threatening problems. This was so apparent that in a the fastest developing of Western cultures this century, the United States of America, the manufacture, sale and consumption of alcohol was prohibited for a decade in the hope that the problems that were associated with over consumption would disappear. Prohibition was lifted after some time when it was realised that prohibition had side effects that were as bad as over consumption.

In Africa and Asia rapid changes in the structure of society, and in particular the influences of urbanisation, have meant that old social or religious controls over drinking have broken down at exactly the same moment as economic forces have led to breweries being established within the borders, or imported liquor being aggressively sold for the first time.

In West countries the affluence of the post-war years has bred a consumer society which has generated, amongst so many other demands, a demands for more drink as part of an ever-increasing leisure industry.

Prosperity seems to breed alcoholism as much as poverty, and we are as likely to find the problem among the slums of New York as the ever-expanding shanty towns of South America.

Alcoholism is a great leveller. No matter what the culture, the range of drink-related problems is enormous. It is not just a case of 'alcoholism' presenting neatly at 'the alcoholism clinic', but of head injuries on Saturday night in Glasgow, a car driving off the road somewhere in West Africa, violence at the fiesta in a Mexican village. And these instances are but part of a virtually endless list of ways in which excessive drinking may actually, occasionally or chronically impair social and family functioning, physical health or mental well-being.

There is no simple stereotyped picture of alcoholism which can in any way satisfactorily subsume the extraordinary range of its presentation. Diversity itself is, paradoxically, a leading common feature. And the fact that a person does not need to be dependent on alcohol to exhibit alcohol-related problems makes the diversity even greater.

Epistein (1995) reports that alcohol use and abuse among American youths are sources of widespread concern to the public. An estimated 5 million adolescents, or 3 out of every 10, have problems with alcohol, and about 1 out of every 15 adolescents will eventually become an alcoholic. This is an enormous waste of human resources and an enormous drain on the health and social systems of any country.

According to a recent national survey, 88% of high school seniors reported that they had tried alcohol; more alarmingly 69% of eight graders had tried alcohol.

In analyses reported elsewhere (Welte and Mirand, 1992) characteristics of adult respondents to a large survey (active lifestyle, depression, medical conditions and physical symptoms) failed to show any strong relationship with their drinking: showing that the problem drinker is a very varied animal.

A health-oriented lifestyle had a modest negative relationship with

quantity of alcohol consumed. A very strong relationship, however, existed between current drinking and drinking earlier in life. This underscores the importance of prevention of heavy drinking in the adolescent and young adult and how important it is to discover why people start drinking and why some continue even at an early age in the face of growing problems. Indeed, Rilly (1993) reported that acute alcohol ingestion can affect life expectancy and is directly responsible for 3,500 deaths per-year in France.

Keech (1992) in a study at the Royal Infirmary, Edinburgh, showed that 40% of patients attending the A&E department in the evening had been drinking and that 32% had a blood alcohol concentration exceeding 80 mg / ml.

He continued with other facts:

* One in three drives killed in road accidents is over the legal limit
* 45% of fatal road accidents in young people involve alcohol
* 1400 road accidents deaths a year, including cyclists and pedestrians, are associated with drinking
* Alcohol is a factor in :
  - 61% of serious head injuries
  - 32% of accidents in the home
  - 19% of accidental drowning
  - up to 50% of murders

Keech explained that Drummond (1991) researched the Alcohol-Related Problems and Public Health, and reported that while this debate persists, alcohol continues to exact a considerable burden on society. One recent estimate suggests that up to 200,000 Americans die from causes directly attributable to alcohol annually, more than 30,000 due to hepatic cirrhosis (Harwood et al., 1984) . The financial costs to society are enormous. Mc Donnell and Maynard (1985) have estimated that alcohol-related morbidity and mortality cost in excess of 1.6 billion Pounds per annum in the UK: the equivalent cost of 30,000 new homes

or 160 new hospital. The social costs in terms of human suffering are incalculable, but the families of approximately one in ten of the population will be affected by problems related to drinking, of ten the already most disadvantaged in society.

The SHECC (Scottish Health Education Co-ordinating Committee) review noted that within the UK alcohol intoxication is involved in some 60% of parasuicides, 54% of fire fatalities, 50% of homicides, 42% of hospital admissions for serious head injuries and 35% of fatal road traffic accidents. Indeed, it has been estimate that alcohol causes about 5-10,000 premature deaths annually in Britain. (Crawford, 1985, p.1)

Crawford (1985) researched the Alcohol Drinking Behaviour and Attitudes in three area, and reported that British Regional Variations in Alcohol-related problems officially recorded rates of problems drinking are markedly greater in northern Britain than in southern Britain. Two early reports, both published in the mid-1960s, noted that the Scots were about 4.5 to 6 times more likely to be admitted into a mental hospital with a diagnosis of alcoholism than were the English or Welsh. This north-south gradient which is also evident within Scotland appears to be unrelated to variation in either diagnostic practice or to socio-demographic differences among in patient populations.

More recent and substantial investigations have not only confirmed the existence of these geographical variations for such indicators of alcohol misuse as alcohol-related mortality, crime and alcoholism admissions but have also shown that they have been evident for many years.

Alcohol can also induce negative feelings including increased aggression, and argument. The development of acute and chronic tolerance means that continued drinking may fail to relieve the anxiety and depression it originally dulled, and may exacerbate feeling of depression or worthlessness.

Anderson (1990) wrote that one of the effects of intoxication is loss of judgement. He continued, alcohol is sometimes used to relieve

unpleasant feelings such as anxiety and depression.

Anderson believed that a feeling of low self-steam is universal among people who are drinking to excess. The effect of this, combined with increased anxiety and depression as well as conflict and guilt, undoubtedly contributes to the very high rate of attempted and successful suicide among heavy drinkers.

Alcohol also increases the suicide potential of sedative antidepressant and anxiolytic drugs.

Types of Alcohol Damage

For convenience, it is useful to consider alcohol-related damage under the three headings of social, psychological and physical. In reality, of course, an individual's experience may involve a combination of all three. Heavy drinking may lead to marital difficulties (social damage), which in turn may cause unhappiness (psychological damage). This may be followed by even heavier drinking, harming the liver (physical damage).

Social damage:

The idea of social damage implies failure on the part of an individual to perform adequately in any role expected of him or her, for example in the family or at work. It may also include behaviour which transgresses social roles--crime, for example, or sexual deviance. social damage, of course, depends very much on social norms, which may be different for men and women, for different age groups, for different social classes, and certainly for different countries.

Both intoxication and regular heavy drinking are associated with a wide range of problems involving families and children. Excessive drinking is a frequent cause of marital disharmony and divorce. In one study of 100 battered wives in the UK, 52 of the victims reported that their parents frequently drank heavily. Financial stress will almost inevitably result from heavy consumption, affecting the well-being of the

rest of the family. Children are especially at risk, and the results can be devastating. Neglect is related to both intoxication and regular heavy drinking; the same may be true for child abuse. Heavy drinking in one member of a family seems to impose a greater load of illness on others in that close environment.

Psychological damage:

Psychological damage merges imperceptibly into social and physical damage and there are of course no hard and fast division between these three groups. For example, there is obvious overlap between social difficulties in the family, and psychological mood and the effects of conflict. The same is true of cognitive impairment and damage to the nervous system.

Most people are familiar with acute intoxication, and have experienced it to some degree at one time or another. Slurred speech and impairment of co-ordination, thinking and memory often occur. Ultimately, drowsiness results. Respiratory depression and inhalation of heavy consumption, and whereas a blood-alcohol level of 150 - 200 mg per100 ml may cause an inexperienced drinker to be obviously intoxicated, some regular heavy drinkers may appear superficially "normal" with a blood alcohol level of 500 mg per100 ml.

For someone who is beginning to become aware that his or her drinking is causing harm, or for someone who is well aware of that harm arises due to associated feelings of conflict and guilt. When people feel guilty about their behaviour, they have a tendency to minimise its extent and the harm it is causing, to try to cover it up, to become more secretive about it, and to rationalise it. It is important to appreciate that when this occurs, it is a natural psychological response to the real distress which the patient is feeling. Some of the more extreme forms of behaviour that are occasionally found in association with excessive drinking, such as abnormal jealousy and impulsive risk-taking, may have the same origins.

Quite apart from impairment of judgement during acute intoxication and the effects of persistent drinking on mood and behaviour just discussed, regular heavy drinking may produce more general cognitive impairment. "morning-after" amnesia quite often accompanies very heavy bouts of drinking, but frequent and more lasting periods of amnesia give warning of a serious risk of progressive damage, as well as being alarming for the person who has them.

Anderson(1990) wrote that as many as half of all the superficially normal heavy drinkers in alcohol treatment units manifest a detectable impairment of cognition and memory when subject to formal psychological testing.

Physical damage :

Both acute intoxication and regular heavy drinking can have an adverse effect on physical health. Alcohol can damage nearly every organ and system of the body, and lead to premature death.
In a study of middle-aged, middle-class heavy drinkers in the UK, 29% showed evidence of malnutrition (Anderson, 1990).

There is considerable evidence that even moderate doses of alcohol may be a risk factor for breast cancer in women. In a follow-up study of women attending alcohol treatment units in the UK, mortality from breast cancer was twice the national rate.

The relationship between drinking and road traffic accidents has already been discussed, but alcohol is also a significant cause of other accidents. Excluding traffic accidents, nearly two thirds of men admitted with serious injuries to accident and emergency facilities in the UK have blood-alcohol levels indicative of their having drunk 12 or more units. About one third of home accidents are alcohol-related, and heavy drinkers have a work accident rate three times higher than normal. In the UK, alcohol is the most common single factor in death by drowning; in 1983 drinking was implicated in 25% of such death. Also in the UK, alcohol consumption has been noted to be a factor in over two

fifths of deaths from falls, and in two fifths of deaths from fires.

There is a type of alcohol-related disability (Table1.1).

It is likely that the majority of drinkers will at some stage of their lives experience some problems due to drinking. The type and nature of the problems will vary from individual to individual, and also according to the circumstances in which the alcohol is drunk, for example when working or when driving.

Table1.1. Problems relating to regular heavy drinking

Social problems	Psychological problems	Physical problems
Family problems	Insomnia	Fatty liver
Divorce	Depression	Hepatitis
Homelessness	Anxiety	Cirrhosis
Work difficulties	Attempted suicide	Liver cancer
Unemployment	Suicide	Gastritis
Financial difficulties	Changes in personality	Pancreatitis
Fraud	Amnesia	Cancer of mouth,
Debt	Delirium tremens	larynx,oesophagus
Vagrancy	Withdrawal fits	Cancer of breast
Habitual convictions	Hallucinosis	Cancer of colon
for drunkenness	Dementia	Nutritional
	Gambling	deficiencies
	Misuse of other drugs	Obesity
		Diabetes
		Cardiomyopathy
		Raised blood pressure
		Strokes
		Brain damage
		Neuropathy
		Myopathy
		Sexual dysfunction
		Infertility
		Fetal damage
		Haemopoietic toxicity
		Reactions with other drugs

Alcohol is central nervous system depressant.

The amount required to produce a demonstrable effect varies according to the interrelationship of such variables as the percentage of alcohol in the beverage, the tolerance the individual has developed to the substance, the person's physical and emotional state of health, and the nature of the environment in which the person is drinking. In addition, the amount and type of food in the stomach constitute a major factor that effects the rate of absorption. Hard Liquor consumed by a person unaccustomed to alcohol who is emotionally upset, has not eaten all day, and is in the company of person who are accepting of intoxication is certain to produce a very rapid effect.

Once alcohol is absorbed into the blood-stream, it affects all body tissues, but its immediate effects are caused by its action on the brain. At a level of 0.05% alcohol in the blood, inhibitions are diminished and the individual is likely to say and do things that would be unacceptable if the person were sober (Taylor, 1994).

Interestingly, there is a social norm that, to a point, excuses the behaviour of an individual who has been drinking on the grounds that he or she has been drinking. This cyclical thinking is based on the belief that the behaviour of a person when drunk is not a reflection of the person but rather a manifestation of the alcohol. The reality is that the impulses acted on emanate from the person, and the alcohol merely removes the barriers to their implementation. At a level of 0.10% alcohol in the blood, motor and speech activity is impaired.

For this reason there is a continuing national campaign against driving a motor vehicle when drinking.

Taylor (1994), continued that, Alcohol dependence may take many forms:

* Individuals may be *chronic alcoholics* , which means they drink excessively and may be incapacitated most of the time.

* Other person may be referred to as *periodic* , or *cyclical* , alcoholics, which means that they drink excessively during certain periods of their lives but during other periods may not drink at all.

* A third type of alcoholism is exhibited by individuals who drink large quantities of alcohol daily over a period of years.

At first these persons may not seem to be seriously affected by this over-indulgence. Slowly and insidiously, however, physical, mental, and emotional deterioration occurs. Eventually they may be described as having alcoholic deterioration.

Short-term, immediate treatment of alcohol-dependent individuals is focused on withdrawing them from this substance and assisting them to attain or regain physical health. This is accomplished by symptomatic treatment of the anxiety, tremors, nausea, and diaphoresis that accompany withdrawal.

Seizures and delirium tremens are serious, life-threatening conditions that may occur during detoxification.

Taylor (1994), explain about the relationship between blood alcohol levels and behaviour in the nontolerent drinker. This is set out in Table 1.2 below

Table 1.2

The Relationship between Blood Alcohol Level and Behaviour in the nontolerent drinker

BAL(mg/d)	**BAC**	**Behaviour**
5	1-2 drinks	Changes in mood and behaviour, judgement is impaired.
10	5-6 drinks	Voluntary motor action because clumsy, legal level of intoxication in most states.
20	10-12 drinks	Function of entire motor area of the brain is depressed, causing staggering and ataxia, emotional liability is present.
30	15-18 drinks	Confusion, stupor
40	20-24 drinks	Coma
50	25-30 drinks	Death from respiratory depression

[**BAL**=Blood Alcohol Level] , [**BAC**=Blood Alcohol Accumulation in excess of alcohol metabolised]

The alcohol equivalency in selected beverages is shown in following:

Alcohol Equivalencies:

Wine: 4 ounce equivalent to 12% Alcohol

Beer: 12 ounce equivalent to 4% Alcohol

Hard Liquor: 1 ounce equivalent to 48% Alcohol

Pitts and Phillips (1991) wrote that:

Chronic pharmacodynamic tolerance is described by Ashton (1987), "infrequent drinkers are affected by small amounts of alcohol, while habitual drinkers need large amounts to experience equivalent subjective effects. This chronic tolerance partially explains the neurochemical basis of alcohol dependency". Following regular drinking, dose and frequency have to increase to produce subjective feeling of intoxication. In the average drinker Pitts and Phillips have related blood alcohol levels and its effects and these are shown in Table 13.

Table 1.3

Psychological and Physiological effects in an "average"drinkers_

Blood alcohol concentration (BAC, mg/100ml blood)	Typical psychological/physiological effects
30	. relaxation
	. increased talkativeness
50	. impaired vigilance / concentration
	. mild euphoria
70	. reduced sensory alertness
	. reduced mental / cognitive ability
	. reduced motor co-ordination
100	. feeling of intoxication
	. pronounced decrements in skilled tasks
	. clumsiness, walking affected
150	. staggering with eyes open
	. slurred speech
	. severe mental / psychomotor impairments
200	. nausea / vomiting
	. unresponsive to most stimuli
300	. anaesthesia / slow heavy breathing
400 / 500	. coma / death

Conclusion: It is not difficult to find published evidence that in most cultures where alcohol can be legally made, sold, bought and consumed, alcohol-related problems impact on individuals, families and societies in terms of health, finance and general safety.

Trying to understand why people drink alcohol in the first place and why when in some people alcohol-related problems occur, alcohol consumption is not reduced is not only one of the most taxing problems in society, it could also be one of the most productive in terms of improvement.

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CHAPTER TWO

EXPECTANCY

Alcohol problems and Expectancies

> **Self-consciousness withdrawn into the inmost retreats of its being....Doubled, divided and at variance with itself...**
> **It lives in dread of action and existence.... it is a hollow object which it fills with the feeling of emptiness.**
>
> **[Hegel, 1931]**

This chapter will concentrate upon, firstly, a brief review of the recent theoretical models, with. its focus on the expectancy theory, secondly, attitudes and expectancy towards alcohol, and finally, stages of changes.

Recent Theoretical Models:

The start of this chapter review, the most prominent theoretical models that, relate to alcohol consumption.

The choice of recently developed models was dictated by two criteria: (1) the exposition of a systematic conceptual model aimed at the explication of important aspects of the initiation and maintenance of drinking behaviour that sometimes eventuates in alcohol problems, and (2) a beginning body of empirical support for the model. The five models selected include expectancy, stress response dampening, self-awareness, self-handicapping, and opponent process theory.

Expectancy Theory

The importance of cognitive factors in the initiation and maintenance of drinking behaviours is central to expectancy theory. The construct "expectancy", the history of which is delineated by Goldman, Brown, and Christiansen, "refers to the anticipation of a systematic relationship between events or subjects" in a specific situation. The authors, drawing upon their own research as well as that of other investigators, examine how expectancy theory answers four basic questions: initiation of alcohol use, maintenance of drinking, acceleration of drinking in some individuals, and continuing use of alcohol in these individuals even when its consequences have become physically and behaviourally destructive.

Stress Response Dampening

Quite closely aligned with the tension reduction hypothesis, stress response dampening focuses on alcohol's effects on the individual when stressed. The stressed individual reacts physiologically in several different systems. Blane (1987) wrote that, Sher argues that alcohol dampens this physiologic response, subjectively alleviating stress and thereby reinforcing drinking in other similar stress situations. Viewing stress response dampening theory is an essentially psycho pharmacological approach to alcohol, Sher examines the psycho physiological effects of alcohol, its relation to other drugs, and the possible direct and indirect pharamacologic mechanisms involved. He also assesses the importance of nonpharmacologic cognitive effects (i.e., expectancies) and the role of individual differences in sensitivity to stress response dampening. While acknowledging the importance of the tension reduction hypothesis to the development of stress response dampening theory, he distinguishes the latter as being more molecular and relying on fewer hypothetical constructs; he considers the stress response dampening model as a "psycho biological mini theory" that may be viewed within the

larger context of cognitive-social learning theory.

Self-Awareness

Like the stress-response dampening model, the self-awareness model attempts to understand some of the causes and effects of alcohol use in terms of alcohol's pharmacological action. Unlike stress response dampening, the self-awareness model posits that this action affects cognitive processes, specifically the self-aware state, rather than the physiologic stress response. The model contains four basic propositions:(1) alcohol decreases self-awareness (2) by inhibiting cognitive processes related to encoding information according to its self-relevance. By reducing self-awareness, (3) drinking has affective and behavioural consequences opposite to those associated with increased self-awareness, thus decreasing appropriate behaviours (i.e., behavioural disinhibition) and self-evaluation based on past performance. (4) Alcohol decreases negative evaluation of the self following failure and this is sufficient to induce and sustain drinking.

The self-awareness model is molecular, attempting to explain some causes and effects of drinking. Blane said that, Hull argues that drinking to avoid negative self-evaluation is orthogonal with respect to other alcohol consumption motives such as expectancy and tension reduction, and thus has a unique though circumscribed explanatory value.

Self-Handicapping

Berglas, the originator of the model said that, this nonpharmacological model, with origins in the theories of attribution and impression management, addresses a major gap in our knowledge, that is, the explanation of alcohol abuse among successful individuals. He asserts that self-handicapping involves the use of a tactic that enables these individuals to produce a positive competence image by controlling the attributions drawn

from their behaviour. Consuming alcohol prior to evaluation of performance is one such tactic. If failure occurs under the influence of alcohol, the individual's own competence is not assailed since poor performance is charged to alcohol; with success, the individual's image of competence is enhanced since he or she performed well under handicapping conditions. He explores the implications of this formulation, showing that self-handicappers' successful performance histories are marred by subjective ambiguity as to whether success was due to their personal abilities or to factors external to themselves
(noncontigent reinforcement).

The consequent threat of performance anxiety, often accompanied by an exaggerated competency image, sets the stage for the use of alcohol to self-handicap. As with the stress-response dampening and self-awareness models, self-handicapping may be though of as a model that attempts to understand the causes and effects of one type of abusive drinking in a specifically predisposed individual.

Opponent Process Theory

Opponent process theory is a general theory of acquired motivation developed in the early 1970s and applied to a variety of motivational phenomena, including addictive behaviours. As applied to alcohol abuse, the theory, which is basically a classical conditioning approach, holds that the intake of alcohol has a direct effect on physiologic processes, an effect that is counteracted by a homeostatic rebound mechanism which has physiologic effects opposite to that of alcohol. The formulation differs from other homeostatic theories in that the rebound mechanism overcorrects, leading to a "failure of equilibrium". According to the theory, this rebound mechanism becomes stronger with repetition, diminishing the immediate effect of alcohol such that the individual requires

more alcohol than before to achieve the same effect (i.e., tolerance). Furthermore, this homeostatic process is experienced as a decidedly negative state (i.e., withdrawal) and can be linked to external cues related to drinking. Addiction to alcohol occurs when the person begins to drink to alleviate this conditioned homeostatic process.

Blane(1987) said that, Slipley critically examines evidence for the basic propositions of the theory and considers recent alternative explanations of addiction. Furthermore, he carefully integrates implications of opponent process theory with clinical aspects of alcoholism, including relapse, recovery, and treatment strategies.

The thesis's focus is on the Expectancy Theory.

Expectancy Theory

The approach distinguishes between these relatively stable competencies which underlie the capacity to construct behaviours and social cognitions, and the encoding, *expectations* , goals and values, and self-regulatory system and plans that guide the individual's choice. Collectively such a set of person variables allows one to describe discriminative, adaptive, contextually responsive functioning at the level of specific behaviour from situation to situation.

Goldman, et al. (1987) wrote that, in 1954, Rotter incorporated Lewin's (1951) notion of subjective probability into his definition of expectancy as the "probability held by the individual that a particular reinforcement will occur as a function of a specific behaviour on his (her) part in a specific situation or situation." An individual's internal probability estimates are based both on the actual frequency of occurrence of objective past events and by factors specific to an individual.

Rotter also conceived of expectancies as generalising from other similar behaviour-reinforcement sequences. Empirical studies reported by Rotter demonstrated the generalisation of expectancies along a gradient that could be predicted from "common sense" or cultural knowledge of situational similarities.

Rotter (1981) emphasised that expectancies could increase in stability; that is, as one's expectancies in a given stimulus situation become repetitive, the probability held of a particular situation-behaviour-reinforcement relationship increases toward an asymptote. Hence, it become less likely that an alteration in the real-world contingencies will alter expectancies, and consequently behaviour, in a specific situation. This possibility has important implications for any efforts to alter behaviour by modifying expectancies. With behaviours such as alcohol or drug taking, the importance of altering expectancies is obvious.

The Expectancy Concept

Some researchers believed that the psychological literature is replete with divergent uses of the term "expectancy". Shapiro and Morris (1978) refer to expectancies as "specific attitudes" in their discussion of the genesis of placebo effects. In psychotherapy research, expectancies have been viewed as attitudes formed and modified by previous experience that have an important, non-specific impact on the process and outcome of psychotherapy. In drug studies investigating placebo effects, and in particular, in those studies utilising the balanced placebo design expectancy has been equated with instructional set. That is, when subjects are told that they are to consume alcohol, they are spoken of as having been given an "expectancy". In the social psychological literature, the terms attitudes, beliefs, attributions, and expectancies have often been used interchangeable.

Since there is no clearly agreed upon usage for the term expectancy,

researchers are obligated to specify the particular usage they intend. However, significant commonalties among these divergent uses should be recognised.

The term *expectancy* typically refers to an intervening variable of a cognitive nature. Whether explicit or implied, this cognitive variable is understood to be knowledge (information, encoding, schema, scripts, and so on) about relationships between events or objects in the real world. The term expectancy, rather than attitude or belief, is usually invoked when the author refers to the anticipation of a systematic relationship between events or objects in some upcoming situation. The relationship is understood to be of an if-then variety; *if* a certain event or object is registered *then* a certain event is expected to follow (although the *if* condition may be correlated with, rather than causal of, the *then* event). Expectancies can be inferred to have causal status in that an individual, with his or her own actions, may actually produce a certain consequence upon noting that an *if* condition is fulfilled. Researchers usually intend a close linkage between the cognitive expectancy and antecedent stimuli and consequent behaviours in the real world, although the relationship is too often not clearly specified.

Relationship of Expectancies to Observable Behaviour

Goldman and Brown Christiansen (1987), wrote that Guthrie, acting here as a spokesman for all S-R theories, seems unable to comprehend how having an expectancy can produce movement. An expectancy is merely a hypothetical construct; it is postulated to be an unobservable central event. How can it generate behaviour? Bolles (1972) points out, however, that the hypothesised association (bond) between S and R in classical learning theory, and the "hypothesised expectancy", are both constructs, are both unobservable, and are therefore, from a theoretical view point, indistinguishable. It is likely, of course, that Guethrie and other

associationists included an implicit physiologic component in their and their concept of association. That is, they likely conceived of a complex neural pathway leading from the proximal stimulus to the efferent output that was responsible for movement. In the absence of explicit verification of such a pathway, Bolles correctly points out that neither the concept of association nor the concept of expectancy has a pre-eminent claim to explaining the increasing correlation between a stimulus and a response with increasing experience. Rather than a complex reflex pathway, the cognitive psychologist (Bolles, 1972) likens the nature of the intervening process to map-reading (Tolman) or to "coding, storing, and retrieving information, or making a decision" (Irvin,1971). Thus, while it is clearly appropriate to advance the concept of expectancy as an important explanatory variable, it must never be forgotten that expectancy research is always an implicit or explicit test of the theoretical utility of expectancy as an intervening variable, which cannot be taken for granted in advance.

If one allows for the moment the replacement of the term expectancy with that of attitude (as is often done in the social psychology literature), then the literature is filled with attempts to determine the correspondence between attitudes and behaviour.

The recent work has emphasised situational specificity to improve prediction. that is, the more closely the measures of an attitude correspond to specific features of the situation in which a behaviour will be performed, the better the predictability of the behaviour. Ajzen and Fishbein (1977) add three elements to the specific behaviour to be performed (action) as bearing upon the likelihood of performance: The target toward which the behaviour is directed, the context (situation) in which the behaviour is to be performed, and the time at which the behaviour is to be performed.

In 1977, Bandura offered a categorisation of expectancies into two

types, outcome and efficacy expectancies, also to increase their utility in the prediction of behaviour. He wished to distinguish between expectancies relating particular behaviours to desired outcomes, and an individual's higher-order expectancies that he or she could execute these critical behaviours. The ability to execute particular behaviours was seen by Bandura as limited either by a lack of (social) skills, or performance inhibitions due to fear of failure. As George and Marlatt (1983) have suggested, the response of alcohol consumption may easily become tied to an individual's estimation of their likelihood of being able to execute a desired behaviour so that they come to anticipate a performance inability in the absence of alcohol (Goldman and etal.,1987,186).

Another conceptual advance made in recent years is the prototype concept. In this view, a decision to apply an expectancy to a stimulus situation is made, not by using the myriad of available cues, but instead based upon a few key features which most characterise that stimulus category (Mischel and Peake,1982).

In sum, expectancy concepts are not theoretically deficient in their potential ability to predict overt behaviour relative to any classical learning theory. The addition of the above refinements may actually offer some advantages in terms of ultimate predictive power.

Origins of Expectancies

Tolman and Bolles having elevated expectancy to a central position in the learning process, it may appear redundant to ask how expectancies originate. From their perspective, expectancies are what is learned in any learning situation; when situational cues or a particular organismic response, and a particular environmental outcome, are correlated and repetitive, an expectancy is acquired by the organism. The registration, encoding, and storage of a high correlation between cues and outcomes *is*

the expectancy.

However, in relation to alcohol and other drug use, such a conceptualization de-emphasises important considerations. Alcohol consumption potentially has many intraorganismic effects that may alter the perceptual system and provide interoceptive cues (thus altering the overall stimulus context), and may even alter the motor response (effete) system. Hence, the boundaries between the stimulus-response and the hypothetical (intervening) variable become difficult to establish.

They said that, how should our knowledge of the effect of alcohol and other drugs on membranes, synaptic transmission, receptor sites, and so forth, be included in our understanding of the nature of an intervening variable such as expectancy?

Some of these approaches may overlap general expectancy theories. They are dealt with separately because each highlights an important aspect of the alcohol-expectancy process.

Causal Attributions

Goldman et al. (1987) wrote that Harvey and Weary's view in 1987 was that Concepts under the heading "attribution theory" are closely linked to those of expectancy and the concept of attribution is implicit in the expectancy theories. In one sense, expectancy and attribution may be viewed as reciprocal; that is, when one holds an expectancy one must have previously attributed a causal (inferred from high observed correlations) relationship to the events in question, and when one attributes a relationship, one ends up holding an expectancy.

Attribution theory emphasises that humans do not just passively observe correlations between events, but instead deliberately search for causal relationships. Therefore, the linkage of a consequence to an antecedent event could happen very quickly if circumstances are favourable.

Attribution theory also emphasises the commonsensical theorising of the everyday individual to explain behaviours that they observe. Thus, attribution theory does not just relate observable, but might also relate an individual's implicit theory of behaviour to an observable outcome; for example, a person's "aggressiveness" causes a physical attack.

Goldman continued that, these attributed causes may then determine subsequent responses. For example, one person may hit another because the first person provoked him , because he or she is aggressive in nature, or because the alcohol made him or her do it.

Goldman et al. (1987) quoted from (Heider,1958; Jones and Nisbett,1971; Kelly,1967) that "Attributions may be internal or external. In internal attributions, causes lie within the person; that is, a specified behaviour is considered a consequence of personality, dispositions, preferences, abilities, and so forth. Inferences that a behaviour is due to environmental or situational factor(s) are external attributions. Research indicates that individuals tend to attribute their own actions to situational determinants, whereas the same actions by others are more likely attributed to stable personal dispositions (Jones and Nisbett,1971; Quattrone,1982). Society-at-large and an individual's cultural background may also pull for particular attributions through cultural theories and stereotypes".

Motivation

What is motivation? It is a field of psychological investigation concerned with certain types of phenomena and events.

Cofer and Appley (1964) wrote that Young has stated the matter well in his recently revised and expanded *Motivation and Emotion* (1961), offering at the same time his own definition of the concept:

The concept of motivation is exceedingly broad-so-broad, in fact, that psychologists have attempted to narrow it...(singling) out one aspect or

another of the complex processes of determination. The two most important aspects are the *energetic* aspect and...*regulation and direction*...define the study of motivation broadly as *a search for determinants (all determinants)* of *human and animal activity.*

Young sees motivation more specifically as "...*the process of arousing activity* ". They continued that, Gardner Murphy (1947) considers motivation as the "*General name for the fact that an organism's acts are partly determined by its own nature or internal structure* ". On the other hand, Maier (1949) used the term motivation to "characterise the process by which the expression of behaviour is determined or its future expression is influenced by consequences to which such behaviour leads".

Motivation of Alcoholism

A factor that has an effect on drinking is motivation.

In social psychological literature, the terms attitudes, beliefs, attributions, and expectancies have often been used interchangeably.

Edwards (1982) wrote about the motivation for drinking and that the patient may discover that it is unwise for him to drink in response to mood, for instance, when he is angry, depressed or bored. He does better to drink only when he does not "need" a drink.

There is necessary that at the first explains attitude,

Edwards (1982) described attitude in the following terms:

The behaviour of an individual is organized and stable. To a certain extent the behaviour of an individual is consistent and hence predictable. One of the factors that summarises parts of this consistency is an attitude. An attitude is a tendency toward certain behaviour patterns, which have an affective component, that is, feeling, along with cognitions. From another point of view, an attitude describes a predisposition to become motivated. The object of an attitude may be anything that has the property of existing

for the individual. There is both a direction and a degree of feeling associated with the object of the attitude.

Attitudes may be pleasant or unpleasant in many degrees. They are general motivational states reflecting an organisation of motivated behaviours for an individual.

Attitudes serve the goals of the motivational needs of the individual. In-coming information having to do with an attitude is selected and shaped according to those more basic motivational needs. Thus, it has been found that new information that is congruent with a need satisfaction supports and strengthens a weak attitude. Information coming from varying sources is accepted according to the authority of the source in line with the strength of the personal needs. Because the motivational needs are satisfied by the attitude and the resulting behaviour, new information supporting such attitudes is accepted and it intern supports the attitude. For example, the attitudes of the groups to which the individual belongs may affect his personal attitudes, but he may do some picking and choosing among the beliefs of the group, selecting those that are consistent with his present attitudes and personal motivations.

Edwards (1972) defined, the term motivation as an invented construct. It describes certain aspects of behaviour.

In every day language, motivation implies a hidden cause. "He was motivated to do it" means that there were some special conditions present that forced a particular behaviour, without which the behaviour would not have occurred.

Motivation, then, is identical with those special conditions and their origins.

Fromme et al. (1993) wrote that Social Learning approaches to the treatment and prevention of alcohol abuse depend on an accurate assessment of the cognitive and behavioural factors that influence the use of alcohol.

Recent measurement advances in this area have focused on individuals' beliefs about the reinforcing effects of drinking alcohol. They continued, measures of alcohol outcome expectancies have reliably discriminated heavy from light drinkers and problem from non-problem drinkers.

Attempts to change individuals' outcome expectancies and thereby alter drinking patterns have consequently been incorporated into programmes designed to prevent alcohol-related problems.

Researchers explain about the motivation.

Miller (1985) said that, motivation is often regarded as a client attribute related to maladaptive defence mechanisms, and it is used to explain unfavourable treatment outcome.

Miller quotes from (Appelbaum,1972 and Karoly, 1980) that, a common attribution, especially in the treatment of addictive behaviours, is to client deficits, in particular poor motivation. Lack of proper motivation has been used to explain failure to enter, continue in, comply with, and succeed as a result of treatment since the early days of psychoanalysis. Often this lack of motivation is, intern, attributed to client characteristics: personality traits, resistance, and overuse of defence mechanisms such as denial. Motivation has long been regarded as an important non-specific factor in treatment.

Miller (1985) continued that, emphasis on the role of client motivation has been particularly strong in the treatment of alcoholism. Surveying alcoholism treatment personnel, Sterne and Pittman (1965) found that 75% believed patient motivation to be important to recovery, and 50% viewed it as essential. Indeed motivation is frequently described as a prerequisite and a *sine quinine* for treatment.

Prochaska and DiClemente (1982) explained that, a *motivational intervention,* then, is defined as an operation that increases the probability

of entering, continuing, and complying with an active change strategy. Although it is recognised that paralleled processes operate within self-directed change, the following review focuses on interventions relevant to the context of treatment and helping agents.

Miller wrote that Fox (1976) asserted that "most patients are not motivated to stop drinking.....Most patients refuse to face their alcoholism for many years, using the defence mechanisms of denial, rationalization, regression, and projection".

Alcohol Expectancies

Alcohol expectancies, the beliefs about the outcomes associated with drinking, have been conceptualised as the final common Path way in decisions about alcohol use (Cox and Klinger, 1988).

The construction of a system of drinking beliefs that gives direction to drinking is important to decisions about alcohol use. Such a cognitive system is constructed from an individual's past and current exposure to drinking, which provides drinking-related information that influences beliefs and contributes to knowledge of drinking.

For example, the family and peer experiences of some adolescents will have led them to expect positive benefits from drinking, such as increased relaxation whereas others will have had experiences that make them more a ware of potential negative outcome, such as impaired driving ability. These experiences about the outcomes associated with drinking are hypothesised to influence adolescents' decisions about drinking.

Goldman et al.(1987) explained the Expectancy Concept as following: The psychological literature is replete with divergent uses of the term "expectancy". They said that, Shapiro and Morris (1978) refer to expectancies as "specific attitudes" in their discussion of the genesis of placebo effect. In psychotherapy research, expectancies have been viewed

as attitudes formed and modified by previous experience that have an important, non-specific impact on the process and outcome of psychotherapy.

In drug studies investigating placebo effects, and in particular, in those studies utilising the balanced placebo design (Marlatt and Rohsenow,1980; Ross, Krugman, Lyerly and Clyde,1962), expectancy has been equated with instructional set. That is, when subjects are told that they are to consume alcohol (whether or not alcohol is actually administered), they are spoken of as having been given an "expectancy".

Since there is no clearly agreed usage for the term expectancy, researchers are obligated to specify the particular usage they intend. However, significant commonalties among these divergent users should be recognised.

The term *expectancy* typically refers to an intervening variable of a cognitive nature. Whether explicit or implied, this cognitive variable is understood to be knowledge (information, encoding, schema, scripts, and so on) about relationships between events or objects in the real world. The term expectancy, rather than attitude or belief, is usually invoked when the author refers to the anticipation of a systematic relationship between events or objects in some upcoming situation. The relationship is understood to be of an *if -then* variety; *if* a certain event or object is registered *then* a certain even is expected to follow (although the *if* condition may be correlated with, rather than causal of, the *then* event).

Expectancies can be inferred to have causal status in that an individual, with his or her own actions, may actually produce a certain consequence upon nothing that an *if* condition is fulfilled.

Researchers usually intend a close linkage between the cognitive expectancy and antecedent stimuli and consequent behaviours in the real world, although the relationship is too often not clearly specified.

Goldman et al. (1987) continued their view points about the Development of the Expectancy concept.

They explained that, in "Purposive Behaviour in Animals and Man"(1932), Tolman began the systematic explication of the term expectancy in his expectancy theory.

Tolman (1932) argues that, a full appreciation of human behaviour required concept such as knowledge, thinking, planning, inference, and purpose, as intervening variables between stimuli and responses. However, he remained a behaviourist in that he strongly believed in the linkage of all intervening variables to observable.

Goldman et al. in continued debate pointed to the view of MacCorquodal and Meehl (1954) based upon, further systematised Tolman's expectancy theory by defining expectancy as the learning of a relationship between an initial stimulus (the elicitor), a response, and the expectandum of the response (outcome) in the presence of the elicitor. In the line of thinking, the organism may learn an expectancy linkage without behaving in accord with it. Other factors, including the valence of the consequence, determine whether the expectancy sequence is performed in any specific situation. Within Tolman's framework it is possible for an organism to learn an expectancy without ever performing the behaviour or achieving the intended goal (i.e., vicarious learning).

MacCorquodal and Meehl explained about the Rotter's view that, Rotter (1981) emphasised that expectancies could increase in stability; that is, as one's experiences in a given stimulus situation become repetitive, the probability held of a particular situation-behaviour-reinforcement relationship increases toward an asymptote. Hence, it becomes less likely that an alteration in the real-world contingencies will alter expectancies, and consequently behaviour, in a specific situation.

He continued that, this possibility has important implications for any effects to alter behaviour by modifying expectancies. With behaviours such as alcohol or drugs taking, the importance of altering expectancies is obvious. Alcohol expectancy theory provides a framework for understanding the process by which individual adolescents evaluate the advantages and disadvantages of initiating alcohol use or changing current levels of use. Alcohol expectancies have been associated with differing patterns of alcohol use by adolescents and adults, and with the transition to problem drinking by them. Consistent with both social learning and genetic theories of alcohol use and abuse, adolescents' expectancies have been found to relate parental drinking to high risk status based on family history of alcoholism, and to personality characteristics that predispose individuals to early alcohol use.

In this area, Evans (1995) investigated college students in college campuses.

The prevalence of alcohol use and misuse on college campuses is greater than that observed in the population at large (Rivinus, 1988). Furthermore, many studies have identified college students as a population at risk to experience alcohol-related problems based on the pattern and level of alcohol consumption exhibited. This point is high lighted further by Engs and Hanson (1988) who sampled over 3,000 college students across 56 Universities.

These authors reported that 80% of the students sampled drank, 50% experienced problems related to their drinking and 49% reported driving while intoxicated.

This latter statistic alone is cause for concern, as motor vehicle fatalities are the leading cause of death among young adults; more than half of these deaths are alcohol related (Rivinus,1988).

Why Do People Drink?

Goldman, et al. (1987) Explained about that, what maintains further drinking once drinking has been initiated. It is well known that without some manipulation, animals will not spontaneously consume more than the smallest amounts of alcohol. Combine this observation with anecdotal evidence with which, namely, the reaction of a young child to the first taste of a strong alcoholic beverage (in low alcohol concentration beverage, other olfactory and gustatory cues may mask the alcohol taste, rendering the beverage more palatable). They continued that we must wonder why anyone would continue to drink after their first experience with this drug.

Mac Andrews and Edgerton (1969) wrote that, whether the underlying motivating factors are biological or psychological, alcohol use is, at least in part, an acquired (learned) behaviour. Alcohol is certainly not an immediate need for infant and children, and once alcohol use is begun in adolescence or adulthood, its pattern tends to accommodate to external contingencies in terms of frequency and amount of drinking, and appropriate time and context for drinking. It has long been recognised that individuals within different societies use alcohol in different ways and may show different effects.

The act of alcohol consumption is both a response (putting the glass to your lips and drinking) and a stimulus (taste, the sensations of swallowing, and so on). Once alcohol is absorbed into the blood-stream and begging to impact on neurophysiologic systems, it may also produce interoceptive stimuli (e.g., dizziness) and, as it affects the efferent or motor system, it may result in molecular as well as molar motoric changes (e.g., postural alterations). An individual may also hold expectancies of the relationship between these internal stimuli and responses and external outcomes. At the same time, these internal stimuli and proprioceptive feedback from efferent changes

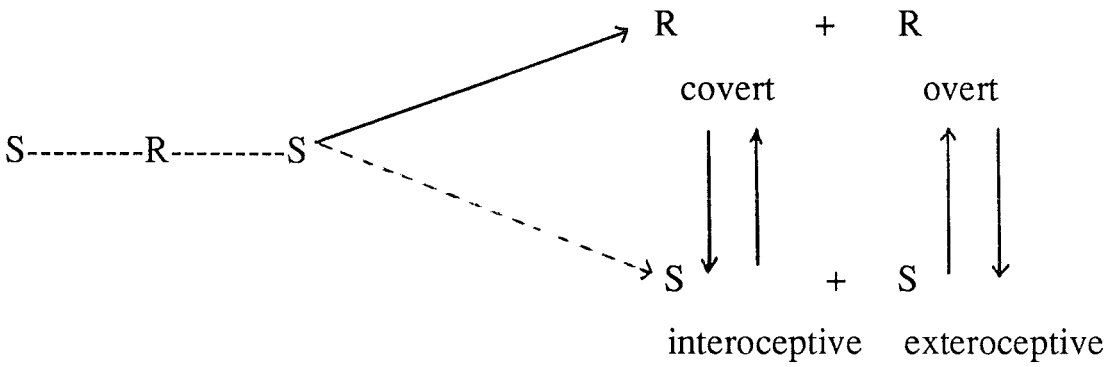
may also serve as sough-after outcomes expected as a consequence of initial alcohol consumption.

Goldman et al. continued that, the most drinking takes place in particular context (a bar, a party, and so on). Alcohol-related expectancies may pertain to these contexts, in addition to those deriving from alcohol consumption itself. For example, appropriate behaviour at a party is not the same as at a faculty meeting; however, since alcohol is often consumed at a party, to the drinker the distinction between alcohol-induced behaviour and party-induced behaviour may get lost. Thereafter, they may come to expect all such behaviour from alcohol consumption.

They wrote that, to help with these concepts, Figure 2.1 offers a simplified schematic representation of the possible expectancy relationships. To the left of the figure they find the environmental stimuli that are common in the usual environmental contexts for drinking, such as a bar, dim lights, people milling about, and so forth. The individual comes to expect that particular environmental outcomes are possible in this stimulus context. Part of this expectancy may be, however, that these environmental consequences are possible only if the alcohol is consumed in that context. In expectancy theorising the context does not push or force the occurrence of alcohol consumption because the notion of an associative bond between the stimuli and responses is not included. However, the individual may perform the responses of alcohol consumption because this response is expected in this context to result in certain sought-after environmental outcomes.

Figure 2.1

The Relationship between Environmental Stimuli and Alcohol Consumption



(Diagram of complex expectancy which includes psychopharmacological effects. S-S and R-S expectancies are overlapped. The Stimulus to the left refers to a drinking context; the Response to the left refers to alcohol consumption; the Stimuli before the fork are gustatory; the Responses to the top of the figure are covert and overt motor activities; the Stimuli to the bottom of the figure are sought-after interoceptive pharmacological stimuli and sought-after environmental outcomes).

The next element in the figure is the S representing the stimuli that derive from the odour of alcohol, alcohol in the mouth, and the swallowing of alcohol. Goldman (1987) explained that, if we trace the lower pathway in the figure, we will then see, following by some time lag, interoceptive stimuli resulting from the effect of alcohol on the nervous system, and exteroceptive stimuli resulting from alterations in the perceptual system. These inter- and exteroceptive stimuli may, of course, change with the rise and fall of the blood alcohol level. The inter- and exteroceptive stimuli may also derive from covert and overt motor responses (depicted as the upper pathway in Figure 2.1), which the individual emits in the context of the prior stimuli connected with a drinking setting and alcohol consumption itself. These two types of stimuli and responses may cycle to augment each other; the motor responses produce stimuli and stimuli serve as a context in which motor responses are carried out (which are then expected to result in desired stimulus outcomes). Because specific alcohol-related expectancies may include both the external situational context and internal cues in a varying ratio, it is possible for some alcohol expectancies to be less situationally bound than others. That is, some expectancies may be primarily based on internal alcohol cues and therefore could readily occur in many contexts. Most expectations, however, have developed in specific situations and include these situational cues as part of the expectancy.

All this model requires is a belief in a relationship between stimuli and outcomes or between behaviours and outcomes. The model operates even if these beliefs are not based on reality. For example, if a person in a typical drinking environment believed they had consumed alcohol, they might produce covert and overt alcohol-related responses (which appear to observers as pharmacological effects). The covert and overt responses

produced in this situation might even result in interoceptive cues which, to the drinker, mimic psychopharmacological effects of alcohol.

How is Drinking Initiated?

Goldstein (1983) wrote that, the research history of the alcohol field is filled with unsuccessful attempts to get animals to drink more than minor amounts of alcohol without force-feeding or extensive genetic manipulation. They continued that, obviously, alcohol has little inherent appeal for animals. As noted earlier, it is also highly unlikely that a child sampling alcohol for the first time will demonstrate any degree of affinity for the taste. Hence, it would appear that some form of external incentive is necessary to induce drinking, particularly past the initial contact with alcohol. To gain some appreciation of the variables that may influence drinking styles, researchers have extensively examined the adolescent years.

The large number of research studies devoted to adolescent drinking have consistently shown that drinking in this age range can be predicted from parental drinking behaviour and/or drinking attitudes (Barnes, 1977; Lassey and Carlson, 1980). Barnes (1981) reported that, equally predictive of adolescent drinking are peer group attitudes and drinking patterns. Goldman (1987) wrote "it is an open question as to which influence, parents or peers, is more potent regarding which drinking phenomena (drinking onset, drinking pattern, problematic drinking). The weight of the evidence seems to favour peer influence over parental influences, especially in older adolescents (Biddle, Bank, and Marlin, 1980; Harfond and Spiegler, 1983)".

Goldman et al. (1987) explained about the other view's researchers about the other relevant variables include ethnic, religious, race, socio-economic status, sex, age and delinquency.

It is important to recognise, however, that most of the variables that correlate with adolescent drinking are not immediately present at the time

that alcohol is actually consumed. Even among those variables that might be present, such as adolescent peer group interaction, the mere observation of a correlation does not by itself offer a mechanism responsible for the behavioural effects of drinking.

Goldman reported that, that expectancies may have a potent role in mediating adolescents' decisions to drink and the behavioural effects of alcohol is already indicated by a number of empirical studies. Schlegel, Crawford, and Sanborn (1977) used an expectancy-value model originated by Fishbein (1967) to predict adolescents' intentions to drink and enjoyed moderate success (correlation of .33 with actual drinking for an entire adolescent sample and .47 for adolescents above the legal age of 18). So, he (Goldman) reported that, Biddle, Bank, and Marlin (1980), found that most parental and peer influences on drinking were indirect and were instead channelled through the adolescents' own expectations, and especially their drinking preference (enjoyment or dislike of drinking). Thus, these existing predictive models seem to favour internal and/or proximal variables (attitudes, values, expectations, normative beliefs, preferences) as predictors of adolescent drinking over distal and/or external variables (parents, peers, religious affiliation, and so on).

How does Drinking Accelerate?

It is important at this point to specifically how expectancy theory might explain individual differences in alcohol use: that is, why do some individuals drink more than others? Research has already indicated a limit to the number of general expectancies (Goldman et al., 1987), as well as individual differences in the strength with which each of the alcohol expectancies is held. These differential strengths are related to alcohol usage and the behavioural consequences of alcohol usage (at least as self-reported). Obviously, from an expectancy viewpoint the key to individual

differences in alcohol use is the development of individualised strengths and patterns of alcohol-related expectancies; once particular patterns of expectancies are in place, differential alcohol consumption patterns would ensue. Of course, a perfect linkage between expectancy patterns and alcohol consumption should not be anticipated. Individuals may hold similar outcome expectancies but find the value of the outcome differentially important. Two individuals may expect that alcohol will help them relax in a particular situation; only one may find relaxation a desirable outcome.

Goldman et al. (1987) suggested that, three patterns of expectancies may be made. First, each individual's own particular life expectancies prior to alcohol use (usually in childhood) may provide differential expectancies. For example, usage of alcohol by family members. Second, once alcohol consumption begins, different expectancies with alcohol may serve to differentially strengthen alcohol expectancies. For example, if a teenage drinks frequently in a party situation, expectations of alcohol as a modifier of social and physical pleasure may be strengthened. And thirdly, individual physiologic differences may interact with pharmacological effects to determine differential expectations. This process may be direct or indirect. Hence, alcohol may actually pharmacological produce an effect that, with repetition, becomes an expectancy. For example, some individuals may achieve greater tension reduction than others from alcohol use and thereby develop different expectancies. An indirect effect on expectancies might derive from a non-specific psychopharmacological action. An individual with greater physiological tolerance for alcohol may drink larger amounts on more occasions and thereby have the opportunity for generation of stronger expectancies. Conversely, with the development of increasing tolerance, a consistent drinker may need ever higher doses to produce the interoceptive cues necessary to trigger expectancies.

Efficacy Expectations

Blane and Leonard (1987) explained about the efficacy expectations. They wrote that, Bandura's social learning theory (1982) assigns central importance to a self-efficacy mechanism in explaining how thought affects action and how behaviour patterns are selected by the individual.

Briefly, *self-efficacy* refers to a perception or judgement of one's capability to execute a particular course of action required to deal effectively with an impending situation.

Efficacy expectations reflect an estimate that an individual has sufficient mastery of the skills required to cope with a specific situation. *Efficacy judgements* are thought to influence the choice of actions, the effort expended, perseverance in a course of action, attributions for success or failure, quality and strength of emotional reactions during anticipation of an event, and performance in the actual situation. Efficacy judgements influence directly preparatory learning skills, and influence one's ability to withstand failures.

Bandura continued that efficacy judgements are based upon, and altered by, four sources of information. Performance accomplishments or previous experience of action in a given situation are thought to exert the most powerful influences upon efficacy beliefs insofar as failure experiences will undermine, and success experiences will boots directly efficacy judgements. Efficacy expectations are also instigated vicariously through modelling influences. Observation of success or failure of others similar to oneself will be reflected in a corresponding increase or decrease in self-efficacy. Bandura believed that social persuasion can also act to influence efficacy judgements. Finally, individuals will rely on their physiologic state in judging their efficacy to perform a set task in a given situation. If someone is highly anxious or fatigued, for example, this will influence an estimate of

their capability to perform adequately.

Blane and Leonard (1987) explained that, efficacy judgements are thought to influence directly a person's coping efforts in threatening or aversive situations. For example, efficacy perceptions have been related to initiation and duration of coping actions in fear and anxiety-related disorders (Biran and Wilson, 1981), or relapse in treated smokers (Condiotte and Lichtenstein,1981). As they attempted to show, efficacy beliefs, by influencing directly coping efforts during aversive stimulation, will bear upon both the development and maintenance of alcohol abuse and dependence. They also will be related directly to predictions about recovery and prevention of relapse.

Attitudes towards Alcohol Use and Misuse

There is a very large and diverse literature concerned with attitudes towards alcohol use and misuse. The literature contains reports upon the development among pre-school children of knowledge about, and attitudes towards, alcohol use; attitude change in primary and secondary school children; general public (adult) attitudes towards drinking, drunkenness and alcoholism; drinking norms; reasons for drinking; expectations about the effects of drinking; alcohol dependent patients' attitudes about alcoholism (e.g., descriptions / evaluations of alcohol education programmes; analyses of attitudes presented in a number of forms of entertainment and advertising) (reported by several researchers in the years 1969-1984).

The Respondent

Crawford (1985) wrote that, attitudes towards alcohol use and misuse are influenced by respondent characteristics. Taken together several studies show that greater tolerance towards drinking and / or drunkenness has been found among those who are male, young, or who are regular or heavier drinkers. Decreased tolerance has typically been found among respondents

who reside in legally dry, largely abstinent or rural areas.

He continued that religion is also important. Greater tolerance has been found among those who had either no religious affiliation or were not Protestant denominations. He continued that, Blaxter et al. (1982) reports that those belonging to Protestant denominations in the Western Isles were more likely to regard heavy drinking as being a problem within their community.

So, Crawford (1985) explained that ethnicity also appears to affect attitudes. Several surveys have been conducted in and around San- Francisco also, Chu (1972) found that males aged 50 and over from a 1971 Chinese community survey were more disapproving of drunkenness that were whites drawn from a 1967 survey. Crawford writes that Knupfer and Room (1967) reported that Jewish males held less extreme views towards drunkenness than did Irish or white Protestant males. Also, Caetano (1984) found that Hispanics (males in particular) were more approving of drunkenness than were either blacks or whites. Moreover, the relative contributions of factors such as age, education and respondent sex to the prediction of alcohol attitudes varied between the ethnic groups. And finally, Kinder (1975) in a review of a number of earlier surveys observed that "demographic variables were not generally consistently related to attitudes".

The Drinker

The results of researches of several researchers show that drinking, especially in bars, or to the point of intoxication, has been shown to be tolerated less for females than for males in many countries. On the other hand, it is believed that women were least affected by alcohol.

Crawford (1985) reported that there are also considerable variations in attitudes towards drinking by young people. Drinking, and drunkenness

especially, by 16 year old was not widely approved in either Scotland (Ritson et al.,1981). But teenage drinking was more acceptable in some countries and some regions of countries (Priyadarsini,1981) than in others. Many New Zealanders believed that underage teenagers should be thought to drink in moderation by their parents (Gregson and Stacy 1980, 1981).

The Beverage

Crawford (1985) explain that young people in Britain believed beer to be most acceptable alcoholic drink for male peers (Aithen, 1978). Darlington and Byrne's report of young people's (16-24 years) group discussions found that cider was regarded as a beginner's drink and that whisky was for older, heavier drinkers. Lager and lime were regarded as a drink for "effeminate men such as 'John Travolta' types" or, when consumed out of a straight glass, by girls. Various adult studies have associated whisky with heavy drinking. Indeed, whisky is traditionally associated with power in Ireland (Bales,1962); regarded as being more harmful than beer in Northern Ireland (Yates, 1984); as a heavy drinker's beverage by Scottish alcohol drink trade workers (Plant, 1979) and Western Islanders (Blaxter et al., 1982).

Time

Attitudes change overtime. Two cross-sectional surveys conducted in 1961 and 1969 in the traditionally conservative and relatively abstinent state of Iowa, found a marked increase in the endorsement of attitudes towards moderate but not excessive drinking (Mulford and Fitzgerald,1983). The changes accompanied an overall increase in consumption levels over that period. Recent increases in consumption levels by Scottish women have been attributed to a general relaxation in attitudes towards drinking in general, and women in particular, rather than to changes in licensing laws (Opcs,1985). Blame (1977) suggested that attitudes and habits change

towards the norms of the new community by successive generations of migrant communities within the U.S.A

(Crawford, 1985)

These attitudinal changes may reflect wider social issues.

Several authors have argued that female attitudes towards drinking are becoming more tolerant as a result of recent general changes in their roles.

Attitudes towards Alcoholism

General Attitudes

Crawford, 1985 explained that, it is clear from a number of surveys conducted in different countries, and from laboratory studies that alcoholics are not well regarded by the general public. They are less popular than many other deviant groups (Cash et al., 1984). They continued the label "alcoholic" is subject to many preoperative connotations, which are magnified when associated with sickness.

stigmatisation also extends to the spouses of alcoholics. Recent reviews have suggested that female heavy drinkers are doubly stigmatised because they violate norms for women and for drinkers. Stafford and Petway (1977), however, report that female alcoholics are no more stigmatised than are males.

He wrote that it is also clear that members of the general public of many countries are able to define 'alcoholism', and that are in broad agreement with clinicians and alcohol researchers (Mulford,1977).

Heavy drinking *per-se* is perceived to be an insufficient cause of alcoholism; rather, alcoholics are also thought to have a compulsion to drink, to do so for personal reason, and to experience serious adverse consequences from their drinking.

There are widespread differences in the perceived cut-off point between problem and non-problem drinking. Crawford (1985) writes that Marcus,1963c reported that respondents from a general population survey generally different only in respect of intensity rather than in direction of attitudes towards alcoholism when compared with staff from the Addiction Research Foundation in Toronto. Moreover, Breeze (1985) found that the highest estimates for a typical drinking session by a male heavy drinker were offered by male, heavy drinkers who were resident in lower status parts of areas with high risk of problem drinking in England. Others have reported considerable differences in the

perceived seriousness of drinking problems within and between countries.

The differences may reflect variation in actual drinking practices between countries. But other factors have been implicated. Researchers found different social manifestations of alcoholism among three distinctive cultural groups in Montreal.

Crawford (1985) reported that Budd et al., 1982 suggested that differences in the perceived magnitude of drinking problems in

Newcastle and Leicester may have been as much to do with the belief in area stereotypes, as in actual drinking practices. So, Blaxter et al. (1982) found that (largely incomes) health care professionals perceived higher levels of alcohol related problems in the Western Isles than did native residents.

Attitudes and Behaviour

Common to much of the literature reviewed thus far is the assumption that alcohol-related attitudes are associated with behaviour. This section is devoted to those studies which have investigated the nature of the relationship. Crawford (1985) wrote that: little attention will be paid to several essentially mechanical exercises which have considered the applicability of traditional attitude scaling techniques (Veevers, 1991),

multiple regressions (Gregson and Stacey, 1981), or cross-lagged panel analysis (Kahle and Berman, 1979) to predicting drinking behaviour. Such theoretical exercises have done little other than reaffirm that attitudes are generally weakly associated with behaviour.

Reasons or Motivations for Drinking

People drink alcohol for a variety of reasons. Theoretical and empirical classifications of these reasons typically result in upwards of two groupings (McCarty, et al.1983). Essentially these different groupings can be more or less formed into three super ordinate categories. Crawford (1985) wrote that these are:

(a) 'social' reasons which refer to social obligations (e.g., 'to be sociable', 'its the polite thing to do', 'the people I know drink') and to celebration (e.g., 'to celebrate a special occasion').

(b) 'psychological effect' or 'escape' reasons which refer to avoidance (e.g., 'to forget worries', 'to reduce anxiety') and to sensation seeking (e.g., 'to feel happy', 'to feel relaxed', 'to gain confidence').

(c) 'intrinsic' reasons which refer to the pleasures derived from alcohol *per se* (e.g., 'to improve appetite', 'to quench thirst', 'to enjoy the flavour').

Though social reasons are believed to denote alcohol's function as a 'social catalyst' and escape reasons to its use as a drug, intrinsic reasons are thought to have neither social nor psychological significance (Cahalan et al., 1969). Taken together the most commonly listed, or most highly rated reasons refer to sociability, celebration, relaxation, creation of pleasant feeling, politeness, friend's drinking habits and to flavour. In addition, Kimes et al. (1969) found that youthful drinkers also typically cite peer pressure, curiosity and the desire to be adults.

Crawford wrote that the recent investigation by several researchers show that reasons for drinking have been associated with family experience,

personality, and mystical experiences but have not been conclusively linked with demographic variables.

He continued that the most frequent reasons for abstaining include religious / moral grounds, concern for health or costs, fear of loss of control, peer / parental pressure, dislike of flavour and lack of desire to drink.

Cahalan et al's (1969) American study found that men were more likely to emphasise health and financial reasons and woman religious / moral reasons or a lack of desire or need for alcohol.

Some studies (Yates et al., 1984) show a clear separation between endorsement of social and escape reasons, with the latter begging relative uncommon or unimportant. Others report an intermingling between both groups. And in the Western Isles of Scotland, escape reasons tend to be of more importance than social reasons.

Escape drinking is regarded as being less normatively controlled and less acceptable than social drinking. The association between escape and heavy drinking can be observed in a number of studies. For example, heavier drinkers are most likely to cite escape reasons; they more often drink for such reasons; and they are particularly likely to rate such reasons as important. Heavy drinkers who are also escape drinkers are more likely to report problems than those who are not. Moreover, dependent drinkers often state that they drink for escape reasons. Heavy drinking females have been shown to be particularly likely to do so for escape reasons.

Expectancies and Attitudes

Leigh (1989) wrote that research suggests that expectancies explain very little variability in drinking beyond that explained by demographics and attitudes towards drinking. In terms of current attitude theory (e.g., Fishbein and Ajzen, (1975), attitudes include both a cognitive component

and an evaluative component: An attitude towards an object is composed of a set of beliefs about the characteristics or effects of the object, and the perception of the "goodness" or "badness" of each of these characteristics. Expectancies, because they reflect beliefs about alcohol's consequences, can then be conceptualised as the cognitive or belief component of attitude. One might then propose that the observed relationship between expectancies and drinking habits is an artefact of an underlying relationship between attitudes and behaviour. Leigh continued that, such a relationship has been demonstrated with attitudes towards drinking. If this is the case, expectancies should be unrelated to drinking habits when attitudes are controlled for. In studies of attitudes and drinking behaviour, McCarty et al. (1984) and Schlegel Crawford, and Sanborn (1977) found that increased correspondence of attitude and behaviour measures strengthened the attitude-behaviour relationship.

Positive and Negative Alcohol-Related Expectancies

In summary the research on the aetiology of expectancies suggests that expectancies of alcohol are:

1- established through social learning initially

2- may change from predominantly negative to predominantly positive during adolescence.

3- present prior to actual experience of drinking.

4- self-perpetuating, that is, expectancy can elicit an effect which is then attributed to alcohol

5- robust, that is, once established they are resistant to change

(McMahon,1993)

He continued that the studies demonstrate that positive alcohol-related expectancies are associated with consumption, that is the higher the

expectancy an individual holds the higher the consumption. They also provide further evidence that these expectancies are mainly acquired through social learning and are refined through direct experience of alcohol.

Brown, Chiristiansen and Goldman (1987) suggest that alcohol-related expectancies are important to our understanding of alcohol consumption decisions. Hence, they hold that the rationale for investigating the content of the expectancies which people hold of alcohol is that these expectancies represent 'reasons for drinking'. Certainly this view would appear to be justified since the results of expectancy studies have consistently shown a positive relationship between expectancy and consumption, that is, higher positive expectancy is associated with higher levels of consumption.

Brown et al. (1980) in their study of expectancies tested the hypothesis that not all subjects would have the same expectancies and that these differences in expectancies would be differentially related to consumption patterns. This hypothesis was confirmed, since they found that particular expectancies were indeed associated with differences in drinking patterns. Specifically, they found that less experience with drinking and limited consumption was associated with more general expectancies of alcohol, that is, Global Positive Changes, whereas more experienced and heavier drinkers had higher expectancies of Sexual Enhancement and Arousal and Aggression. This finding is consistent with the evidence quoted earlier which suggests that while individuals have definable expectancies prior to experiencing alcohol, these expectancies tend to be amorphous and direct experience of alcohol crystallises the expectancies--makes them more

specific. Alternatively, it could also suggest that individuals who approach alcohol with already well formed specific expectancies tend to become heavier drinkers.

They suggested that higher levels of Global Positive Changes were associated with lighter drinking and that heavier and problem drinking was associated with higher expectancies of Sexual enhancement and Arousal and Power. In another study, problem drinking in college students was found to be associated with high expectancies of tension reduction. An alcoholic profile was proposed by Brown, Goldman and Christiansen (1985) who suggested that alcoholic drinking was characterised by high expectancies of Global Positive Changes, Social Assertiveness and Social and Physical Pleasure.

On the other hand, Rohsenow (1983) used a modified version of the Alcohol Expectancy Questionnaire (AEQ) to test the hypothesis that there would be a difference between personal and general expectancies. Results of the study showed significant self / other differences on every scale, that is, that subjects expected others to be more affected, both positively and negatively, by alcohol than themselves. Significant effects were found for both gender and level of drinking.

She also found that negative expectancy showed no relationship with drinker category or behaviour. But, Southwick et al. (1981) found that for all subjects negative expectancies increased with dose. It is important to note at this point that there are two different ways of measuring positive and negative expectancies. One way (as used by Southwick et al., 1981) identifies an expectancy item such as "I would expect to be talkative" and asks for the subjects response to it as a positive or negative item an a single scale of probability. In this way the item can only be 'positive' to the extent that it is not 'negative'. It all items appear on the questionnaire in this either/or mode, then the total positive expectancy score and the total negative expectancy score will correlate (as one gets bigger, the other gets smaller). Regression analyses can not be done on correlated scores,

however and the results would be unanalysable in any Meaningful way. It, through, negative and positive expectancy item are measured separately, this correlational problem is avoided and this is the way expectancy is measured throughout contemporary research.

Christiansen and Goldman (1983) used the AEQ in a study to measure the expectancies of adolescents. They report that there is "a virtual absence of relationship between negative expectancy and drinking style or age".
Leigh (1989) and Mooney et al. (1987) suggested that negative expectancy should represent motivation to not drink. In other words, if people drink if they expect to get 'good effects' then it would appear to be a reasonable assumption that they would not drink if they expected 'bad effects'. This assertion is not merely speculation since some evidence has supported it.
Consistently, the main finding of all studies reviewed is that higher positive alcohol-related expectancy is associated with higher levels of drinking.

McMahon (1993) reported that Leigh (1987) found that abstainers had higher negative expectancies than drinkers. Leigh argues that many current abstainers (previous drinkers as opposed to life-long abstainers) are likely to be reformed alcoholics and problem drinkers and therefore their experiences are likely to have been negative. Also, McMahon explained that evidences from these studies have also strongly supported the view of negative expectancy as a motivator of both the initiation and maintenance of abstinence. These evidences have shown that negative expectancy is important in life-long abstainers remaining abstinent (Leigh 1987), in motivating individuals to seeking help for alcohol problems and entering treatment (Oppenheimer, Sheehan and Taylor 1988;Thom 1987).
Indeed, Ludwig (1985) found that negative expectancy of alcohol was so universally cited as a motivator by his subjects that he suggested that it is extremely likely that it is implicated in all types of recovery.

McMahon and Jones (1992, 1993) argued that although an individual is experiencing alcohol-related problems this is not necessarily translated into negative alcohol-related expectancies. They (1993) suggested that one reason why this may occur is the pre potency of positive expectancy, that is, because positive expectancy is learned first it is difficult to change. Thus, there are two distinct elements to this argument: (1) positive expectancies are in place prior to negative expectancies; (2) once in place positive expectancies are difficult to change. They have suggested that negative alcohol-related expectancy has been neglected and has implicated the absence of an empirically derived instrument for measuring negative expectancy in this neglect. They have argued that negative expectancy should be an important predictor of drinking behaviour and that a valid instrument is required. They have also shown evidence that negative expectancy is an important factor in recovery and have argued that measuring negative expectancy should provide a measure of both level and infrastructure of motivation for recovery from problem drinking.

Stages of Changes

Expectancy theorising offers a number of unique directions for prevention and treatment. Successful intervention depends on accurate targeting of intervention resources. Hence, assessment of expectancies in both adolescents and young adults may identify high-risk individuals without the need for obtaining sensitive personal information. Since, there may be a relationship between alcohol expectancies and subsequent drinking patterns, it might be possible to intervene and head off later problems before they develop.

When negative alcohol expectancies are measured appropriately they form at least as secure associations with measures of consumption as has been demonstrated by mainstream expectancy research for positive alcohol

expectancies and they can be usefully used to represent a component of motivation to restrain consumption or recover in dependent drinkers (Jones and McMahon,1996).

How people intentionally change addictive behaviours with and without treatment is not well understood by behavioural scientists. Prochska and DiClemente's (1992) research on self-initiated and professionally facilitated change of addictive behaviours using the key transtheoretical constructs of stages and processes of change. Modification of addictive behaviours involves progression through five-stages (pre contemplation, contemplation, preparation, action, and maintenance) and individuals typically recycle through these stages several times before termination of the addiction. Multiple studies provide strong support for these stages.

They continued that hundreds of psychotherapy outcome studies have demonstrated that people successfully change with the help of professional treatment (Miller et al., 1980 and Shapiro et al., 1986).

Numerous studies also have demonstrated that many people can modify problem behaviours without the benefit of formal psychotherapy. However, about *how* people change on their own. Similar results are found in the literature on addictive behaviours. Certain treatment methods consistently demonstrate successful outcomes for alcoholism and other addictive behaviours (Miller et al., 1980, 1986). Self-change has been documented to occur with alcohol abuse, smoking, obesity, and opiate use.

Prochaska and DiClemente (1992) reported about the processes of change of behaviour. They showed (1985) the table that presents the 10 processes receiving the most theoretical and empirical support in their work, along with intervention. A common and finite set of change processes has been repeatedly identified across such diverse problem areas

as smoking, psychological distress, and obesity.

Table 2.1

Titles Definitions and Representative interventions of the Processes of Change Proce

Definitions:intervention

Consciousness raising	Increasing information about self and :obeservations,confrontations interpretations, bibliotherapy
Self-re-evaluation	Assessing how one feels and thinks about oneself with respect to a problem: value clarification, imagery, corrective emotional experience
Self-liberation	Choosing and commitment to act or belief in ability to change: decision-making therapy, New Year's resolutions, logo therapy techniques, commitment enhancing techniques
Counter conditioning	Substituting alternatives for problem behaviours: relaxation,desensitization assertion, positive self-statements
Stimulus control	Avoiding or countering stimuli that elicit problem behaviours: restruct-uring one's environment (e.g., removing alcohol or fattening foods) avoiding high risk cues, fading techniques
Reinforcement management	Rewarding one's self or being rewarded by others for making changes: contingency contracts,

Table 2.1 continued

Titles Definitions and Representative interventions of the Processes of Change Proce Definitions:intervention	
Helping relationships	Being open and trusting about problems with someone who cares: therapeutic alliance,social support,self-help groups
Dramatic relief	Experiencing and expressing feelings about one's problems and solutions: psychodrama, grieving losses, role
Environmental re-evaluation	Assessing how one's problem affects physical environment: empty training, documentarie
Social liberation	Increasing alternatives for non problem behaviours available in society: advocating for rights of repressed, empowering, policy intervention

DiClemente et al., (1991) recruited 1466 smokers for a study on quitting. There were two parts to this study, a cross sectional part where the subjects were allocated to a stage of change. Prochaska and DiClemente (1982) suggest that not everyone who attends for treatment is actually wanting to change. Thus, they classify individuals according to stages, that is: pre contemplator (PC), not considering quitting; contemplator (C), thinking about quitting; or preparation for action (PA), set a date to quit. The second part of the study was longitudinal where subjects were followed up to determine a) how many quitting attempts they had made and b) length of abstinence. The results of this study showed that for both follow up measures PA>C>PC. Interestingly this study also incorporated measures of the pros and cons of smoking and a decisional balance measure, which is the arithmetical difference of these two measures (basically these measures are positive and negative expectancy measures). They report that the decisional balance measure was exactly as would be predicted, that is, the decisional balance become more negative with movement through the stages that is, PA < C < PC.

McMahon (1993) explained that, although the pros of smoking decrease significantly as the subjects move through the stages, the more dramatic shift is seen in the cons. He continued that, this would suggest that subjects may retain at least some positive expectancies of smoking but change is more affected by the negative expectancies. Of course the superior predictive utility of negative expectancy demonstrated in this study could be merely an artefact of the items employed in the decisional balance instrument, however, it does suggest that negative expectancy may be at least as important as positive expectancy as a predictor of abstinence.

Taken together these studies represent, at least, tentative support for the assertion that negative expectancy may motivate abstinence. The Bauman studies suggest that negative expectancy may be instrumental in the maintenance of abstinence in recovering alcoholics and ex-problem drinkers and finally the DiClemente et al. (1991) study suggests that negative expectancy is important in the initiation of abstinence. Of course the DiClemente study was carried out with smokers and not drinkers; however, there are no a priori reasons to suggest that this result does not generalise to drinking. Indeed, the Stages of Change model (Prochaska and DiClemente 1985) has been adopted by the alcohol research fraternity for a decade now.

The authors conclude that subjects appear to wait until they are unable to manage their lives before they seek help, hence, they will not seek help until they perceive it to be a problem. They further suggest that there appears to be a combination of "*trigger events* " which promotes a subjective re-evaluation of the meaning of these events preceding help. Prochaska and DiClemente's search for how people intentionally modify addictive behaviours encompassed thousands of research participants attempting to alter, with and without psychotherapy, a myriad of addictive behaviours, including cigarette smoking, alcohol abuse, and obesity. From this and related research, they have discovered robust commonalties in how people modify their behaviour. From their perspective the underlying structure of change is neither technique-oriented nor problem specific. The evidence supports a transtheoretical model entailing (a) a cyclical pattern of movement through specific stages of change, (b) a common set of processes of change, (c) a systematic integration of the stages and processes of change.

This thesis addresses the construct of motivation or expectancy rather than states of change. There is however more to alcohol motivation than alcohol expectancies. The next chapter explains this.

CHAPTER THREE

VALUE

Contents

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VALUE

In recent years, much research in the alcohol field has focused on expectancy as a key concept in psycho social models of drinking behaviour. People are of different attitudes on the effect of alcohol on their behaviour, moods, and emotions. According to Goldman et al. (1987) alcohol outcome expectancies are correlated with drinking behaviour in adolescents and adults. It has also been noted that they have an important role in the initiation and maintenance of drinking.

Long-time thinking about that the subjective evaluation of alcohol expectancies moderates the relationship between expectancies and consumption has never been critically tested in social, alcohol-legal drinkers.

Jones et al. (1997) write that the last 25 years have seen principles based upon observable behaviour and constructs based upon cognitive process, not themselves directly observable, intersect as social learning theory to provide explanations of variability in alcohol consumption (White, Bates and Johnson, 1990). Statistical associations between expectancy assessments and consumption measures have been sought and used by the alcohol research community to test the hypothesis that alcohol expectations relate to (or might even cause) consumption and that

variability in expectations accounts for variability in consumption.

Grube et al. (1995) explained that expectancies and values independently predicted drinking in the additive model. Expectancies were more important as predictors than were values, and negative expectancies were more important than positive expectancies. Significant expectancy-value interactions also were found.

Researches indicate that such beliefs are important predictors of onset, frequency, and quantity of alcohol consumption among children and adolescents (Christiansen and Goldman, 1983) and among adults (Brown, Goldman, and Christiansen, 1985). Furthermore, differences in these beliefs may foreshadow drinking problems and problem drinking. It is important to understand exactly how expectancy values are related to drinking and to identify the theoretical model that best represents this relationship.

Grube et al. continued that studies of alcohol expectancy values have relied on one of three models:

(I) The most commonly applied model specifies that expectancies are important for drinking, but does not include values.

(II) The second model includes evaluative beliefs as well as expectancies and assumes that these two types of beliefs have independent additive effects on behaviour.

(III) Finally, the third model arises from a subjective utility approach to drinking and assumes that expectancies and values are interactive. From this perspective, values are seen to moderate the relationship between expectancies and drinking behaviour.

Some researchers have found that beliefs about positive consequences are more predictive of drinking than are beliefs about negative consequences (Bauman, 1986; Leigh and Stacy, 1993; Stacy et al., 1990)

and other researchers have found just the opposite (Fromme et al., 1993; Grube et al., 1994). Grube's study (1994) has tested the relative contributions of positive and negative beliefs. This study indicated that expectancies regarding the negative consequences of drinking were somewhat more important for adult drinking in the work place than were expectancies regarding positive consequences.

On the basis of previous researches, it was expected that a model containing both expectancies and values would predict drinking better than a model containing only expectancies.

Werner et al.'s study (1993) evaluated a measure of positive and negative expected effects of alcohol and their subjective evaluation. Students' expectancies of positive outcomes and their subjective evaluations of both positive and negative outcomes from drinking, for example, were significantly correlated with drinking and alcohol-related health problems indices.

Heavier-drinking students and those reporting more health problems expected more positive effects on their sociability and sexuality and were less concerned about cognitive and behavioural impairment as a result of drinking. Students with more health problems were less concerned that drinking would lead to risk-taking or aggressive behaviour. Positive and negative outcome expectancies and their subjective evaluations accounted for a significant portion of the variability in drinking and alcohol-related health problems.

According to Jones et al. (1997) cross-sectional studies appear to consistently show that heavier drinkers have higher positive expectancy than do lighter drinkers (Brown, Goldman, and Christiansen, 1985; Leigh and stacy, 1993) and also have higher negative expectancy (McMahon, Jones and O'Donnell, 1994). However, Fromme et al., Grube et al.,

(1995), and Werner et al., (1993) had a contradictory result with young alcohol-illegal drinkers. Also it has been demonstrated that heavier drinkers, drinkers in treatment or those experiencing problems appear to have higher positive expectancies (Brown et al., 1987) and higher negative expectancies (McMahon et al., 1994) than do others. At first sight the finding that in heavy drinking social drinkers, negative expectancy is high and higher still in drinkers coming into treatment, is surprising. However, McMahon et al. explain this as negative expectancies increasing as a result of the increases in drinking (and the increases in negative consequences) until it rises through a criterion and then begins to impact drinking behaviour. In other words, negative expectancy is capable of building up until at some point it begins to have its effect.

Longitudinal studies also show that expectancies can be changed in the short term. Even more encouraging is the view that alcohol expectancy might be the integrating 'biopsychosocial' feel to the 'final common pathway' influencing alcohol decisions - namely **alcohol motivations** (both to drink and restrain, Leigh 1989; McMahon and Jones 1993; McMahon and Jones 1994).

Werner et al. (1993), on the other hand, reported that alcohol consumption by high school and college students has been remarkably stable over the past 15 years (in America) with annual use reaching 90%-92% and daily use near 7%. They continued problems frequently associated with drinking include personal injury, accidents, blackouts, legal difficulties, acquaintance rape, sexually transmitted disease, unplanned pregnancy, and poor academic performance. Almost 30% of college students report loss of hours of normal functioning while recovering from drinking during the preceding week.

Whether beliefs about negative or positive consequences are better

predictors of drinking may also depend on a number of other factors (Grube, Chen and Madden, 1995). Researches believe that age, in particular, may be one important consideration. Drinking among adolescents may be better predicted by beliefs about negative consequences than by beliefs about positive consequences, whereas the opposite pattern may hold for college students and other adults. Such age-related differences could result from a number of processes. For example, adolescents, who have relatively little direct experience with drinking, may tend to overestimate the likelihood and undesirability of negative consequences. Older, more experienced drinkers, might come to recognise that the objective probabilities of many negative drinking consequences are actually quite low and that these consequences are often not as bad as anticipated. Parents, teachers, and other adults generally place more emphasis on the negative aspects of drinking when communicating with adolescents about alcohol. As a result, young people may come to focus more on negative than on positive consequences when making drinking decision. Similarly, many negative consequences of drinking (e.g., getting into trouble with parents or police) may be more salient for young people because they are more likely to happen to them than to adults. Finally, drinking context may be an important consideration, regardless of age. Drinking in situations where alcohol consumption is generally considered to be inappropriate (e.g., in cars, at school, in the work place) may be more controlled by expected negative than by expected positive consequences. Drinking in situations in which this behaviour is acceptable or expected may relate more closely to anticipated positive outcomes.

Grube et al., (1995) wrote that the findings of their study have both theoretical and practical implications. The fact that evaluative beliefs independently predict drinking among adolescents is of theoretical interest

because it increases our understanding of the nature of beliefs about the consequences of drinking and how they relate to drinking behaviour. Similarly, because beliefs about negative consequences of drinking were important, predictor provides additional insight into the decision-making processes that underlie this behaviour among adolescents.

Werner explained about that Bandura's view (1977) that behaviour is a function not only of the perceived likelihood that certain consequences will occur, but also the subjective evaluation of those consequences. Leigh (1987) suggested that decisions about how much one drinks are influenced by the subjective evaluation of alcohol's effects. Previous studies of alcohol outcome expectancies have been criticised for failing to consider individual differences in judgements about the desirability of particular effects of drinking. In fact, there is evidence of considerable variability in these judgements. Effects that are highly valued by one individual may not be by others. Leigh (1987) continued that the evaluation of negative expectancies appears to add significantly to the prediction of quantity measures of drinking above that predicted by outcome expectancies alone.

Marlatt and Rohsenow (1980) have suggested that drinking may give individuals an excuse to engage in otherwise socially proscribed behaviours such as aggression. Increased risk taking has been associated with alcohol use.

Although adolescents may view risk-taking and aggressive behaviours as inherently negative, they may see the opportunity to engage in these behaviours after drinking as a positive effect of alcohol (Werner et al., 1993). Efforts to curtail problem drinking and prevent alcohol-related accidents, trauma, and violence may need to directly address these attitudes.

Werner et al.'s study (1993) highlighted further the important role of alcohol outcome expectancies and their subjective evaluation as

predictors of problem drinking and alcohol-related health problems. Positive and negative outcome expectancies and their subjective evaluations accounted for a significant portion of the variability in drinking patterns and health problems reported by college freshmen. Collins et al., suggested that it may be necessary to use at least a three-component model including expectancies for positive effects, expectancies for negative effects, and strength of beliefs to appreciate fully the alcohol-related belief structure impotent to decisions about drinking.

Tversky and Kahneman (1981) indicated that adolescents drink more frequently only when they believe that there is a reasonably good probability that drinking will lead to desirable outcomes, such as increasing relaxation, fun, or sociability. They drink less frequently and less heavily, when they believe that there is even a small probability that this behaviour will result in undesirable personal outcomes, such as harming health, feeling sick, or getting into trouble.

Students' expectations of the likelihood of positive outcomes and their subjective evaluation of the potential negative outcomes may have an important influence on decisions to drink. In Werner et al.'s study (1993) heavy drinkers and those reporting more adverse health consequences evaluated negative consequences as significantly less problematic than light drinkers. Thus, these potential consequences may have served as less of a deterrent to drinking for heavy drinkers. The adolescents who are less concerned with negative outcomes may interpret

prior experiences differently, may have a different set of priorities or values, may have different developmental and cognitive characteristics, and may be less able to monitor their drinking.

Grube's finding also suggested that alcohol expectancy theory (e.g., Goldman et al., 1987) is incomplete and should be extended to include a

consideration of the evaluative component of these beliefs about negative consequences. From a practical standpoint, the results indicated how predictions of adolescent drinking behaviour can be improved, thus allowing a better specification of those young people who may be most at risk for drinking and drinking-related problems (Christiansen et al., 1985). In addition, they suggested that attempts to delay or reduce adolescent drinking by addressing beliefs about its consequences should focus on values as well as on expectancies, and on beliefs about negative as well as positive consequences.

Grube et al. (1995) and Jones and McMahon (1996b) have appropriately evaluated the moderating role of subjective evaluations on the relationship between expectancy and consumption. Both studies have adopted the critical procedures advocated by Baron and Kenny (1985) and Evens (1991) who, within the framework of hierarchical regression analysis, point to the need to assess the additional and unique contribution made by multiplicative composites to the explained consumption variance when added to a model already containing their components entered as sole variables. Grube et al. (1995) report a significant incremental contribution (2.3%, from 41.8% to 44.1%) by the multiplicative composites. However, both the generalizability and efficacy of this outcome are limited by a number of difficulties.

In particular, the expectancy assessment instrument used by Grube et al. (1995) comprised a combined total of only 11 positive and negative items and unless demonstrated to the contrary by the result of compacting through factor analytical procedures, is unlikely to be representative of the range of expectancies typically found and assessed in the alcohol expectancy domain. The incremental contribution made by the multiplicative composite to the consumption variance explained was very small (2.3%).

Grube et al. continued that the analyses also showed that beliefs about negative consequences were slightly more predictive of drinking among these adolescents than were beliefs about positive consequences. This findings are important because alcohol expectancy theory (e.g., Goldman, 1987) and many studies of alcohol expectancies and values have neglected to include beliefs about negative consequences. Among studies that have considered both positive and negative beliefs, some have found that beliefs about negative consequences are less important than beliefs about positive consequences (Bauman, 1986; Leigh and Stacy, 1993; Stacy et al., 1990).

Adolescents may be more influenced by anticipated immediate consequences of their behaviour than by anticipated future consequences (Evans, 1987; Leigh, 1989).

Researches showed that as they mature, children develop increasingly positive expectations regarding the effects of alcohol. By adolescence, expectations of alcohol use include the reduction of physical tension, diversion from worry, increased interpersonal power, transformation of experiences, enhanced pleasure, and modification of social-emotional behaviour. Goldman et al. (1987) suggests that individuals' expectations regarding the potential outcomes associated with drinking alcohol are influential in the initiation and maintenance of drinking.

Alcohol outcome expectancies have been conceptualised as the final common pathway in decisions about alcohol use. Werner et al. (1993) wrote that previous studies support the distinction between anticipated positive and negative consequences of drinking as predictors of different aspects of alcohol use. Expectancies regarding positive consequences (e.g., increased sociability) may be important determinants of the decision to being drinking, whereas expectancies regarding negative consequences (e.g., cognitive impairment) may be important determinants of the amount

one drinks and decisions about stopping a drinking episode. Thus, assessment of risk for problematic alcohol use and related health problems might be enhanced by measuring both positive and negative expectancies associated with alcohol use.

Werner et al. (1993) wrote that research has shown that drinking alcohol results in a variety of emotional, physical, and behavioural changes. While the specific outcomes expected by an individual or group may vary, the basic concept that expectations and their subjective evaluation correlate with drinking remains. For example, their study found no gender differences in the role of outcome expectations or evaluations in predicting drinking habits or associated health problems. They continued that students who reported less drinking and fewer adverse health consequences may better monitor their drinking because of concerns about potential cognitive and behavioural problems results from drinking. Prevention and intervention efforts might focus on improving adolescents' ability to appraise potential negative outcomes of drinking and to self-monitor their drinking through an enhanced awareness and concern for the behavioural effects of alcohol.

The result of Grube et al.'s study (1995) indicated that evaluative beliefs make a statistically significant and substantively important contribution to the prediction of drinking behaviours and beyond expectancy beliefs. However, although evaluative beliefs were important, they were somewhat less closely associated with drinking than were expectancies. The effects for negative expectancies, in particular, appear to be greater than those for negative values. Nonetheless, evaluations accounted for a total of 13% of the variance in adolescent drinking, and uniquely accounted for 5% of the variance. These results strongly suggest that studies investigating the effects of beliefs about the consequences of

drinking on adolescent alcohol use should include evaluations of these consequences, as well as judgements about their likelihood. The addition of expectancy-value interactions further improved the prediction of drinking. Solving the equations containing the interaction terms showed that drinking was highest when positive consequences were believed to be very likely and very desirable. Drinking was lowest when negative consequences were believed to be very likely and very undesirable.

The relationship between the perceived likelihood of positive consequences and drinking was strongest when the consequences were considered to be highly desirable. Similarly, the relationship between negative expectancies and drinking was strongest when the consequences are considered to be less undesirable.

Grube (1995) reported that another way of understanding these interactions is to view them as indicating that the strength of the relationship between expectancies and drinking is conditional upon evaluation of the consequences (e.g., Mardsen, 1981). It can be seen that the slope of the regression line for positive expectancies is slightly negative when evaluation is relatively unfavourable, but becomes positive and increasingly steep as the consequences are evaluated more favourably. The slope of the regression line for negative expectancies becomes steeper and more negative as the consequences are evaluated less unfavourably.

Grube's result of study (1995) showed that positive expectancies and values were somewhat more closely related to drinking when the consequences were believed to be relatively likely or were relatively favourably evaluated. They were less closely associated with drinking when positive consequences were believed to be unlikely or were less favourably evaluated. Conversely, negative expectancies had slightly larger effects when the consequences were believed to be relatively unlikely, and negative

values had larger effects when the consequences were unfavourably evaluated.

Jones et al., (1997) explained that consistent with the view that the principal finding of the Grube et al.'s study (1995) might represent a 'sample-size forced result' of doubtful psychological significance, Jones and McMahon (1996b), in the only other study using the critical hierarchical analytical procedures, found no support for an association between multiplicative composites and consumption. However, although, their assessment instruments were much more widely representative of both positive and negative expectancies (AEQ, Brown et al., 1987 and NAEQ, Jones and McMahon, 1994), respectively and in this respect represent an improvement on the Grube et al.'s study (1995), their consumption measure of number of days post-treatment abstinence survivorship is as problematic as that employed by Grube et al. (1995), but for different reasons.

Consequently, although for the first time adopting the appropriate critical analytical procedures, neither the Grube et al.'s (1995) nor the Jones and McMahon's study (1996b) permit resolution of the problem of multiplicative composites contributing to explaining consumption variance. There was another problem with these studies. It one of the goals was to test the relative contributions of positive and negative terms (as well as test the status of multiplicative composites) then (i) the fact that it was not possible to assess whether Grub et al.'s questionnaire was comprised of equivalently - developed positive and negative parts and (ii) in the Jones and McMahon study the positive (AEQ) and negative (NAEQ) were defined not equivalently - developed, meant that this goal could never be delivered. This criticism could also be applied to Needham (1996) and Jones, Needham (1997) who also used the AEQ for positive expectancy and the

NAEQ for negative. In other words, these studies also used an in appropriately developed questionnaire.

What is required is for the Needham (1996) and Jones, Needham and McMahon (1997) studies to be replicated with a questionnaire that has equivalently-developed Positive and Negative components. In other words, a questionnaire is needed in which both the negative and positive components are developed from the same sort of sample. For example both from social drinkers or both from problem drinkers. Since in this thesis the concern is social drinkers, a questionnaire is needed that has a negative and positive component developed with social drinkers. This is an improvement over the Needham's studies in which the positive and negative components were developed differently (one with social drinkers, one with problem drinkers). Fromme et al. (1993) have developed such a questionnaire. There is added benefit in that the questionnaire measures not just expectancy but the subjective evaluations of expectancy, too.

Summary

To sum up, the assessment of both positive and negative expectations and their subjective evaluation may enhance the prediction of drinking behaviour and associated health problems. By addressing these issues, the clinician may be better able to monitor people's affective appraisal of alcohol and facilitate behaviour change of critical interest, though, in the multiplicative composite and the extent to which it forms a significant component of a model that predicts drinking behaviour.

The following two studies were designed to achieve this with adults from general population of the city of Glasgow and young adults (alcohol-legal students at Glasgow University), but with a questionnaire (Fromme et

al. 1993, The Comprehensive Effects of Alcohol Questionnaire) that had equivalently - developed positive and negative components. This has not been done before.

CHAPTER FOUR

EXPERIMENT ONE : ALCOHOL EXPECTANCIES AND THEIR SUBJECTIVE EVALUATIONS AND THE ASSOCIATION WITH ALCOHOL CONSUMPTION IN STUDENTS (YOUNG ADULTS).

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CHAPTER FOUR

EXPERIMENT 1: ALCOHOL EXPECTANCIES AND THEIR SUBJECTIVE EVALUATIONS AND THE ASSOCIATION WITH ALCOHOL CONSUMPTION IN STUDENTS (YOUNG ADULTS)

Experiment 1

In the preceding chapters was discussed drinking problems and alcohol Expectancies and Values. In particular, has been discussed, the role of alcohol expectancies (both positive and negative) in defining the level of alcohol consumption. However, as was also discussed, any model of alcohol use would be incomplete without containing some measure of the evaluation of these expectancies in each individual. It should be expected that incorporating a measure of subjective evaluation of alcohol expectancies into a regression model for alcohol consumption should improve the association.

In this chapter the role of subjective evaluations is explored with young adults at a university in the city of Glasgow UK. More specifically, the experiment in this chapter is designed to examine the moderating effect of the subjective evaluation of alcohol expectancy on the relationship between expectancy and consumption in student users. For the first time this has been done with a questionnaire that has equivalently - developed positive and negative components.

METHOD

Subjects

All subjects were recruited from psychology courses and labolatory classes at University of Glasgow.

Subjects consisted 183 students (age :17-22 years, mean=19.07 years, Sd=1.49). However, in nineteen cases the information given was incomplete and had to be discarded. The final sample consisted of 76 males (41.53%) and 107 females (58.47%). For feather descriptive details in appendix B.

They were an opportunistic sample drawn from first and second year psychology laboratory classes. None of the subjects were aware of the theoretical content of the experiment. 5.46% of subjects were Asian, 1.63% black, and 92.9% were white.

Subjects for this study were volunteers who were approached in a computer laboratory. They were given a questionnaire in self-complete format and completed the details in individually session, with the researcher remaining present at all times to settle any ambiguities if and when they arouse.

They employing identical questionnaire and completion took an average of 30 minutes.

Questionnaires

A brief sociodemographic / drinking questionnaire collected details on age, sex and ethnicity.

Alcohol consumption

Students were asked to indicate on how many occasions they drank alcohol as follows.

The **frequency** of drinking alcoholic beverages was measured using a nine-point scale with response categories consisting of: 9 (three or more times a day), 8 (two times a day), 7 (once a day), 6 (nearly every day), 5 (three or four times a week), 4 (once or twice a week), 3 (two or three times a month), 2 (about once a month), 1 (less than once a month but at least once a year), 0 (less than once a year *or* I have not had any alcoholic beverages during the past one month). This method was adopted to make possible comparisons with Fromme et al (1993) who used the same questionnaire with US college students and devised this scale for measuring consumption frequency. To make the method more understandable, Fromme's scale was inverted because she use 0 for a frequency of three or more times per day and 9 for never. In this thesis, the scale was inverted or swapped end-to-end. The values described above are for the inverted or swapped scale.

The method Fromme et al used for assessing quantity of alcohol drunk per session was also adopted for this same reasons of comparison.

Per drinking session **quantity** was assessed on a 0 to 6 scale but not using the methods adopted by Jones and McMahon in their series of publications. The method used by Fromme et al (1993) was used since they argue it captures the drinking patterns better than the simple linear scale used by most others. The quantity scores were obtained as follows by having subjects answer the questionnaire questions:

In answering the question: "When you drank, how often did you have as many as 5 or 6 drinks?" If the subjects chose "nearly every time", they scored 6. If they chose "more than half the time", scored 5, Likewise, when asked:

"When you drank, how often did you have 3 or 4 drinks?" If they chose "nearly every time" they scored 4. If they chose "more than half the time", they scored 3. And finally, in responding to the following question "When you drank, how often did you have 1 or 2 drinks?" If they chose "nearly every time", they scored 2 and if they chose "more than half time", they scored 1. If they chose "never = 0", they scored 0.

Weekly quantities were calculated by multiplying the frequency score by the session quantity score following directly the method of Fromme et al 1993. This table shows in appendix B (Table 5).

Alcohol expectancies and subjective evaluations

Comprehensive Effects of Alcohol Questionnaire (CEOA) assesses discrete expectancies about alcohol's effects on physiological, psychological, and behavioural outcomes (Fromme et al., 1993). This questionnaire determines both positive and negative expected effects of alcohol, as well as the subjective evaluation of those effects.

To assess their expectancies, respondents endorse each item on a 4-point Likert scale ranging from "disagree" (1) to "agree" (4) based on their expectation of the likelihood of that outcome if they had been drinking alcohol. Examples of positive outcome expectancy items include "It would be easier to talk with people"; "I would be friendly"; "I would feel calm"; "I would feel powerful"; "I would feel sexy". Examples of negative outcome expectancy items include "I would have difficulty thinking"; "I would be clumsy"; "I would take risks"; "I would feel guilty".

For each expectancy item respondents also indicate their attitudinal evaluation of that particular outcome on a 5-point Likert scale ranging from "bad" (1) to "good" (5). Expectancies are divided into four subscales of positive outcome

(sociability, tension reduction, liquid courage, and sexuality) and three subscales of negative outcomes (cognitive and behavioural impairment, risk and aggression, and self-perception). However, in this project, total expectancy scores not subscale expectancy scores were used throughout because the number of subjects needed for subscale analyses (especially with multiplicative composites) would be prohibitively high.

Total scores for expected outcomes and subjective evaluations are determined by summing responses for each subscale, which are then summed to yield four cumulative scores for each subject : positive expectancies, positive expectancy evaluations, and negative expectancies and negative expectancy evaluations. Multiplicative composites were calculated (for each subject and each item) by multiplying the expectancy assessment by the subjective evaluation assessment and then (for each subject) summing the composite for each item to give a subject total.

Strategy of analysis :

In this research three measures of consumption are use as dependent variables in three different analyses: weekly consumption (QF), quantity consumed per session (Q), and frequency (F). These measures are described in the section above.

Vogel-Sprott (1983), has shown that frequency and quantity measures are in fact independent, and because of this, they are likely to have different causal influences. Therefore a separate analysis for each of them is important. It also suggests that they can be properly combined in a multiplicative composite that might have unique properties.

According to a wide range of alcohol research, for example Brown (1985a) and McMahon et al. (1994), background variables (gender and age) because of their proven association with all measures of alcohol consumption should be

entered first into regression models. Entering previously proven as important variables first into regression models and then entering the variables of recent interest is the principal strategy used throughout these analyses.

In the following section there are described hierarchical regressions of the background variables (i) gender and age, then (ii) expectancy, value, and then (iii) the multiplicative composites - all on three measures of consumption.

Each subsection includes analyses for each consumption measure (QF, Q, F).

For all the analyses made in this research, the package Statistica / Mac (Statsoft 1993) has been employed in which the multiple regression option facilitates very easy entry of any pre-defined hierarchy of variables and provides regression statistics at each stage. Using this strategy, the extra variance explained by each unique entry can be established and documented.

RESULTS

The following sections describe hierarchical regression analysis of Expectancy, Value, and Multiplicative Composites on Quantity Consumed per session in the week (Q), and Frequency of Drinking Sessions in the week (F) and quantity consumed per week (QF). Throughout the regression analysis, reference can be made to the Correlation Matrix in Appendix C (Table 1).

Frequency of drinking (F).

The result of the hierarchical regression analyses with dependent variable Frequency was as follows (refer to Table 4.1) :

1. Background variables (gender, G and age, A) entered together and alone :

The model containing these variables alone is not reliable ($P< 0.41$) and accounts for 0% of the variance. The interpretation of the beta weight for gender and age does not show that these variables are reliable either.

2.(i) Background variables and expectancy (G+A+expectancy, E).

When positive and negative expectancy are added together to the model containing gender and age, there is a statistically significant (P<0.0000) increase in variance explained of 8.87% (0% to 8.87%). The reliable components of the model are positive expectancy (beta weight = 0.184, P<0.000) and negative expectancy (beta weight = -0.371, P<0.000). Gender and age remain unreliable although a more valid indication of

Table 4.1 : Seven multiple regression models using total negative (N) and positive (P) expectancy (E), value (V) and the multiplicative composites (EV) in the **Students** group. **Dependent Variable :** Usual Frequency

Model	P	% variance explained	% increment	P-level of increment	Usual - F Standardized beta weights and reliablilities							
					G	A	NE	PE	NV	PV	NEV	PEV
1.G+A	0.41	0.00	------	-----	ns	ns	----	----	----	----	----	----
2.GA+E	0.000	8.87	8.87	0.0000	ns	ns	-0.371	0.184	----	----	----	----
3.GA+V	0.176	1.3	1.3	0.1	ns	ns	----	----	ns	ns	----	----
4.GA+EV	0.117	1.87	1.87	0.01	ns	ns	----	----	----	----	ns	0.191
5.GA+E+V	0.001	8.32	0.55	0.1	ns	ns	-0.38	ns	ns	ns	----	----
6.GA+V+E	0.001	8.32	7.02	0.000	ns	ns	-0.38	ns	ns	ns	----	----
7.GA+V+E+EV	0.0000	20.13	11.81	0.000							0.149	0.307

Note : Beta weight are not supplied for the variables 'G', 'A', 'NE', 'PE', 'NV', and 'PV' in models '7' because they become statistically uninterpretable after addition of the multiplicative composites (there is used Partial Correlations method).

their explanatory use is given at their first point of entry (i.e. in model 1, above).

The results show that the more positive expectancy is held, the more individuals drink. For negative expectancy, the more individuals drink the less negative expectancy they hold.

(ii) Background variables and value (G+A+value, V).

When positive and negative values are added to the model containing gender and age there is not a statistically significant ($P<0.1$) increase in variance explained -1.3% ($P<0.1$) (0% to 1.3%). All of the components of the model are non significant too age, gender, negative value, and positive value.

(iii) Background variables and the multiplicative composites [G+A+ Expectancy x value (EV)].

When the positive and negative multiplicative composites are added to the gender and age model there is a statistically significant ($P<0.01$) increase in variance explained of 1.87% (0% to 1.87%). The reliable component of the model is positive multiplicative composite (beta weight = 0.191, $P<0.01$), the gender, age and negative multiplicative composite are not statistically significant. Assessing the multiplicative composite at this stage is, though, inappropriate (Evans 1991). Although others (e.g., Leigh 1985) have carried out this inappropriate procedure.

3.(i) The additive model (G+A+E+V).

The model including gender, age, expectancy and value accounts for 8.32% of the variance in the weekly consumption. When value is added to the GA+E model the decrease in variance explained is small (0.55%, $P<0.1$), there is a

statistically significant (P<0.00) decrease of 0.55% when value is added to the GA+E model. The reliable component of the additive model is negative expectancy (beta weight = -0.38, P<0.001). It decreases as individuals drink more.

However, the unreliable components of the additive model are gender, age, positive expectancy, negative value and positive value.

(**ii**)The additive model (G+A+V+E).

The model including gender, age, value, and expectancy accounts for 8.32% (P<0.001) of the variance in the weekly consumption. When Expectancy is added to the GA+V model the increase in variance explained of 7.02% (1.3% to 8.32%). There is a statistically significant (P<0.001) increase of 7.2% when Expectancy is added to the GA+V model. The reliable component of the additive model is negative expectancy (beta weight = -0.38, P<0.1), and the unreliable components of the additive model are gender, age, positive expectancy, negative value and positive value.

4. The multiplicative model (G+A+V+E+EV).

This is the critical test of multiplicative composites according to Evans (1991): the composites are added to the model that already contains the components added as separate variables.

Adding the multiplicative composites to the additive model in a hierarchical fashion shows that there is a reliable (P<0.000) increase in variance explained of 11.81% (8.32% to 20.13%). The reliable components of the multiplicative model are the negative and positive composites.

The constituents of the model was examined by partial correlation coefficients not beta weights (following the Statsoft manual with the result that of negative

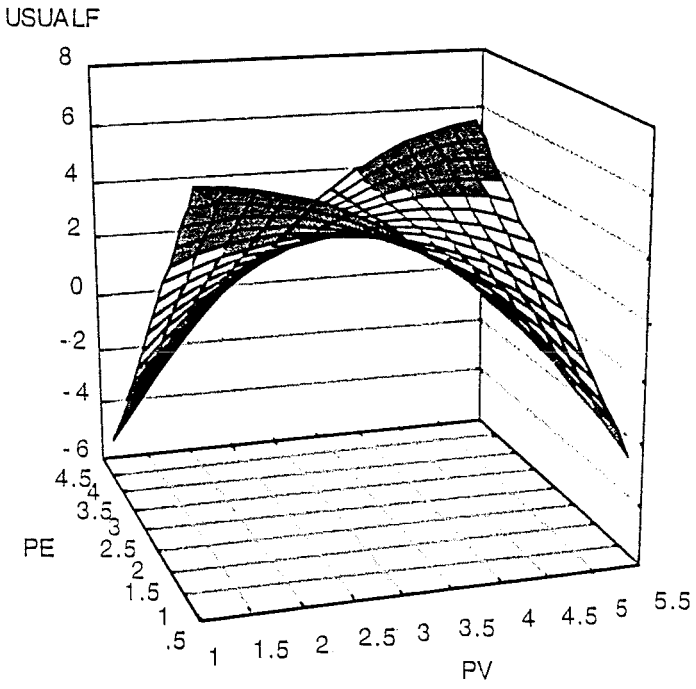
expectancy x value (Partial corrl. = 0.149, P<0.000), and positive expectancy x value (Partial corrl. = 0.307, P<0.000).

A significant increment in variance indicates that a moderating effect is present. It shows that subjective evaluations have a moderating effect on the relationship between alcohol expectancies and alcohol consumption. The moderating effect can be visualized in 3-dimensional graphical representation of the relationship between negative expectancy, negative value and alcohol consumption, and, the relationship between positive expectancy, positive value and alcohol consumption (figures 4.1 and 4.2).

The graph for positive expectancy (figure 4.1) and value shows that the for those positive expectancies that have a high subjective evaluation, the more they are endorsed the more frequently subjects drink. As the expectancies are less valued, this positive relationship between expectancy and frequency of consumption becomes flat and then becomes negative. This change in the slope of the expectancy consumption relationship with changes in subjective evaluation is the moderating effect made visual. The extent of the moderating effect is the extent of the twist on the surface of the 3 dimensional graph.

The graph for negative expectancy (figure 4.2) and value shows that for those negative expectancies that have a high subjective evaluation (they particularly bother the subject), the more subjects drink, the more they are endorsed As subjects are less bothered by the expectancies (as the value scores become less), this positive relationship between expectancy and frequency of consumption becomes flat and then becomes negative. Just as with positive expectancy, this change in the slope of the expectancy consumption relationship with changes in subjective evaluation is the moderating effect made visual. Just as with positive expectancy, the extent of the moderating effect is the extent of the twist on the surface of the 3 dimensional graph.

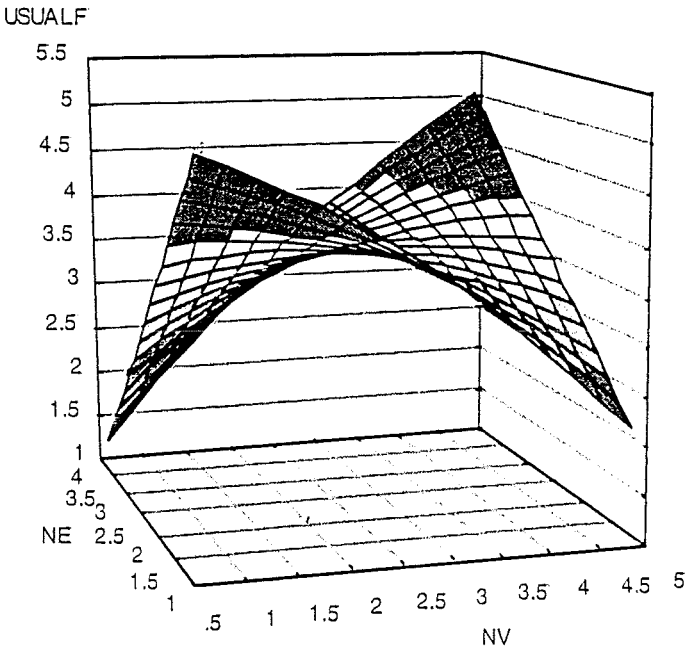
Figure 4.1. Positive expectancy totals and their subjective evaluations plotted against frequency of consumption



KEY: USUALF=Frequency of consumption. PE=Total Positive expectancy. PV=Subjective evaluations of positive expectancy.

The twist in the surface swept by USUALF vs PE as PV goes from 0 to 6 represents the extent of the moderating effect of PV on USUALF vs PE

Figure 4.2. Negative expectancy totals and their subjective evaluations plotted against frequency of consumption



KEY: USUALF=Frequency of consumption. NE=Total Negative expectancy. NV=Subjective evaluations of negative expectancy.

The twist in the surface swept by USUALF vs NE as PV goes from 0 to 6 represents the extent of the moderating effect of NV on USUALF vs NE

It is important to note the following :

The signs of the beta weight of each of the variables in the model show whether the variables is negatively or positively corrected with the dependent variable. In the case of the Multiplicative Composite, however, it is the directional change in the twist of the two-dimensional surface that is corrected with the dependent variable. There is no reason why this sign-indicator should be the same as the sign-indicator for either one of the composite's components.

This observation applies true out all similar analysis in this thesis.

Summary: Frequency of drinking

As it is shown in table 4.1, comparing the variance explained in weekly consumption by the two models (GA+E, GA+V, and GA+EV) reveals that the GA+E (8.87%) model explains the most, and the variance explained by the GA+V (1.3%) and the GA+EV (1.87%) models is similar. Positive expectancy is the only reliable component in the GA+E model. To this extent at least, it is possible to say that, as single variables, (positive) expectancy is a more 'explanatory' concept than value or than the multiplicative composite in relationship to drinking frequency although the multiplicative composite is inappropriately assessed at this stage).

In support of this view, when value is added to the GA+E model there is a much less (0.55%) increase in variance explained than when expectancy is added to the GA+V model (7.2%). In contrast to the above, however, it is negative and not positive expectancy that is reliable.

The critical result, however, was when the multiplicative composites (EV) were added to the additive model (GA+V+E) - they generated a significant

increase in the variance explained (11.81%, P<0.000). In this model both negative and positive multiplicative composites make a reliable contribution.

Quantity consumed per session (Q)

The result of the hierarchical regression analyses with dependent variable, Quantity per session, is described below. Please read with reference to Table 4.2. The strategy for analysis is identical to the strategy used for frequency, above.

1. Background variables alone [gender (G) + age (A)].

This model containing the background variables gender and age alone is not reliable. Both components of the model are also not reliable.

2.(i) Background variables and expectancy (G+A+expectancy , E).

When positive and negative expectancy are added to GA model there is a statistically significant (P<0.0000) increase in variance explained of 10.17% (2.63% to 12.8%). The reliable components of the model are gender (beta weight = 0.18, P<0.000), negative expectancy (beta weight = -0.35, P<0.000), and positive expectancy (beta weight = 0.33, P<0.000).

Males are shown to drink more than females in a session; consumption in a session increases with positive expectancy but decreases with negative expectancy.

(ii) Background variables and value (G+A+value, V).

When positive and negative value are added to the GA model there is a statistically significant (P<0.000) increase in variance explained of 6.92% (2.63% to 9.55%). The reliable components of the model are gender (beta

weight = 0.18, P<0.000) and positive value (beta weight = 0.27, P<0.000). The unreliable components are age and negative value.

Males drink more per session than females and consumption increases as subjects value the positive outcomes more.

(**iii**) Background variables and the multiplicative composites (G+A + expectancy x value, EV).

When the multiplicative composites are added to gender and age model there is a statistically significant (0.0000) increase in variance explained of 9.27% (2.63% to 11.9%).

The reliable components of the model are gender (beta weight = 0.18, P<0.0000) and the positive multiplicative composite (beta weight = 0.315,

Table 4.2 : Seven multiple regression models using total negative (N) and positive (P) expectancy (E),value (V) and the multiplicative composites (EV) in the **Students** group. **Dependent Variable :** Quantity Per session (weekly consumption).

Model	P	% variance explained	% increment	P-level of increment	Q, Per session Standardized beta weights and reliablilities G	A	NE	PE	NV	PV	NEV	PEV
1.G+A	0.033	2.63	----	----	ns	ns	----	----	----	----	----	----
2.GA+E	0.0000	12.8	10.17	0.0000	0.18	ns	-0.35	0.33	----	----	----	----
3.GA+V	0.000	9.55	6.92	0.000	0.18	ns	----	----	ns	0.27	----	----
4.GA+EV	0.0000	11.9	9.27	0.0000	0.18	ns	----	----	----	----	ns	0.315
5.GA+E+V	0.0000	13.5	0.7	0.1	0.17	ns	-0.29	0.24	ns	ns	----	----
6.GA+V+E	0.0000	13.5	3.95	0.000	0.17	ns	-0.29	0.24	ns	ns	----	----
7.GA+V+E+EV	0.0000	27.9	14.4	0.000							0.254	0.291

Note : Beta weight are not supplied for the variables 'G', 'A', 'NE', 'PE', 'NV', and 'PV' in models '7' because they become statistically uninterpretable after addition of the multiplicative composites (there is used Partial Correlations method).

P<0.0000). The components of the model not significant are age and negative expectancy value.

3.(i) The additive model (G+A+E+V).

The model including gender, age, expectancy, and value accounts for 13.5% (P<0.0000) of the variance in the weekly consumption. When value is added to the GA+E model the increase in variance explained is small (0.7%, P<0.1) and non significant (12.8% to 13.5%). The reliable components of the additive model are gender (beta weight = 0.17, P<0.0000), positive expectancy (beta weight = 0.24, P<0.0000), and negative expectancy (beta weight = -0.294, P<0.0000).

(ii) The additive model (G+A+V+E).

The model including gender, age, value, and expectancy accounts for 13.5% (P<0.0000) of the variance in the weekly consumption. When expectancy is added to the GA+V model there is a statistically significant (P<0.000) increase of 3.95% (9.55% to 13.5%). The reliable components of the additive model are gender (beta weight = 0.17, P<0.0000), positive expectancy (beta weight = 0.24, P<0.0000) and negative expectancy (beta weight = -0.29, P<0.0000).

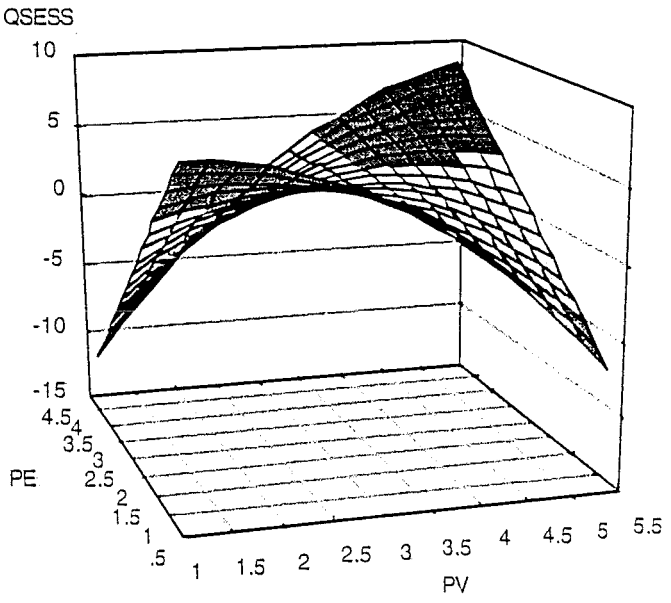
4. The multiplicative model (G+A+V+E+EV).

The critical test is when the multiplicative composites are added to the additive model (Evans 1991). There is a statistically significant (P<0.0000) increment in variance explained of 14.4% (13.5% to 27.9%). The reliable components of this model are negative multiplicative composite (partial corrl. = 0.254, P<0.0000), and positive multiplicative composite (partial corrl. = 0.291, P<0.0000). The subjective evaluations of expectancies (both positive and negative) are moderating the relationship between expectancies (positive and

negative) and the quantity of alcohol consumed per session. This relationship is visualised in Figures 4.3 and 4.4.

The graph for positive expectancy (figure 4.3) and value shows that the for those positive expectancies that have a high subjective evaluation, the more they are endorsed the more do subjects drink per session. As the expectancies are less valued, this positive relationship between expectancy and quantity consumed per session flattens and then becomes negative. Consistent with the earlier explanation, the change in the slope of the expectancy consumption relationship with changes in subjective evaluation is the moderating effect made visual. The extent of the moderating effect is the extent of the twist on the surface of the 3 dimensional graph. Figure 4.4 illustrates exactly the same relationship as does Figure 4.3..

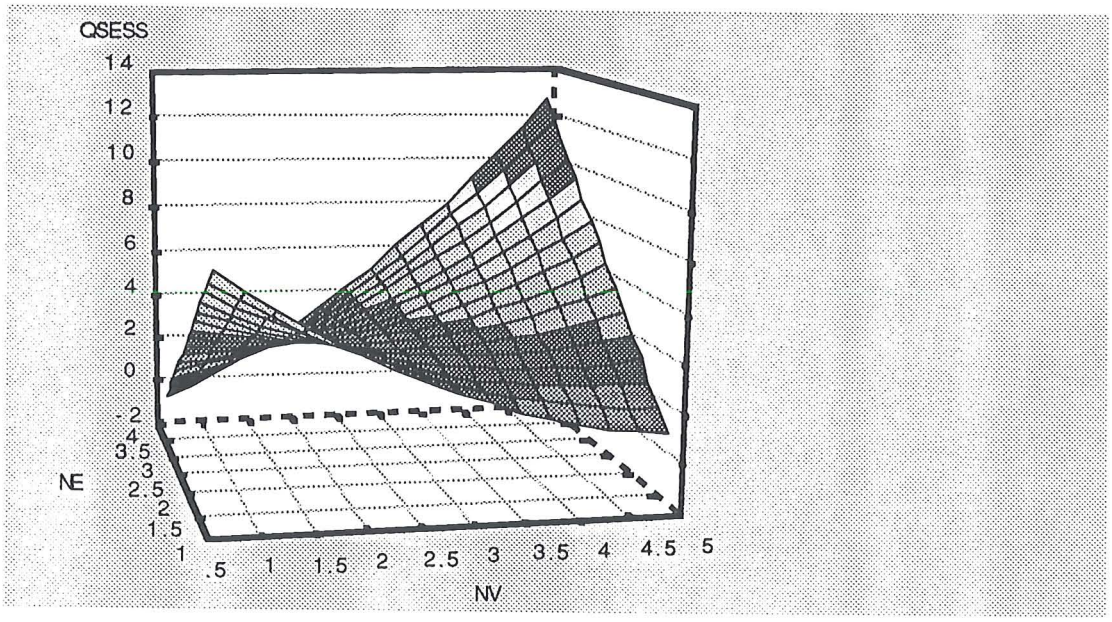
Figure 4.3. Positive expectancy totals and their subjective evaluations plotted against quantity consumed per session



KEY: QSESS=Quantity consumed per session. PE=Total Positive expectancy. PV=Subjective evaluations of positive expectancy.

The twist in the surface swept by QSESS vs PE as PV goes from 0 to 6 represents the extent of the moderating effect of PV on QSESS vs PE

Figure 4.4. Negative expectancy totals and their subjective evaluations plotted against quantity consumed per session



KEY: QSESS=Quantity consumed per session. NE=Total Negative expectancy. NV=Subjective evaluations of negative expectancy.

The twist in the surface swept by QSESS vs NE as NV goes from 0 to 6 represents the extent of the moderating effect of NV on QSESS vs NE

Summary: quantity consumed per session in a week.

When the variance explained in quantity consumed in a week by the GA+E, GA+V, GA+EV, GA+E+V, and GA+V+E models is compared, the GA+E (12.8%) model is revealed to explain the most, the GA+V (9.55%), the GA+EV (11.9%), and 13.5% for the GA+E+V and GA+V+E. Generally, there is a closer association between quantity consumed per session and the models above than frequency of consumption.

In common with the earlier section (frequency of consumption) there is no really consistent picture in terms of whether positive or negative expectancy or value form reliable associations with quantity consumed per session.

This is not so with the multiplicative composites, however, when they are assessed as Evans (1991) recommends. Just as with frequency of consumption, the addition of the multiplicative composites to the additive model GA+V+E+EV generates a significant increment in variance explained (14.4%, $P<0.0000$) in the quantity consumed per session.

Weekly Consumption (QF).

The results of the hierarchical regression analyses with the dependent variable, weekly consumption, are described below. Please refer to Table 4.3.

1. Background variables alone (gender G and age A).

The model containing the background variables gender and age is only just unreliable ($P<0.065$) accounting for 1.9% of the variance.

2.(i) Background variables and expectancy (G+A+expectancy E).

When positive and negative expectancy are added to the model containing gender and age there is a statistically significant (P<0.000) increase in variance explained of 8.5% (1.9% to 10.4%).

The reliable components of the model are gender (beta weight = 0.161, P<0.0000), negative expectancy (beta weight = -0.326, P<0.0000), and positive expectancy (beta weight = 0.299, P<0.0000).

(ii) Background variables and value (G+A+value V).

When positive and negative values are added to the GA, there is a statistically significant (P<0.000) increase in variance explained of 7.04% (1.9% to 8.94%).

The reliable components of the model are gender (beta weight = 0.156, P<0.000), and positive value (beta weight = 0.289, P<0.000).

(iii) Background variables and the multiplicative composites (G+A + expectancy x value EV).

Table 4.3 : Seven multiple regression models using total negative (N) and positive (P) expectancy (E), value (V) and the multiplicative composites (EV) in the **Students** group. **Dependent Variable :** Quantity x Frequency (weekly consumption)

Model	P	% variance explained	% increment	P-level of increment	Q x F Standardized beta weights and reliablilities G	A	NE	PE	NV	PV	NEV	PEV
1.G+A	0.065	1.9	----	----	n s	n s	----	-----	----	----	----	----
2.GA+E	0.0000	10.4	8.5	0.000	0.161	n s	-0.326	0.299	----	----	----	----
3.GA+V	0.000	8.94	7.04	0.000	0.156	n s	----	----	n s	0.289	----	----
4.GA+EV	0.0000	10.9	9	0.0000	0.164	n s	----	----	----	----	n s	0.322
5.GA+E+V	0.000	12	2.4	0.0000	0.152	n s	-0.274	0.193	n s	0.195	----	----
6.GA+V+E	0.0000	12	3.06	0.01	0.152	n s	-0.274	0.193	n s	0.195	----	----
7.GA+V+E+EV	0.0000	28.8	16.8	0.0000							0.251	0.332

Note : Beta weight are not supplied for the variables 'G', 'A', 'NE', 'PE', 'NV', and 'PV' in models '7' because they become statistically uninterpretable after addition of the multiplicative composites (there is used Partial Correlations method).

When the multiplicative composites are added to gender and age there is a statistically significant (P<0.0000) increase in variance explained of 9% (1.9% to 10.9%). The reliable components of the model are gender (beta weight = 0.164, P<0.000), and positive multiplicative composite (beta weight = 0.322, P<0.0000).

3.(i) The additive model (G+A+E+V).

The model including gender, age, expectancy, and value accounts for 12% of the variance in frequency of drinking sessions in a week. The contribution of value is revealing an increase of 2.4% (10.4% to 12%) when added to the GA+E model (P<0.0000). The reliable components of the additive model are gender (beta weight = 0.152, P<0.0000), negative expectancy (beta weight = -0.274, P<0.0000), positive expectancy (beta weight = 0.193, P<0.0000), and positive value (beta weight = 0.195).

(**ii**) The additive model (G+A+V+E).

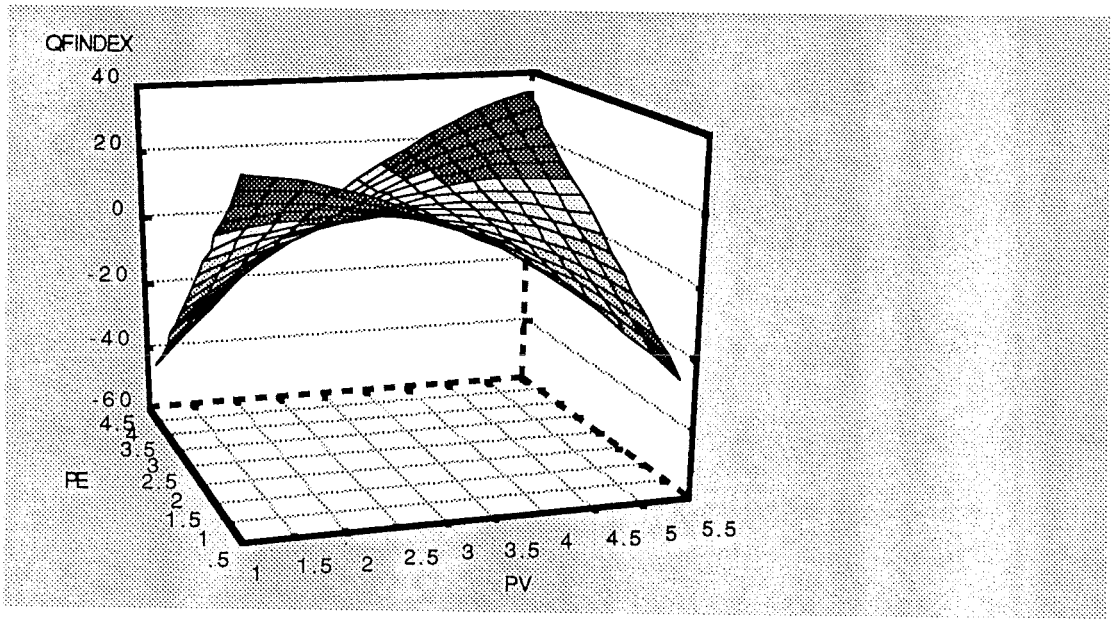
The model including gender, age, value, and expectancy accounts for 12% of the variance in frequency of drinking sessions in a week. The relative contribution of expectancy reveals an increase of 3.06% (8.94% to 12%) when expectancy is added to the GA+V model (P<0.01). The reliable components of the additive model are gender (beta weight = o.152%. P<0.0000), negative expectancy (beta weight = -0.274, P<0.0000), positive expectancy (beta weight = 0.193, P<0.0000) and positive value (beta weight = 0.195, P<0.000).

4. The multiplicative model (G+A+E+V+EV).

Critically, when the multiplicative composites are added to the additive model hierarchically, there is a very large increment in the variance explained of 16.8%, P<0.0000 (12% to 28.8%).

The reliable components of the model are both the negative multiplicative composite (partial corrl. = 0.251, P<0.000), and the positive multiplicative composite (partial corrl. = 0.332). The subjective evaluations of expectancies (positive and negative) are moderating the relationship between expectancies (positive and negative) and alcohol consumption.

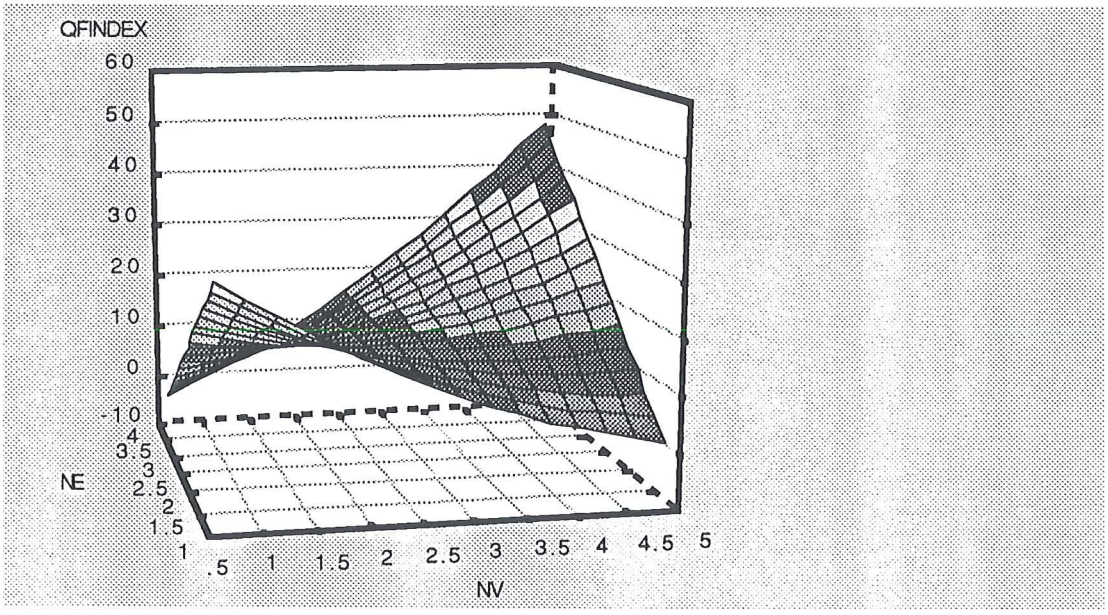
Figure 4.5. Positive expectancy totals and their subjective evaluations plotted against quantity consumed per week



KEY: QFINDEX=Quantity consumed per week. PE=Total Positive expectancy. PV=Subjective evaluations of positive expectancy.

The twist in the surface swept by QFINDEX vs PE as PV goes from 0 to 6 represents the extent of the moderating effect of PV on QFINDEX vs PE

Figure 4.6. Negative expectancy totals and their subjective evaluations plotted against quantity consumed per week



KEY: QFINDEX=Quantity consumed per week. NE=Total Negative expectancy. NV=Subjective evaluations of negative expectancy.

The twist in the surface swept by QFINDEX vs NE as NV goes from 0 to 6 represents the extent of the moderating effect of NV on QFINDEX vs NE

Summary: Weekly consumption.

Comparing the variance explained in drinking in a week by the GA+E, GA+V, and GA+EV models reveals the GA+EV (10.9%) model to explain the most, with GA+E model (1.4%) and the GA+V model (8.9%), less.

In the GA+E model, both positive and negative expectancies are reliable components (the positive term is more closely associated). In the GA+V model, only the positive value (not negative) is reliable component. Only the positive multiplicative composite is reliable in the GA+EV model. When value is added to the GA+E model there is a reliable increment in variance explained of 2.4%. The addition of expectancy to the GA+V model, there is a reliable increment in variance explained of 3.06%. In the additive model both negative and positive expectancies and positive value are reliable components (the positive term is more closely associated).

In the critical stage (Evans 1991), when the multiplicative composites are added to the additive model there is a reliable increase in variance explained and both negative and positive multiplicative composites are reliable components.

Overall summary of students' results

The main finding is consistent throughout the three types of model (frequency of drinking, quantity consumed per session and quantity consumed per week). That is, both positive and negative multiple composites when they are assessed properly in university students add significantly to the variance explained and show that for the association between expectancy and consumption both positive and negative subjective evaluations have a moderating influence. The

greatest effect is with the consumption measure, quantity per week. The smallest effect is with frequency of consumption per week.

There is a general effect that males consume more or more frequently than females.

Wherever positive expectancy forms a reliable component of a model, the relationship between expectancy and consumption is positive: more consumption is associated with more expectancy. This is consistent with the majority of other studies. Wherever negative expectancy forms a reliable component of a model, higher expectancies associate with lower consumption. This is not consistent with most other studies in which the relationship is a positive not negative.

Wherever it is possible to estimate whether expectancy or value forms the stronger or more frequent associations with consumption, expectancy rather than value is stronger or more frequently reliable. Positive rather than negative also appears to be more frequently reliable.

CHAPTER FIVE

EXPERIMENT 2: ALCOHOL EXPECTANCIES AND THEIR SUBJECTIVE EVALUATIONS AND THE ASSOCIATION WITH ALCOHOL CONSUMPTION IN ADULTS

Experiment 2

In the preceding chapter was explored the changes in the association between alcohol expectancies and three measures of consumption when the association was moderated by a measure of the subjective evaluations of the alcohol expectancies. This was done with young adults who were undergraduates at Glasgow University. To assess the generalisability of the findings from experiment 1 (a moderator effect was found), the same experiment was carried out with non-student, older adults. This is experiment 2 and is reported in this chapter. In common with Experiment 1, experiment 2 tests the status of the multiplicative composite which a questionnaire in with the positive and negative components were equivalently - developed.

METHOD

Subjects

All subjects were recruited from the city of Glasgow (parks, cinemas, homes, coffee shops).

Subjects consisted 153 adults (age: 23-60 years, mean = 33.77 years, Sd= 8.3). However, in 22 cases the information given was incomplete and had to be discarded. The final sample consisted of 76 males (49.67%) and 77 females (50.33%).

They were an opportunistic sample drawn from much-frequented places in the city of Glasgow. Subjects for this experiment were volunteers who were approached in parks, cinemas, homes, coffee shops.

They were given a questionnaire in self-complete format and completed the details in individually session, with the researcher remaining present at all times to settle any ambiguities if and when they arouse.

They employing identical questionnaire and completion took an average of 30 minutes.

None of the subjects were aware of the theoretical content of the experiment.

Exactly the same questionnaires were used in experiment 2 as in experiment 1: the Comprehensive Effects of Alcohol questionnaire (CEOA) and the drinking and demographic details questionnaire. The consumption measures calculated from the raw consumption measures were just as in experiment 1 and this procedure was carried out for the same reasons.

The testing procedure and strategy of analysis was also the same as in experiment 1.

RESULTS

The following sections describe hierarchical regression analysis of Expectancy, Value, and Multiplicative Composite on Quantity Consumed per session in the week (Q), and Frequency of Drinking Sessions in the week (F) and quantity consumed per week (QF). It is written to map a

closely as possible onto the reporting of the results in experiment 1 to assist in comparison. Throughout the regression analysis, reference can be made to the Correlation Matrix in Appendix C (Table 2).

Frequency of drinking (F).

The result of the hierarchical regression analyses with the dependent variable Frequency of consumption is described below and should be read in conjunction with Table 5.1 :

1. Background variables alone (gender, G and age, A).

The model containing these variables alone is reliable ($p<0.00$) and accounts for 6.53% of the variance in frequency of consumption. The gender variable is not a reliable component but, age is reliable (beta weight = -0.253) in this regression model. The younger adults drink more than do the older adults.

Table 5.1 : Seven multiple regression models using total negative (N) and positive (P) expectancy (E), value (V) and the multiplicative composites (EV) in the **Adults** group. **Dependent Variable :** Usual Frequency

Model	P	% variance explained	% increment	P-level of increment	Usual - F Standardized beta weights and reliablilities							
					G	A	NE	PE	NV	PV	NEV	PEV
1.G+A	0.00	6.53	----	----	ns	-0.253	----	----	----	----	----	----
2.GA+E	0.00	7.81	1.28	0.00	ns	-0.225	-0.205	0.185	----	----	----	----
3.GA+V	0.00	9.17	2.64	0.00	0.155	-0.205	----	----	ns	0.211	----	----
4.GA+EV	0.000	9.73	3.20	0.00	0.149	-0.191	----	----	----	----	ns	0.223
5.GA+E+V	0.00	8.6	0.79	0.1	ns	-0.208	ns	ns	ns	ns	----	----
6.GA+V+E	0.00	8.6	-0.57	0.5	ns	-0.208	ns	ns	ns	ns	----	----
7.GA+V+E+EV	0.000	12.7	4.1	0.01							0.168	0.181

Note : Beta weight are not supplied for the variables 'G', 'A', 'NE', 'PE', 'NV', and 'PV' in models '7' because they become statistically uninterpretable after addition of the multiplicative composites (there is used Partial Correlations method).

2.(i) Background variables and expectancy (G+A+expectancy, E).

Adding positive and negative expectancy to the model containing gender and age produces a statistically significant (P<0.00) but small increase in the variance explained of Frequency of drinking of 1.28% (6.53% to 7.81%). The reliable components of the model are positive expectancy (beta weight = 0.185, P<0.00), negative expectancy (beta weight = -0.205, P<0.00) and age (beta weight = -0.225, P<0.00). Gender is not reliable.

(ii) Background variables and value (G+A+value, V).

When positive and negative values are added to the model containing gender and age there is a statistically (P<0.00) increase in variance explained of 2.64% (P<0.00) (7.81% to 9.17%). The reliable components of the model are age (beta weight = -0.205, P<0.00), gender (beta weight = 0.155, P<0.00), and positive value (beta weight = 0.211, P< 0.00). Negative value is not reliable.

(iii) Background variables and the multiplicative composites [G+A+Expectancy x value (EV)].

When the positive and negative multiplicative composites are added to the gender and age model there is a statistically significant (P<0.00) increase in variance explained of 3.20% (6.53% to 9.73%). The reliable components of the model are gender (beta weight = 0.149, P<0.00), age (beta weight = -0.191, P<0.00), and the positive multiplicative composite (beta weight = 0.223, P< 0.00), the negative multiplicative composite is not statistically significant.

The beta weight for the positive multiplicative composite term shows that it is positively associated with consumption However, as discussed earlier,

this is not the proper way to test for a multiplicative composite and the proper method (using Evans' strategy is carried out later in this section).

3.(i) The additive model (G+A+E+V).

The model including gender, age, expectancy, and value accounts for 8.6% of the variance in the weekly consumption. When value is added to the GA+E model the increase in variance explained is small (0.79%, $P<0.1$). The reliable component of the additive model is age (beta weight = -0.208, $P<0.00$).

(ii) The additive model (G+A+V+E).

The model including gender, age, value, and expectancy accounts for 8.6% ($P<0.00$) of the variance in the weekly consumption. When expectancy is added to the GA+V model there is a small decrease in variance explained (9.17% to 8.6%). The reliable component of the additive model is age (beta weight = -0.208).

4. The multiplicative model (G+A+V+E+EV).

Adding the multiplicative composites to the additive model in a hierarchical fashion shows that there is a reliable ($P<0.01$) increase in variance explained of 4.1% (8.6% to 12.7%). The reliable components of the multiplicative model are both negative and positive.

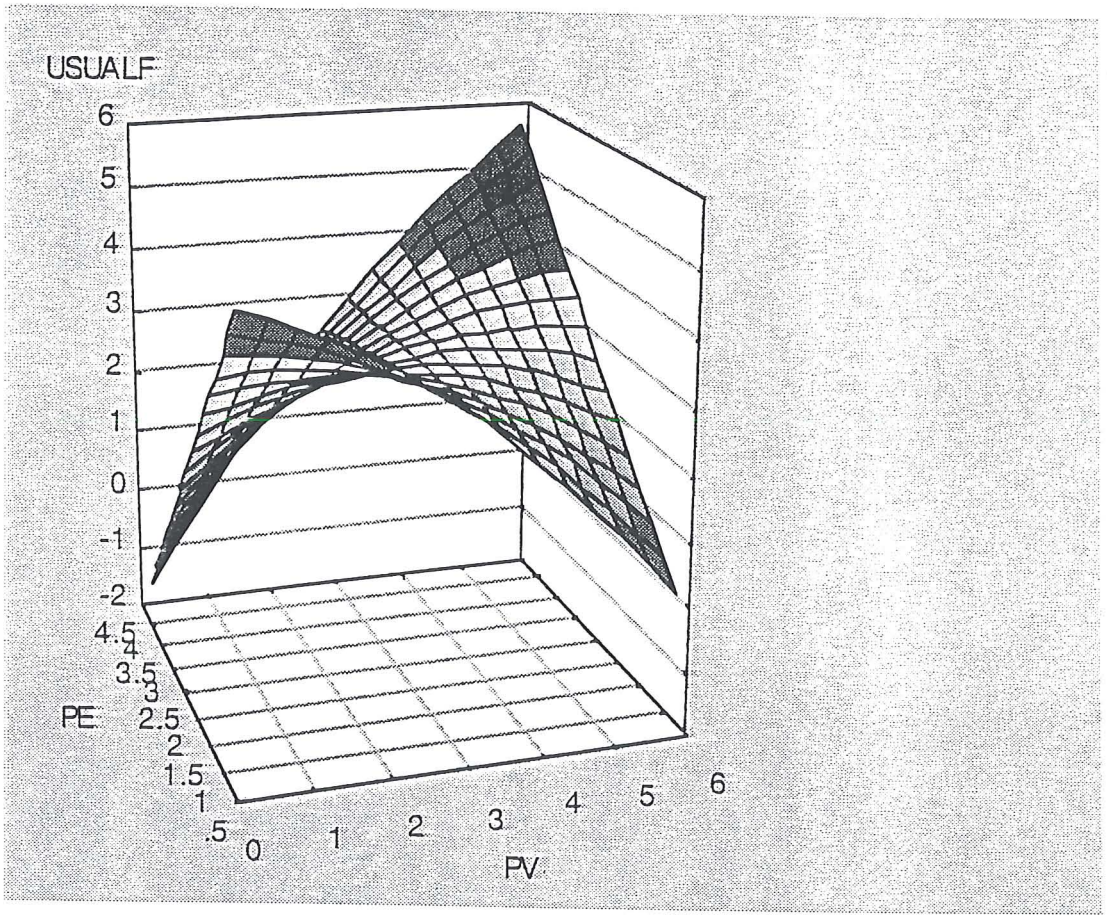
The model was examined using partial correlations - for negative (Partial corrl. = 0.168, $P<0.000$) and positive (Partial corrl. = 0.181, $P<0.000$).

A significant increment in variance indicates that a moderating effect is present. The findings reveal that the negative and positive multiplicative composite are reliable components of the multiplicative model and indicate that subjective evaluation of negative and positive consequences are

moderating the relationship between negative and positive alcohol expectancies and consumption.

The moderating effect can be visualized in three dimensional graphical representation of the relationship between negative expectancy, negative value and alcohol consumption, and the relationship between positive expectancy, positive value and alcohol consumption(figure 651 and 5.2). The graph for positive expectancy and value (figure 5.1) shows that for those expectancies that are highly valued, consumption increases as the expectancies held increase. For those positive expectancies that have little value, the reverse in the case. As in the case of the analysis for experiment 1, the extent of the twist in the 3 dimensional graph is a measure of the extent of the moderating effect of value on the relationship between positive expectancy and consumption.

Figure 5.1. Positive expectancy totals and their subjective evaluations plotted against frequency of consumption

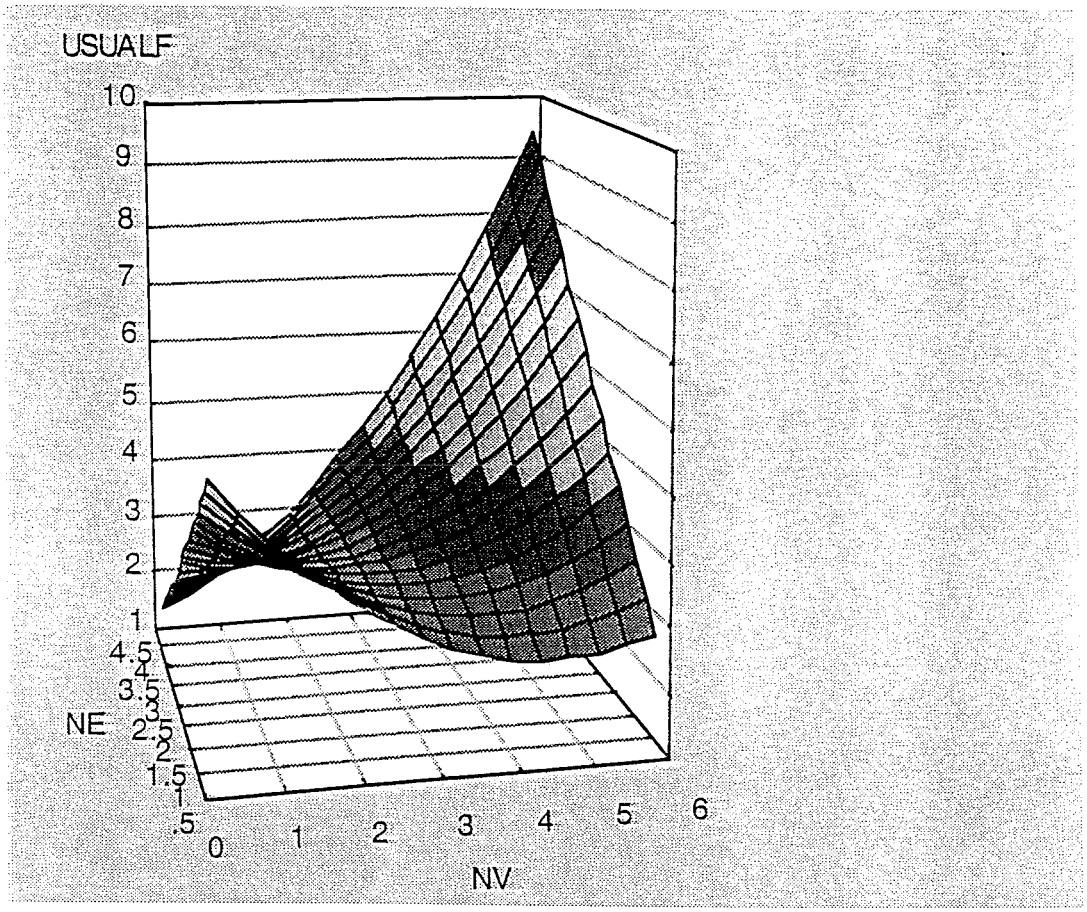


KEY: USUALF=Frequency of consumption. PE=Total Positive expectancy. PV=Subjective evaluations of positive expectancy.

The twist in the surface swept by USUALF vs PE as PV goes from 0 to 6 represents the extent of the moderating effect of PV on USUALF vs PE

The graph for negative expectancy and value (figure 5.2) shows that for those expectancies that are 'highly valued' (that bother the subjects a lot), consumption increases as the expectancies held increase. For those positive expectancies that have little value (about which the subjects care little), the reverse in the case. The extent of the twist in the 3 dimensional graph is a measure of the extent of the moderating effect of value on the relationship between negative expectancy and consumption.

Figure 5.2. Negative expectancy totals and their subjective evaluations plotted against frequency of consumption



KEY: USUALF=Frequency of consumption. NE=Total Negative expectancy. NV=Subjective evaluations of negative expectancy.

The twist in the surface swept by USUALF vs NE as PV goes from 0 to 6 represents the extent of the moderating effect of NV on USUALF vs NE

Summary: Frequency of drinking

It appears that the GA+EV (9.73%) model explains the most of the variance in consumption frequency and the variance explained by the GA+V (9.17%) and the GA+E (7.81%) is less although the differences are small. Generally, the positive variables are reliable components of the model and the negative are not.

With the multiplicative composites, however, both positive and negative variables have reliable contributions to the association. This critical result is consistent with what was found in experiment 1 with young adults (students) and the moderating effect generalises across these two age groups (students and older adults).

Quantity consumed per session (Q)

The result of the hierarchical regression analyses with the dependent variable Quantity per session is described below. The section should be read with reference to Table 4.2.

1. Background variables alone [gender (G) + age (A)].

This model containing the background variables gender and age alone is reliable ($P<0.0000$) and accounts for 13.5% of the variance. The reliable component is age (beta weight = -0.373, $P<0.0000$), but not gender. Younger adults drink more than older adults.

Table 5.2 : Seven multiple regression models using total negative (N) and positive (P) expectancy (E), value (V) and the multiplicative composites (EV) in the **Adults** group. **Dependent Variable :** Quantity Per session

Model	P	% variance explained	% increment	P-level of increment	Q, Per session, Standardized beta weights and reliablilities							
					G	A	NE	PE	NV	PV	NEV	PEV
1.G+A	0.0000	13.5	----	----	ns	-0.373	----	----	----	----	----	----
2.GA+E	0.0000	15.3	1.8	0.0	ns	-0.342	ns	0.222	----	----	----	----
3.GA+V	0.0000	19.4	3.9	0.00	0.142	-0.323	----	----	ns	0.291	----	----
4.GA+EV	0.0000	24.2	10.7	0.0000	0.141	-0.270	----	----	----	----	ns	0.362
5.GA+E+V	0.0000	18.8	3.5	0.0	ns	-0.313	ns	ns	ns	0.268	----	----
6.GA+V+E	0.0000	18.8	-0.6	0.0	ns	-0.313	ns	ns	ns	0.268	----	----
7.GA+V+E+EV	0.0000	27.8	9	0.000							ns	0.336

Note : Beta weight are not supplied for the variables 'G', 'A', 'NE', 'PE', 'NV', and 'PV' in models '7' because they become statistically uninterpretable after addition of the multiplicative composites (there is used Partial Correlations method).

2.(i) Background variables and expectancy [G+A+expectancy(E)].

When positive and negative expectancy are added to the model containing gender and age there is a statistically significant (P<0.0000) increase in variance explained of 1.8% (13.5% to 15.3%). The reliable components of the model are age (beta weight = -0.342%, P<0.0000), and positive expectancy (beta weight = 0.222%, P<0.0000).

(ii) Background variables and value [G+A+value (V)].

When positive and negative value are added to gender and age model there is a statistically significant (P<0.0000) increase in variance explained of 3.9% (13.5% to 19.4%). The reliable components of the model are gender (beta weight = -0.1442, P<0.0000), the age (beta weight = -0.323, P<0.0000), and the positive value (beta weight = 0.291, P<0.0000).

(iii) Background variables and the multiplicative composites [G+A+expectancy x value (EV)].

When the multiplicative composites are added to the gender and age model there is a statistically significant (P<0.0000) and large increase in variance explained of 10.7% (13.5% to 24.2%).

The reliable components of the model are gender (beta weight = 0.141, P<0.0000), the age (beta weight = -0.270, P<0.0000), and the positive multiplicative composite (beta weight = 0.362, P<0.0000).

3.(i) The additive model (G+A+E+V).

The model including gender, age, expectancy, and value accounts for 18.8% (P<0.0000) of the variance in the weekly consumption. When value is added to the GA+E model the increase in variance explained is 3.5%, (P<0.0).

The reliable components of the additive model are age (beta weight = -0.313, P<0.0000) and positive value (beta weight = 0.268, P<0.0000).

(**ii**) The additive model (G+A+V+E).

The model including gender, age, value, and expectancy accounts for 18.8% (0.0000) of the variance in the weekly consumption. When expectancy is added to the GA+V model there is a statistically significant (P<0.0) decrease of 0.6% (to 18.2%) when expectancy is added to the GA+V model. The reliable components of the additive model (same G+A+E+V model) are age (beta weight = -0.313, P<0.0000), and positive value (beta weight = 0.268, P<0.0000).

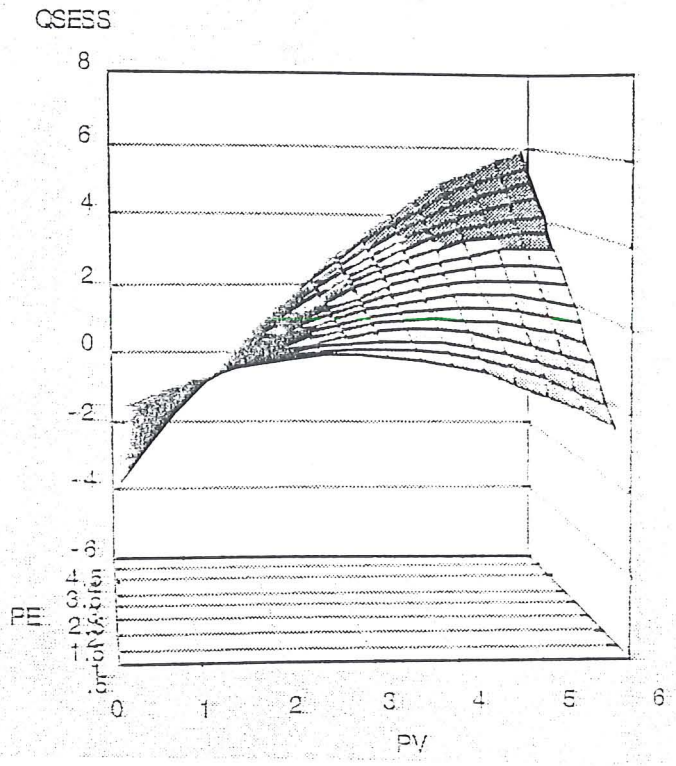
4. The multiplicative model (G+A+V+E+EV).

When the multiplicative composites are added to the additive model, there is a statistically significant (P<0.000) increment in variance explained of 9% (18.8% to 27.8%). The reliable component of this model is positive multiplicative composite (Partial corrl. = 0.336, P<0.0000).

The subjective evaluations of expectancies (only positive, not negative) is moderating the relationship between expectancy (positive) and alcohol consumption.

Figures 5.3 and 5.4 respectively illustrate the moderating effects. Although both are descriptively consistent with the students' results and with the analysis above, only the negative components are statistically significant.

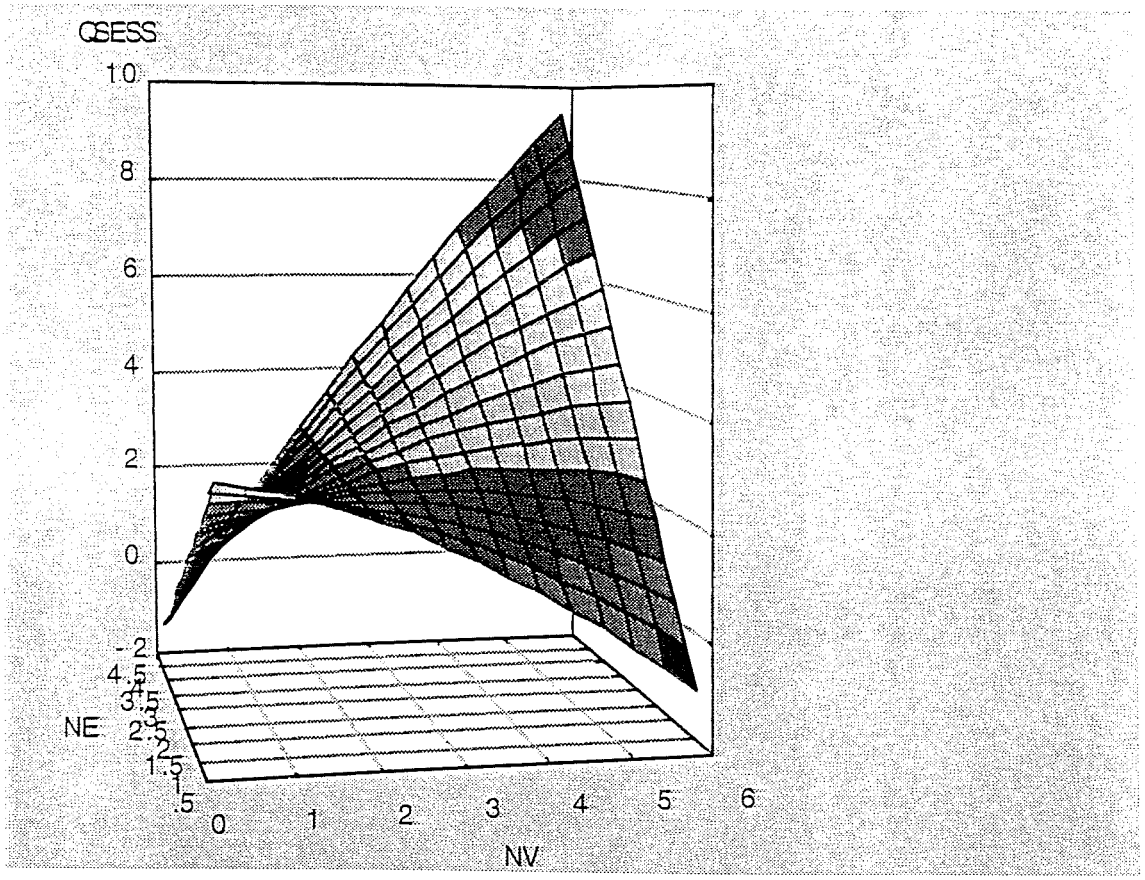
Figure 5.3. Positive expectancy totals and their subjective evaluations plotted against quantity consumed per session



KEY: QSESS=Quantity consumed per session. PE=Total Positive expectancy. PV=Subjective evaluations of positive expectancy.

The twist in the surface swept by QSESS vs PE as PV goes from 0 to 6 represents the extent of the moderating effect of PV on QSESS vs PE

Figure 5.4. Negative expectancy totals and their subjective evaluations plotted against quantity consumed per session



KEY: QSESS=Quantity consumed per session. NE=Total Negative expectancy. NV=Subjective evaluations of negative expectancy.

The twist in the surface swept by QSESS vs NE as NV goes from 0 to 6 represents the extent of the moderating effect of NV on QSESS vs NE

Summary : quantity consumed per session in a week.

When the variance explained in quantity consumed in a week by the GA+E, GA+V, GA+EV, GA+E+V, and GA+V+E models is compared, the GA+EV (24.2%) model is revealed to explain the most, the GA+E (15.3%), the GA+V (19.4%), and the GA+E+V (18.8%), the least.

In the GA+E model positive expectancy (not negative) is the reliable component; in the GA+V model positive (not negative) value is a reliable component; positive (not negative) multiplicative composite is a reliable component of the GA+EV model. In the GA+E+V model positive (not negative) value is the reliable component (not expectancy). Also, there is shown when value is added to the GA+E model there is a reliable increment in variance explained (3.5%, $P<0.0$) and when expectancy is added to the GA+V model there is a small decrease in variance explained (0.6%, $P<0.0$).

The addition of the multiplicative composite to the additive model GA+V+E+EV generates a significant increment in variance explained (9%, $P<0.000$). Only the positive multiplicative composite make reliable contribution.

In general terms, expectancy formed better associations with consumption than did value and positive terms better than negative terms.

Weekly Consumption (QF).

The results of the hierarchical regression analyses with the dependent variable Quantity drunk in a week) is described below and should be read with reference to Table 6.3:

1. Background variables alone [gender (G) and Age(A)].

The model containing the background variables gender and age is reliable (P<0.0000) accounting for 12.9% of the variance. The age is reliable (beta weight = -0.366%, P<0.0000), but the gender is not reliable in the model. Younger adults drink m ore than their older companions.

2.(i) Background variables and expectancy [G+A+expectancy (E)].

When positive and negative expectancy are added to the model containing gender and age there is a statistically significant (P<0.0) increase in variance explained of 1.9% (12.9% to 14.8%).

The reliable components of the model are age (beta weight = -0.337, P<0.0000), and positive expectancy (beta weight = 0.204, P<0.0000).

(ii) Background variables and value [G+A+value (V)].

When positive and negative values are added to the model (gender and age) there is a statistically significant (P<0.00) increase in variance explained of 4.9% (12.9% to 17.8%).

The reliable components of the model are age (beta weight = -0.327%, P<0.0000), and positive value (beta weight = 0.267, P<0.0000). The gender and negative value components are not reliable in the model.

Table 5.3 : Seven multiple regression models using total negative (N) and positive (P) expectancy (E), value (V) and the multiplicative composites (EV) in the **Adults** group. **Dependent Variable :** Quantity x Frequency (weekly consumption)

Model	P	% variance explained	% increment	P-level of increment	Q x F Standardized beta weights and reliablilities							
					G	A	NE	PE	NV	PV	NEV	PEV
1.G+A	0.0000	12.9	----	----	ns	-0.366	----	----	----	----	----	----
2.GA+E	0.0000	14.8	1.9	0.0	ns	-0.337	ns	0.204	----	----	----	----
3.GA+V	0.0000	17.8	4.9	0.00	ns	-0.327	----	----	ns	0.267	----	----
4.GA+EV	0.0000	22.8	9.9	0.0000	ns	-0.264	----	----	----	----	ns	0.344
5.GA+E+V	0.0000	17.7	2.9	0.0	ns	-0.314	ns	ns	ns	0.247	----	----
6.GA+V+E	0.0000	17.7	-0.1	0.0	ns	-0.314	ns	ns	ns	0.247	----	----
7.GA+V+E+EV	0.0000	26.1	8.4	0.000							ns	0.321

Note : Beta weight are not supplied for the variables 'G', 'A', 'NE', 'PE', 'NV', and 'PV' in models '7' because they become statistically uninterpretable after addition of the multiplicative composites (there is used Partial Correlations method).

(**iii**) Background variables and the multiplicative composites [G+A+expectancy x value (EV)].

When the multiplicative composites are added to gender and age there is a statistically significant (P<0.0000) increase in variance explained of 9.9% (12.9% to 22.8%). The reliable components of the model are age (beta weight = -0.264, P<0.0000), and positive multiplicative composite (beta weight = 0.344, P<0.0000).

3.(**i**) The additive model (G+A+E+V).

The model including gender, age, expectancy, and value accounts for 17.7% of the variance in frequency of drinking sessions in a week. The reliable contribution of expectancy and value are revealing an increase of 2.9% (14.8% to 17.7%) when value is added to the GA+E model (P<0.0). The reliable components of the additive model are age (beta weight = -0.314, P<0.0000), and positive value (beta weight = 0.247, P<0.0000).

(**ii**) The additive model (G+A+V+E).

The model including gender, age, value, and expectancy accounts for 17.7% of the variance in frequency of drinking sessions in a week. The relative contribution of value and expectancy reveals an decrease of 0.1% (17.8% to 17.7%) when expectancy is added to the GA+V model (P<0.0). The reliable components of the additive model are age (beta weight = -0.314, P<0.0000), and positive value (beta weight = 0.247, P<0.0000). The gender, negative and positive expectancies, and negative value components are not reliable in the model.

4. The multiplicative model (G+A+E+V+EV).

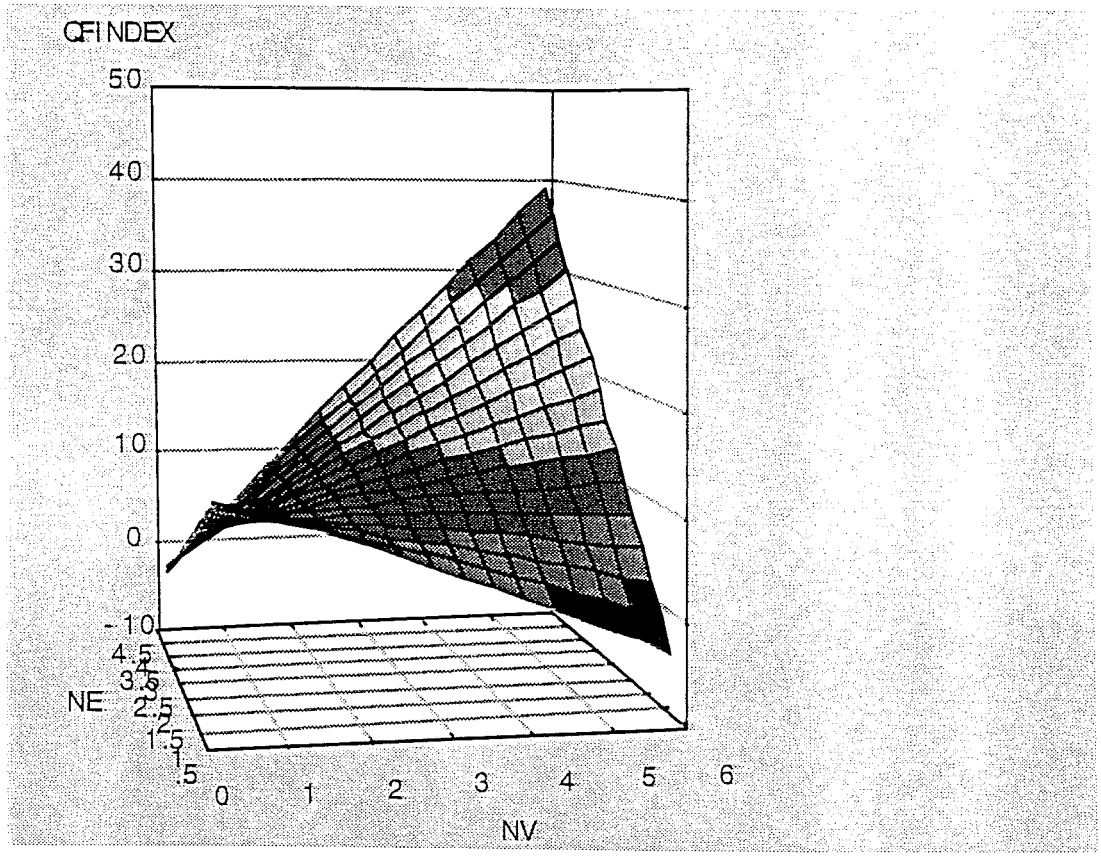
When the multiplicative composites are added to the additive model hierarchically, there is an increment in the variance explained of 8.4%, P<0.000 (17.7% to 26.1%).

The reliable component of the model is positive multiplicative composite (Partial corrl. = 0.321, P<0.0000).

The subjective evaluations of expectancies (positive, not negative) is moderating the relationship between positive expectancy and alcohol consumption.

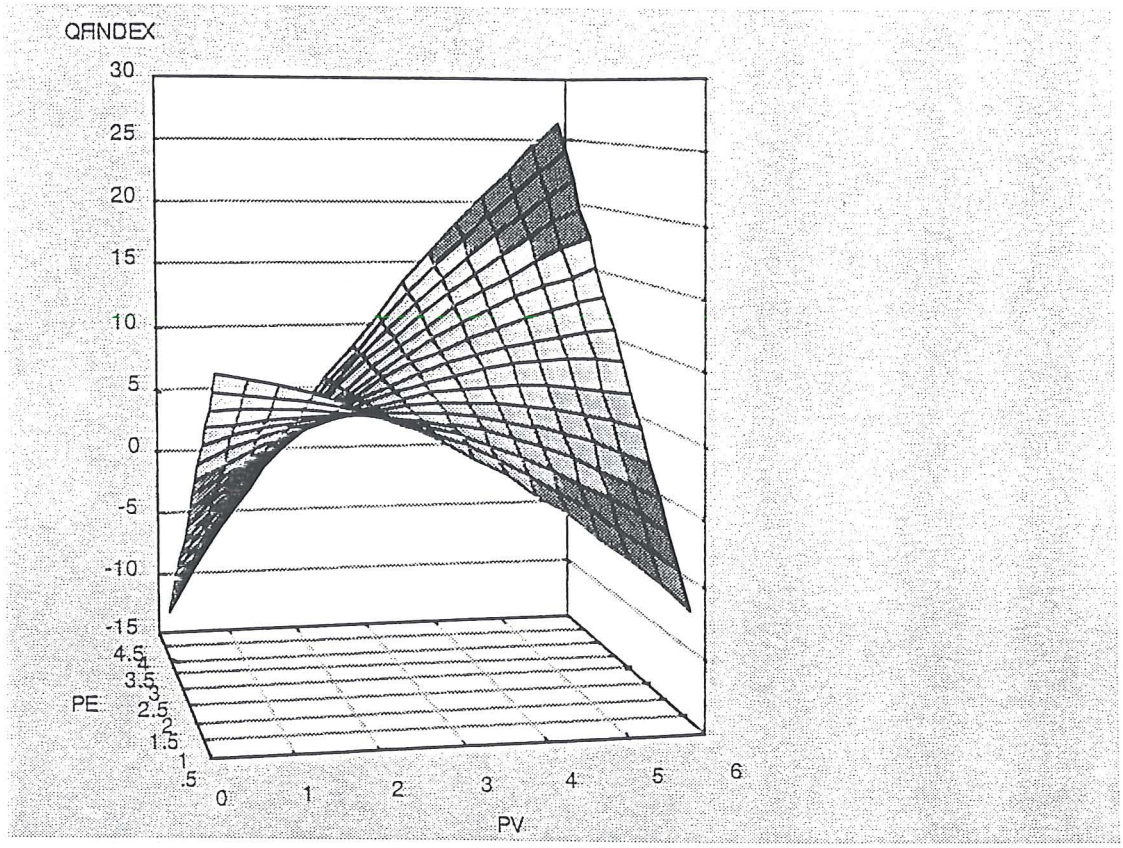
Figures 6.5 and 6.6 illustrate this graphically. And although the moderating effect is only reliable for the positive terms and not the negative, the figures show that both effects are consistent with earlier analyses.

Figure 5.6. Negative expectancy totals and their subjective evaluations plotted against quantity consumed per week



KEY: QFINDEX=Quantity consumed per week. NE=Total Negative expectancy. NV=Subjective evaluations of negative expectancy.

Figure 5.5. Positive expectancy totals and their subjective evaluations plotted against quantity consumed per week



KEY: QFINDEX=Quantity consumed per week. PE=Total Positive expectancy. PV=Subjective evaluations of positive expectancy.

The twist in the surface swept by QFINDEX vs PE as PV goes from 0 to 6 represents the extent of the moderating effect of PV on QFINDEX vs PE

Summary : Frequency of drinking session in a week.

Comparing the variance explained in drinking frequency in a week by the GA+E, GA+V, and GA+EV modes (table 6.3) reveals the GA+EV (22.8%) model to explain the most, with the GA+E model (14.8%) and the GA+V model (17.8%) least.

In the GA+E model, only positive expectancy is reliable component (the negative term is not reliable). In the GA+V model, the component reliable is positive value (not negative). Only the positive multiplicative composite is reliable in the GA+EV model.

Overall summary of adults' results

The main finding is fairly consistent with the main finding in experiment 1. In experiment 1 each of the three models tested (frequency of drinking, quantity consumed per session and quantity consumed per week) showed a significant moderating effect of subjective evaluations of alcohol expectancies on the association between expectancy and consumption. The significant moderating effects were found for both the positive and negative terms; throughout. In experiment 2, results consistent with this were found but only for the model of frequency of drinking. For the other two models (quantity drunk per session and per week), only the negative terms not the positive were significant. However, encouragingly, although the negative terms in these two models were not significant, a look at the appropriate figures shows that the moderating effect is descriptively consistent if not statistically.

Wherever it is possible to estimate whether expectancy or value forms stronger or more frequent associations with consumption the outcome is not as clear as in experiment 1 from which expectancy emerged as a winner. In experiment 2 it appears to be a draw. However, in common with experiment 1, positive terms appear to form more frequent associations with consumption than do negative.

CHAPTER SIX

DISCUSSION

Contents

CHAPTER SIX

Discussion

In the last two chapters was discussed the alcohol expectancies, their subjective evaluations, and the association with drinking alcohol in young and older adults (students and non-student adults). Furthermore, the results of regression analysis of gender, age, expectancies and values (both positive and negative), and multiplicative composites were showed in tables and figures. In this chapter, beside a general discussion there will be an assessment of the similarities and differences. In other words, each of the regression models comprising gender, age, expectancies, values, and multiplicative composites will be discussed.

Tables show the three areas of alcohol consumption considered: Usual Frequency of alcohol consumption per week (**F**), Quantity of alcohol drunk per session (**Q**), and the combined measure of alcohol consumed, Quantity x Frequency (**Q** x **F**). They also indicate comparatively the results in the two experiments (students and adults).

Initially this research administered a single questionnaire (Fromme et al., 1993) to study the positive and negative alcohol expectancies and their subjective evaluation. Also, and for the first time, appropriate statistical methods (Baron and Kenny, 1986 and Evans, 1991) have been applied to investigate the moderator effect of subjective evaluation among alcohol-legal students (N = 183, mean age = 19.07) and general population adults (N = 153, mean age = 33.78).

In this chapter, it is the comparison that is made between the results of the hierarchical regression of the background variables gender and age, the expectancy and value on consumption in students and adults. It is a

feature of hierarchical regression analysis that the importance of any contributor variable is best measured the **first** time it is put into the regression model. Although indications of the importance of a contributor variable are more risky later on in the hierarchical regression analysis they are still useful. But the first time of entry to the model is the most useful and the least risky.

USUAL FREQUENCY (F)

The comparison of students and adults is shown in Table 6.1.

'Age' is statistically significant in all the models in the adults group but not in the students group. 'Gender' is statistically significant in only two models (GA+V and GA+EV) in the students group and not at all for adults.

The study of 'Negative Expectancy' and 'Positive Expectancy' indicates that negative expectancy (NE) and the positive expectancy (PE) in the GA+E model in both groups and in the GA+V model is only positive value (PV) statistically significant in the adults (not students) group.

The study 'Multiplicative Composites' (in the model GA+EV, which is not the appropriate model) shows that, only the positive expectancy value (PEV) is statistically significant in both groups and the negative expectancy value (NEV) is not reliable.

Finally, it also shows that, in the GA+V+E+EV model (the appropriate model for testing the multiplicative composites), the positive expectancy x value and negative expectancy x value multiplicative composites are statistically significant in both groups.

In summary, for Frequency data the most important observation is that, generally, positive terms make more significant associations with frequency of drinking than negative terms in both students and adults. There is a

tendency for negative terms to appear more in the models of students than adults.

Table 6.1. Students and adults compared in terms of the **significant** components of each of the regression models - Frequency, F.

	STUDENT	ADULTS
Model 1 (G+A)	-	**A**
Model 2 (GA+E)	**PE, NE**	**PE, NE**
Model 3 (GA+V)	**G**	**PV**
Model 4 (GA+EV)	**G, PEV**	**PEV**
Model 5 (GA+E+V)	**NE.**	-
Model 6 (GA+V+E)	**NE**	-
Model 7 (GA+V+E+EV)	**PEV, NEV**	**PEV, NEV**

The letters **G** and **A** refer to the background variables of gender and age. **E**, **V**, and **EV** indicate respectively positive and negative expectancy, value, and multiplicative composites.

QUANTITY Per SESSION (Q)

The comparison of students and adults is shown in Table 6.2.

The study of the background variables (Gender, G and Age, A) of the two groups (students and adults) with this questionnaire, indicates that Age is statistically significant in all the models in the adults group (the same as with the frequency) and Gender is statistically significant in the two models GA+V and GA+EV in the same group. The GA+E, GA+E+V, and GA+V+E models are statistically significant in the students group.

The quantity data shows that 'Negative Expectancy' is statistically significant in the GA+E, GA+E+V, and GA+V+E models in the students but not the adults group. The 'Positive Expectancy' is statistically significant in the GA+E model in both groups and in the GA+E+V, and GA+V+E models in the students group. The multiplicative composites in the GA+EV model show that only PEV is statistically significant in both groups.

The Negative and Positive Values indicate that, the 'Negative Value' is not significant in neither the adult nor the student groups in any models.

The 'Positive Value' on the other hand, is statistically significant in the adults (not students) group in GA+E+V and GA+V+E models, and it is statistically significant in GA+V model in both groups.

Research on the effect of 'Negative and Positive Expectancy x Value' (NEV, PEV) on the quantity data with the two groups shows that the PEV is statistically significant in the GA+V+E+EV model in both groups, and the NEV is statistically significant in the GA+V+E+EV model only in the students group.

In summary, for Quantity data the most important observation is that, in common with the Frequency data, positive terms make more significant associations than negative terms in both students and adults. Where

negative terms do appear significant, it is with students rather than adults.

Table 6.2 Students and adults compared in terms of the **significant** components of each of the regression models - Quantity per session, Q.

	STUDENT	ADULT
Model 1 (G+A)	-	**A** .
Model 2 (GA+E)	**PE**, **NE**	**PE**
Model 3 (GA+V)	**PV**	**PV**
Model 4 (GA+EV)	**PEV**	**PEV**
Model 5 (GA+E+V)	**NE**, **PE**	**PV**
Model 6 (GA+V+E)	**NE**, **PE**	**PV**
Model 7 (GA+V+E+EV)	**PEV&NEV**	**PEV**

The letters **G** and **A** refer to the background variables of gender and age. **E**, **V**, and **EV** indicate respectively positive and negative expectancy, value, and multiplicative composites.

QUANTITY x FREQUENCY (Q x F)

Students and Adults are compared in table 6.3.

The study of the total consumption per week and the background variables (Gender and Age) of the two groups (students and adults) indicates that age is statistically significant in all models in the adults group (the same as for usual frequency and quantity Per session), and gender is statistically significant in all models (with the exception of G+A model) in the students group.

Investigation of the impact of 'Negative Expectancy' (NE) on the QF in the two groups (students and adults), shows that the NE is statistically significant in the GA+E, GA+E+V, and GA+V+E models in the students (not adults) group. The 'Positive Expectancy' (PE) is statistically significant in the GA+E model in both groups, and in GA+E+V and GA+V+E models in the students group.

As is indicated that in the 'Negative and Positive Values' (NV, PV), the negative value is not reliable in any model in students or adults groups. And the positive value is statistically significant in GA+V and GA+E+V and GA+V+E models in both groups.

Moreover, the negative expectancy x value in GA+V+E+EV model and the positive expectancy x value in GA+EV model are statistically significant in the students group. The positive expectancy value is also statistically significant in the GA+EV and GA+V+E+EV models in the adults group.

In general: in common with the consumption measure Frequency and Quantity, associations with weekly consumption tend to be with the positive not negative terms and where negative terms are significant it tends to be with students not adults.

Table 6.3 Students and adults compared in terms of the **significant** components of each of the regression models - Quantity per week, QF.

	STUDENT	ADULT
Model 1 (G+A)	-	**A**
Model 2 (GA+E)	**PE, NE**	**PE**
Model 3 (GA+V)	**PV**	**PV**
Model 4 (GA+EV)	**PEV**	**PEV**
Model 5 (GA+E+V)	**PE, NE, PV**	**PV**
Model 6 (GA+V+E)	**PE, NE, PV**	**PV**
Model 7 (GA+V+E+EV)	**PEV, NEV**	**PEV**

The letters **G** and **A** refer to the background variables of gender and age. **E**, **V**, and **EV** indicate respectively positive and negative expectancy, value, and multiplicative composites.

The percentage of variance explained as each variable is added in the hierarchical regression analysis and percentage of the increment are shown in the following tables for students and adults (tables 6.4, 6.5, 6.6). Generally, for students, expectancy adds more than value when the GA+E and GA+V models are compared and the reverse is true for adults. Generally for students, the GA+EV model explains no more variance than does the GA+E or GA+V but for adults, the GA+EV model is best. However, as has been discussed elsewhere in this thesis, the increment of the GA+EV model over the GA model is the wrong way to test the EV multiplicative composite.

When the EV term is correctly assessed by looking at the increment of the GA+E+V+EV model over the GA+E+V model, both students and adults show a significant increment in variance explained with students showing double the effect of the adults.

Table 6.4 Hierarchical regression of frequency of weekly consumption on total negative and positive expectancy (E), value (V), the multiplicative composites (EV) with 184 students (Experiment 1) and 153 adults from the general population (Experiment 2).

USUAL FREQUENCY (F)

Model	**% variance explained**		**% increment**	
	students	adults	students	adults
1. G+A	0.00	6.53	-	-
2. G+A+E	8.87	7.81	8.87	1.28
3. G+A+V	1.3	9.17	1.3	2.64
4. G+A+EV	1.87	9.73	1.87	3.20
5. G+A+E+V	8.32	8.6	0.55	0.79
6. G+A+V+E	8.32	8.6	7.2	0.57
7. G+A+E+V+EV	20.13	12.7	11.81	4.1

Note (i) Percentage of variance explained is derived from the adjusted R-squared.

(ii) The letters G and A refer to the background variables gender and age, and E, V and EV refer to positive and negative expectancy, value and multiplicative composites, respectively.

(iii) The variables added at each hierarchical step are indicated in underlined.

(iv)Model 6 for adults (indicated in underlined) shows the percentage decrease in variance explained.

Table 6.5

Quantity Per Session (Q)

Hierarchical regression of a week consumption on total negative and positive expectancy (E), value (V), the multiplicative composites (EV) with 183 students (Experiment 1) and 153 adults from the general population (Experiment 2).

Model	**% variance explained**		**% increment**	
	students	adults	students	adults
1. G+A	2.63	13.5	-	-
2. G+A+E	12.8	15.3	10.17	1.8
3.G+A+V	9.55	19.4	6.92	3.9
4. G+A+EV	11.9	24.2	9.27	10.7
5. G+A+E+V	13.5	18.8	0.7	3.5
6. G+A+V+E	13.5	18.8	3.95	0.6
7. G+A+E+V +EV	27.9	27.8	14.4	9

Note (i) Percentage variance explained derives from adjusted R-squared.

(ii) The letters G and A refer to the background variables gender and age, and E, V and EV refer to positive and negative expectancy, value and multiplicative composites, respectively.

(iii) The variables added at each hierarchical step are underlined.

(iv) The percentage increment in variance explained for students in models 2 and 4 were significant, $P<0.0000$, and for models 3 and 6 were significant ($P<0.000$).

(v) Model 6 for adults (indicated in underlined) shows the percentage decrease in variance explained.

Table 6.6

Quantity x Frequency (QF) 7

Hierarchical regression of a week consumption on total negative and positive expectancy (E), value (V), the multiplicative composites (EV) and quadratics with 183 students (Experiment 1) and 153 adults from the general population (Experiment 2).

Model	% variance explained		% increment	
	students	adults	students	adults
1. G+A	1.9	12.9	-	-
2. G+A+E	10.4	14.8	8.5	1.9
3. G+A+V	8.94	17.8	7.04	4.9
4. G+A+EV	10.9	22.8	9	9.9
5. G+A+E+V	12	17.7	2.4	2.9
6. G+A+V+E	12	17.7	3.06	0.1
7. G+A+E+V +EV	28.8	26.1	16.8	8.4

Note (i) Percentage of variance explained is derived from the adjusted R-squared.

(ii) The letters G and A refer to the background variables gender and age, and E, V and EV refer to positive and negative expectancy, value and multiplicative composites, respectively.

(iii) The variables added at each hierarchical step are underlined.

(iv) The percentage increment in variance explained for adults in models 2, 5, and 6 was significant, $P<0.0$, and in model 3 was significant, $P<0.00$,

Table 6.6 cont

and in model 4 was significant, P<0.0000.

Also, the percentage increment in variance explained for students in model 6 was significant, P<0.01, and for models 2 and 3 were significant, P<0.000, and in models 4 and 5 were significant, P<0.0000.

(**v**) Model 6 for adults (underlined) shows the percentage decrease in variance explained.

Three studies (Fromme et al., 1993; Leigh, 1987; Werner et al., 1993) investigating the effect of subjective evaluations of alcohol expectancies on drinking decisions have showed that subjective evaluations add to the variance explained in drinking over models containing only alcohol expectancy assessments and basic background variables. Expectancy and subjective evaluations, however, within a social learning theory framework are held interact, not added, in influencing drinking behaviour (Ajzen and Fishbein, 1980; Kirsch, 1990).

Value, within social learning theory is believed to moderate the expectancy-behaviour relationship (Kirsch,1990). This hypothesis in alcohol expectancy research has been tested on three occasions (Grube et al., 1995) and revealed significant moderator effects. They showed that subjective evaluations significantly moderate the relationship between positive and negative expectancies and drinking. They found the relationship between positive expectancy and drinking to be positive or negative, depending on how favourably those positive expectancies are evaluated. Conversely, the negative association between negative expectancy and drinking depends on how favourably the negative expectancies are evaluated.

Fromme et al. (1993) demonstrated that among positive and negative expectancies and values incorporated into a model of undergraduate alcohol consumption, only the expectancy terms were significant. Jones et al., however, have administered questionnaires with a wider range of expectancy items (AEQ, Brown, Christiansen and Goldman, 1987; NAEQ, Jones and McMahon, 1994) and participants of alcohol-legal age have avoided these limitations. Nevertheless, they have revealed a significant moderator effect for subjective evaluations of negative expectancies.

Also using relevant statistical procedures, the two experiments of the

current study explore the association between alcohol consumption and expectancy-value multiplicative composites in a sample of alcohol-legal students (young adults) from the University of Glasgow (Experiment 1), and among mature adults from the general population of the city of Glasgow (Experiment 2). The two experiments provide an opportunity to test the extent to which whatever associations are found with young adults are generalized to include mature adults.

Figure 4.1 shows that the relationship between positive expectancy and drinking is positive for those consequences evaluated most favourably, and negative for those consequences evaluated least favourably. Figure 4.2 indicates the relationship between negative expectancy and drinking to be negative for those consequences evaluated as most bothersome, and positive for those consequences evaluated as being least bothersome. Regarding the moderator effect of expectancy-evaluations on the relationship between expectancy and drinking, the figures reveal that frequency of drinking is high for those with high expectations of positive outcomes and who evaluate these outcomes most favourably. However, it is low when negative consequences are more likely and are evaluated most unfavourably.

The results of Experiment 1 demonstrated that, consistently across all drinking variables, adding of the multiplicative composites model had a significant contribution to the variance explained. Both the negative and the positive multiplicative composites were significant components of the multiplicative model. They indicate the significant moderator effects of subjective evaluations of positive alcohol expectancies on the relationship between positive expectancies and drinking and of negative alcohol-related expectancies on the relationship between negative expectancies and drinking.

In contrast to the student analysis, the positive ($P<0.05$) and not the negative multiplicative composite which was significant. It indicated a significant moderator effect of subjective evaluations of positive expectancies on the relationship between positive expectancies and drinking. The graphical representation (Figure 4.1) in Experiment 1 (on the relationship between positive expectancy) value and drinking frequency, which indicated that frequency of drinking was highest for those with high expectations of positive outcomes and who evaluated these outcomes most favourably, also applied to the adult sample.

The interpretation of the moderator effect of subjective evaluations of positive expectancies (Quantity Per Session, Experiment 2) on the relationship between positive expectancies and drinking and the shape of the graph were identical to Figure 4.1 in Experiment 1. Moreover, the interpretation of the moderator effect in Experiment 1 (about the Q x F) and the shape of the graph (Figure 4.1) were also identical.

In experiment 2, like experiment 1, significant but much smaller moderator effects were at work. However, unlike the latter experiment, in experiment 2 the moderate effects were for subjective evaluations of positive, not negative expectancies.

In the current study a single questionnaire (CEOA) has been developed whit representations of the positive and negative constructs and using the same methodology and the same samples of drinkers. The results show significant moderator effects of subjective evaluations on the relationship between expectancy and consumption for both the positive and the negative constructs with alcohol-legal, young adults drinkers (Experiment 1). Value has a more extensive moderator role in expectancy association with consumption in young adults than what was expected.

Also, significant moderator effects are again revealed with the mature adult drinkers (Experiment 2), (represented by a comparatively smaller improvement in variance explained beyond the additive model than with the young adults, 50%). However, these effects, this time are for subjective evaluations of only positive, not negative, expectancies.

The findings of this study identify an important role for combined expectancy-value assessments (multiplicative composites) in explaining variability in drinking, represented by substantial improvements in percentage variance explained (students: 100%, adults: 50%) when the multiplicative composites are appropriately incorporated in the model. In a motivational model of drinking, drinking decisions are made when expectations of positive consequences outweigh expectations of negative consequences. In this model positive expectancies represent a component of motivation to drink, and negative expectancies represent a component of motivation to restrain drinking (Cox and Klinger, 1988). Decisions to drink or not, however, involve not only 'cognitive' components (expectancies), but also 'affective' components value (Klinger, 1977; Pervin, 1983). In other words, drinking decisions are influenced more by Positive expectancies that are evaluated more favourably than those evaluated less favourably. Similarly, decisions to drink are reduced under the influence of negative expectancies that are evaluated as more bothersome than those which are evaluated as less bothersome.

The main results are similar in all of the three models (frequency of drinking, quantity consumed per session and quantity consumed per week). Both positive and negative multiple composites increase significantly the variance explained in university students. On the other hand, both positive and negative subjective evaluations have a moderating influence on the association between expectancy and consumption. And finally, the greatest

effect is with the consumption measure, quantity per week, and the smallest effect is with frequency of consumption per week.

Whether the relationship between expectancy and consumption is positive or negative depends on the kind of expectancy. Where positive expectancy makes a reliable component of a drinking model, the relationship between the two is positive, that is, more expectancy will lead to more consumption. The finding is supported by other studies. On the other hand, where negative expectancy makes a reliable component of a model, the relationship is negative, in the sense that more expectancy leads to lower consumption.

In relationship between expectancy or value and consumption, it is usually expectancy rather than value which forms the stronger or more frequent association and it is more reliable.

Positive rather than negative terms also appears to be more frequently reliable. The main results are consistent with the findings of experiment 1. Each of the three models tested in experiment 1 revealed a significant moderating effect of subjective evaluations of alcohol expectancies on the association between expectancy and consumption. The significant moderating effects were found for both the positive and negative terms throughout the experiment. In experiment 2, results similar were found but only for the frequency of drinking model. For the other two models (quantity drunk per session and per week), only the negative terms and not the positive were significant. Although the negative terms in these two models were not significant, it was encouraging to see the figures show that the moderating effect is descriptively (if not statistically) consistent.

In studying the association between expectancy or value with consumption and estimating which of the two factors of expectancy or value forms a stronger or more frequent association with consumption, the

results of Experiment one is clear enough to identify expectancy as the one with stronger and more frequent association with consumption. In Experiment 2 the two factors are equal in strength and frequency of association. However, like experiment 1 , compared to negative terms, positive terms form more frequent associations with consumption.
Also, There is a general effect that males consume more or more frequently than females.

Limitations and Suggestions

Expectancy generally is defined as the anticipation of a systematic relationship between events in a situation which is expected to occur in future. The main elements which have major impact on the development of expectancies are familial, personality, socio-economic factors and previous experiences. This thesis has examined alcohol outcome expectancies which are thought to derive from the last feature, previous experience. It has been carried out with the use of convenience samples of students and adults and the acts of monitoring and reporting on generalizability from students to adults have been by the research community as important factors in this research area.

This thesis is based on social learning theory and the adoption of the CEOA was meant to correct possible mistakes caused by the use of earlier expectancy questionnaires. For example the series of experiments carried by Jones and McMahon used two questionnaires.
The CEOA is a new tool for measurement of expectancies of drinking alcohol. It compared to other questionnaires, it has the following advantages :
(a) it measures specific, self-relevant outcomes,

(b) it measures both positive and negative expected effects, and
(c) it measures subjective evaluations of alcohol's effects.

Moreover, by incorporating Likert response scales for the CEOA rather than simply binary responses, the measurement of expectancy strength (Fromme et al., 1993), which is important in both clinical and research settings becomes possible.
The measurement of expectancy through CEOA might help in predicting and even provide information for changing drinking behaviours.

There are difficulties with the CEOA, though. In the construction of CEOA a convenience sample of exclusively undergraduate students was used and, the scope of the expectancy set defined in the questionnaire is commensurably limited. The extent of the generalizability of the questionnaire to other samples of drinkers with more extended set of expectancies is not certain. The majority of negative expectancy items in the CEOA reveal relatively short term and mild negative consequences (e.g., 'my writing would be impaired', 'I would feel fuzzy', which are likely to be more compatible with young drinkers' short term focus (Fromme, Marllet, Baer, Kivlahan, 1994). Longer term physical, emotional and social consequences, however, are associated with more mature adult drinkers and for this reason the CEOA might not be a good tool to use with adults. Although research has demonstrated sample differences in terms of the set of expected consequences of alcohol consumption (Leigh, 1989), it is nevertheless believed that expectancy questionnaires which use samples of only undergraduate students can be used effectively with adults in treatment settings (Fromme et al., 1993). If this were not true, then the incorporation of convenience samples (especially undergraduate students) in the construction of expectancy

questionnaires will have to retarding affection the advancement of theory in expectancy research.

In this thesis it appears that the results got with the CEOA with students are quite similar to those got with adults (although there were differences that were pointed out at appropriate parts of the thesis). This might mean that generalising in general is fair or good rather than poor. More research is needed to be sure of this however. There has also been no test of the use of the CEOA in treatment setting and we do not know yet whether the important finding of the moderator effect of subjective evaluations on the relationship between expectancy and consumption as measured by the CEOA is true for such drinkers.

Although current studies have showed the significance of moderator associations between expectancies, subjective evaluations and drinking when they are measured simelteounsly, they do not explain the process where the cognitive and affective variables (expectancies and values, respectively) extend their influence. This is an important area of research that is almost untouched. Some preliminary work is being reported by Goldman and his colleagues (1992) and Jones and his colleagues (1996).

There is a need to measure subjective evaluations and this is not always recognised and done even less. This shortcoming is potentially significant because, as Leigh (Critchlow, 1987) has shown, there is considerable variability in views about the desirability of particular effects of drinking. Outcomes which are typically thought to be negative (e.g., irresponsibility and decreased motor control), are sometimes reported as positive motivations for students and a questionnaire that only represents expectancies (per-judged as positive or negative by those who constructed the questionnaire in question) will poorly represent an individual's motivations. Although it is necessary to have both expectancy and value as

separate variables in the statistical model for the assessment of the status of the multiplicative composite, it is difficult to imagine them having separate functions in the real world. For example, how might an expectancy cause a particular piece of behaviour if it is divorced from an evaluation?

The assessment of both outcome expectancies and subjective evaluations may be of even more importance in clinical than research setting. Clinicians by measuring subjective evaluations can discern clients' affective appraisal of drinking. Consequently, they will have a better perspective of their patients' future involvement with alcohol. Effect of drinking which are valued highly and positively could be a sign of deterioration, whereas effects considered as less valued and negative will be a sign of improvement and decrease in the level of alcohol consumption. More clinical research shows that having an understanding of clients' cognitive processes and affective experience is very important in causing any change of behaviour (Greenberg & Safran, 1987). Multiplicative composites by allowing modification of a population instrument are more likely to provide better representations of alcohol motivations. They process individuals' expectancies against their ratings of subjective evaluation (Jones and McMahon. 1996b). Subjective evaluation ratings of expectancies can help clinicians in identifying positive and negative expectations which are most valued by drinkers, and consequently have the most impact on their decisions to drink and to stop, or reduce drinking. Indeed, it might even be the case that it is the subjective evaluations of expectancies rather than the expectancies themselves that change as a result of treatment. There is some evidence that expectancies might change after drinking behaviour has changed in fact (Miller personal communication to Jones 1997, Connors, 1993) and if this is true then an explanation in terms of subjective evaluations through a multiplicative composite might be very appropriate.

These findings suggest that, besides outcome expectancies, people have different views on the dose required to achieve those expected outcomes. Further research on dose-related expectations and their effects will provide another tool to the clinical involved in habit change. One example is that the alcohol skills training programme, concentrates on dose-related expectancies of the participants (Fromme et al., 1986). In challenging the programme in its study of participants' views on the amount of alcohol necessary to achieve desirable and avoid undesirable effects, has proven to be successful. it significantly reduced participants' alcohol consumption (Kivlahan, Marlatt, Fromme, Coppel, & Williams, 1990).

Another point which should be given further consideration is the role of expectancies in initiation versus the maintenance of drinking. Expected consequences, are probably more effective in influencing a teenager's first drink than on influencing millionth drink of an alcoholic.

Motivational interviewing, as one of the most currently used and useful methods of clinical intervention, suggests that in order to affect a change in any behaviour characterised with alcohol misuse, it is necessary that such drinkers should show a greater sense of control and responsibility. A better understanding of alcohol expectancies, and especially subjective attitudes, should increases the clinicians' ability to identify critical motivators and consequently develop healthier behaviour. There appear to be, then, some limited success in trying to understand the drinking behaviour of the young and the mature and the moderate and problem drinker through trying to understand their expectancies. If this research has any validity then it should extend to not just alcohol consumption cognitions and behaviour but to uses and abuses of other substances. Extensions have not been quick to come. There are some early

reports of explorations cannabis outcome expectancies (Brown) and McMahon and colleagues are developing an expectancy framework for heroin use. Both research areas show that the use of an expectancy framework might be as useful in the cannabis / heroin domain as in the alcohol domain. For example, Jones and McMahon (1998) have shown how effective motivational interviewing for alcohol problems can be when information from an expectancy assessment is used. Cannabis and heroin treatment has poor outcomes and there might be a real possibility that motivational interviews for cannabis and heroin problems that are based on expectancy assessments might improve this level of outcome.

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APPENDIX

A.

The Context of the Questionnaire

This study aims to collect young and adult people's view on the expectancy of consumption in Glasgow. It would be of great assistance to me if you complete the enclosed questionnaire. Your co-operation is vital for the success of this survey. All information given and opinions expressed in this questionnaire will be treated as strictly confidential.

Thank you very much for your co-operation.

DEMOGRAPHIC & DRINKING HABITS INFORMATION

A. Age-------- B. Sex----------

C. Ethnicity (please circle appropriate response)

1. Asian 2. Hispanic 3. Black 4. White 5. other---------(specify)

D. We are interested in how frequently you drink alcoholic beverages. In general, over the past one month, how often did you have any drink containing alcohol, whether it was wine, beer, cider, spirits or any other alcoholic beverage ? Please circle the item that best describes your usual drinking frequency :

0. three or more times a day
1. two times a day
2. once a day
3. nearly every day
4. three or four times a week
5. once or twice a week

6. two or three times a month
7. about once a month
8. less than once a month but at least once a year
9. less than once a year or I have not had any alcoholic beverages during the past one month

We are also interested in how much alcohol you consume during each drinking occasion. By one drink, we mean one unit of alcohol, i.e., half pint of beer, one shot of spirits - straight or in a mixed drink, or one 4 ounce glass of wine. Think of all the times you have been drinking in the past month

E. When you drank, how often did you have as many as 5 or 6 drinks?

0. nearly every time
1. more than half the time
2. less than half the time
3. once in a while
4. never

F. When you drank, how often did you have as many as 3 or 4 drinks?

0. nearly every time
1. more than half the time
2. less than half the time
3. once in a while
4. never

G. When you drank, how often did you have as many as 1 or 2 drinks?

0. nearly every time
1. more than half the time
2. less than half the time
3. once in a while
4. never

H. Please fill in a number for each day of the week indicating the average number of drinks you have consumed on that day in the past month.

Monday	Tuesday	Wednes	Thursday	Friday	Saturday	Sunday

Please Read These Instructions Carefully.

1. Will you imagine that you have just been drinking alcohol? Imagine you have just about drunk about the quantity you would normally drink.
2. It is likely that you will feel the alcohol has affected you in some way. This is what I am interested in - in what way would you expect to be affected.
3. You will be given a list of about 80 ways that alcohol could

conceivably affect people.

What I want to know is how you expect it will affect **YOU**

4. **Will you read each item in turn and put a cross in the column that fits you best**

Here is an example

"If I had been drinking alcohol....."

I would get into arguments

disagree	slightly disagree	slightly agree	agree

5. I want you to do one more thing.

Tell me whether the effect you've just crossed is good or bad as far as **YOU** are concerned.

6. **Will you indicate how good or bad by crossing the appropriate column that fits you best**

Here is an example that might refer to the 'arguments', above

This effect is

bad	slightly bad	neutral	slightly good	good

So in this case, you have agreed that you expect to be argumentative when you drink alcohol and you think this a bad thing that this happens to you.

Please will you now do this with the 80 or so items on the next few pages.

Remember, I am interested in what you expect to happen to <u>YOU</u>

IF I HAD BEEN DRINKING ALCOHOL .....

	disagree	slightly disagree	slightly agree	agree		bad	slightly bad	neutral	slightly good	good
1. I would be outgoing	----	----	-----	----	This effect is	---	---	---	---	---
2. My senses would be dulled	----	----	----	----	This effect is	---	---	---	---	---
3. I would be submissive	----	----	-----	----	This effect is	---	---	---	---	---
4. I would be romantic	----	----	----	----	This effect is	---	---	---	---	---
5. I would be humorous	----	----	-----	----	This effect is	---	---	---	---	---
6. I would feel self-accepting	----	----	----	----	This effect is	---	---	---	---	---
7. I would be easier to express my feeling	---	---	---	---	This effect is	---	---	---	---	---
8. I would be sick to my stomach	---	---	---	---	This effect is	---	---	---	---	---

IF I HAD BEEN DRINKING ALCOHOL .....

	disagree	slightly disagree	slightly agree	agree		bad	slightly bad	neutral	slightly good	good
9. I would get into arguments	---	---	---	---	This effect is	---	---	---	---	---
10. I would worry less	---	---	---	---	This effect is	---	---	---	---	---
11. I would feel self - reliant	---	---	---	---	This effect is	---	---	---	---	---
12. I would be difficult to walk	---	---	---	---	This effect is	---	---	---	---	---
13. I would slur my word	---	---	---	---	This effect is	---	---	---	---	---
14. My head would spin	---	---	---	---	This effect is	---	---	---	---	---
15. I would act impatiently	---	---	---	---	This effect is	---	---	---	---	---

IF I HAD BEEN DRINKING ALCOHOL .....

	disagree	slightly disagree	slightly agree	agree		bad	slightly bad	neutral	slightly good	good
16. I would have a hangover the next day	---	---	---	---	This effect is	---	---	---	---	---
17. I would feel sexy	---	---	---	---	This effect is	---	---	---	---	---
18. I would act immaturely	---	---	---	---	This effect is	---	---	---	---	---
19. I would feel socially acceptable	---	---	---	---	This effect is	---	---	---	---	---
20. I would feel lucky	---	---	---	---	This effect is	---	---	---	---	---
21. I would have difficulty thinking	---	---	---	---	This effect is	---	---	---	---	---
22.I would feel content	---	---	---	---	This effect is	---	---	---	---	---
23.I would act rudely	---	---	---	---	This effect is	---	---	---	---	---
24.I would feel awake	---	---	---	---	This effect is	---	---	---	---	---

IF I HAD BEEN DRINKING ALCOHOL .....

		slightly	slightly			slightly		slightly	
	disagree	disagree	agree	agree		bad	bad	neutral	good	good
25. I would neglect my obligations	---	---	---	---	This effect is	---	---	---	---	---
26. My problems would seem worse	---	---	---	---	This effect is	---	---	---	---	---
27. I would feel sleepy	---	---	---	---	This effect is	---	---	---	---	---
28. I would feel self-confident	---	---	---	---	This effect is	---	---	---	---	---
29. I would forget things that happened or things I did	---	---	---	---	This effect is	---	---	---	---	---
30. I would feel lazy	---	---	---	---	This effect is	---	---	---	---	---
31. My writing would be impaired	---	---	---	---	This effect is	---	---	---	---	---
32. I would be dominant	---	---	---	---	This effect is	---	---	---	---	---

IF I HAD BEEN DRINKING ALCOHOL .....

	disagree	slightly disagree	slightly agree	agree		bad	slightly bad	neutral	slightly good	good
33. I would feel optimistic about the future	---	---	---	---	This effect is	---	---	---	---	---
34. I would feel easy going	---	---	---	---	This effect is	---	---	---	---	---
35. My breathing would change	---	---	---	---	This effect is	---	---	---	---	---
36. I would be passive	---	---	---	---	This effect is	---	---	---	---	---
37. My head would feel fuzzy	---	---	---	---	This effect is	---	---	---	---	---
38. I would do things I would not usually do	---	---	---	---	This effect is	---	---	---	---	---
39. I would be flirtatious	---	---	---	---	This effect is	---	---	---	---	---

IF I HAD BEEN DRINKING ALCOHOL .....

	disagree	slightly disagree	slightly agree	agree		bad	slightly bad	neutral	slightly good	good
40. My bad mood would change to a good mood	---	---	---	---	This effect is	---	---	---	---	---
41. I would enjoy sex more	---	---	---	---	This effect is	---	---	---	---	---
42. My vision would be impaired	---	---	---	---	This effect is	---	---	---	---	---
43. I would feel restless	---	---	---	---	This effect is	---	---	---	---	---
44. I would be friendly	---	---	---	---	This effect is	---	---	---	---	---
45 I would behave inconsistently	---	---	---	---	This effect is	---	---	---	---	---
46 I would feel dizzy	---	---	---	---	This effect is	---	---	---	---	---
47 I would be clumsy	---	---	---	---	This effect is	---	---	---	---	---
48 I would feel emotional	---	---	---	---	This effect is	---	---	---	---	---
49 It would be easier to act out my fantasies	---	---	---	---	This effect is	---	---	---	---	---

IF I HAD BEEN DRINKING ALCOHOL .....

	disagree	slightly disagree	slightly agree	agree		bad	slightly bad	neutral	slightly good	good
50 I would feel less bored	---	---	---	---	This effect is	---	---	---	---	---
51 I would be loud, boisterous, or noisy	---	---	---	---	This effect is	---	---	---	---	---
52 I would feel peaceful	---	---	---	---	This effect is	---	---	---	---	---
53 I would be brave and daring	---	---	---	---	This effect is	---	---	---	---	---
54 I would feel unafraid	---	---	---	---	This effect is	---	---	---	---	---
55 I would feel creative	---	---	---	---	This effect is	---	---	---	---	---
56 I would act unpredictably	---	---	---	---	This effect is	---	---	---	---	---
57 I would be courageous	---	---	---	---	This effect is	---	---	---	---	---
58 I would have a headache	---	---	---	---	This effect is	---	---	---	---	---
59 I would feel shaky or jittery the next day	---	---	---	---	This effect is	---	---	---	---	---

IF I HAD BEEN DRINKING ALCOHOL .....

	disagree	slightly disagree	slightly agree	agree		bad	slightly bad	neutral	slightly good	good
60 I would feel weak	---	---	---	---	This effect is	---	---	---	---	---
61 My heartbeat would change	---	---	---	---	This effect is	---	---	---	---	---
62 I would feel energetic	---	---	---	---	This effect is	---	---	---	---	---
63 My body would be relaxed	---	---	---	---	This effect is	---	---	---	---	---
64 I would forget my problems	---	---	---	---	This effect is	---	---	---	---	---
65 I would act aggressively	---	---	---	---	This effect is	---	---	---	---	---
66 My responses would be slow	---	---	---	---	This effect is	---	---	---	---	---
67 I would feel guilty	---	---	---	---	This effect is	---	---	---	---	---
68 I would feel moody	---	---	---	---	This effect is	---	---	---	---	---

IF I HAD BEEN DRINKING ALCOHOL .....

	disagree	slightly disagree	slightly agree	agree		bad	slightly bad	neutral	slightly good	good
69 I would find it easier to talk to people	---	---	---	---	This effect is	---	---	---	---	---
70 I would feel calm	---	---	---	---	This effect is	---	---	---	---	---
71 I would be a better lover	---	---	---	---	This effect is	---	---	---	---	---
72 I would feel attractive	---	---	---	---	This effect is	---	---	---	---	---
73 I would feel happy	---	---	---	---	This effect is	---	---	---	---	---
74 I would have a quick temper	---	---	---	---	This effect is	---	---	---	---	---
75 I would feel bloated	---	---	---	---	This effect is	---	---	---	---	---
76 I would feel self-critical	---	---	---	---	This effect is	---	---	---	---	---
77 I would behave recklessly	---	---	---	---	This effect is	---	---	---	---	---
78 Parts of my body would feel numb	---	---	---	---	This effect is	---	---	---	---	---
79 I would feel flushed	---	---	---	---	This effect is	---	---	---	---	---

IF I HAD BEEN DRINKING ALCOHOL .....

	disagree	slightly disagree	slightly agree	agree		slightly bad	bad	neutral	slightly good	good
80 I would be talkative	---	---	---	---	This effect is	---	--	---	---	---
81 I would be an interesting person	---	---	---	---	This effect is	---	---	---	---	---
82 I would act tough	---	---	---	---	This effect is	---	---	---	---	---
83 I would act irresponsibly	---	---	---	---	This effect is	---	---	---	---	---
84 I would be assertive	---	---	---	---	This effect is	---	---	---	---	---
85 I would take risks	---	---	---	---	This effect is	---	--	---	---	---
86 I would feel light headed	---	---	---	---	This effect is	---	--	---	---	---
87 I would feel powerful	---	---	---	---	This effect is	---	---	---	---	---
88 I would act sociable	---	---	---	---	This effect is	---	---	---	---	---
89 I would act rowdy	---	---	---	---	This effect is	---	---	---	---	---

B. Frequency Tables :

Table 1 : This table shows the
Frequency of Gender in the Students.

Statistical Basic Statistics	Frequency Table; Variable: Gender			
Category	Freq.	Percent	Cumulative Freq.	Cumulative Percent
Female	107	58.47	107	58.47
Male	76	41.53	183	100.00

Table 2 : This table shows the Frequency of Gender in the Adults.

Statistical Basic Statistics	Frequency Table; Variable: Gender			
Category	Freq.	Percent	Cumulative Freq.	Cumulative Percent
Female	77	50.33	77	50.33
Male	76	49.67	153	100.00

Table 3: This table shows the Frequency of Age in the Students.

Statistical Basic Statistics	Frequency Table; Variable: Gender			
Category	Freq.	Percent	Cumulative Freq.	Cumulative Percent
17	15	8.20	15	8.20
18	75	40.98	90	49.18
19	32	17.49	122	66.67
20	24	13.11	146	79.78
21	17	9.29	163	89.07
22	20	10.93	183	100.00

Table 4: This table shows the Frequency of Age in the Adults.

Statistical Basic Statistics	Frequency Table; Variable: Gender			
Category	Freq.	Percent	Cumulative Freq.	Cumulative Percent
23	13	8.50	13	8.50
24	16	10.46	29	18.95
25	7	4.58	36	23.53
26	7	4.58	43	28.10
27	11	7.19	54	35.29
28	8	5.23	62	40.52
29	11	7.19	73	47.71
30	7	4.58	80	52.29
31	3	1.96	83	54.25
32	9	5.88	92	60.13
33	2	1.31	94	61.44
34	3	1.96	97	63.40
35	7	4.58	104	67.97
36	3	1.96	107	69.93
37	2	1.31	109	71.24
38	3	1.96	112	73.20
39	3	1.96	115	75.16
40	6	3.92	121	79.08
41	2	1.31	123	80.39
44	2	1.31	125	81.70
45	3	1.96	128	83.66
46	1	0.65	129	84.31
47	1	0.65	130	84.97
48	5	3.27	135	88.24
49	2	1.31	137	89.54
51	1	0.65	138	90.20
52	4	2.61	142	92.81
53	1	0.65	143	93.46
56	1	0.65	144	94.12
57	2	1.31	146	95.42
58	2	1.31	148	96.73
59	3	1.96	151	98.69
60	2	1.31	153	100.00

Table 5 : This table shows the Frequency Weekly Consumption

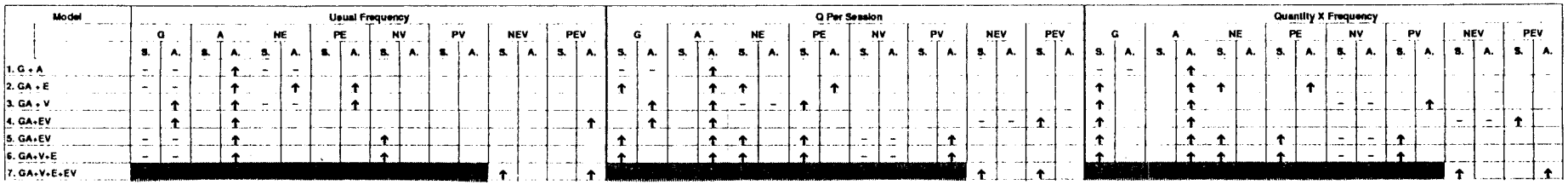
STATISTICA Frequency Table; Variable: WEEKSUM

BASIC Interval Method: All values

STATISTICS Minimum = .000000 Maximum =73.00000

Category	Freq.	Percent	Cumulatv Freq.	Cumulatv Percent
0	10	9.90	10	9.90
1	1	.99	11	10.89
2	6	5.94	17	16.83
3	1	.99	18	17.82
4	1	.99	19	18.81
5	2	1.98	21	20.79
6	7	6.93	28	27.72
7	2	1.98	30	29.70
8	5	4.95	35	34.65
9	4	3.96	39	38.61
10	1	.99	40	39.60
11	2	1.98	42	41.58
12	6	5.94	48	47.52
14	2	1.98	50	49.50
15	2	1.98	52	51.49
16	5	4.95	57	56.44
17	6	5.94	63	62.38
18	1	.99	64	63.37
19	2	1.98	66	65.35
20	2	1.98	68	67.33
22	1	.99	69	68.32
24	3	2.97	72	71.29
25	2	1.98	74	73.27
26	1	.99	75	74.26
27	1	.99	76	75.25
28	2	1.98	78	77.23
29	1	.99	79	78.22
32	1	.99	80	79.21
34	1	.99	81	80.20
35	1	.99	82	81.19
36	1	.99	83	82.18
37	2	1.98	85	84.16
39	1	.99	86	85.15
42	2	1.98	88	87.13
44	2	1.98	90	89.11
45	1	.99	91	90.10
46	2	1.98	93	92.08
48	1	.99	94	93.07
52	1	.99	95	94.06
55	1	.99	96	95.05
60	1	.99	97	96.04
62	2	1.98	99	98.02
64	1	.99	100	99.01

Table 6 : Comparison models in the three area (Usual Frequency, Quantity Per-Session, Quantity x Frequency)



Note :

Beta weight are not supplied the variables ' G', 'A', 'NE', 'PE', 'NV', and 'PV' in model '7' because, they become statistically uninterpretable after addition of the multiplicative composites (there is used Partial Correlations Method).

Table 2: The correlation Matrix for the variables in the full model of Experiment 2 (Adults).

STATISTICA REGRESSION STATS	CORRELATIONS					
Variable	AGE	GENDER	USUALF	QSESS	QFINDEX	PE
AGE	1.000000	.054644	-.246514	-.367951	-.360529	-.136444
GENDER	.054644	1.000000	.116284	.089160	.083807	.008068
USUALF	-.246514	.116284	1.000000	.472275	.574229	.080239
QSESS	-.367951	.089160	.472275	1.000000	.966154	.198047
QFINDEX	-.360529	.083807	.574229	.966154	1.000000	.218858
PE	-.136444	.008068	.080239	.198047	.218858	1.000000
NE	.011227	-.012162	-.084751	.036655	.083297	.669659
PV	-.259588	-.134823	.233522	.314194	.281926	.228010
NV	-.215618	-.036338	.093746	.067725	.031188	-.205384
PEV	-.298159	-.102147	.259955	.423042	.410467	.711463
NEV	-.218494	.009451	.110771	.178968	.188846	.485960

STATISTICA REGRESSION STATS	CORRELATIONS				
Variable	NE	PV	NV	PEV	NEV
AGE	.011227	-.259588	-.215618	-.298159	-.218494
GENDER	-.012162	-.134823	-.036338	-.102147	.009451
USUALF	-.084751	.233522	.093746	.259955	.110771
QSESS	.036655	.314194	.067725	.423042	.178968
QFINDEX	.083297	.281926	.031188	.410467	.188846
PE	.669659	.228010	-.205384	.711463	.485960
NE	1.000000	-.203244	-.484188	.230503	.468533
PV	-.203244	1.000000	.385019	.764033	.231126
NV	-.484188	.385019	1.000000	.085509	.429486
PEV	.230503	.764033	.085509	1.000000	.368497
NEV	.468533	.231126	.429486	.368497	1.000000

Note : The Correlation are supplied for the variables Age (A), Gender (G), Positive Expectancies (PE), Negative Expectancies (NE), Positive Values (PV), Negative Values (NV), Positive Expectancy Value (PEV), Negative Expectancy Value (NEV) and Consumption.

C. Correlation's Tables :

Table 1: The correlation Matrix for the variables in the full model of Experiment 1 (Student).

STATISTICA REGRESSION STATS	CORRELATIONS					
Variable	AGE	GENDER	USUALF	QSESS	QFINDEX	PE
AGE	1.000000	.116139	.094533	.059622	.059512	.101835
GENDER	.116139	1.000000	.041496	.188787	.168021	-.027313
USUALF	.094533	.041496	1.000000	.345230	.527935	.005070
QSESS	.059622	.188787	.345230	1.000000	.941744	.150447
QFINDEX	.059512	.168021	.527935	.941744	1.000000	.132096
PE	.101835	-.027313	.005070	.150447	.132096	1.000000
NE	.174804	-.021754	-.252324	-.170907	-.162880	.519312
PV	-.017931	.017643	.151928	.281776	.283541	.369733
NV	-.039471	-.035495	.085530	.108762	.075118	-.068576
PEV	.050099	-.000547	.159909	.320360	.316411	.837741
NEV	.103822	-.009566	.001224	.140381	.116766	.436287

STATISTICA REGRESSION STATS	CORRELATIONS				
Variable	NE	PV	NV	PEV	NEV
AGE	.174804	-.017931	-.039471	.050099	.103822
GENDER	-.021754	.017643	-.035495	-.000547	-.009566
USUALF	-.252324	.151928	.085530	.159909	.001224
QSESS	-.170907	.281776	.108762	.320360	.140381
QFINDEX	-.162880	.283541	.075118	.316411	.116766
PE	.519312	.369733	-.068576	.837741	.436287
NE	1.000000	-.165958	-.404843	.208118	.401514
PV	-.165958	1.000000	.360852	.783567	.264629
NV	-.404843	.360852	1.000000	.145462	.556322
PEV	.208118	.783567	.145462	1.000000	.415278
NEV	.401514	.264629	.556322	.415278	1.000000

Note : The Correlation are supplied for the variables Age (A), Gender (G), Positive Expectancies (PE), Negative Expectancies (NE), Positive Values (PV), Negative Values (NV), Positive Expectancy Value (PEV), Negative Expectancy Value (NEV) and Consumption.