

## Alcohol and Choice: The Context for Drinking\*

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Studies describing situational factors influencing patterns of drinking alcohol in New Zealand and elsewhere are described and interpreted in terms of a behavioural view of choice. The behavioural theory of choice places drinking in the context of competing choice alternatives. In particular, the view accounts for drinking in terms of the relativity between the consequences of drinking (costs and benefits) and the consequences of alternative activities. The health and social costs of drinking are typically delayed or removed from the context of drinking and thereby exert little influence on drinking. Greater influence is exerted by the range of choices provided by different contexts for drinking and the availability of opportunities to engage in activities other than drinking.

According to Orchard (1986), estimated per capita consumption of alcohol in New Zealand has increased by 35% since 1955. The social costs to the health system, including public hospital costs, capital costs of medical facilities, general practitioner care, pharmaceuticals, teaching and research, and public health activities, have been estimated at over \$108 million (Rayner & Chetwynd, 1987). Public hospital costs alone are estimated at between \$52 and \$115 million annually (Ashton & Casswell, 1984). Drinking alcohol is clearly a highly preferred and costly activity.

The literature of the last 40 years has suggested conditions that motivate alcohol consumption. These hypothetical motivational states for alcohol abuse include tension reduction (Cappell & Greeley, 1987), a lack of personal power (McClelland, Davis, Kalin, & Wanner, 1972), cognitive dissonance (Steele, Southwick, & Critchlow, 1981), lack of personal control (Marlatt, 1976), and ambiguity regarding personal causes of failure (Berglas & Jones, 1978). The various hypotheses have met with little support (Vuchinich & Tucker, 1983). In the present paper we offer an alternative based on the

behavioural theory of choice, which places drinking in the context of competing choice alternatives (Herrnstein, 1970; Lacey & Rachlin, 1978; Rachlin, 1980). As a conceptual framework it adopts a fundamentally different approach to alcohol use compared to the earlier motivational accounts. This view places drinking in the context of other behaviours and emphasises that drinking is one of several possible choices a person is faced with at any one time. In particular, this view accounts for drinking in terms of the relativity between the consequences of drinking (costs and benefits) and the consequences of alternative activities that might be engaged in.

The consequences of drinking are its "costs and benefits". Drinking may have some few "benefits", the most influential of which may be the physiological effect of alcohol itself. The social and medical costs of drinking are recognised as major sources for concern, but typically have little effect on the behaviour of the individual drinker because the social and medical costs are delayed. The costs and benefits of other activities that might compete with drinking have an inverse effect on drinking — the benefits of alternative behaviour reduce drinking. Accordingly, drinking contexts that provide a wider range of alternative activities such as the home are associated with lower rates of consumption than contexts where few competing alternatives are possible, such as public bars.

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### Costs and Benefits of Drinking

Drinking may be understood in terms of choices made between drinking and other alternative behaviours. The opportunity to drink is one of a number of competing possible activities. Each choice, including drinking, has its own set of costs and benefits (or rewards and punishers). The likelihood of choosing to drink is determined by the costs and benefits of drinking, relative to costs or benefits of engaging in alternative behaviours. (A basic tutorial on the matching law, which predicts this relation, is provided by McDowell, 1988). The direct costs of drinking will generally reduce drinking whereas the benefits obtained from drinking strengthen it. The effects of these direct costs and benefits are relative to the costs and benefits of other competing alternatives. The costs of other behaviours will tend to increase drinking whereas the benefits derived from other behaviours will decrease drinking.

New Zealand data describing the prevalence of drinking among different ages focus our attention on the possible problems of increased consumption, especially in young persons (Casswell, Brasch, Gilmore & Silva, 1985; Cullen, 1985; Deaker, 1987; Stacey, 1983; Stacey & Elvy, 1982). Many authors have studied the costs of excessive drinking, whereas several authors have also considered the costs and benefits of low and moderate alcohol consumption (Logue, 1986; Smith, 1987). Although the health and social costs are direct consequences of drinking, they are relatively ineffective in reducing rates of consumption because they are typically delayed consequences which are discounted (Vuchinich & Tucker, 1983).

*Price.* A direct cost which is more immediate is the purchase price of alcohol. Purchase price does indeed appear to affect levels of drinking. The effects of price reductions at happy hour (half-price bar sales) appear to support this view. Price increases reduce consumption or encourage the substitution of other beverages in New Zealand (Easton & Kay, 1982), and in North America (Ornstein, 1980).

In terms of the behavioural theory of choice, as the price of alcohol increases, the consequences of alternative behaviour be-

come relatively more influential compared to the consequences of drinking and the probability of drinking (or purchasing alcohol) decreases. Figure 1 shows the price index deflated by the consumers' price index (indexed to 1960 prices) of Beer, Wine, and Spirits, and the total litres consumed across these beverages. Figure 1 was based on data showing changes in consumption over a 15-year period reported by Ashton and Casswell (1986).

There is a clear inverse relationship between the price of beer, wine, or spirits and the consumption of these beverages.

The annual fluctuations in price and consumption of beer, as opposed to wine and spirits (Ashton & Casswell, 1986) suggest that beer may be a relatively inelastic commodity; that is, beer consumption remains unaltered (to some extent) with variations in price. Studies conducted in North America also point to the relative inelasticity of beer compared to other beverages (Ravn, 1987). Nevertheless, consistent with our summary in Figure 1, Ashton and Casswell (1986) concluded that there is sufficient evidence to maintain that a rise in the price of alcoholic beverages in New Zealand does reduce per capita consumption.

*Health costs.* Many studies have shown that alcohol abuse can cause health problems (Logue, 1986; Popham, Schmidt & Israelstam, 1984; Smith, 1987). The health costs of drinking include: Liver cirrhosis, alcoholism, cancer of the upper alimentary tract, rectum, breast, pancreas, and liver;

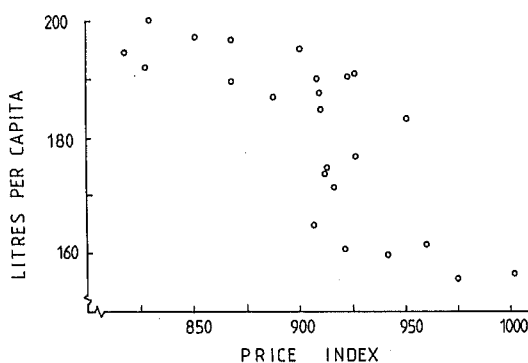


Figure 1. Mean litres of alcoholic beverages consumed per capita per year as a function of the price index deflated by the consumers' price index (indexed to 1960 prices) for the beverages (beer, wine and spirits combined).

pancreatitis, hypertension, ischaemic heart disease, alcoholic cardiomyopathy, cerebrovascular disease,

*Social costs.* The effects of alcohol abuse are not confined to health problems (Logue, 1986; Smith, 1987; Wilson & Herrnstein 1985). The social costs of drinking include increased rates of homicide, assault, rape, robbery, burglary, disorderly behaviour, domestic violence, drink-driving convictions, suicide, and attempted suicide. They also include traffic accidents, and industrial and domestic accidents.

*Health benefits.* Turner, Bennet, and Hernandez (1981) and Baum-Baicker (1985) reviewed some 25 studies detailing various beneficial effects of low to moderate drinking behaviour. The beneficial consequences are thought to include improved nutrition from increased potassium and caloric value, reduced hypertension and coronary heart disease with low alcohol intake, and improved diabetic diet because insulin is not required to metabolise alcohol. Additional reinforcing consequences of alcohol consumption that have been suggested include the reduction of clinical depression (Logue, 1986; Neff & Husaini, 1982, Smith, 1987). In terms of the behavioural theory of choice, small immediate reinforcers or benefits from alcohol consumption should be considered against the long-term costs of drinking. Such health benefits may seem few, when compared to the many costs of drinking.

#### Contexts and Competing Choices

The effects of competing choices on drinking can be examined in two ways. Indirectly, drinking can be understood in terms of the range of choices provided by different contexts for drinking or by different life circumstances. Directly, choices of drinking can be related to the availability of opportunities to engage in activities other than drinking. These opportunities depend on the drinking context. The question we shall address is whether the consumption of alcohol is affected by competing activities that are incompatible with drinking in different contexts.

The availability of other competing activities in hotels was studied by the Mass observation Team in 1943. They reported

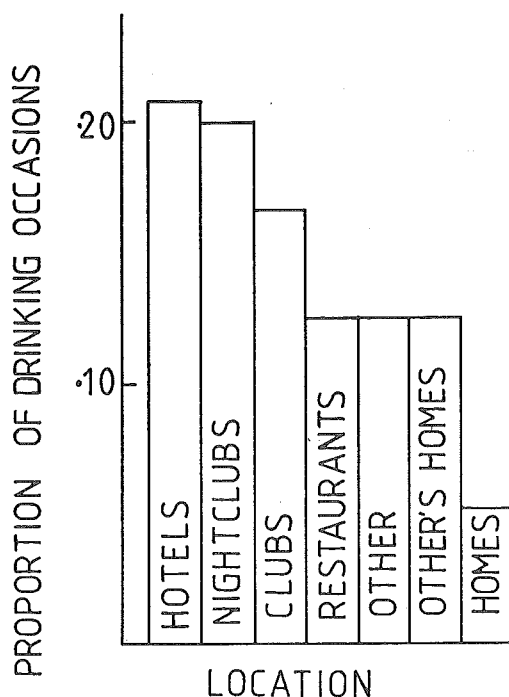


Figure 2. Proportion of drinking occasions in different locations likely to result in blood alcohol levels (BAL) greater than 80 mg%, the legal limit for driving.

that activities such as darts, or cards reduced the amount of drinking. Areas that did not have such other purportedly reinforcing activities in the drinking context had higher rates of arrest for drunkenness. Carver (1979) found that Napier Hotels that had more games facilities had no violence problems.

The inverse relationship between the range of choices provided by different contexts and drinking behaviour is supported by our analysis of New Zealand data from Stewart and Casswell (1986) suggesting a link between context and high blood alcohol levels (BAL) as measured by self report. Using self reports of alcohol consumption in different locations from survey data, Stewart and Casswell estimated the proportion of drinking occasions likely to result in BALs greater than 80mg%, the legal limit for driving. Figure 2 shows the proportion of occasions, by location, on which blood-alcohol level exceeded 80mg%, recalculated from Stewart and Casswell's Figure 3. Hotels, which can be assumed to provide few available

alternative activities besides drinking behaviour or games, are associated with the highest probability of BAL levels in excess of 80 mg%. Other locations that provide a wider range of choices within the drinking context were associated with a lower likelihood of BAL exceeding 80 mg%.

The inverse relationship in Figure 2 between the likelihood of BAL exceeding 80 mg% and the range of choices in different drinking locations provides evidence that other activities may compete with drinking to decrease BAL. The drinking locations in Figure 2 can be assumed to involve different numbers of choices and can be viewed as points on a continuum of increasing choices. Hotel and nightclub environments offer the fewest choices. In restaurants food may decrease the absorption of alcohol, and eating as a competing activity will result in lower rates of drinking behaviour. Homes are likely to offer many more alternatives. In own homes, many other activities are available; caring for children, domestic activities, hobbies, watching television, reading, and so on. That is, own homes offer a wide range of choices that compete with drinking and in these terms, BALs that exceed 80 mg% are unlikely, as shown by Figure 2.

The study by Stewart and Casswell (1986) was interpreted in terms of the choices available to an individual within specific environmental contexts. It can also be asked whether drinking is affected by the choices available across different contexts, such as the choice between drinking in a hotel versus watching a film in a movie theatre. Unfortunately, there is a paucity of research bearing on this question except for a recent study investigating patterns of drinking behaviour by adolescents. Deaker (1987) surveyed 24,420 adolescents aged 12 to 19 about their drinking, drug, and smoking activities. He concluded that one of the factors limiting drinking was whether parents and schools encouraged children to become involved in a range of other activities (although his results are incompletely documented and cannot therefore be described in detail). Deaker studied adolescent alcohol and drug use in relation to such activities as participating in sports,

frequenting coffee bars, television watching, listening to pop music, and frequenting discos. The conclusion that involvement in other activities reduced levels of drinking is other consistent with our emphasis on drinking as choice.

### Conclusions

The behavioural theory of choice places drinking in the context of competing choice alternatives. As a conceptual framework, it emphasises the importance of environmental factors, rather than cognitive, motivational or physiological factors, as the primary determinants of drinking. It accounts for drinking in terms of the relativity between the consequences of drinking (costs and benefits) and the consequences of alternative activities that might be engaged in. That is, the effects of the consequences of drinking are relative to the effects of the consequences of competing choice alternatives. Drinking is reduced by its direct costs, and by the benefits derived from alternative behaviours. Perhaps the most important prediction from this behavioural view of drinking is that the likelihood of drinking can be decreased by increasing the value of the consequences of competing choices.

The New Zealand studies of alcohol consumption briefly reviewed here were seen as consistent with the choice interpretation. However, there is at present no direct evidence from naturalistic studies of alcohol consumption for the choice interpretation. Other aspects of human behaviour are consistent with predictions from the behavioural theory of choice (McDowell, 1988; Wilson & Herrnstein, 1980). For example, the increase in self-injurious behaviour in a retarded child with increase in parental attention described by McDowell (1988) was perfectly predicted by the rectangular-hyperbola derived from the matching law, the formal expression of the behavioural theory of choice (Herrnstein, 1970). What is needed is experimental research on the relation between the likelihood of alcohol consumption and the reinforcing value of the consequences of alternative choices in natural settings. But we have found that such research is fraught

with practical difficulties. An alternative approach is to study the results of a "natural experiment", in which the consequences of drinking are altered through an event such as the imminent Sale of Liquor Act. In this instance, a wide range of liquor outlets (including supermarkets) will enhance the immediacy, and hence the reinforcing value, of the consequences of the choice to drink. Such an approach, however, relies on assumptions concerning the effectiveness of the reinforcers available in the situation, and does not allow their direct measurement or manipulation.

A further alternative is to study choice in the laboratory. Vuchinich and Tucker (1988) recently reviewed the very few human studies involving choice between alcohol and money. They concluded that delaying access to alternative reinforcers (thereby decreasing their potency), or reducing the amount of alternative reinforcement, resulted in an increase in preference for alcohol consumption. The laboratory approach taken by Vuchinich and Tucker (1988) is promising but nevertheless is distant from the study of drinking in natural settings. It also views alcohol consumption as a reinforcer rather than as a behaviour. By treating drinking as a behaviour as we have done here, it is possible to contrast it with competing behavioural alternatives and to show how it might be determined by the relativity between consequences of the different possible choices in any situation.

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