



What's the BMA Been Drinking?

The Case Against an Alcohol Ad Ban



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Democracy Institute

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Introduction¹

A fortnight ago, doctors called for a total ban on all forms of alcohol advertising in a bid to address the rising cost of drink-related problems.² The British Medical Association (BMA) believes that alcohol – the nation’s favourite drug – should be subjected to the same advertising rules as tobacco. Doctors want to see a *total* ban on advertising, which includes sporting and music festival sponsorship deals and cut-price drinks promotions. According to the BMA, its report, entitled *Under the influence - the damaging effect of alcohol marketing on young people*, ‘identifies effective ways of protecting young people from the influence of alcohol promotion and marketing’.

Given the source, the BMA’s pro-ban position unsurprisingly generated several hundred print and broadcast media headlines both at home and abroad. What is surprising, however, is the weakness of the BMA’s case. This paper examines whether the BMA’s claims about alcohol advertising effects are evidence-based and, consequently, whether its demand for a

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² Gerard Hastings, *Under the influence - the damaging effect of alcohol marketing on young people*, British Medical Association, 2009

www.bma.org.uk/health_promotion_ethics/alcohol/undertheinfluence.jsp.

ban on alcohol advertising and sponsorship is justified.

Alcohol Advertising Policy

Two works, Vance Packard’s *The Hidden Persuaders* (1957) and Sully Ledermann’s *Alcohol, Alcoholism Alcoholisation* (1956), have disproportionately shaped the policy debate about alcohol advertising over the last half century. Between them, Ledermann’s epidemiological claim that in any population there was a fixed relationship between total alcohol consumption and the proportion of heavy drinkers (the only difference between heavy drinkers and the rest of the population being the amount of alcohol consumed) and thus a causal relationship between consumption and misuse, and Packard’s assertions about the strong manipulative influence of advertising on consumption, have provided the basis for the public health community’s consistent demand that alcohol advertising be either tightly regulated or completely banned.

According to the public health view, increases in average alcohol consumption increase the number of problem drinkers and thus the amount of alcohol-related harm, including health care costs. Given that alcohol advertising both initiates new consumers and increases total consumption, it should therefore be restricted or banned. At the very least, this view asserts that exposure to advertising a) causes individuals to drink who might not otherwise drink and b) causes people to consume more alcohol than they otherwise would. Restricting or eliminating advertising

is justifiable since this reduces total consumption and with it aggregate alcohol harm. As Schmidt and Popham (1978) note in their discussion of Ledermann:

[F]uture proposals to change legislative or other provisions governing the marketing and distribution of alcoholic beverages would be tested against a health objective: the prevention of further increases in the prevalence of alcohol problems. The relevant question would become: Are the proposed changes likely to contribute to higher consumption levels and therefore to an increase in health costs?

This paper examines whether the public health community's claims about alcohol advertising effects are empirically sound and whether its demands for restrictions or complete bans on alcohol advertising, based as they are to a large degree on Ledermann and Packard, are justified.

We examine five aspects of the alcohol advertising debate:

1. the model about how advertising works that underpins the claims about its affect on initiating drinking and increasing consumption
2. quasi-experimental studies about the effect of alcohol advertising
3. studies of alcohol advertising exposure, awareness, and recall
4. econometric analyses of alcohol advertising and drinking initiation
5. consumption studies of the effects of alcohol advertising restrictions and bans.

Hierarchy of Effects Model

Before turning to the empirical evidence about the effects of alcohol advertising, it is worth examining the plausibility of both Ledermann's claim about the link between alcohol consumption and alcohol abuse and Packard's about advertising's effects on consumer decision-making.

The Ledermann thesis is strongly challenged by the evidence adduced by researchers Skog, Makela, Smith, Duffy, and de Burgh. Both Skog and Makela found that Ledermann's claim was not validated by Scandinavian data and, in particular, could not explain abstainers. Smith, Duffy and de Burgh, using data from the UK and Canada, found that Ledermann's predicted distribution was simply not present in real-world data, with statistically significant variations from what the model suggested would be the case. Again, studies by Kendell et al (1983) on the consumption patterns of Scottish drinkers found that during a period when general consumption was increasing, heavy drinkers in fact reduced their consumption – a direct contradiction of the Ledermann thesis.

Differences in drinking patterns between parts of Europe also undermine Ledermann's claim that alcohol consumption and levels of misuse follow a regular pattern. Per capita alcohol consumption, for example, is roughly equal in Ireland and Italy, but Ireland has both more abstainers and more abusers than does Italy.

Equally significant problems surround the Packard thesis about the strong capabilities of advertising unconsciously to determine consumer behaviour.

Packard contended that there were 'large-scale efforts' underway, 'often with impressive success, to channel our unthinking habits, our purchasing decisions, and our thought processes by the use of insights gleaned from psychiatry and the social sciences'. Though Packard devoted little attention to subliminal advertising, and indeed never used the word, his interest was in the ways in which unconscious thought processes can be exploited by advertising.

Packard's work was in some respects a popularisation of the earlier hierarchy of effects model that argued that advertising 'worked' through its capacity to move consumers from reading, seeing, or hearing an advert to believing, remembering, and finally acting on it. (Though Packard concentrated more on the unconscious aspect of the cognitive process rather than on the rational appraisal aspect that is central to the hierarchy model.) The implicit assumption, certainly in Packard, is that the consumer is at the very most a passive, and at the very least an unconscious, participant in the advertising process. This contrasts quite starkly with the view that certain behaviours will occur irrespective of the presence or absence of advertising and that advertising can at best influence this behaviour. On this view, the consumer is an active decider who uses advertising to help make choices between different product and service characteristics.

The problem is that both Packard's uncritical acceptance of the assumptions of the hierarchy of effects model and the subsequent use of this model by the public health community and other critics of advertising as the foundation of their analysis of advertising is untenable given the fact that the model is significantly flawed.

The flaws are several. First, the empirical evidence for the model is decidedly weak. As Krugman (Krugman, 1965) and others have found, even intense advertising campaigns often fail to elicit both extensive recall and attitude change.

Second, the model assumes a unidirectional causality such that changes in attitude about a product lead to its purchase rather than follow from its purchase, or that attention to advertisements lead to interest in a product rather than interest in a product generating interest in the product's advertisements. For example, a young person's interest in drinking could have been formed prior to and independently of seeing an alcohol ad. Adolescents who are interested in and receptive to drinking can be assumed to have a drinking preference that would lead to their interest in and recall of alcohol advertising.

Third, there are no studies of alcohol advertising that trace the advertising 'effect' through all of the steps predicated in the model, from encountering the advert to acting on it. Take, for example, McGuire's hierarchy-based account of how advertising works. (McGuire, 1980) According to McGuire, advertising-influenced behaviour occurs only at the end of a nine step process that begins with exposure to the

advertisement, and moves through attending to it, reacting favourably to it, comprehending it, agreeing with it, storing and retaining its content, remembering it, deciding based on it, and behaving in accordance with the decision. At any step in this tenuous process the causal chain can be broken. For example, failing to retain the advert's content, failure to subsequently remember the advert, deciding based on something other than the advert, becoming sceptical of the advert, and deciding based on something other than the advert, all invalidate the causal 'effect' of the advert.

Yet, despite the fact that the claim that behaviour is the consequence of the advertisement is true only if the causal chain is unbroken, empirical studies of so-called advertising effect *never* demonstrate such unbroken causality. They assume that the intervening variables are present, but fail to demonstrate their presence. Studies of alcohol advertising and recall, which are falsely claimed to demonstrate causality, report a subjects' supposed exposure to an advert (though even this is frequently ascertained by proxy measures such as television viewing, which are not the same thing) on the basis of their memory of it, and some even report subjects' 'agreement' with an advert. However, none show the effect of an advert through a typical hierarchy such as McGuire's, in this case steps five through nine, and none show the effect of the advert in the two most crucial steps of 'deciding on a purchase' and then 'behaving in accordance with that decision.'

Instead, they make the simplistic and empirically unsupported claim that a subject's recall at T2 of an alcohol advertisement seen at T1 is the 'cause' of

their subsequent drinking at T3. What is supposed to be demonstrated is, in fact, assumed.

As Calfee (Calfee, 2000) observes with respect to the problems inherent in such an assumption, 'however successful a marketing campaign may be in the early stages of the hierarchy, that success is by no means bound to carry on through actual choices in the marketplace. But many, if not most, applications of this model work exclusively with intervening variables (i.e. after the advertisements but before market behaviour) and never actually test advertising's effect on market choices'.

Finally, the hierarchy of effects model must rely on path analysis, which uses regression, econometric, and factor analysis. A path analysis will model both the direct effects of advertising and the indirect effects as mediated through latent variables such as risk perception. The total advertising effect is thus a combination of direct and indirect effects. As Nelson (Nelson, 2001) and Bollen (Bollen, 1989) observe, such path analyses are 'subject to the full range of econometric problems, including specification bias, measurement errors, sample selection bias, missing data, outliers, multicollinearity, lack of replication and the like'.

As Nelson (2001) observes, this sort of path analysis 'can be likened to a coin-flipping experiment. There are four or five possible steps to the actual youth behavior of interest, including advertising exposure, desirability, advertising awareness or identification, positive beliefs, and, lastly, actual drinking behavior or expectancies. The resulting outcome is analogous to the

probability of flipping a fair coin, and getting a 'head' four times in a row. The joint probability of this event is $(0.5)^4 = 0.0625$ '.

If we were to allow that the effects model is strongly supported by the empirical evidence, there are no studies of alcohol advertising that trace the 'effect' of an advert from exposure to purchase behaviour across a sample population in such a fashion to demonstrate that the advert caused the behaviour. Without such a demonstration, it is impossible to conclude legitimately that alcohol advertised caused a behaviour.

Having looked at the key assumption underlying many critiques of alcohol advertising, we now turn to analysing three types of evidence about its alleged effects: evidence from experimental studies, evidence from exposure and recall studies, and evidence from econometric studies.

Quasi-Experimental Studies

Studies discussed in this section:

McCarty and Ewing 1983 'Alcohol consumption while viewing alcoholic beverage advertising' Findings: No statistically significant results.

Kohn and Smart 1984 'The Impact of television advertising on alcohol consumption: an experiment' Findings: No statistically significant results.

Kohn et al 1984 'Effects of two kinds of alcohol advertising on subsequent

consumption' Findings: No statistically significant results.

Sobel 1986 'Effect of television programming and advertising on alcohol consumption in normal drinkers' Findings: No statistically significant results.

Lipsitz et al 1993 'Another round for the brewers: television adverts and children's alcohol expectancies' Findings: No statistically significant results.

There are a limited number of quasi-experimental studies about the effects of alcohol advertising exposure. Here, we discuss five. McCarthy and Ewing (1983) showed two groups advertisements: one group saw advertisements for spirits, while the other group was shown advertisements for other non-alcohol products. The study reported no statistically significant differences in alcohol consumption between the two groups.

Kohn and Smart (1984) exposed groups of male university students to 90-minute sports programmes, with some programmes having no beer advertisement, some four, and some nine advertisements. The students were allowed to purchase beer while watching the programmes. While there were differences in beer consumption during the programmes, there were no statistically significant differences in beer consumption among the groups by the end of the programme.

Kohn et al (1984) interviewed subjects in a shopping mall and then gave them either tombstone or lifestyle alcohol advertisements or no advertisements. The subjects were also given a voucher which

entitled them to a meal in mall restaurants that served alcohol. An examination of the subjects' restaurant bills revealed that those who had received one of the alcohol advertisements ordered less alcohol with their meal than the group that had received no advertisement. A follow-up phone survey from six to 12 weeks later found no statistically significant subsequent differences in alcohol consumption between the two groups.

Sobell et al (1986) showed a group of male university students various versions of a TV programme that contained advertisements. In some versions, there were scenes in the programme depicting alcohol use. Other versions had adverts for beer, non-alcoholic drinks, and food. Following the viewing, the students were asked to participate in a taste test to rate light beers, during which their beer consumption was measured. There were no statistically significant results that supported the claim that viewing programmes with drinking scenes or alcohol advertising increases alcohol consumption.

Lipsitz et al (1993) showed groups of 10-11 year old students 40 television adverts, including five beer adverts, five soft-drink commercials or five beer adverts plus two anti-drinking adverts. The students were then asked about their drinking expectancies. The authors found no statistically significant differences in drinking expectancies from exposure to the different advertisements. The same experiment was repeated with 13 year old students with similar results.

Conclusion

Even making allowances for the variety of methodologies, small sample sizes and the appropriateness of drawing conclusions based on artificial settings, it is nonetheless clear that there is no support in the quasi-experimental literature for the claim that alcohol advertising causes initial alcohol use or increases alcohol consumption.

Exposure, Recall & Consumption Studies

Studies discussed in this section:

Cross Sectional Studies

Strickland 1982 'Alcohol advertising: orientations and influence'

Findings: Statistically significant association between advertising exposure and drinking.

Aitken 1989 'Television alcohol commercials and under-age drinking'

Findings: Underage drinkers more adept at recognising brand imagery in TV adverts for alcoholic beverages.

Grube and Wallack 1994 'Television beer advertising and drinking knowledge, beliefs and intentions among schoolchildren'

Findings: Awareness of beer advertising associated with increased knowledge of beer brands, more positive beliefs about drinking and intentions to drink as an adult.

Wyllie et al 1998 'Responses to televised alcohol and advertisements associated with drinking behaviour of 10-17 year-olds'

Findings: Alcohol advertising likely to have some influence on youth drinking.

Austin and Knaus 2000 'Predicting the potential for risky behaviour among those 'too young' to drink as the result of appealing advertising'

Findings: Pre-drinking behaviour predicted by school year.

Chen et al 2005 'Alcohol advertising: what makes it attractive to youth?'

Findings: Youth who drank more frequently rated alcohol advertising as more likeable and influential than youth who drank less often or who abstained.

Hurtz et al 2007 'The relationship between exposure to alcohol advertising in stores, owning alcohol promotional items, and adolescent alcohol use'

Findings: Retail exposure to alcohol advertising was associated with ever drinking (CI 1.1-2.0) but such exposure was not independently associated with an increase in the odds of current drinking.

Longitudinal Studies

Connolly et al 1994 'Alcohol in the mass media and drinking by adolescents: a longitudinal study'

Findings: No relationships were found between advertising and wine and spirit consumption among men or women.

Robinson et al 1998 'Television and music video exposure and risk of adolescent alcohol use'

Findings: Drinking initiation associated with hours of television and music video viewing.

Ellickson et al 2005 'Does alcohol advertising promote adolescent drinking? Results from a longitudinal assessment'

Findings: Viewing particular television programmes predict subsequent alcohol use. Viewing TV beer advertising did not predict subsequent drinking.

Snyder et al 2006 'Effects of alcohol advertising exposure on drinking among youth'

Findings: Subjects who saw more alcohol adverts drank more and subjects in markets with greater alcohol advert expenditure drank more.

Advocates of the view that advertising causes people to start drinking and causes them to increase their alcohol consumption frequently point to studies of advertising exposure and recall as providing evidence of clear links between advertising and behaviour. Hastings et al (2005), for example, claimed that 'while econometric studies suggest little effect, more focused consumer studies, especially recent ones with sophisticated designs, do show clear links between advertising and behaviour'. This, however, is not the case, at least with total consumption. As we shall see, these studies have largely unsophisticated designs that cannot in many cases even warrant that their measurements are accurate, and often rely on subject interviews or self-reported data and other qualitative data that are poorly explained and unreliable. More importantly, by their very nature they cannot demonstrate causal linkages

between advertising and drinking behaviour.

Regardless of the claims that such studies provide evidence that alcohol advertising causes people to begin drinking or causes them to increase their consumption, such claims are scientifically unfounded given the nature of these studies. Given that such studies are not randomised controlled experiments that do allow causal conclusions, but rather cross-sectional or longitudinal studies, *at the very most* these studies provide evidence of a statistical association between a variable such as advertising and an outcome such as increased consumption. By their very nature, cross-sectional or longitudinal studies of advertising exposure and recall cannot fulfill the causal burden of proof of the public health view by demonstrating that alcohol advertising causes people to drink or to drink more.

Furthermore, none of the advertising exposure and recall studies have adequately controlled for other drinking risk factors. This means that the alleged causal factor of advertising has not been isolated from other risk factors so that a genuine association can be determined. For example, it might well be true that 15 year olds who can remember an alcohol advert are more likely to drink as 18 year olds than 15 year olds who do not remember an alcohol advert. It does not follow from this, however, that this association is due to the fact that they remembered alcohol advertisements. It might well be that those 15 year olds also shared some other characteristic, such as being more inclined to risk-taking, or performing poorly at school, and it may be that those factors,

which have been excluded from one's study, rather than alcohol advertisements, are the cause of subsequent drinking. Without controlling for these other factors, one can never know the answer.

Finally, although the alcohol advertising exposure and recall studies make claims about the effects of alcohol advertising on drinking initiation and consumption, it is not clear that most have measured the exposure to such advertising of any individual who is alleged to have started to drink. Rather, these studies generally use proxy measures of exposure such as television viewing, reading magazines with contain alcohol adverts, or visiting corner shops with alcohol advertisements as a proxy for exposure to alcohol advertising. Obviously, the mere possession of a magazine containing alcohol advertising or viewing a television programme with alcohol adverts does not guarantee that one has been exposed to alcohol advertising. In truth, these sorts of studies cannot warrant what exposure, if any, to alcohol advertisements has taken place.

These measurement issues raise the broader problem of whether such studies meet the fundamental standards of scientific evidence that minimally require that measurements can be warranted as accurate. It is quite probable that none of these studies can meet this standard and, as such, are of questionable scientific standing.

Eleven studies of advertising exposure and recall, seven cross sectional and four longitudinal, are at the centre of the alcohol advertising debate.

Strickland (1982) administered a self-report questionnaire to a group of 7th, 9th, and 11th grade students in St Louis, Missouri, in an effort to examine the relationship between advertising exposure and alcohol consumption. The questionnaires requested information in four areas: mass media involvement; personality system and social-psychological states; alcohol use and attitudes; and family structure and decision-making patterns. Although he found a small significant association between exposure and drinking, he nonetheless concluded that 'reducing the amount of advertising for alcoholic beverages is likely to have a negligible impact on the level of consumption among teenagers. Given the presumed vulnerability of youth to mass media influences, and especially for those who hold certain susceptible orientations, the findings fail to sustain the argument that alcohol advertising is a primary factor in drinking behaviour'.

Aitkin's (1989) analysis of the effects of alcohol advertising on young people in Glasgow, based on qualitative research and survey data, is a second example of this sort of study. On the basis of the survey data, Aitken concludes that underage drinkers are 'more adept at recognising and identifying the brand imagery in television advertisements for alcoholic drinks' and they 'tend to be more appreciative than non-drinkers of television advertisements for alcoholic drinks'. While he acknowledges that this does not 'necessarily mean' that advertising causes children to begin to drink, he nonetheless appears to believe that it has some effect.

Aiken's conclusion, however, follows from a commitment to the effects model with its

unidirectional notion of causation. This leads him to ignore the equally plausible interpretation of his data, namely that the reason drinkers recognise and are more appreciative of the brand imagery in television alcohol advertisements is precisely because their drinking status makes them more attentive to it. Moreover, the fact that drinkers are better able to recognise brand imagery suggests that the drinks advertising is working just as it is described, that is, it is supporting brand loyalty as opposed to increasing aggregate consumption.

A third advertising recall study is Grube and Wallack's 'Television Beer Advertising and Drinking Knowledge, Beliefs and Intentions among Schoolchildren', (1994) whose publication was accompanied by an editorial that claimed that, 'Alcohol advertising, we may flatly assert, has a powerful impact on our society and particularly on our children, their peer groups and their families'. (Mosher, 1994) The importance of the effects model is apparent in this study since the authors note that it is not simply exposure to advertising but awareness of it that is crucial. Unfortunately, their study, like others of this type, fails to carry the effects model through to link exposure and awareness with behaviour.

Through a combination of a written survey and face to face interviews, 468 children aged 10 to 14 provided information about television viewing, awareness of beer advertising, knowledge of beer brands and slogans, alcohol beliefs, intention to drink as an adult, and perceived parental and peer approval of drinking. As the authors note, a 'unidirectional effects from

awareness of beer advertising to beliefs and knowledge and from beliefs to intentions' was assumed. According to the authors, awareness of advertising was linked to increased knowledge of beer brands and more positive beliefs about drinking and indirectly related to drink intentions to drink as an adult.

Despite the enthusiastic editorial endorsement and its frequent citation as evidence of alcohol advertising's causal effects on young people, the study is so profoundly flawed that it establishes nothing more than the low standards of evidence that prevail in this policy debate. To begin with, the study is cross-sectional, which means that whatever the authors may believe that their effects model shows, it cannot show that advertising causes intentions to drink. Indeed, the authors, in a more candid moment, admit that 'it was not possible to address drinking behaviors'. Second, the study provides no evidence that the subjects had actually seen any beer advertisements, since television viewing was measured but not beer advertisement viewing. There is considerable evidence that these are not the same, given that children report failing to pay attention to alcohol advertising even while being exposed to it. As a recent research report to Ofcom and the Advertising Standards Authority on alcohol advertising and young people observed, 'it was quite common for respondents to say that they did not pay much attention to advertising for alcoholic drinks because they knew they were underage and therefore that the advertising was not aimed at them'. (Dawson and Cragg 2004)

Clearly, television viewing is not equivalent to exposure to alcohol advertising, advertising exposure is not equivalent to attending to alcohol advertising, and attending to alcohol advertising is not equivalent to agreeing with alcohol advertising. Despite this, the study's entire causal framework about positive beliefs and intention to drink is erected without any objective empirical evidence that any of the children had ever seen a beer advertisement.

Third, the authors fail to move beyond the earliest stages of the effects model. By only reporting on their subject's awareness of beer advertising, they fail to enquire, for example, of the next step in the McGuire model: agreement. Agreement, which is necessary for advertising to have its effect, is assumed but not demonstrated. Additionally, there is no effort to trace the advertisement's sequence of effects through to behaviour. Even more astonishing, given the assertions made about what this study allegedly shows, is the fact that the authors fail to provide many of their important statistical results, such as the coefficient estimates or their standard errors. In other words, we have no idea of the magnitude of the indirect effect of advertising. Fourth, the authors' conclusions follow only if a unidirectional causal model is accepted, but this assumption is not warranted without compelling evidence that an alternative direction of causality is implausible. For example, the children's positive views about drinking may have predated and driven their knowledge of beer brands. Given the cross-sectional nature of the study, it is impossible to know what the 'causal' sequence is.

A fourth advertising recall, awareness, and influence study is by Wyllie et al (1998). Like Grube and Wallack it is based on interviews, in this case 500 10-17 year olds in three New Zealand cities, and is also cross-sectional. The interviews were designed to determine recall and liking of alcohol advertisements. Though the authors make less extravagant claims than Gruge and Wallack, they nevertheless assert that 'alcohol advertising is likely to have some influence on young people'. This may well be true, since advertisers would agree that the purpose of alcohol advertising is to influence brand share, but it misses the crucial question in this debate: Does advertising cause people to begin drinking and to increase their drinking? Wyllie et al, however, cannot answer this question because their data is once again cross-sectional. The absence of a detailed account of the measures used in the research also makes it difficult to draw any conclusions about the relevance of the study for the policy debate. For example, a description of the research measures and process occupies less than half a page compared to five pages of discussion.

What does emerge from the study is that the strongest association was not between liking adverts and drinking behaviour but between peer behaviour and drinking behaviour. As Brian Young (2003) observes in discounting the study's conclusion about alcohol advertising and consumption, 'I would argue that the evidence is also consistent with the hypothesis that being part of a culture where alcohol consumption is common, where friends and family drink, and where a lot of TV is being watched and alcohol adverts are found to

be interesting would increase the frequency of future drinking'.

A fifth cross-sectional study, Austin and Knaus (2000), surveyed 273 US children in the 3rd, 6th, and 9th grades in an attempt to determine the effects of television on the 'precursors to drinking' in children who had not yet consumed alcohol. The authors assumed that children's responses to the desirability of alcohol would predict their expectations about drinking outcomes, for example, drinking will make one happy. The study also examined 'pre-drinking activity' by looking at the subjects' preferences for items that contained alcohol logos. Surprisingly, the study contains no measures of advertising exposure or of recall of brands. The path analysis assumes that desirability predicts expectancy, which should predict pre-drinking behaviour, but the data fails to confirm this analysis. The coefficients are 0.22, 0.18, 0.43, and 0.02, with this last coefficient not significant. The only predictor of pre-drinking behaviour found in the study is grade level, which is 0.6. This compares with the indirect effect of desirability – supposedly mediated by advertising – of 0.15. The effect of variables like age are far more important than the supposed advertising-related variables such as desirability.

A sixth cross-sectional study of alcohol advertising recall and awareness is based on US data from 253 children and adolescents aged 10-17 who were shown tapes of television commercials for beer and soft drinks. (Chen, et al 2005) After viewing the commercials, the students completed questionnaires that reported their affective responses to the advertisements, the advertisement's effectiveness in terms of

intention to purchase both the product and brand being promoted, and frequency of alcohol consumption.

The authors report that 'youth who drank more frequently rated beer advertisements as more likeable and more influential than did those who drank alcohol less often or did not drink', but they are sensitive to the different conclusions that might be drawn from this cross sectional finding. As they note, 'it is possible that alcohol advertising influences young people's drinking beliefs and behaviours, but the opposite also may be true. That is, young people who are predisposed to drinking may be more attentive to and hold more favourable attitudes toward alcohol advertising'. The plausibility of this conclusion is bolstered by the fact that frequency of alcohol use predicted both how attractive and effective subjects found alcohol advertising. Indeed, subjects' experiences with alcohol were positively linked to their ratings of alcohol advertisements in terms of likeability and effectiveness.

A final cross-sectional advertising exposure study is Hurtz et al (2007), which is modeled on a study on the effects of tobacco advertising in shops and subsequent smoking. US grade 7 and grade 8 students were surveyed about their exposure to alcohol advertising in retail shops, their ownership of alcohol promotional items, and their current alcohol use. Peer drinking, propensity for risk-taking, and ownership of an alcohol promotional item had the strongest association with ever drinking. Retail exposure to alcohol advertising had a barely significant association (CI 1.1-2.0) to ever drinking. Contrary to the authors' hypothesis, 'retail ad exposure was not

independently associated with a significant increase in the odds of current drinking'. Given these findings, and the fact that the study was based entirely on recall, never verified whether the subjects actually saw any alcohol advertisements in a retail environment (it relied on a sample of advert frequency in retail stores rather than examining the placements of adverts in stores that the students visited), and was cross-sectional and thus unable to determine the time sequence in owning a promotional item and drinking, it offers no support for virtually any conclusion about advertising and adolescent drinking.

Whilst unable to offer any causal conclusions, four longitudinal studies of alcohol advertising exposure and recall provide a longer time frame to examine the 'effects' of such advertising on drinking behaviour.

Connolly et al (1994) report on a longitudinal study on recall of alcohol advertisements based on face to face interviews at ages 13 and 15. At age 18, subjects provided a self-report of alcohol consumption. The goal of the study was to determine the relationships between alcohol consumption at 18 and earlier recall of alcohol advertising. Only one association was found to be statistically significant. For males, none of the alcohol communication variables – alcohol advertisements or drinking portrayed in entertainment – were significantly associated with frequency of beer, wine, or spirit consumption. However, the number of alcohol commercials recalled at age 15 was significantly associated with the amount of beer consumed at age 18. For females, neither alcohol advertisements nor drinking portrayed in entertainment

were significantly associated with the amount or frequency of wine or spirit consumption.

In a second longitudinal study by Robinson et al (1998), 9th grade students in San Jose, California reported their hours of television, music video, and videotape viewing, as well as computer and video game use, along with lifetime and past 30 day use of alcohol. This was compared with alcohol use 18 months later. The study reports that drinking initiation was significantly associated with hours of television viewing, music video viewing, and videotape viewing, but in fact the findings were statistically significant only for television and music video viewing. The major problem with the study, however, is not its lack of statistical significance, but rather its design, which assumes that television viewing is equivalent to viewing alcohol advertising. While this might be argued if subjects were asked to keep a record of what television programmes they were viewing, or what times of day they were viewing, or the alcohol advertisements they had seen, the subjects in this study were asked for none of these things.

Thus, there is no evidence that any of the subjects saw any alcohol advertising. Nor is there any evidence that any of the subjects saw any alcohol use depicted in entertainment programmes. All that we can conclude is that some students who watch television and music videos also become drinkers. But we are unable to conclude what the association between these three activities is. And we are completely unable, based on this study, to determine what the relationship is between alcohol advertising,

television, and music video-viewing and beginning to drink.

A third longitudinal study by Ellickson et al (2005) claims to provide a more precise answer to that question. The study followed 3,111 South Dakota students for three years and collected recall data on their alcohol use, television viewing, and exposure to various types of alcohol advertising including in shop beer displays, exposure to magazines with alcohol advertisements, and beer concession stands at sports and entertainment events in an effort to determine whether advertising exposure predicts subsequent adolescent drinking. Unlike most studies of this sort, Ellickson et al controlled for some other risk factors associated with student drinking in an attempt to provide a more robust association between advertising and consumption.

Despite this, the study has several crucial flaws. First, as we have seen in previous studies, there is no measure of the number of alcohol advertisements the students saw on television or in magazines since the researchers' data only tallied the frequency of watching sports and late night TV programs and reading certain magazines. This is not a scientific measure of alcohol advertising exposure and the failure to provide such data obviously corrupts the study from the outset.

Second, the study controlled for only a few of the other risk factors for youth drinking, which makes it impossible to determine whether alcohol advertising exposure is genuinely associated with subsequent drinking.

Third, the study data comes from only one state, South Dakota, which ranks among the top ten US jurisdictions for adolescent and young adult drinking, hardly a representative adolescent population sample.

Despite these limitations, the study provides little to support a causal connection between alcohol advertising and starting to drink or increasing one's consumption. For one thing, there was no association between television watching and drinking. Exposure to particular television programmes (bearing in mind that respondents provided no information about which programmes they watched), however, did predict subsequent alcohol use. This finding should not be surprising for, as Fisher notes, the connection between watching depictions of drinking on TV and subsequent drinking is strong because alcohol use during programmes occurs six times more frequently than do advertisements for alcohol. (Fisher, 1993) For another thing, TV beer advertising did not predict subsequent drinking. Even more crucially, the link between other forms of alcohol advertising and subsequent drinking are barely statistically significant, and all have OR values below 2, which are generally considered weak indicators of a genuine association.

Finally, the most significant predictors of future drinking are not related to alcohol advertising at all. Adult approval of drinking, poor marks, low religiosity, and low parental monitoring are all better predictors of underage drinking than exposure to alcohol advertising.

A final longitudinal study of alcohol advertising and drinking is Snyder et al (2006). In this study, the authors interviewed four times a random sample of youth in 24 US media markets from 1999 to 2001. Subjects were asked to recall alcohol advertising and drinking over the past four weeks. According to the researchers, youth who saw more alcohol advertisements consumed more alcohol and youth in markets with greater alcohol advert expenditures drank more. They note that, 'The results also contradict claims that advertising is unrelated to youth drinking amounts; that advertising at best causes brand switching, only affects those older than the legal drinking age, or is effectively countered by current educational efforts'.

In theory, then, Snyder et al provide a major support for the causal hypothesis about the effects of alcohol advertising, particularly with young people. Several aspects of the study, however, suggest that it lacks the compelling character that its supporters have trumpeted since its publication.

First, it is difficult to accept that this study is genuinely longitudinal since the attrition rate was so substantial that two-thirds of the subjects failed to complete the study. It is also difficult to understand how this study is properly described as a youth study, except for polemical effect, given that almost half of the participants were over 21.

Second, as Reginald Smart (2006) has noted, the data is highly anomalous in that, at baseline, black and Hispanic participants drank more than whites and those under age 23 drank much more than those aged 23-26. As Smart observes, 'These results suggest sampling biases, because their

findings are different from large, well-established data sets.'

Third, scientific studies are only scientific to the extent that they can guarantee that their measurements are accurate. Without this assurance any conclusions based on those measurements are unfounded. But Synder et al are unable to meet this basic requirement since both their advertising exposure data and their drinking data are based on subjective as opposed to objective measures. The study's findings are entirely reliant on subject recall data, recall data covering a four week period. Recall data is notoriously unreliable at best, and asking subjects about the number of alcohol advertisements they saw, given the typical advert exposure per day, let alone the number of drinks they had, 30 or more days after the fact is an invitation to speculation not accurate measurement.

Fourth, a host of well-researched predictors of drinking, including peer and parental drinking, academic performance, and religiosity, are not controlled for, making it impossible to know what their contribution to drinking and consumption levels might be as opposed to the contribution of advertising. This, along with the study's longitudinal nature, renders the study useless for making any causal claims about the connection between advertising and drinking initiation and consumption.

Fifth, according to the effects model and the criteria for assessing causality, there should be a dose-response relationship such that those exposed to more advertising should increase alcohol consumption. Yet this was not the case. Those with the highest exposure decreased

rather increased their drinking. These results, which the authors do not explain, completely confound their causal hypothesis.

Conclusion

Despite Hastings et al's claim that these newer studies provide evidence of the link between alcohol advertising and drinking behaviour, a careful analysis of these 11 cross-sectional and longitudinal studies of advertising exposure and recall suggests otherwise. All are, by their very nature, unable to provide any causal evidence about the link between alcohol advertising exposure and consumption. Moreover, most have significant methodological problems that make them unable to certify that they have even accurately measured alcohol advertising exposure. Finally, most report data that is either not statistically significant or of marginal significance or, as in the case of Synder et al and Ellickson et al, contradicts their thesis.

Econometric Studies

Studies discussed in this section:

McGuiness 1980 ' An econometric analysis of total demand for alcoholic beverages in the UK, 1956-1975'

Findings: Statistically significant association between price and alcohol demand for spirits, but no effect for wine and beer.

Walsh 1982 'The demand for alcoholic drink in the United Kingdom: a comment'

Findings: Unlikely that changes in alcohol advertising had a large effect on alcohol consumption.

Hagan and Waterson 1983 The Impact of Advertising on the United Kingdom Alcoholic Drink Market

Findings: No advertising effects, either short or long term, on alcohol consumption.

Duffy 1977-2003

Findings: Increase in alcohol consumption owes 'little, if anything at all, to advertising of these products'.

Dickerson and Dorsett 2004 'Advertising and alcohol consumption in the UK'

Findings: No statistically significant associations were found between alcohol advertising and consumption.

Calfee and Scheraga 1994 'The influence of advertising on alcohol consumption: a literature review and an econometric analysis of four European nations

Findings: Advertising had no statistically significant impact on consumption.

Franke and Wilcox 1987 'Alcoholic Beverage Advertising and Consumption in the United States'

Findings: No statistically significant association between beer adverts and consumption: statistically significant association between wine and spirit adverts and consumption.

Tegene 1990 'The Kalman filter approach for testing structural change in the demand for alcoholic beverages in the United States'

Findings: Advertising had no statistically significant association with wine, beer, and spirit consumption.

Lee and Tremblay 1992 'Advertising and the US market demand for beer'

Findings: No support for claim that advertising has a significant positive effect on market demand.

Guis 1996 'Using panel data to determine the effect of advertising on brand-level distilled spirits sales'

Findings: Advertising effects brand switching but does not increase size of market.

Nelson and Moran 1995 Advertising and US alcoholic beverage demand: system-wide estimates'

Findings: Advertising affects product categories in drink market but no overall demand for alcohol.

Nelson 1999 'Broadcast advertising and U.S. demand for alcoholic beverages'

Findings: Advertising had little or no effect on demand, regardless of medium.

Wilcox 2001 'Beer brand advertising and market share in the United States: 1977-1998'

Findings: Statistically significant association between beer advertising expenditure and market share: advertising influences brand share.

Wilcox and Gangadharbartia 2006 'What's changed? Does beer advertising affect consumption in the United States?'

Findings: Aggregate advertising and per capita consumption for beer in the US were significantly related from 1970-2003,

though the strength of the association was very weak.

Bourgeois and Barnes 1979 ' Does advertising increase alcohol consumption?'
Findings: Little association between advertising and per capita consumption.

Lariviere et al 2000 'modeling the demand for alcoholic beverage and advertising specifications'
Findings: Advertising has a weak effect on aggregate consumption and is not effective in enlarging the market.

A third type of evidence about whether alcohol advertising causes drinking and increases consumption comes from econometric studies. These studies, mostly from the UK, US, and Canada (although there have been a few studies that have looked at other European countries), have examined the relationship between alcohol consumption and such independent variables as the price of alcohol, consumer income, other prices, availability, and advertising. We begin with at look at several general studies of whether advertising increases aggregate demand and then proceed to examine five individual studies of alcohol advertising and consumption in the UK market, one study from the European market, eight studies from the US market, and two studies from Canada.

One of the most important contributions to the study of the effects thesis of advertising on total consumption is Sturgess' 'Dispelling the Myth: The Effects of Total Advertising Expenditure on Aggregate Consumption'. (Sturgess, 1982) Replying to critics of

advertising, such as Galbraith and Packard, Sturgess examined total advertising expenditure in the UK from 1969-1980 in order to test the claim that advertising is an 'important factor influencing total consumption'. Sturgess found not only that much previous research on the alleged relationship between advertising expenditure and consumption to be methodologically suspect, but concluded that during the period examined there was no 'evidence that may lead one to reject the null hypothesis of no relationship between the two variables in this particular causal direction'.

Sturgess' work has been recently confirmed by Hsu et al (Hus et al, 2002), who examined the relationship between advertising and sales in the US from 1948-1995. Like Sturgess, Hsu et al failed to find 'any long- term relationship binding advertising, aggregate sales and disposable income'.

Other studies that have looked at the effect of advertising on market size or growth have reached similar conclusions. For example, Peter Kyle of the University of Lancaster (Kyle, 1982) reviewed the impact of food advertising on total food consumption in the UK and found no evidence to support the 'popular myth that advertising will increase market size'. Then, too, there is the work of Martyn Duffy, discussed at length below in relation to the drinks market, who examined the impact of advertising on 11 food categories from 1969-1999. Duffy (Duffy, 1999) found that not only did advertising have no effect on food demand as a whole, but that it had virtually no effect on the demand for any individual food. As he notes, 'this study

joins the accumulating number of studies that have found little or no evidence to support the view that advertising can affect the product composition of total food demand'. In 2003, in a second study, Duffy found that 'there is very little evidence here to support the view that advertising is a potent force in the determination of consumer preferences'. Similar conclusions are found in Yasin (1995), who examined the effect of advertising on 31 foods. He reports that there was no relationship between advertising and market growth or size.

These sorts of findings have led advocates of the public health position to argue that if advertising has little or no impact on total demand, then advertising expenditure is irrational. As Dickerson and Dorsett (2004) observe, 'To those outside the marketing community, or to critics of alcohol advertising, this lack of relationship between advertising and overall consumption may seem counter-intuitive. The 'common-sense' argument is that advertising's purpose is to sell and must therefore grow markets'. This, of course, fails to consider the brand function of advertising as outlined in Ambler et al (Ambler et al, 1998).

Ambler et al notes that what is often lost in the debate, particularly with respect to drinks, is the effect of advertising on sectors where products can be substituted for one another and also in categories in which substitution is also possible. For example, though not initiating or increasing consumption, advertising can lead to changes in the malt whisky and blends sector of the scotch category. Similarly, it can lead to consumption changes between

beer and spirits, or between beer and wine, but not to changes in the overall alcohol market. Indeed, as Ambler et al note, there is little empirical evidence that total markets such as ' food, healthcare, clothes, household cleaners or confectionary' grow as the result of brand advertising.

Moreover, these claims about the irrationality of advertising without total market growth also fail to understand that in a mature market such as drinks, advertising functions in a largely defensive way in reinforcing brand loyalty and minimising brand-switching.

In response to this line of argument it is often suggested that such predatory advertising, (See Friedman, 1983), that is, advertising which attempts to redistribute market share but does not grow the market size, either does not exist or it does not exist in such markets as alcohol and tobacco. However, the empirical evidence suggests otherwise. Baltagi and Levin (1986), Fugii (1980), Hamilton (1972), and Schmalensee (1972) all find that tobacco industry advertising is predatory, functioning at the brand level but not in terms of total consumption. More recently, Seldon and Doroodian (1990) examined panel data from the six major US tobacco manufacturers from 1955-1979 and found that tobacco advertising was purely predatory.

Evidence from the UK

What is the evidence from the alcohol market? A number of studies have examined the

relationship between alcohol advertising and alcohol consumption in the UK market. McGuiness (1980) looked at advertising, income, price, and the number of places where alcohol could be purchased as independent variables. He found a statistically significant relationship for spirits but no effect for wine and beer. In a 1982 study, Walsh extended McGuiness work concluding that it was unlikely that changes in alcohol advertising had a large effect on alcohol consumption.

Hagan and Waterson (1983) used quarterly data from the UK market over an 18 year period to examine the advertising consumption relationship. Their study used expenditures on alcohol rather than consumption as a dependent variable and also included a lagged advertising variable to address the claim that econometric studies capture only short-term effects while missing the longer term persistence of influence. Their results are interesting. For example, from 1978-1987, total spending for beer advertising increased by over 80 percent while beer consumption fell by 14 percent. Between 1978 and 1987, advertising for spirits increased by 70 percent while sales fell by 4 percent. During the same period, advertising fell in the wine market by 26 percent while sales increased by 65 percent. They conclude that there were no advertising effects, either short or long term, on alcohol consumption.

Perhaps, the most thorough group of econometric studies that have examined the alcohol advertising-consumption relationship are six from Martyn Duffy (from 1981-2003) that looked at the UK market. The strength of Duffy's analysis is to be found in his use of the Rotterdam

model that allows for an examination of the relationships between advertising and price in terms of consumer behaviour with different types of alcohol, his use of quarterly data, and his factoring into his model the possible effects of anti-drinking campaigns. Based on these studies, Duffy concludes that:

[A]dvertising's role in the expansion of total alcoholic drink demand, and its changing composition, has been barely measurable in an absolute sense and certainly quite unimportant in comparison with the effect of income...In short, our calculations suggest that the great expansion in consumption of alcoholic drinks over the sample period...owes little, if anything at all, to advertising of these products. (1989)

A final econometric study of the UK drinks market is Dorsett and Dickerson (2004), which provides not only an examination of advertising expenditure and consumption trends over the past decade but also two econometric analyses of the relationship between advertising and consumption. The study finds that advertising expenditure from 1991-2001, taking into account media inflation, fell by 10.8 percent. This compares with an increase in consumption (per litre of pure alcohol) of 16.5 percent. In the first model that examined advertising expenditure, total consumer expenditure, and retail price for drinks as possible drivers of annual alcohol consumption, no statistical significant association was found between alcohol advertising and consumption.

Because of criticism from Saffer (2002) and others about the use of annual data, the authors performed a second analysis using monthly data from July 2000-June 2003. Two models were developed, one for 18-24 year olds and the other for those above age 25. Over 100 different factors, including advertising spend, pricing factors, the carryover effect of advertising, inflation, food inflation, alcohol promotions, average earnings, seasonality, and weather variables were included in each model. For both age groups, no statistical association between alcohol advertising and alcohol consumption was found.

Evidence from Europe

The major econometric analysis study of advertising and alcohol consumption in Europe is Calfee and Scheraga (1994), which examined four European countries, France, Germany, the Netherlands, and the UK. For comparative purposes, Sweden, which has banned alcohol advertising since 1979, was included. Advertising expenditures, alcohol price, and per capita disposable income were independent variables during the period from 1971-1989. The study found that consumption in all but one of the countries peaked around 1980, while advertising continued to increase. While price and consumer income were found to have a statistically significant impact in all of the countries, advertising was not found to have a significant influence on consumption. In France, for example, advertising coefficients were significantly negative, suggesting that advertising had a

negative effect on consumption, even as advert spend was increasing. Moreover, the authors discovered that strong social forces (that is, changing attitudes toward drinking) contributed to declining consumption levels that advertising was powerless to prevent. As they note:

[T]he dominant finding from the analysis...was that advertising remained an insignificant force, while the trend variable was strongly and significantly negative in four out of the five nations. This suggests that during the 1970s and 1980s, social forces were bringing about a strong reduction in alcohol demand, and advertising was not a counterforce to that trend...Supporting this observation is the fact that in Sweden, where advertising has been prohibited since 1979, the workings of the other variables (price, income and the trend variable) were very similar to what we observed in markets with advertising.

Evidence from the US

There have been several econometric studies of US alcohol advertising and consumption, beginning with Franke and Wilcox (1987), who used beer, wine, and spirit consumption from 1964 to 1984. They found no statistically significant relationship between beer advertising and consumption and a small statistically significant relationship between wine and spirit consumption and advertising. The authors concluded, however, that advertising did not significantly affect total consumption during the period under review.

A more recent analysis by Tegene (1990), which used data from 21 years (1954-1975) and was interested in whether consumers of various types of alcohol became more price sensitive over time, found that advertising had no statistically significant effect on wine, beer, or spirit consumption. Lee and Tremblay (1992) examined the demand for beer in a model that examined price, the price of whiskey, soft drinks, real disposable income, real advertising, and lagged consumption stock of advertising and youth demographics. They concluded that 'there is no support for the hypothesis that advertising has a significant positive effect on market demand'.

Several more recent studies of the US market reach similar conclusions. Gius (1996) looked at 16 major spirits brands to determine the effect of brand level advertising from 1976-1989. Aside from advertising, variables included price, rivals price, rival advertising, and income. The study concludes that 'brand level spirits advertising results only in brand switching and does not increase the overall size of the market'. Nelson and Moran (1995) and Nelson (1999) build models that use system-wide models and account for simultaneity. Nelson and Moran found that while advertising had little impact on overall demand for drinks, it did have an effect on the relationships between product categories. For example, demand for spirits increased with a decline in wine advertising, a finding that supports the claim that alcohol advertising affects product category demand rather than overall demand. In Nelson 1999, quarterly data from 1977-1994 are used to look at the relationship between alcohol consumption and advertising in terms of broadcast

advertising and print advertising. Regardless of the medium, advertising had little or no effect on demand.

Finally, we turn to two studies by Wilcox of the relationship between beer advertising and consumption. In the first study (2001), Wilcox examined beer brand advertising from 1977-1998 for eight brands of beer. He found that there was a significant association between advertising levels and market share and concluded that advertising appeared to influence brand market share. In the second study (2006), Wilcox and Gangadharbartia revisit the question of advertising in the beer market in the light of both structural changes in the market and brand transformations, using data from 1970-2003.

In the final model, with advertising considered by categories (print, billboard, radio, and cable), radio and cable advertising 'exhibited significant positive relationships with per capita consumption'. He notes, 'The major finding in this study is that aggregate advertising and per capita consumption levels for beer in the United States were significantly related from 1970 to 2003, although the strength of this relationship was very weak'. To understand just how weak the relationship is and how marginal an impact it has on consumption, Wilcox notes that radio has a point estimate of 0.0000002581, 'which means 1% increase in radio advertising of beer is associated with an increase in the per capita consumption level of 0.0000002581%. In other words, a dollar increase in radio advertising increases consumption by 4.033×10^{-15} ounces/year per individual'.

Evidence from Canada

In addition to the US studies, two econometric analyses from Canada also deserve mention. Bourgeois and Barnes (1979) looked at the relationship between alcohol advertising and alcohol consumption in Canada from 1951-1974. They examined, on a per province basis, beer, wine, and spirits consumption, total consumption along with a variety of advertising and non-advertising variables, finding little association between per capita consumption and advertising. As they note, 'alcohol consumption is influenced more by uncontrollable variables than by those...over which marketers and policy makers might exercise control'.

A second, more recent Canadian study by Lariviere et al (2000) confined its analysis to demand for beer, wine spirits, and soft drinks in the province of Ontario. They found that advertising has only weak effects on aggregate alcohol expenditure and noted that 'advertising is not effective in enlarging markets'.

Conclusion

Together, these studies (which, including all of Duffy's work, number over 30) present virtually no support for the claim that alcohol advertising causes young people to begin drinking. Collectively, these studies suggest that alcohol advertising either does not increase total alcohol consumption, or has an impact that is, in the case of beer advertising (Wilcox), so marginal as to be insignificant. This

means, as Fisher (1993, p. 116) notes, that 'the effect of advertising on total alcohol consumption is so small that the eventual impact on alcoholism or alcohol related disease morbidity and mortality will be so minute as to be unmeasurable'.

Alcohol Advertising Restrictions & Bans

Studies discussed in this section:

Cross Sectional Studies

Ogborne and Smart 1980 'Will restrictions on alcohol advertising reduce alcohol consumption?'

Findings: No statistically significant association between alcohol advertising restrictions and total consumption or alcoholism.

Schweitzer et al 1983 'Alcoholism: An econometric model of its causes, its effect and its control'

Findings: Advertising restrictions unrelated to alcohol consumption.

Hoadley et al 1984 'The effect of alcohol beverage restrictions on consumption: a 25 year longitudinal analysis'

Findings: Advertising restrictions were ineffective as a deterrent to alcohol consumption.

Ornstein 1984, Ornstein and Hanssens 1985 'A survey of findings on economic and regulatory determinants of the demand for alcoholic beverages' 'Alcohol control laws

and the consumption of distilled spirits and beer'

Findings: Price advertising on billboards associated with spirit and beer consumption.

Wilkinson 1985, 1987 Alcohol and Accidents: an economic approach to drunk driving 'The effects of regulation on the demand for alcohol'

Findings: Restrictions on alcohol price advertising had a negative effect on consumption (1985). In the 1987 study, there was no statistically significant effect on demand from advertising restrictions.

Nelson 1990 'State monopolies and alcoholic beverage consumption'

Findings: Advertising bans had no statistically significant effect on consumption.

Markowitz and Grossman 1998, 2000 'Alcohol regulation and domestic violence towards children' 'The effects of beer taxes on physical child abuse'

Findings: No statistically significant association between advertising restrictions and family violence outcomes.

Longitudinal Studies

Smart and Cutler 1976 'The alcohol advertising ban in British Columbia: problems and effects on beverage consumption'

Findings: No statistically significant changes in consumption following an ad ban.

Ogborne and Smart 1980 'Will restrictions on alcohol advertising reduce alcohol consumption?'

Findings: No decrease in beer sales following advertising ban.

Makowsky and Whitehead 1991 'Advertising and alcohol sales: a legal impact study'

Findings: No statistically significant increase in total alcohol sales following ending of alcohol advertising restrictions.

Wilcox 1985 'The effect of price advertising on alcoholic beverage sales'

Findings: No statistically significant increase in beer sales post-advertising ban.

Saffer 1991 'Alcohol advertising bans and alcohol abuse: an international perspective'

Findings: Strong association between strength of advertising restrictions across countries and alcohol consumption and road accidents.

Young 1993 'Alcohol advertising bans and alcohol abuse: comment'

Findings: Relationships between advertising bans and consumption of specific kinds of alcohol refute idea that advertising bans reduce consumption.

Calfee and Scherga 1994 'The influence of advertising on alcohol consumption: a literature review and an econometric analysis of four European nations'

Findings: Swedish advertising ban had little, if any, effect on drinks market.

Young and Nelson 2001 'Do advertising bans work? An international comparison'

Findings: Broadcast bans of spirits advertising increased alcohol consumption and traffic fatalities. Comprehensive bans were not associated with total consumption or alcohol-related harm.

A fourth way in which to test the claim that alcohol advertising causes individuals to begin drinking or increases consumption is through an examination of the effects of advertising restrictions, including bans. As with studies of advertising effect, analyses of advertising bans and other restrictions are either cross-sectional or longitudinal. We begin with a review of cross-sectional studies.

Cross-Sectional Studies of Advertising Restrictions

Ogborne and Smart (1980) compared Canadian and US data in an attempt to determine the effects of advertising restriction on consumption and rates of alcoholism. Using data from one Canadian province (Manitoba) and 50 states and the District of Columbia, they rated jurisdictions on the severity of advertising restrictions as well as controlling for income and alcohol availability. They reported finding no statistically significant relationship between alcohol advertising restrictions and total alcohol consumption, or alcoholism, concluding that 'It is considered unlikely that restrictions on advertising will reduce consumption.'

In a similar analysis, Schweitzer et al (1983) examined total consumption and alcohol-related mortality in relation to whether alcohol advertising was permitted in 35 US states. The study controlled for a very large number of variables, and found that advertising restrictions were unrelated to alcohol consumption. Hoadley et al (1984) looked at spirits consumption in 48 US states in a cross sectional analysis of six

years from 1955-1980, along with restrictions on billboard advertising and other signs. They found that advertising restrictions had been 'almost totally ineffective as a deterrent on alcohol consumption'.

Two studies by Ornstein (1984) and Ornstein and Hanssens (1985) examined differences in advertising restrictions (bans of billboard advertising, bans of print price advertising, and bans of billboard price advertising) in the District of Columbia and 50 states from 1974-1978. The studies found mixed results with non-price related advertising having no effect for beer and spirits consumption, though there was a beer-brand effect. Price advertising on billboards, however, was associated with spirit and beer consumption.

Wilkinson (1985, 1987) in two studies examines the relationship between alcohol consumption, advertising, and traffic fatalities in 48 states from 1976-1979. Two types of advertising restrictions were studied: prohibitions of all alcohol advertising on billboards and in magazines; and prohibition of price advertising in magazines and billboards. In the 1985 study, he reported that restrictions on alcohol price advertising had a negative effect on alcohol consumption and prohibitions on all alcohol advertising did not have a significant effect on consumption. In the 1987 study, which looked at 45 states over four years, he found no statistically significant effect on demand from advertising prohibitions. Nelson (1990), using a cross-sectional analysis of the 48 states for 1982, also found that advertising bans had no significant effect on consumption.

Markowitz and Grossman (1998, 2000) studied the relationship between alcohol consumption and domestic violence toward children. They hypothesised a connection between violence and a variety of factors, including restrictions on alcohol advertising. In both studies, they found no statistically significant association between advertising restrictions and family violence outcomes.

Longitudinal Studies of Advertising Restrictions

In addition to these cross-sectional studies, there have been several longitudinal analyses that have looked at patterns of consumption and alcohol-related harm both pre-and post-advertising restriction or ban. Sometimes these studies include consumption and advertising data from another region or country without restrictions as a control.

The majority of longitudinal studies of the effects of alcohol advertising bans have been conducted in Canada. Smart and Cutler (1976) examined the effect of a British Columbia ban on alcohol advertising, using changes in consumption in the province of Ontario as a control. While there was a small decline in consumption in British Columbia, along with an increase in consumption in Ontario, these changes were not statistically significant. The authors note that 'the data presented lent little support for the view that the BC advertising ban reduced alcohol consumption. Both the yearly and monthly analyses of beer, wine or liquor consumption show no substantial effect of

the ban'. In a second study of a Canadian advertising ban, this time in Manitoba and only for beer, Ogborne and Smart (1980) found that beer sales did not decrease over the seven years following the ban, and indeed increased.

A third Canadian study from the province of Saskatchewan allowed something closer to a real-time experiment in that it looked at the effect of removing an advertising restriction that had blocked alcohol advertising for 58 years. Makowsky and Whitehead (1991) studied the effect of the ban's repeal on consumption, hypothesising that allowing advertising would lead to a significant increase in consumption. As a control, the authors used the province of New Brunswick, which had a similar ban on alcohol advertising that continued after the repeal of the Saskatchewan ban.

Data were collected on monthly sales from 1981-1987 for both provinces. Even after allowing for a lag in advertising effects, the authors concluded that, 'The change in legislation regarding alcohol advertising produced neither an abrupt permanent nor a gradual permanent effect on the pattern of the total volume of sales in Saskatchewan'. What did occur was a significant shift in consumption patterns among different types of beverage, with beer consumption increasing while spirit consumption declined. 'In spite of what appears to be a substitution effect between beer and spirits, overall sales of alcohol did not increase between 1981 and 1987 in Saskatchewan...there was no increase in overall sales...following a change in advertising policy'. In comparison with New Brunswick, with its continued ban and where total sales did not change, the

authors note, 'The change in alcohol policy in Saskatchewan, when viewed in context of changes in New Brunswick during the same period, presents little support for the contention that alcohol advertising contributes to alcohol consumption'.

Finally, there is Wilcox's (1985) study of the effects of beer price advertising in Michigan where advertising was allowed after a previous ban. In Michigan, advertising was permitted for 14 months in 1982-83. Wilcox looked at beer sales prior to, during, and after this period in an effort to determine whether price advertising had an impact. Though there was a significant amount of price-based advertising, Wilcox did not find a significant increase in beer sales.

Several studies have examined the effects of alcohol advertising bans internationally. Saffer (1991), using a cross-sectional and times series methodology, examined data from 17 OECD countries from 1970-1983 on price, income, alcohol preference, alcohol advertising, tourism and per capita road travel, to determine whether there was an association between advertising, consumption, road accidents, and deaths from liver disease. He found a strong connection between strength of advertising restrictions and several measures, including alcohol consumption and reduced traffic mortality. Countries that had banned advertising for spirits, for example, had 16 percent less consumption and 10 percent fewer traffic fatalities than countries without such a restriction. Those countries with bans of spirits, wine, and beer advertising had 11 percent less consumption and 23 percent fewer traffic fatalities than countries without such bans. There were no statistically significant

differences between countries with respect to liver disease mortality.

Despite these results, Saffer notes that drawing a causal connection is problematic, since it might be the case that lower rates of alcohol consumption make advertising and other alcohol control measures easier to enact, a fact that suggests that one is the outcome rather than the cause of the other. As he writes, 'These models cannot explicitly distinguish between the effects of alcohol advertising bans, other alcohol policies, and alcohol sentiment.'

Young (1993) reexamined Saffer's OECD data using binary variables for each country and disaggregating the consumption data and estimating demand for each type of drink. He found that the reverse causation about which Safer speculated was indeed present, observing that 'there is evidence of reverse causation: countries with low consumption/death rates tend to adopt advertising bans, creating a (spurious) negative correlation between bans and consumption/death rates' – a direct refutation of the Ledermann thesis. Moreover, he found that when consumption was broken down into its components – spirits, wine, and beer – the data indicated that 'bans are associated with INCREASED (emphasis in original) consumption'. For example, bans on spirits advertising resulted in higher beer consumption, a total advertising ban lead to higher spirits consumption while having no impact on wine consumption – highlighting the substitution effect. Young concludes that 'the relationships between advertising bans and consumption of specific types of alcoholic beverages are largely inconsistent

with the notion that bans reduce consumption’.

Calfee and Scheraga (1994), in their comparative analysis of consumption and advertising patterns in Europe, included Sweden in a separate data run for its advertising ban that began in 1979. Regression results for the four other countries studied – Germany, Netherlands, UK, and France – all without advertising bans, were not significantly different from Sweden. Indeed, total consumption declined in all of the countries over the period. The authors concluded that the Swedish ban ‘had little if any effect on the dynamics of the Swedish market’.

The most recent international study is Young and Nelson (2001), which uses data of 17 OECD countries for 1977-1995 to examine associations between alcohol advertising, advertising restrictions, consumption, and alcohol-related harms, such as cirrhosis mortality and traffic fatalities. An especially useful contribution of the study is a discussion of how consumption levels in Scandinavian countries are underreported in both legal and illegal home production, along with cross-border and duty-free purchases. They found that alcohol consumption was positively affected by per capita income, tourism, and ‘drinking sentiment’, and negatively affected by the price of alcohol and the percentage of the elderly population.

In terms of liver disease, there was a positive association between income and drinking sentiment and a negative association with price, the unemployment rate, and the percentage of elderly

population. Traffic fatalities are positively associated with income and youth population and negatively associated with the unemployment rate and the elderly population.

As for advertising bans, the authors found that broadcast bans of spirits advertising resulted in increased alcohol consumption along with higher rates of traffic fatalities. More comprehensive bans of advertising were not consistently associated with either total consumption or alcohol-related harm.

The authors conclude that:

The empirical results do not support the notion that bans of broadcast advertising of alcoholic beverages will reduce consumption or alcohol abuse. The evidence indicates that a complete ban on broadcast advertising of all beverages has no effect on consumption relative to countries that do not ban broadcast advertising.

Equally important for alcohol policy, the results fail to provide evidence that advertising bans have significant negative effects on alcohol abuse outcomes, including cirrhosis mortality and road fatalities...Despite the long-stand use of advertising bans in many of the countries in the sample, other economic and cultural factors are apparently far more important as determinants of drinking patterns and consumption.

Conclusion

The imposition of alcohol advertising bans represents a reasonably direct way in which to test the Ledermann-derived public health hypothesis about both the effects of alcohol advertising and the corrective of advertising restrictions and bans.

Although the evidence is not completely consistent and, as we have noted, has significant limitations in its ability to control for possible confounding factors, there is still very strong evidence that the imposition of bans has not reduced consumption.

Moreover, where alcohol advertising bans have been lifted, there is no evidence that shows that consumption has increased. This does not, of course, mean that advertising is ineffective, as many of these studies have demonstrated the expected advertising outcome of substitution effects and movements between brands and beverage categories. As Fisher observes:

[I]t is quite clear that bans on advertising where they have been imposed have not had a measurable impact on total alcohol consumption and rarely have even affected single product category consumption...

These conclusions are supported by the cross-sectional studies that typically find no relationship between the severity of regulations and consumption of alcohol products or alcohol related disease.

Alternative Accounts of Drinking Initiation

While this review has concentrated on the evidence supporting the thesis that alcohol advertising increases alcohol consumption and harm, it is worth noting that many of the studies that examine the supposed association between advertising and consumption also point to the far more credible and better-evidenced role of other risk factors for adolescent consumption. For example, Donovan's (2004) review of the risk factors for adolescent alcohol initiation concluded that, 'The most consistent antecedent risk factors for starting to drink in adolescence were parental and peer approval and models for drinking and drug use as well as adolescent's own prior involvement in delinquent behaviour'. Norman (1997) and Epstein et al (1995) both point to the high correlation of risk factors such as economic deprivation, poor school performance and absenteeism, approval of risk-taking, low self-esteem, and family structure with intentions to drink.

A longitudinal study by Hops et al (1999) followed US children in grades 2-4 and 9-10 and examined five key risk factors for both alcohol and other substance use: peer pressure, success in school, classroom behaviour, playground behaviour, and child-parent-family conflict. It found that peer pressure and family conflict were the best predictors of male underage drinking. Poor school performance best predicted female underage drinking.

They note that ‘children who experience social, behavioural and/or academic problems in early life appear to be at risk for non-normative or deviant alcohol, tobacco and other drug use’.

In a recent study of the psychosocial correlates of substance use among adolescents in six European countries, Kokkevi et al (2007) found associations between regular use of alcohol and substance use by peers and siblings, absence of parental monitoring, dissatisfaction with parents, and absences from school.

Williams (1995), writing in a National Institute on Alcohol and Alcoholism monograph on the effects of the mass media on the use and abuse of alcohol, cautions against the inappropriate fixation on advertising when family, peer, and school environments are the dominant factors in underage drinking. He writes, ‘Researchers also need to recognise that to a certain extent they may be ‘swatting at gnats while being swallowed by a tiger’ by spending so much time focusing on advertising while ignoring factors such as family and peer pressure, which account for the greatest impact on consumption, particularly among adolescents’.

Conclusion

This public health community has claimed that alcohol advertising causes individuals to drink who might not otherwise drink and causes individuals to consume more alcohol than they otherwise would. In order to test these

claims we have examined five aspects of this debate: the model of advertising effect which is foundational to the view that advertising effects drinking choices; quasi-experimental studies of alcohol advertising; studies of alcohol advertising exposure and recall; econometric studies of alcohol advertising, drinking initiation, and consumption; and studies of alcohol advertising restrictions and bans.

With respect to the model of advertising effect, we found that the empirical evidence for this construct is weak and that, even taken on its own terms, studies of alcohol advertising that depend on some sort of path analysis consistently fail to demonstrate that the drinking behaviour of an individual is the causal result of an alcohol advertisement.

As for experimental studies, it is clear that even allowing for the substantial issues around methodology and to what extent one can generalise based on such limited and artificial settings, that these studies provide no support for the claims that alcohol advertising initiates drinking or increases consumption.

Despite the claims of Hastings et al that such studies now have ‘sophisticated designs’ that allow them to demonstrate clear links between advertising and behaviour, we have found no evidence of this. Indeed, the studies reviewed here fail to meet the minimal standards of science in being unable to warrant the integrity of their measurements. Further, their results, even when they are significant, demonstrate only weak associations and fail to demonstrate causal connections between advertising and changes in

consumption, drinking initiation and alcohol-related harm. Studies of alcohol advertising exposure and recall may yet provide valuable evidence to the causal questions that are at the centre of this debate, but only if they are designed with far more rigour than is currently the case.

Three problems undermine the findings of the alcohol advertising exposure and recall studies. First, and most importantly, none of the studies can justify a causal conclusion about the relationship between advertising and drinking initiation or consumption given their cross-sectional or longitudinal design. Second, all have significant methodological issues, particularly with respect to warranting that they have in fact accurately measured exposure, and also in terms of their reliance on unverified subject recall. Finally, the studies generally report data that is either not statistically significant or, if significant, is a weak relationship.

With respect to econometric studies, out of over 30 such studies over the last two decades, only a handful support the claim that alcohol advertising lead to drinking initiation or increases total consumption.

Finally, of 17 cross-sectional and longitudinal studies of the effects of advertising restrictions and bans on drinking initiation and consumption, only three find that such measures have a statistically significant effect on either initiation or consumption. There is strong evidence that restrictions have not reduced consumption and the evidence from jurisdictions that have removed bans shows that consumption has not increased when advertising has resumed. Nor do such studies provide support for the claim that

such restrictions on advertising reduce alcohol abuse or alcohol related-harms such as road fatalities or disease. Indeed, one study found that broadcast bans of spirits advertising resulted in both higher consumption levels and increased levels of traffic fatalities.

Based on the evidence presented in this review, the causal claims of the BMA and other members of the public health community about the effects of alcohol advertising are not sustained. Indeed, the weight of the evidence, not just marginally but substantially, argues against its assertions about alcohol advertising initiating drinking and increasing consumption and alcohol-related harm. In consequence, there is no public policy justification for measures to substantially restrict or completely ban alcohol advertising that is directed to legal consumers.

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