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# Smoking and drinking as complementary behaviours

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**Abstract**

Parallels and contrasts between tobacco smoking and alcohol drinking are considered, in terms of harms, cultural positioning, and a dependence, which is social as well as physical and psychological. Evidence is briefly reviewed of two kinds of conjunction: of being a smoker and being a drinker, and of the smoking event and the drinking event. The complementary relation between smoking and drinking, it is argued, can be understood at physiological, psychological and social levels. Implications for prevention, intervention and policy are discussed, including the need for international agreement on alcohol as well as tobacco control.

*Keywords:* Tobacco; Nicotine; Smoking; Alcohol; Drinking; Complementary behaviours; Conjunction; Event

## 1. Introduction

Nicotine and alcohol, along with caffeine, are the most widely used psychoactive substances. Nicotine and alcohol are also the substances ingested by humans which cause the greatest harm to health. According to the WHO Global Burden of Disease estimates for 2000, tobacco smoking is responsible for 4.1% and alcohol drinking for 4.0% of avoidable disability or loss of life, in terms of net disability-adjusted life-years, or DALYs ([1]; estimated beneficial effects of alcohol have been subtracted out). In low-mortality developed countries, including Europe and North America, e.g. established market economies such as Germany, the estimated proportions of DALYs lost are 12.2% for tobacco and 9.2% for alcohol.

In the case of nicotine, nearly all of the health harm does not come from the psychoactive substance itself, but from what is also ingested in customary modes of use. There are thus modes of use of nicotine, uncommon at present, which carry very little health harm [2]. In the case of alcohol, there are modes of use with essentially no risk to health, and some, in fact, which seem to be beneficial to health. However, a pattern of use of alcohol likely to be beneficial to health but carrying no risk of casualty or other health or social harm is also quite uncommon [3], particularly when a global perspective is taken [4]. This reflects the fact that for alcohol, unlike tobacco, much of the harm is associated with the specific occasion of drinking, and not with enduring patterns of use. Most drinkers engage in at least some risky drinking, and in many developing countries risky patterns are predominant [4].

The fact that much of the potential and immediately rec- ognizable harm from drinking is associated with drinking in the immediate occasion, and the related fact that attention and motor skills are decreased by drinking more than a little, have done much to shape customary patterns of drinking. Both in terms of who may participate and in terms of the nature of the occasion, drinking occasions are enclaved and set apart in many societies. In most places, drinking is forbid- den to children, and in many traditional societies it is forbid- den to all or most women also. In many developed societies, there was a long struggle in the process of industrialization to remove drinking from the workplace. Most people disap- prove of having more than one or two drinks at most when one is caring for children or about to drive a car [5]. Enclaved from everyday life, drinking occasions are defined in many cultures as a “time out” from normal responsibilities, as a time for sociability and relaxation, often somewhat transgressive of the norms of everyday life [6,7]. The result of the enclaving is a heavy concentration of drinking by time and occasion, so that drinking largely occurs on weekday evenings and weekends [8].

In many cultures, tobacco smoking has also been restricted in terms of who may participate, with children usually excluded, and often women also. But for much of the 20th century, at least in industrialized countries, tobacco smoking was much less enclaved to particular occasions than drinking. In part, this reflected that nicotine is not an immediate impediment to thinking and motor skills, and may even enhance performance in intellectual work. In the 20th century, in many places cigarette smoking became a medium of sociable interaction as well as an individual habit, including sociable interaction in the workplace. Where "having a few drinks" often marks the end of the work week or workday, the sociable cigarette often marked the end of a spell of work. Thus, in the Australia of my childhood, a short collective break from manual work was known as a "smoko".

Much of the anti-smoking effort in recent years may be seen as an effort to increase the enclaving of tobacco smoking, by limiting the places and circumstances in which cigarette, cigar or pipe smoking can occur. In many places, there has been a long march through social institutions and public spaces in terms of moves to increase smoking restrictions. There were always some places and occasions when smoking would have been unthinkable—at church services, for instance—but in the last 30 years or so the restrictions have been progressively extended, in some countries to cover most indoor public spaces and occasions. It is relevant to the present topic that taverns and other drinking places have often been the last such places to be covered. The resistance to banning smoking in taverns (e.g., [9]) may be seen as a marker of the close association of smoking and drinking.

Prior to the effort to restrict smoking in the workplace and in public spaces, the situation in many countries was that smoking was usually acceptable on occasions where drinking was acceptable, but the reverse was not true—there were many occasions where smoking was acceptable but drinking was not. The increased enclaving of smoking is now probably pushing the two behaviours towards a closer conjunction.

Both nicotine and alcohol are classified as dependence-producing substances; that is, heavy users may find it difficult to cut down or quit their use even if it is seen as problematic. Part of what binds the smoker or drinker to the behaviour is physiological; for instance, that use will forestall or relieve withdrawal symptoms. Another part is psychological; for instance, that the smoking or drinking provides short-term psychological benefits to the smoker or drinker, despite any harm which may ensue. Regular use has provided the smoker or drinker with a set of cues for the behaviour, which can render the behaviour automatic—the smoker may have no consciousness of lighting another cigarette, the drinker of refilling the glass.

A third, and often crucial, part of what binds the smoker or drinker to the behaviour is its social nature. For most drinkers, drinking is quintessentially a part of various forms of sociability. For example, in many societies, it is considered rude to refuse an offer of a drink. In English-speaking societies, "round-buying" customs may dictate that, once the male drinker is included in a "round" of drinks, he is committed to consuming at least as many drinks as the number of people in the drinking group. For many drinkers, drinking becomes strongly involved with courtship and sexuality, so much so that intimacy may seem impossible without drinking. Through such mechanisms, dependence may be conceptualized as being as much a social as a psychological and physiological problem [10].

Smoking has also been very much a sociable behaviour, so that nicotine dependence is social as well as physiological and psychological. Thus, offering cigarettes was until quite recently often a routine part of hospitality. In many circumstances, it would be seen as inexcusably selfish and rude to refuse to share one's cigarette supply. The offering, lighting and sharing of cigarettes, as much as the minor rituals of drinking, have often been a carrier of cues in courtship and sexuality. The sociable aspect of smoking may be in the process of change, although the clusters of smokers outside the doors of public buildings in Canada and elsewhere signify that prohibitions on smoking at work have changed rather than eliminated the sociable aspects of smoking.

## 2. Conjunctions

### *2.1. Being a smoker and being a drinker*

So far, we have considered the parallels between smoking and drinking as separate behaviours. But in fact they often occur together. The conjunction of smoking and drinking can be seen as occurring at several levels. In the first place, in industrial societies, smokers are more likely than others also to be drinkers, and drinkers also to be smokers. Among US high school seniors, Dee [11] finds a coefficient of 0.41 for current smoking predicting current drinking, controlling for other predictors, and a coefficient of 0.34 for current drinking predicting current smoking. In another study of US high school students, drinkers were three times as likely as non-drinkers to be smokers and smokers three times as likely as nonsmokers to be drinkers [12]. Among adults these days, simply because there are more drinkers than smokers, smoking predicts drinking more strongly than the reverse, though the rate of smoking is much higher among drinkers than abstainers. Thus, among adults in the US in 1997, 37% of current drinkers were current smokers, as compared to only 6% of abstainers [13]. That smoking is much less common than drinking in the US is a reflection of a particular societal history and patterns; this will be reversed, for instance, in most Islamic societies.

Beyond this, heavy drinkers are quite likely to be heavy smokers, and vice versa. Among US adults in 1997 who had drunk five or more drinks on an occasion in the last 30 days, the rate of current smoking rose to 55% [13]. Anthony and Echegaray-Wagner [14] report that the rate of dependence on both alcohol and tobacco among 15–54-year-olds in the US,

7%, was twice as high as would have been expected from the rates of alcohol dependence (14%) and tobacco dependence (24%) if there were no association between the two. In the US, at least, it seems that heavy drinkers are more likely to be heavy smokers than vice versa; in data from 1964, one-half of heavy drinkers smoked more than a pack of cigarettes a day, while somewhat less than one-third of those smoking that much were heavy drinkers (recalculated from [15: p. 148]). Recent US studies have found that nicotine-dependent smokers have 2.7 times the risk of alcohol dependence of non-smokers, and alcohol-dependent drinkers are 4.7 times as likely as others to be smokers [16].

At the level of drinking where drinkers come in for treatment for alcoholism, tobacco smoking used to be extremely common in North America—at a level of 90% or higher. However, with the shift in cultural attitudes towards tobacco smoking in the 1980s and 1990s, more recently the percentage has dropped to 70–75% [13].

Recently, Dee [11] has found evidence, among US teenagers, that increased alcohol controls (raising the drinking age) reduced the rate of smokers, and (more equivocally) that raising tobacco taxes reduced the rate of drinkers. Using the terminology of economics, smoking and drinking are thus complementary behaviours—that is, a factor which increases one behaviour will also tend to increase the other.

### *2.2. The smoking event and the drinking event*

So far, we have considered the association of smoking and drinking at the person level. But the association exists also in terms of timing and occasion among those who both smoke and drink. Anecdotally, those who both smoke and drink report smoking more when they are drinking at a party. Those who have quit smoking report being particularly likely to be tempted to smoke again while drinking [17]. This is particularly true for those whose smoking has been most associated with drinking [18].

We may expect the relation between drinking and smoking at the event level to vary between cultures and social groups, according to the temporal rhythm of drinking and of smoking. In many developed societies, drinking has a weekly rhythm, with much of the week's drinking concentrated at the weekend [8,19]. Within the day, drinking tends to be concentrated in the evening hours. These rhythms are likely to be much less marked in the southern European wine-drinking cultures, while on the other hand, in some developing societies drinking may be particularly concentrated in fiestas which occur a few times a year [4].

Less information is available on the rhythm of smoking over the week or the year. However, the smoking literature is now paying much more attention to intermittent smoking on a less-than-daily basis. Half the current smokers among Norwegian teenagers, for instance are occasional smokers [20], and Colder et al. [21] report that 25% of their longitudinal sample of US teenagers were "stable puffers", who smoked only a few puff of cigarettes a month.

In terms of the prevailing patterns in the 20th century, where there has been a wider spread of smoking occasions than of drinking occasions across the week, smoking does not seem to have been much of a cue for drinking, while drinking appears to have been a cue for smoking, which Shiffman et al. [18] suggest might be prompted "through conditioning mechanisms... The repeated pairing of the two substances (in those for whom the behaviours were associated) may condition a craving response such that drinking elicits craving."

Changes in the temporal rhythms of smoking and drinking might well change the apparent asymmetry whereby drinking cues smoking more than the reverse. On the other hand, the different psychoactive effects of the two substances are likely to play a role in the asymmetry. In many cultures, alcohol is expected to produce disinhibition [7], while there is little such expectation for tobacco. Particularly where smoking is disvalued personally or culturally, intoxicated drinking is likely to produce a smoking event where it would not otherwise occur.

## 3. Understanding the association

How are we to understand the strong association between smoking and drinking, and particularly between heavy smoking and heavy drinking? The connection is overdetermined—again, we may think in terms of factors at each of the physical, psychological and social levels.

Untangling the connections between smoking and drinking at the physical level seems to be a complex task. Pharmacologically, ethanol and nicotine have effects which partially counteract each other, and users apparently use them to titrate each others' effects. For instance, Marlatt and Gordon [22] recount the daily round of one of their clients, using a succession of "uppers" and "downers", including cigarettes and alcohol, each used in part to counteract the preceding substance's effects.

Recent research suggests other physiological paths of connection between smoking and drinking. Lê et al. [23] found that repeated administrations of nicotine stimulated alcohol consumption. Johnson et al. [24] and Chen et al. [25] have identified another connection: that nicotine reduces the intoxicating effects of alcohol, which would lead those seeking those effects to drink more.

At the psychological level, personality traits such as impulsivity and sensation-seeking are linked both to heavy drinking and to heavy smoking [26], suggesting that some of the connection between the behaviours may reflect their appeal to the same traits in the users. As already mentioned, the association between the two behaviours in time and context also means that use of each can become a cue for use of the other. However, animal studies on reinforcing effects have given inconsistent results, although this may reflect deficiencies in the experimental designs [26].

At the social level, the links between smoking and drinking are both negative and positive. To the extent that they are

culturally classified in similar categories, so that both are forbidden to particular social categories, such as respectable women in many cultures, there is a social influence tending to link their use. Likewise, the "negative matches" in the four-way table are increased by the fact that both behaviours are forbidden to a number of religious denominations, such as Mormons, Seventh Day Adventists, and the Salvation Army. At the other end of the spectrum, heavy drinking and heavy smoking are both often culturally defined as somewhat transgressive behaviours. Smoking has long been especially associated with institutions for drinking: taverns have long been, and still are in most places, smoke-filled rooms.

In light of the multiple levels of connections of the behaviours, then, each tends to be a risk factor for the other. The connection is not only in terms of the risk of initiating the behaviour, but also apparently in terms of the ease or difficulty of cutting down or giving the behaviour up. For instance, tobacco smoking seems to be involved in relapses for those attempting to quit drinking. A controlled trial among those in treatment for alcoholism, comparing groups who were also encouraged to quit smoking with groups who were not, found that 43% of the former, compared with 29% of the latter, were still abstaining from alcohol after 1 year of follow-up [27].

## 4. Implications for prevention, intervention and policy

Given that heavy smoking appears to be a risk factor for heavy drinking, and heavy drinking a risk factor for heavy smoking, what are the implications for prevention, intervention and policy? The controlled trial we have just cited lends weight to the movement in alcohol problems treatment away from the old policy in the field of ignoring smoking, and instead tackling smoking as well as drinking in the treatment program. Reflecting the profile of problems associated with tobacco smoking, smoking cessation programs have grown up more in the mainline of medicine than alcohol treatment programs. In a number of countries, primary care physicians have proved far less willing to take on drinking than smoking issues [28,29]. The link between the two behaviours suggests that any treatment with respect to one behaviour should take into account the potential involvement of the other behaviour. Similarly, prevention and harm reduction programs are well advised to take into account the likelihood of links between the behaviours.

At the level of policy, the links between the two behaviours constitute another reason for a reexamination of the separation that has long existed between the tobacco and alcohol policy communities in public health. While there are certainly a number of differences in the issues for tobacco and alcohol, there are also many common points. Both are legal commodities, in most places, but not ordinary commodities, since the wide use of each entails a very substantial burden of public health problems. The public health challenge for each is to enhance control of the marketing and promotion of the commodities, and to seek to minimize the harm associated with use, while maintaining personal freedom to choose to use. Each field has much to teach the other. Some aspects of the tradition of alcohol control—such mechanisms as specific licensing for retail selling, and government retail monopolies—could usefully be extended to the tobacco field.

On the other hand, there is much that is equally applicable to alcohol in the current international efforts to rein in the excesses of tobacco marketing. The list of issues included in WHO's Framework Convention on Tobacco Control (FCTC)—prices and taxes, smuggling, duty-free sales, advertising and sponsorship, ingredient control and reporting, labelling, agricultural policies, cooperation and information sharing [30,31]—are all also potential matters for international cooperation in a public health approach to alcohol problems. A parallel to the FCTC is urgently needed for alcohol.

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