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# Can you drink your way to happiness?



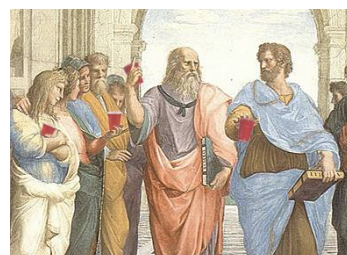
## Introduction

The linkage between alcohol and happiness is something which stretches back for centuries – it is believed that the well used idiom of “drowning one's sorrows” (in alcohol) dates back to the late 1300s (Ammer, 2012). Alcohol appears throughout history often as a source to improve mood and wellbeing – throughout the Bible alcohol is often referred to as a source for happiness, one verse in particular commands the reader to “drink and be glad” (Ecclesiastes 8:15 New International Version). The relationship between alcohol and wellbeing has long been of interest to those both within psychology and health services due to its obvious economical implications but also the fact that it is generally assumed with extremes of sadness or happiness.

The relationship is U-shaped and research has commonly found that levels of anxiety and depression are at their lowest when an individual consumes a moderate amount of alcohol.

## History

Purposeful production of alcohol has a long history in many cultures and often reflects their sociological and geographical conditions as well as cultural and religious peculiarities. Archaeological evidence suggests that production of alcoholic beverages existed as early as 10,000 BC. Discovery of late Stone Age beer jugs and chemical analysis of traces preserved in pottery in China and the Middle East shows that alcohol has played a role in human culture for thousands of years (McGovern et al., 2004). Alcohol has always been closely linked to different practices and many cultures have emphasised its benefits when used in moderation.



## Ancient History

### *China*

The jars from Neolithic settlements near the Yellow River date back to about 7000 BC, and provide the evidence for purposeful fermentation of rice, honey and fruit in ancient China. Alcohol played part in traditional medicine as well as religious practices. It was believed that alcohol in moderation was prescribed by heaven and was considered spiritual food.

## Egypt

The civilization of ancient Egypt considered beer to be invented by god Osiris and to be a necessity of life. Both beer and wine were offered to gods and used for medicine, nutrition, and pleasure. The importance of moderation has been stressed in numerous accounts and the norms for moderation were both religious and secular (Joffe, 1998).



## Greece

Alcohol also played an important role in ancient Greece, where it was used for medical and ritual purposes. It became very important in hospitality and an integral part of daily meals. It was recommended to consume alcohol in moderation; however, the cult of god Dionysus was related to a belief that intoxication brings people closer to deity.

## Pre-Columbian America

A number of Native American civilizations developed alcoholic beverages. The fermented fruit, maize, and manioc to produce different types of alcohol used in religious ceremonies as well as consumed in daily life.

## Jewish Culture

Jews used alcoholic beverages, mainly wine, while performing their rites and during weddings and circumcision celebrations. In the Scriptures, wine is described as *bringing joy to God and man* (Judges 9:13). However, the Torah also teaches about the destructive consequences of intoxication. This again shows that although alcohol was widely used, moderation was of great importance.



## Christianity in Europe and the Middle East

Throughout the years of church history, Christians consumed alcohol as a common part of everyday life. They also used wine in their central rite- the Eucharist, which commemorates the final meal that Jesus shared with his Apostles. The institution of the Lord's Supper is recorded in Gospels, where Jesus commands the Apostles to drink wine in remembrance of him: *Then he took a cup, and when he had given thanks, he gave it to them, saying, "Drink from it, all of you. This is my blood of the covenant, which is poured out for many for the forgiveness of sins"*(Matthew 26:27-28).

# Medieval History and Early Modern Period - beginning of large scale production of alcohol

In the Middle Ages, the popularity of alcohol led to the development of large scale techniques for alcohol production. The first certain evidence of the distillation of alcohol dates back to the 12th century and the first book dedicated to distillation was written and published in 1500 by German alchemist Hieronymus Braunschweig. This resulted in large scale, industrial production of alcoholic beverages (Forbes, 1970). The late 15th century marks the beginning of large scale whisky distillation in Scotland. In 1690, the British parliament passed a law to encourage the distillation of brandy and spirits, which led to a massive raise in production and consumption of alcoholic beverages.

# Modern History and Pop-culture

As a result of increased industrialisation in 19th century, intoxication began to be viewed as a threat to efficiency and growth. Therefore, the attitudes towards alcohol have changed, as there was a need for reliable work force, and drunkenness was not accepted. This resulted in the return to putting emphasis on moderation.

Nevertheless, alcohol was and still is an important component of various cultures and it even played a role in world politics.



For instance, it is certain that a lot of alcohol was consumed at the 1945 Yalta conference, where Stalin, Churchill and President Roosevelt met to discuss the new boundaries between the European countries following the war. Brandy was officially served during the day which undoubtedly influenced the moods of world leaders, and possibly their decisions as well (Dobbs, 2013).

There are countless other examples of how alcohol is involved in both private and public aspects of life. Alcohol is intrinsically connected to our culture. An illustrative example is the practice of “Bruderschaft” (German word for “brotherhood”); when two individuals drink together a glass of alcoholic and abandon the use of titles to simply call each other by first names.



Alcohol is also omnipresent in our media that portrays it as something to improve one's mood and wellbeing. Alcohol is generally associated with fun and pleasure. Even the widely used term "Happy Hour" shows that general public associates alcohol with happiness. More and more studies are being published, showing the benefits of moderate alcohol consumption. Headlines such as "*Want to know the secret to a happy marriage? Share a bottle of wine once a week* (<http://www.dailymail.co.uk/news/article-2206938/Want-know-secret-happy-marriage-Share-bottle-wine-week.html>)", "*Drink Up, Because Booze Won't Make You Depressed* (<http://newsfeed.time.com/2013/09/20/drink-up-because-booze-wont-make-you-depressed/#ixzz2sZY59EYm>)", "*Drinking wine makes you happier* (<http://metro.co.uk/2010/05/19/drinking-wine-makes-you-happier-says-study-319871/>)", or "*Booze makes students happy* (<http://www.dailymail.co.uk/news/article-2190977/Is-secret-happiness-Survey-finds-binge-drinking-puts-students-better-mood.html>)" attract our attention, as they provide a justification for people's craving for alcohol.



Perhaps one of the most well known pop culture references to alcohol's U-shaped relationship with happiness is Homer Simpson's toast to alcohol as "the cause of, and solution to, all of life's problems" which can be viewed below alongside another recently created video discussing, rather lightly, this phenomenon.

## Top Article

The key paper we have selected in this area is entitled "Non-linear relationships in associations of depression and anxiety with alcohol use" by Rodgers, Korten, Jorm, Jacomb, Christensen and Henderson (2000). Testing 2725 Australians between the ages of 18 and 79, the study found that heavy drinkers and non-drinkers (or "abstainers") report more symptoms of depression and anxiety than moderate drinkers. The authors initially examined the general

drinking habits and emotional states of the participants in order to fully control for alcohol related differences. Males drank more and reported more problems than females leading the authors to adjust the threshold for definitions of drinking levels (e.g. abstainers, moderate etc.). Young people were found to report more problems with drinking than older people and lastly females and young people showed lower levels of negative affect generally. These differences were all relatively controlled for before the relationship was considered further.

Depression and anxiety levels were both tested on two measures – Goldberg et al.'s (1988) depression/anxiety measure and the Delusions-Symptoms-States Inventory (DSSI sAD) (Bedford et al. 1976; Bedford & Deary, 1997). The results showed a distinctive U-shaped relationship between levels of anxiety and depression and level of alcohol consumption. The designated levels of alcohol consumptions were defined as – Non-drinkers, Occasional, Lower level, Higher level, and Hazardous/harmful. The levels of depression and anxiety peaked at Non-drinkers and Hazardous/harmful and were lowest at Lower level. This result was at its lowest in participants who were over 60 years old. It should also be noted that the U-shape did not appear for problems with drinking.

The authors critically discuss the implications of the U-shape curve especially regarding the sample effect of such an experiment. They note that a previous study has also found this result (Power et al., 1998) and use this as support for the particular concern of the prevalence of ex-drinkers in the non-drinkers category. The authors note that had this been the case the U-shape would have become more emphasised with age but it did not. Also Power et al.'s (1998) study excluded ex-drinkers and still found the U-shape. Other studies also found that ex-drinkers are equally likely to be found in the moderate category as they are in the non-drinkers one (e.g. Goldman and Najman, 1984). The authors do point out that the lack of longitudinal data makes it very difficult to interpret the origin of the U-shape and that the heavy-drinkers group could also be prone to depression due to a stressful life event which has prompted an alcohol dependence. Also with a study of this nature it is very possible that culture can have an impact due to religious and cultural beliefs about alcohol though the non-drinkers group should be examined closely as an at-risk group for anxiety and depression disorders.

Please find the full article text here (<http://dx.doi.org/10.1017/S0033291799001865>).

## Three Key Articles

### Butterscotch or Bitter-Scotch?

Lang, Wallace, Huppert and Melzer (2007) conducted a study examining alcohol consumption and its effect on the cognitive functioning, subjective well-being and depressive symptoms in older adults. They used data from the (2002) English Longitudinal Study of Ageing (ELSA) to recruit participants and had them complete a 4-question CAGE questionnaire to select out those with problem drinking tendencies. After disqualifying those who had scored 2 or higher on the CAGE measure their analyzed sample contained 6,005 male and female U.K. adults over 50. The participants who consumed moderate amounts of alcohol scored significantly higher on measures of subjective well-being and cognitive functioning, and also showed fewer depressive symptoms than alcohol abstainers. For men, the highest levels of cognitive functioning and subjective well-being were found in those who consumed 2+ alcoholic beverages per day and for women in those who consumed 1-2 alcoholic beverages per day. These findings are especially pertinent to our theory that moderate alcohol consumption increases happiness because they implicated the same U-shaped association with regards to both cognitive functioning and well-being measures, as did Rogers et al. (2002) with regards to depression and anxiety. The full article can be found here (<http://dx.doi.org/10.1093/ageing/afm001>).

### Reward Yourself With a Drink

Mitchell et al. (2012) investigated the biological effects that alcohol has on mood. It is known that ethanol, found in

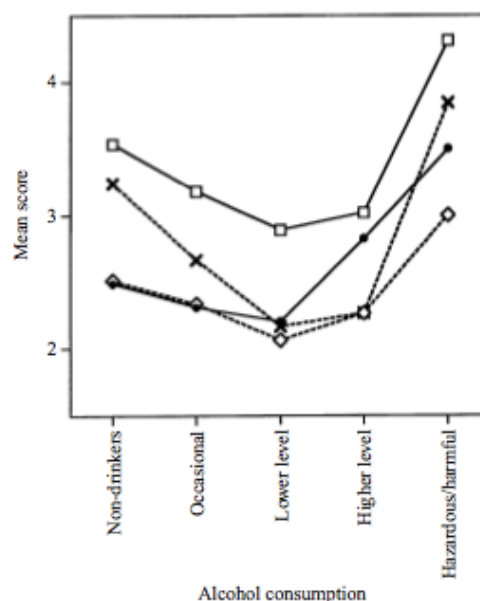


Fig. 2. Mean Goldberg depression scores by level of alcohol consumption (younger and intermediate groups). (Age 18-39 years: ●—●, men; □—□, women. Age 40-59 years: ◇---◇, men; X---X, women.)

alcoholic beverages, modulates several neurotransmitter receptors and other molecular targets. However, the neural mechanisms underlying its rewarding role have not been fully explored. Studies in rodents showed that ethanol consumption leads to release of endogenous opioids (the small peptides endorphins, enkephalins, and dynorphins) that act at the  $\mu$  opioid receptor (MOR) and that this determines further consumption. To examine this issue in humans, the authors used PET imaging to investigate binding of the selective MOR agonist following consumption of alcohol in a group of heavy drinkers and a control group of light drinkers. Voxelwise analysis demonstrated that alcohol caused a significant reduction in MOR binding in the left orbitofrontal cortex (OFC) in both heavy drinkers and control participants. It was found that regardless of how much participants usually drink, alcohol consumption led to the release of endogenous opioids that bind to MORs in brain regions necessary for reward processing: the OFC and nucleus accumbens. This provides direct evidence of how drinking alcohol leads to feelings of pleasure. It was also found that more opioid was released in the reward centres of heavy drinkers than light drinkers. This suggests that individuals with more alcohol responsive orbitofrontal cortices and nucleus accumbens (related to releasing larger amounts of opioids) may get more pleasure from consumption of alcohol, which may lead to excessive drinking. The full article can be found here (<http://dx.doi.org/10.1126/scitranslmed.3002902>).

## Adolescents are as *wellbeing* sensible when they drink

Finally, Tomcikova, Geckova, van Dijk, and Reijneveld (2010) conducted a study in which they compared abstainers, consumers, and excessive drinkers on several topics, including well-being. Tomcikova et al. (2010) assessed well-being with the General Health Questionnaire-12, a well-known questionnaire that divides well-being into two main topics (social dysfunction and depression/anxiety). In their study they found that, in a sample of 3694 adolescents, there was a significant difference between excessive drinkers on the one hand, and abstainers and consumers on the other hand regarding their psychological well-being. Excessive drinkers scored significantly lower on depression and anxiety than the consumers and abstainers did. One could argue that this is support for our view that alcohol consumption can indeed make you happier. The full article can be found here (<http://dx.doi.org/10.1111/j.1465-3362.2010.00209.x>).

## Alcohol as a Coping Technique

Consider the phrase “drive someone to drink” – it is so commonly used that we do not even have to think much about its meaning. It appears obvious that stressful events may lead people to drink alcohol in order to make them feel better.

This has been confirmed in empirical studies. For instance, it has been found that stressful working conditions are associated with higher levels of alcohol intake. The study by San Jose, van de Mheen, van Oers, Mackenbach, and Garrentsen (2000) demonstrated that hazardous working conditions, demands at work, low levels of control over one’s job, and little support from co-workers were all related to higher levels of alcohol consumption in both men and women. This suggests that alcohol has a role in tension reduction. Moreover, Pearlin and Radabaugh (1976) have found that the coping functions of alcohol stem from experiences rooted in social and economic aspects of life. They found that alcohol serves as a coping mechanism for people experiencing economic hardship, distress, anxiety and low self-esteem. Another study has found that heavy drinking was positively correlated with stress and depended on coping style (Hussong, 2003). It was concluded that alcohol use was associated with high levels of stress and limited support seeking style and active coping styles. All of these studies imply that alcohol serves as a coping technique for people who find themselves under a lot of pressure.



## Defining Drinkers, Drinking and a Drink

In the previous sections there has been spoken a lot about drinking alcohol, drinkers and alcoholic drinks. But what exactly is “drinking” or “a drink”? And what makes a problem drinker or an alcoholic?

Some authors state that there is no definition of what ‘a drinker’ or ‘a drink’ is (Dufour, 1999), whereas others state that

there actually is (Hester, n.d.). Some authors try to define (heavy) drinkers by establishing certain properties of the drinking behaviour itself. Benton (2009) for instance, distinguishes between problem drinkers and alcoholics, in terms of phases of one's life and reasons offered to stop drinking. This is backed up by Gold and Aronson (2011), who state that drinking will become a problem when it affects someone's life or when the drinker loses control of his behaviour.

Finally, the NIAAA makes a stunningly correct summary of this debate by saying "Moderate drinking is difficult to define because it means different things to different people".

So, in an attempt to create more clear definitions of drinkers and drinks, Thickett et al. (2013) had twelve focus groups of four different countries in Europe (Poland, Hungary, Estonia and the UK) discuss with each other the cultural differences of the definitions. It turns out that there are several differences between said countries concerning their definitions of 'drinking', 'drinkers' and 'a drink'.



All in all it turns out that, even when we think we have a mental concept of what 'drinking', 'drinkers' or 'a drink' is, it's still possible that it can differ cross-cultural. In fact, it might not even be possible to actually establish a universal definition of said concepts.

So, when talking about drinking, a drink or drinkers in relation to alcohol, it is important to set up clear definitions beforehand, so the public know exactly what you are talking about, for instance when you want to provide guidelines for moderate drinking.

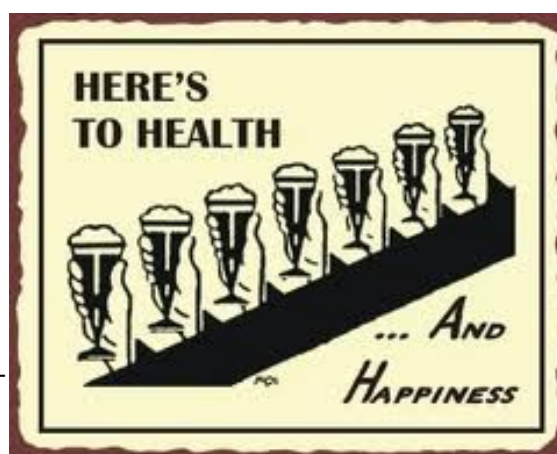
## A Toast to Health and Happiness

It is common knowledge that drinking alcohol can be a pleasurable social activity, but did you know that it could also benefit your physical and mental health? While excessive consumption can be detrimental to health, in moderation, there are actually many benefits to alcohol consumption. Not only can the various health benefits of moderate consumption improve physical health and well-being, contributing to overall happiness; but better public health leads to less economic strain on health care services (Baumeister et al., 2006).

### *Subjective Well-being in Older Adults Leads to Increased Longevity*

Subjective well-being can be defined as a person's emotional and cognitive evaluations of their lives and subsequent satisfaction. Not just the mere absence of depressive symptoms but also the frequency of positive mood and emotions. Subjective well-being is often used synonymously with **happiness** in the literature, as it is the measureable aspect of life satisfaction and typical affect (Huppert & Baylis, 2004).

As previously summarized, Lang et al.'s (2007) study looked at the relationship between alcohol consumption, or lack thereof, and the self-reported subjective well-being of older adults as well as measuring their cognitive functioning and number of depressive symptoms. Moderate (2> drinks per day for men, and 1>2 drinks per day for women) alcohol consumption was associated with the highest levels of subjective well-being and cognitive functioning as well as a low number of depressive symptoms. Diener and Chan (2011) published a lengthy review of seven different types of studies all of which linked happiness and ratings of subjective well-being to increased longevity. Providing ample evidence for their claim that happy people actually do live longer. Therefore it can be implicated that if moderate drinking can make an older adult subjectively happier, as well as simply increasing the quality of their life; it may actually contribute to prolonging it.



### *Reduces Risk of Cardiovascular Disease*

The high levels of cognitive functioning in older adults who indulged in moderate alcohol consumption in Lang et al.'s (2007) study, led them to ask by what mechanisms were those results possible? The main theory that they came up with to explain this higher cognitive functioning in moderate drinkers compared to abstainers is that the consumption acted as a protective factor against cardiovascular disease. Cardiovascular disease is especially prevalent in older adults and can cause deficits in cognitive functioning. This is consistent with the popular belief, that moderate alcohol consumption, especially of beer and wine reduces the risk of heart disease.

Chiva-Blanch, Arranz, Lamuela-Raventos, & Estruch (2013) conducted a comprehensive review of human studies



focusing on the benefits of moderate alcohol consumption on cardiovascular health as well as the specific effects of different types of alcoholic beverages. They found that alcohol containing polyphenols: specifically wine and beer, protected against an array of cardiovascular diseases including cardiac events such as heart attacks. Red wine was found to better protect against cardiovascular mortality than beer or liquor, however they were all found to be similarly protective against cardiovascular events. However positive the results of this study it must be noted that people who consume three or more drinks per day may be at an increased risk for cardiovascular disease. Moderation is key when looking to reap the health benefits associated with alcohol consumption.

### Drinkers Exercise More Frequently Than Non-Drinkers



People who drink are often thought of as being inactive, lazy or as having a dreaded “beer belly”. However recent studies have found a correlation between alcohol consumption and the tendency to exercise. French, Popovici and Maclean (2009) used data from the U.S.A’s 2005 national Behavioral Risk Factor Surveillance System survey to determine whether drinkers exercised more or less than the general population. The sample they used was large and representative, consisting of 230,856 U.S. adult citizens. Through statistical analysis they determined that being a drinker is associated with a 10.1% increase in the probability of engaging in vigorous exercise. They also concluded that light, moderate, and heavy drinkers exercised 5.7, 10.1, and 19.9 more minutes respectively per week, compared to abstainers. They came up with several explanations for these correlations including that alcohol consumption and physical activity both may be part of a thrill-seeking lifestyle. They also suggested that drinking socially often occurs after participating in team sport and that physical exercise may be a mechanism to compensate calorically for drinking, especially in women.

Regardless of the reasons why drinkers exercise more frequently and vigorously than non-drinkers, if the drinking does occur in moderation health benefits as well as psychological ones should be expected. Exercise can be viewed as a moderating factor between moderate alcohol consumption and happiness. Szabo and Abraham (2013) conducted a field study, which examined the positive affect caused by running as exercise. The participants were recruited in a naturalistic setting as they were already preparing to run in a local park and asked for consent. They were completed the Exercise-Induced Feeling Inventory both before and after exercising. Their results showed a significant increase in positive affect post-run, indicating that exercise can influence happiness. It can be hypothesised that since drinkers tend to exercise more, that as well as improving their physical health they are also improving their mood and subsequent happiness. Further research examining all three factors is needed to determine causation.



## Guidelines of Drinking for Happiness

Below you can see the contrast between each country for their governmental recommendations.

Country	Males (units/day)	Females (units/day)	Standard Drink Size
United Kingdom	3-4 (do not exceed 24-32g/day)	2-3 (do not exceed 16-24g/day)	8g
USA	1-2 (do not exceed 14-28g/day)	1 (do not exceed 14g/day)	14g
Canada	6.5 (do not exceed 51g/day)	4 (do not exceed 34g/day)	17g
Poland	2 (do not exceed 20g/day)	1 (do not exceed 10g/day)	10g
Netherlands	2 (do not exceed 20g/day)	1 (do not exceed 10g/day)	10g
Japan	1-2 (do not exceed 39.5g/day)	Not specified	19.75g

For a detailed list of other country's drinking recommendations please click [here](#)



# Conclusion

Throughout history, alcohol's role can be seen clearly - the studies which have been discussed shown that when moderately consumed, alcohol can in fact be a very positive factor for wellbeing and health. However, when it is not consumed moderately or indeed, at all, it appears that individuals seem to be both less healthy and have lower wellbeing. While overconsumption and alcoholism cannot be ignored it seems to be the case that moderately consuming alcohol is, generally speaking, good for you.

It is worth noting the vast differences from country to country regarding their suggested alcohol intake, this is something which perhaps should be the focus of future study in this area.

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