

RESEARCH

CHRISTMAS 2013: RESEARCH

Were James Bond's drinks shaken because of alcohol induced tremor?

 OPEN ACCESS

Graham Johnson *ST5 emergency medicine*¹, Indra Neil Guha *clinical associate professor of hepatology*², Patrick Davies *consultant paediatric intensive care*³

¹Emergency Department, Royal Derby Hospital, Derby; ²NIHR Nottingham Digestive Diseases Biomedical Research Unit, University of Nottingham;

³Paediatric Intensive Care Department, Nottingham University Hospitals NHS Trust, Nottingham

Abstract

Objective To quantify James Bond's consumption of alcohol as detailed in the series of novels by Ian Fleming.

Design Retrospective literature review.

Setting The study authors' homes, in a comfy chair.

Participants Commander James Bond, 007; Mr Ian Lancaster Fleming.

Main outcome measures Weekly alcohol consumption by Commander Bond.

Methods All 14 James Bond books were read by two of the authors. Contemporaneous notes were taken detailing every alcoholic drink taken. Predefined alcohol unit levels were used to calculate consumption. Days when Bond was unable to consume alcohol (such as through incarceration) were noted.

Results After exclusion of days when Bond was unable to drink, his weekly alcohol consumption was 92 units a week, over four times the recommended amount. His maximum daily consumption was 49.8 units. He had only 12.5 alcohol free days out of 87.5 days on which he was able to drink.

Conclusions James Bond's level of alcohol intake puts him at high risk of multiple alcohol related diseases and an early death. The level of functioning as displayed in the books is inconsistent with the physical, mental, and indeed sexual functioning expected from someone drinking this much alcohol. We advise an immediate referral for further assessment and treatment, a reduction in alcohol consumption to safe levels, and suspect that the famous catchphrase "shaken, not stirred" could be because of alcohol induced tremor affecting his hands.

Introduction

Excess alcohol consumption is a societal and health problem throughout the world. Around 4% of deaths worldwide are related to alcohol, with 2.5 million deaths a year attributable to its use.¹ Death is most commonly caused by injury, liver cirrhosis, poisoning, and malignancy. In the entertainment world, however, excess alcohol consumption is often portrayed in a positive, even glamorous, light. Of particular note are the drinking habits of James Bond, the quintessential British spy in the novels of Ian Fleming. He is renowned for enjoying cigarettes, alcohol, and women, with a catchphrase of "vodka martini—shaken, not stirred."

James Bond has often been seen as a strong role model. He is admired for his performance under pressure and his ability to be master of all situations he encounters. We were struck, while reading the original James Bond books, that his alcohol consumption seemed rather high and wondered whether he would realistically have the capacity to perform (in all aspects of his life)^{2,3} at his high level of alcohol intake. Previous analyses of Bond's drinking behaviour have examined the types of alcohol he has drunk and the total number of drinks^{4,5} but have never studied the number of units of alcohol this represents and the potential health effects of this.

Ideally vodka martinis should be stirred, not shaken.⁶ That Bond would make such an elementary mistake in his preferences seemed incongruous with his otherwise impeccable mastery of culinary etiquette. We examined Bond's alcohol consumption to determine whether he might have been unable to stir his drinks because of the persistent shaking of alcohol induced tremor, making it more socially acceptable to ask for his drinks "shaken, not stirred."

Correspondence to: P Davies patrick.davies@nuh.nhs.uk

Extra material supplied by the author (see <http://www.bmj.com/content/347/bmj.f7255?tab=related#webextra>)

Appendix: Fleming bibliography

Methods

Two authors read all 14 original James Bond books either on paper or on a Kindle (Amazon UK) device between January and July 2013. They kept contemporaneous notes of all alcohol consumption, as documented in the books. Each author read seven books.

Bond's alcohol intake was calculated by the number of days on which action was described. We used pre-formed definitions of units (table 1), based on definitions provided by www.nhs.uk/alcohol/,⁷ a United Kingdom National Health Service (NHS) alcohol awareness website. In the UK a unit of alcohol is defined as 10 ml or 8 g of pure ethanol. For cocktails we obtained recipes from Wikipedia. Spirit volumes were taken from previous research into actual poured volumes.⁸⁻¹⁰ When drinks were shared, an equal split was presumed at all times. The last five terms in table 1 were used only if there was no specific mention of which drinks were consumed. We considered the unit and quantities to be reasonable but relatively conservative estimates in the context of his overall drinking habits. It is likely that these are an underestimate rather than an overestimate of his intake on these few occasions.

Data were then analysed by day. When days were not described or described in only brief detail, they were not taken into account. Days when Bond was unable to drink (usually because of incarceration or injury) were logged.

We excluded *The Spy Who Loved Me* from analysis as it is written in the first person by a waitress involved with the criminal underworld, and Bond appears for only eight hours as a peripheral figure. The 14th book, *Octopussy and the Living Daylights* is a compendium of short stories and was also excluded as it is not one coherent detailed story.

Results

Across 12 of the 14 books, 123.5 days were described, though Bond was unable to consume alcohol for 36 days because of external pressures (admission to hospital, incarceration, rehabilitation). During this time he was documented as consuming 1150.15 units of alcohol (table 2). Taking into account days when he was unable to drink, his average alcohol consumption was 92 units a week (1150 units over 87.5 days). Inclusion of the days incarcerated brings his consumption down to 65.2 units a week. His maximum daily consumption was 49.8 units (*From Russia with Love* day 3). He had 12.5 alcohol free days out of the 87.5 days on which he was able to drink.

Furthermore, when we plotted Bond's alcohol consumption over time, his intake dropped in the middle of his career but gradually increased towards the end (figure 1). This consistent but variable lifetime drinking pattern has been reported in patients with alcoholic liver disease.¹¹

Statistics

Descriptive statistics alone have been performed.

Discussion

We have shown that James Bond's alcohol consumption, while on his various missions for Her Majesty's Secret Service is, on average, between 65 and 92 units a week. There is only one indication of his alcohol consumption while not on a mission. During a medical assessment in *Thunderball* he is documented as drinking half a bottle of spirits a day, equivalent to 105 units a week. There are also occasional references to hangovers during non-mission times in the books. We therefore conclude that his

drinking during missions is roughly comparable with his "office days."

Many studies have shown that people generally underestimate their alcohol consumption by around 30%, implying that Bond's could be as high as 130 units a week. It is unclear whether having a third party describing one's alcohol intake would make stated consumption more or less accurate. Recent research implies that half of all alcohol sold is not accounted for by health surveys, so actual consumption could even be double that claimed.⁸⁻¹⁰ We are unaware of any studies that have shown an overestimation of alcohol consumption. Similarly, when we had to estimate Bond's consumption (such as "visited a bar") we have been deliberately conservative. We are therefore confident that our estimates are at the lower end of the truth.

UK NHS recommendations for alcohol consumption state that an adult male should drink no more than 21 units a week, with no more than 4 units on any one day, and at least two alcohol free days a week.¹² James Bond's drinking habits are well in excess of each of these three parameters. This level of consumption makes him a category 3 drinker (>60 g alcohol/day) and therefore in the highest risk group for malignancies, depression, hypertension, and cirrhosis.^{13 14} He is also at high risk of suffering from sexual dysfunction,¹⁵ which would considerably affect his womanising.

Data on the average life expectancy of real world secret agents are, not surprisingly, difficult to find. Although some secret service deaths are high profile, there are limited data on a robust denominator for this population. In *Moonraker*, Bond reflects that he would probably be killed before the age of 45 (the age of mandatory retirement from the "00" section of MI6). Should he not be "killed in action," his risk of developing many serious pathologies is high.

Deaths from liver cirrhosis occur at a relatively young age in the UK; an average of 59 years, in stark contrast to the other major causes of mortality including respiratory and cardiovascular disease. Rehm and colleagues have shown a dose:response relation with alcohol and development of cirrhosis. Drinking between 65 and 92 units of alcohol a week equates to between 74 g and 105 g of alcohol a day, giving Bond a relative risk of developing liver cirrhosis of between 7 and 16 compared with a lifetime abstainer.¹⁴ Work by Hart and colleagues would suggest that his relative risk of all cause mortality is greater than 1.74 (95% confidence interval 1.47 to 2.06) and particularly from stroke (2.33, 1.31 to 4.14) and alcohol related causes (3.72, 98 to 7.00).¹⁶ Presuming survival despite the high risk nature of his profession, we anticipate that James Bond's life expectancy would be significantly reduced. In fact, the author Ian Fleming died aged 56 of heart disease after a life notable for alcohol and tobacco excess. We suspect that Bond's life expectancy would be similar.

High stress jobs are often associated with high alcohol intake,¹⁷ and it would therefore be logical to assume that these professions are also associated with a high alcohol related mortality. An analysis by the website businessinsider.com, however, showed that actually bartenders and shoe-machine operators had the highest alcohol related deaths.¹⁸ They identified that sailors were the sixth highest risk, with a relative risk of 1.75 for an alcohol related death. Bond was, first and foremost, a sailor, so his drinking habits might have their root in his original profession.

It is well recognised that alcohol increases the risk of driving related incidents, and this risk increases from blood alcohol level of 0.04%. The UK sets its limit at 0.08%, which is the same as the US, but higher than that of much of Europe and Australia.¹ No such limits existed in the 1950s and throughout

the books Bond is noted to have several drinks, enough to put him well over this limit and then drive. In *Goldfinger*, for example, he drinks 18 units while having drinks and dinner with Auric Goldfinger before then driving home. In *Casino Royale* he drinks over 39 units before engaging in a high speed car chase, losing control, and spending 14 days in hospital. We hope that this was a salutatory lesson.

Such behaviour is typical of Bond. Despite his alcohol consumption, he is still described as being able to carry out highly complicated tasks and function at an extraordinarily high level. This is likely to be pure fiction.

It was noted that Bond's intake decreased in the middle part of his career but increased again towards the latter years. Consistently high but variable levels of drinking have already been documented in heavy drinkers,¹¹ but one potential reason for the increase in the later books could be the death of his new wife in *On Her Majesty's Secret Service* in 1963. This could explain the peak of his drinking in 1964, as he tried to find a quantum of solace in alcohol, before returning to his more usual level of consumption in 1965 when he was pitted against Francisco Scaramanga. It would also match the findings of Eigenbrodt and colleagues that in all ethnicities together alcohol intake will slightly decrease with age, but in white men it will actually increase, at least up until the age of 60.¹⁹

Connoisseur or alcoholic?

A commonly used screening tool to identify alcohol dependence is the "CAGE" questionnaire,²⁰ where two yes responses should prompt further investigation:

- Have you ever felt you needed to Cut down on your drinking?
- Have people Annoyed you by criticising your drinking?
- Have you ever felt Guilty about drinking?
- Have you ever felt you needed a drink first thing in the morning (Eye opener) to steady your nerves or to get rid of a hangover?

Applying these to Bond, the authors would score him 3 out of 4. In "Thunderball" he recognises his high alcohol intake and that he feels better drinking less. He also admits to having an eye opener on some mornings (the "Prairie Oyster"). Also in *Thunderball*, together with the *Living Daylights*, he becomes annoyed when challenged about his drinking by his boss "M". It is likely that an international spy and assassin cannot spend too much time worrying about remorse, so we are not surprised that there are no documented instances of alcohol associated guilt.

The most common cause of tremor is essential tremor.²¹ This is typically postural and will most commonly affect the upper limbs, although lower limb involvement is recognised. The role of alcohol is somewhat uncertain, with some evidence that in lower doses it can be beneficial in essential tremor, while others propose that those with high alcohol consumption are four times more likely to suffer with essential tremor.²²

Cerebellar lesions are well known to cause an intention tremor and cerebellar tremor is considered a distinct clinical entity.²³ While strokes are a more common cause of cerebellar lesions (of which Bond is at increased risk¹³), chronic exposure to toxins, such as alcohol, that cause more generalised damage to the cerebellum can also cause a cerebellar tremor. We have shown that Bond's alcohol intake is of sufficiently high frequency and duration to cause such cerebellar damage.

Limitations

Ideally each of the authors would have read all of the books and reached their own total for Bond's alcohol consumption, allowing a κ statistic to be calculated and a consensus amount for each book. Unfortunately limited resources and other clinical, social, intellectual, and cultural commitments meant a more pragmatic approach had to be taken, and seven books each were allocated over the six month study period.

On several occasions estimates of consumption have had to be used as Mr Fleming was not precise with his writing. The authors have taken reasonable measures to ensure that, when necessary, conservative estimates have been made. Of the total 1150 units drunk, only 190 units (16.5%) were accounted for by these terms, therefore if the estimations were inaccurate this would make a minimal change to the total. Similarly, when it was mentioned that drinks were shared, we thought it appropriate to assume an equal share of the drinks, regardless of who he was sharing with.

One of the study authors was familiar with the books and had read them before the study period. While it was noted at that time that the consumption of alcohol was an important part of Bond's life, detailed notes on the magnitude of his consumption were not taken. It did, however, inform the original study idea.

Conclusions

James Bond's weekly alcohol intake is over four times the advisable maximum alcohol consumption for an adult male. He is at considerable risk of developing alcoholic liver disease, cirrhosis, impotence, and other alcohol related health problems, together with being at serious risk of injury or death because of his drinking. Although we appreciate the societal pressures to consume alcohol when working with international terrorists and high stakes gamblers, we would advise Bond be referred for further assessment of his alcohol intake and reduce his intake to safe levels.

We conclude that James Bond was unlikely to be able to stir his drinks, even if he would have wanted to, because of likely alcohol induced tremor.↓

Contributors: GJ read half of the books, and drafted and edited the paper. ING edited the paper and added much hepatology advice. PD developed the hypothesis, read half the books, and edited the manuscript.

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Competing Interests: All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Ethical approval: The impact of this study on fictional British spies was thought to be minimal and therefore ethical approval was not sought for this study. No consent has been sought from the Commander Bond chronicled in the original Ian Fleming novels. The barrier to this chiefly being his fictional nature meaning he is unable to give valid consent.

Data sharing: Technical appendix and dataset are available from the corresponding author.

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What is already known on this topic

Author and ex-Naval intelligence operative Ian Lancaster Fleming died at a relatively young age from a myocardial infarction and enjoyed smoking and drinking to excess. It has been postulated that the habits of his literary character, James Bond, had habits similar to his own

James Bond's consumption and in depth knowledge of a wide variety of alcoholic drinks is well documented. What has been unclear to date is whether he was more a connoisseur or a chronic alcoholic

What this study adds

Bond consumed an average of 92 units a week, yet he is still described as being the "best shot in the Secret Service." People who drink at this level are severely functionally inhibited and unless this refers to shots of various spirits, this assertion is likely to be pure fantasy

The security of the British Isles depends on our Secret Service agents performing at their highest ability; quantifying the alcohol intake of their "top" spy might be an indicator of the consumption of other agents and should prompt further enquiry and support

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Tables

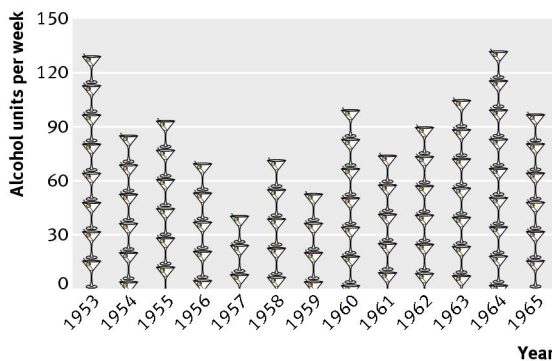
Table 1 | Alcoholic unit definitions by drink or activity

Type of drink	Measure	Alcohol units
Wine	One bottle	9
Wine	Carafe	12
Spirits neat	Regular measure	1.25
Spirits mixed	Regular measure	1.8
Spirits neat	Large, double, or "stiff" measure	2.5
Spirits mixed	Large, double, or "stiff" measure	3.6
Spirits	One finger	1
Vodka martini	Regular	3
Tumbler (spirit)	Full	12
Beer	Pint	3
Sake	One flask (180 ml)	3.6
A chain . . .	5 drinks	
"Serious drinking" or "got drunk"	—	20
"Lots of"	3 drinks	—
"Bring in the drink tray"	2 drinks	—
Visit to a bar, drinking	—	10

Table 2| James Bond's alcohol consumption by book and year of publication

	No of days described	Days unable to drink	Alcohol consumed (units)	Weekly consumption	
				Including days unable to drink	Excluding days unable to drink
<i>Casino Royale</i> (1953)	25	21	73.8	20.7	129.1
<i>Live and Let Die</i> (1954)	14	7	84.45	42.3	84.5
<i>Moonraker</i> (1955)	5.5	0	73.6	93.6	93.6
<i>Diamonds are Forever</i> (1956)	5	0	50	70	70
<i>From Russia with Love</i> (1957)	8	0	106.8	93.45	93.45
<i>Dr No</i> (1958)	13	8	51.1	27.5	71.5
<i>Goldfinger</i> (1959)	13	0	97.4	52.4	52.4
<i>For Your Eyes Only</i> (1960)	8	0	113.35	99.2	99.2
<i>Thunderball</i> (1961)	5	0	52.55	73.6	73.6
<i>On Her Majesty's Secret Service</i> (1963)	12	0	179.8	104.9	104.9
<i>You Only Live Twice</i> (1964)	12	0	225.8	132	132
<i>Man with the Golden Gun</i> (1965)	3	0	41.5	96.8	96.8
Total	123.5	36	1150.15	Mean 65.2	Mean 92.0

Figures



James Bond's weekly alcohol consumption by year of book publication

JAMES BOND IS "THE MAN WITH THE GOLDEN LIVER"
AN ANALYSIS OF JAMES BOND'S COPIOUS ALCOHOL CONSUMPTION.

92 UNITS PER WEEK
The Spy Who Loved Booze
Bond's weekly alcohol consumption was 92 units per week. That's over 4 times England's recommended amount.

0.08
Drive Another Day
The UK blood alcohol limit is 0.08. But Bond frequently drank enough to put him over the legal limit before he stepped into his car.

DEAD AT AGE 56
Given his high-risk profession and his dangerous drinking habits, James Bond is expected to die at the age of 56.

SHAKEN NOT STIRRED
James Bond's preferred method of preparing martinis was likely due to an alcohol-induced cerebellar tremor.

From Prison with Love
Bond was only unable to drink due to incarceration, a stint in rehab and time spent in the hospital.

Dr. Yes, I'll Have Another
Bond's drinking habits make him a Category 3 drinker (≥40g alcohol/day), putting him in the highest risk group for malignancies, depression, hypertension, cirrhosis and sexual dysfunction.

Tomorrow's Hangover Never Dies
Bond only had 12.5 alcohol-free days out of the 87.5 days he was able to drink.

IN CASINO ROYALE, BOND CONSUMED 39 ALCOHOL UNITS BEFORE GETTING INTO A HIGH-SPEED CHASE, LOSING CONTROL AND CRASHING.

JAMES BOND'S AVERAGE WEEKLY ALCOHOL CONSUMPTION BY YEAR
1953: 40 units, 1965: 130 units

Martini's Are Forever | Bond's alcohol consumption resembles patterns seen in patients with alcoholic liver disease.

One is Not Enough
Over the course of twelve missions, Bond consumed over 1150 alcohol units.

Alcohol Units	Movie
73.8	Casino Royale
84.5	Live and Let Die
73.6	Moonraker
50.0	Diamonds Are Forever
106.8	From Russia With Love
51.1	Dr. No
97.4	Goldfinger
113.4	For Your Eyes Only
92.6	Thunderball
179.8	On Her Majesty's Secret Service
225.8	You Only Live Twice
41.5	The Man With the Golden Gun

BMJ
The statistics shown above are from a study published by BMJ titled, "How James Bond's drinks shake because of an alcohol-induced tremor". The study quantifies Bond's alcohol consumption as detailed in the series of novels by Ian Fleming.
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