

RAPID COMMUNICATION

DRINKING HISTORIES OF SELF-IDENTIFIED LIFETIME ABSTAINERS AND OCCASIONAL DRINKERS: FINDINGS FROM THE 1958 BRITISH BIRTH COHORT STUDY

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Abstract — **Aims:** To investigate the validity of retrospective items used to distinguish people who have rarely or never consumed alcohol. **Methods:** The 1958 British Birth Cohort Study has followed 9377 individuals until age 45. Previous drinking (at 16, 23, 33 and 42 years) was investigated for two groups of 45-year-old non-drinkers, those reporting never having consumed alcohol ('never drinkers', $n = 143$, 1.5%), and having only consumed very infrequently ('occasional-only drinkers', $n = 1149$, 12.3%). **Results:** 67% of never drinkers previously reported drinking, 25% were past weekly/daily drinkers; 56% of occasional-only drinkers reported weekly/daily consumption. The validity of the retrospective items was progressively questionable when presumed to cover longer time periods. **Conclusions:** Substantial measurement error was evident when identifying 'occasional-only' and 'never' drinkers using retrospective items covering the lifecourse. Researchers investigating potential health benefits associated with moderate drinking need to incorporate more sophisticated methods when identifying sub-groups of non-drinkers.

INTRODUCTION

Non-drinkers have been found to have poorer health outcomes than moderate drinkers such as increased cardiovascular disease (Wannamethee and Shaper, 1997), more specifically, coronary heart disease (Corrao *et al.*, 2004), psychological distress (Power *et al.*, 1998), and mortality (Doll *et al.*, 2005). Researchers attempting to explain these findings have argued that non-drinkers are a heterogeneous group, including a large proportion of past drinkers (Shaper, 1990) and people who have stopped drinking because of poor health (Goldman and Najman, 1984). Researchers have therefore separated lifetime abstainers from past drinkers when investigating the relationship between health and alcohol consumption.

There is little consistency in findings and claims of studies investigating the distinction between lifetime abstainers and past drinkers. Some studies have reported that lifetime abstainers and ex-drinkers were similar in terms of coronary heart disease morbidity and mortality (Rehm *et al.*, 1997; Wannamethee and Shaper, 1997). Findings from a meta-analysis suggested that excluding ex-drinkers and people with pre-existing health problems from non-drinking categories resulted in a lower protective effect of moderate drinking on coronary heart disease (Corrao *et al.*, 2000).

In another meta-analysis, Fillmore *et al.* (2006) argued that the reduced mortality associated with moderate alcohol use could be accounted for by a systematic misclassification of former drinkers as abstainers.

The separation of lifetime abstainers from past drinkers has primarily been achieved by asking current non-drinkers to retrospectively report their drinking (or non-drinking) history (Poikolainen *et al.*, 1996), however this method has not previously been questioned. The main aim of this paper was

therefore to investigate the validity of self-reported lifetime abstinence and infrequent drinking in 45-year-olds, by identifying consumption levels previously reported (in a cohort study) from adolescence into mid-adulthood.

METHOD

The 1958 British Birth Cohort Study

The 1958 cohort study commenced as a perinatal study and included 98% of all births in England, Scotland and Wales during a week in March 1958. Interviews have been conducted when aged 7, 11, 16, 23, 33, 42, and 45 years. During childhood, the sample was augmented by immigrants to Britain born in the study week, giving a total of 18 650 participants. After exclusions for death, emigration, permanent refusal, armed forces, and long-term non-contacts, 12 070 cohort members were invited to participate in the 45-year study. Data were collected from 78% ($n = 9377$) of this target sample. Of these, 62 did not complete the alcohol consumption questions, so the response rate for this study was 77%.

Ethical approval for the 45-year survey was given by the South East Multi-Centre Research Ethics Committee; and for the 42-year survey, approval was obtained from the North Thames Multi-Centre Research Ethics Committee. See Power and Elliott (2006) for an overview of the study.

Alcohol consumption measures at age 45

The Alcohol Use Disorders Identification Test (AUDIT; Saunders *et al.*, 1993) was given at age 45 using a self-complete computer assisted questionnaire. The frequency item enabled the identification of those responding 'not in the last 12 months' and 'once a month or less'. The question 'Have you ever drunk alcohol?' enabled the identification of those reporting having never consumed alcohol ('never drinkers').

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Table 1. The alcohol consumption categories used in this report, by the response options for items given at ages 16, 23, 33, and 42

Frequency of alcohol consumption	Response options at each sweep			
	16 years*	23 years**	33 years**	42 years**
Most days	7+ drinks in past week	Most days	Most days	Most days
Weekly	<1 week	Around once or twice a week	1, 2, or 3 times a week	2–3 times a week, once a week
<Weekly	2–4 weeks	Less often	1, 2, or 3 times a month	2–3 times a month
Occasional	5+ weeks, uncertain, can't remember	Only on special occasions	Less often/special occasions	Less often/special occasions
Never nowadays	N/A	N/A	N/A	Never nowadays
Never	Never had one	Never	Never	Never had an alcoholic drink

*At 16, participants were asked 'How long is it since you last had an alcoholic drink?'

**At later sweeps the exact wording differed minimally, but the content was similar, asking how often they had a drink containing alcohol.

N/A: not asked.

Table 2. Frequency of alcohol consumption reported by 45-year-old 'never' and 'occasional-only' drinkers at each sweep

Infrequent drinking group, age at sweep (years)	Frequency of alcohol consumption [n, (%)]						
	Most days	Weekly	<Weekly	Occasional	Never nowadays*	Never drink/had a drink	Missing
Never drinkers (n = 143)							
16		23 (16.1)	10 (7.0)	29 (20.3)		46 (32.2)	35 (24.5)
23	1 (0.7)	9 (6.3)	7 (4.9)	23 (16.1)		86 (60.1)	17 (11.9)
33	0	6 (4.2)	4 (2.8)	24 (16.8)		89 (62.2)	20 (14.0)
42	2 (1.4)	3 (2.1)	3 (2.1)	23 (16.1)	36 (25.2)	75 (52.4)	1 (0.7)
Occasional-only drinkers (n = 1149)							
16	39 (3.4)	251 (21.8)	169 (14.7)	421 (36.7)			269 (23.4)
23	41 (3.6)	301 (26.2)	184 (16.0)	471 (41.2)			152 (13.2)
33	8 (0.7)	151 (13.2)	252 (21.9)	616 (53.6)			121 (10.5)
42	7 (0.6)	188 (16.4)	229 (19.9)	698 (60.8)			27 (2.3)

*Only asked at age 42.

Participants who reported current or past drinking were asked to think about when their regular consumption was at its highest level (over a period of three months or longer) and to report the frequency of their drinking at that time ('monthly or less', 'two to four times a month', 'two or three times a week' and 'four or more times a week'). The past highest and current frequency items were used to identify 'occasional-only drinkers', who reported that they had either not drunk during the past year or were currently drinking monthly or less, and their past highest frequency of drinking was monthly or less.

Alcohol consumption measures at ages 16, 23, 33, and 42

Alcohol consumption was assessed by self-complete questionnaire (age 16), trained interviewer (ages 23 and 33), and self-complete computer assisted program (when aged 42).

While the exact wording of questions differed across sweeps, at 23, 33, and 42 years participants were asked how often they had a drink containing alcohol and given a range of response options. At 16, participants were asked, 'How long is it since you had an alcoholic drink (beer, wine spirits etc)', and given a range of response options (including 'never had one'). Those who had drunk alcohol in the past week were asked to describe the type and number of drinks they had consumed. At age 42, participants had an additional response option of 'never nowadays'. Table 1 shows the response options for each consumption category across sweeps.

Analysis

Previous reports about drinking were investigated at individual sweeps (from age 16 to 42) for those who, when aged 45, reported they were 'never drinkers' or 'occasional-only drinkers'. Then data were used to identify highest frequency of consumption reported: (i) at age 42, (ii) from age 33 to 42, (iii) from age 23 to 42, and (iv) from age 16 to 42.

RESULTS

The sample

Of the 9315 people who completed the AUDIT frequency item at age 45, 147 (1.6%) participants were classified as 'never drinkers', and 1170 (12.6%) as 'occasional-only drinkers'. Four 'never' and 21 'occasional-only' drinkers were excluded because they had missing data at three or all four previous sweeps, leaving 1149 'occasional-only' and 143 'never' drinkers in the analysis.

Alcohol consumption at ages 16, 23, 33, and 42

Table 2 shows the frequency of alcohol consumption reported by 45-year-old 'never' and 'occasional-only' drinkers at each of the previous sweeps. When aged 23, 7.0% of the 'never drinkers' reported consuming once a week or on most days; and when aged 16, 43% reported drinking during the past month. Nearly 50% of the 'occasional-only drinkers' reported consuming more than occasionally when aged 23.

Table 2 also shows the number of people with missing data at individual sweeps (after the exclusion of those with three or four sweeps of missing data). These participants were included in the denominators, so the percentages in the table represent conservative estimates.

Highest consumption across all previous sweeps

The highest frequency of consumption previously reported across all sweeps was investigated. A large proportion of 45-year old 'never' drinkers had previously reported drinking at the following frequencies: 2.1% on most days, 22.4% weekly, 9.8% less than weekly and 32.9% occasionally. Overall, nearly a quarter (cumulative percent = 24.5%) of 'never' drinkers had previously reported drinking at least once a week, and more than a third (cumulative percent = 34.3%) had consumed alcohol more than occasionally. Only 32.9% $n = 47$ of 'never drinkers' had consistently reported never consuming alcohol across all sweeps. For the 'occasional-only' drinkers, the highest frequency previously reported across all sweeps was as follows: 7.5% most days, 48.9% weekly, and 24.4% less than weekly but more than occasionally. Cumulative percentages indicated that 56.4% of 'occasional-only' drinkers had previously reported drinking at least once a week. Only 19.2% $n = 221$ had been consistent across all sweeps about drinking on an occasional basis.

Inconsistency in retrospective reports over time

The final analysis combined data from previous sweeps in a step-by-step manner, to investigate the consistency of reports about lifetime infrequent drinking and abstinence, over increasing time periods. First, the responses of the 36 'never drinkers' who when aged 42 reported that they 'never drank nowadays' needed to be investigated. The majority ($n = 29$) had previously reported having consumed alcohol at one or more earlier sweeps of the study. To be conservative no assumptions were made about the drinking history of the remaining seven participants (they may have consumed alcohol between data collection points, and four had missing

data at one or two sweeps), and they were separately classified.

Figure 1a and b shows the highest consumption frequency previously reported by 'never' and 'occasional-only' drinkers, combining each individual's responses about drinking at sweeps, in a step-by-step fashion, going back in time. To be conservative, highest frequency was left unchanged if participants had missing data at a sweep being added to the analysis.

For 'never drinkers', only 53.1% reported 'never drinking' at age 42 and a progressively smaller proportion were consistent in their reports of not drinking going back to age 33 (46.2%), 23 (42.7%), and 16 (32.9%). For 'occasional-only' drinkers, a progressively smaller proportion was consistent in their reports going back to age 42 (63.2%), 33 (46.4%), 23 (30.1%), and 16 (19.2%).

DISCUSSION

When attempting to identify lifetime abstainers, researchers have not previously investigated the validity of retrospective items covering the entire life of the individual. This is despite a literature showing that consumption is usually underestimated when people are asked to report consumption over long periods (weeks or months) compared to short periods (such as the last week) (Lemmens *et al.*, 1992, Stockwell *et al.*, 2004). The current study found that only half of the 45-year-olds, who reported having never consumed alcohol, identified themselves as lifetime abstainers just three years earlier. Only a third had consistently reported being non-drinkers from age 16. Further, a discrepancy between data collection methods was also evident in participants who reported they had only ever consumed very infrequently. More than half had previously reported consuming at least once a week. The validity of using simple retrospective questions to identify and distinguish lifetime abstainers and very infrequent drinkers is therefore questionable, and is progressively more so when the retrospective measure is presumed to cover a longer time period.

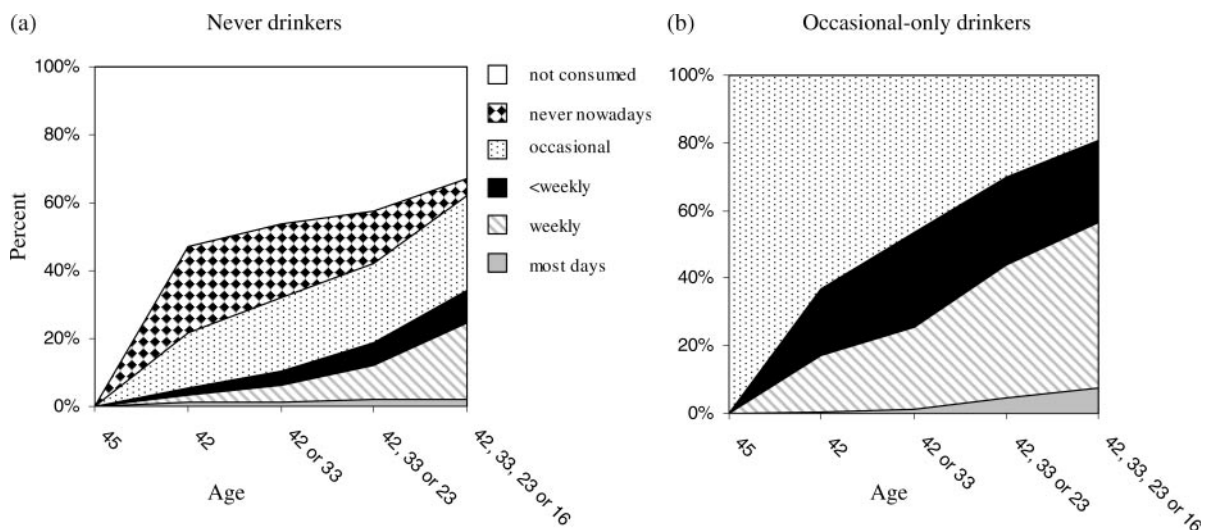


Fig. 1. Highest frequency of alcohol consumption (combining individual responses going back in time) previously reported by 45-year-old (a) 'never' and (b) 'occasional-only' drinkers.

The limitations for this study need to be acknowledged. Caution should be taken when generalising the findings to other age cohorts and countries, particularly given that alcohol consumption is high in Britain compared with many other countries (World Health Organisation, 2004). There was also no scope to investigate potential explanations for the discrepancies in the identification of lifetime infrequent drinkers across reported methods.

Variations in data collection methods over sweeps may have contributed to discrepancies in reports over time. Non-response may also have influenced the results as dropout in this study has been shown to be associated with having a lower education, less stable employment and living in more disadvantaged circumstances (Hawkes and Plewis, 2006), characteristics also found to pertain to non-drinkers in other studies (Fillmore *et al.*, 1998). Loss to follow-up may mean that our sample does not reflect all people in the community who consider themselves lifetime infrequent drinkers. However, it is not possible to investigate how or whether attrition has influenced the findings of this study.

At age 45, 'occasional-only' drinkers reported having never consumed more than once a month, for a period ≥ 3 months. Some of these individuals may have had a brief period (< 3 months) of drinking more than occasionally, which coincided with a previous data collection sweep. Some of the discrepancy in reports may be due to this mismatch in time frames. However, this limitation is not relevant to the 'never drinkers'. The consistency in findings across the two groups strengthens the argument that substantial error arises from using lifelong retrospective methods to identify sub-groups of non-drinkers.

While it was not possible to verify consumption data collected from age 16 to 42, the present study's findings suggest that the proportion of lifetime abstainers in the general population may be substantially overestimated by retrospective items, particularly those asking about drinking (or abstinence) over long periods of time. At age 45, 147 participants, from a sample of nearly 10 000, retrospectively reported to being lifetime abstainers, however, data collected from adolescence indicated that only 47 were consistent non-drinkers.

The findings have implications for alcohol research methods and policy, particularly studies investigating the non-linear associations between alcohol consumption and health outcomes. The small number of lifetime abstainers limits the opportunity for them to be investigated as a distinct group. There was also considerable overlap in the drinking histories reported by those who said they had never had a drink and by those who said they were infrequent drinkers. For cross-sectional research, it may therefore be pragmatic to abandon the notion of identifying lifetime abstainers and focus on very infrequent consumption. However, it would be desirable to improve retrospective methods used for identifying infrequent and non-drinkers. Indeed, Friesema *et al.* (2004) stated that asking about alcohol consumption across different stages of the life-course may reveal more accurate information about lifetime abstinence.

Lastly, the findings have implications for the interpretation of studies investigating 'J' or 'U' shaped associations between alcohol consumption and health outcomes, such as coronary heart disease. Many nations have guidelines recommending 'safe' levels of drinking, incorporating and

discussing possible benefits associated with moderate drinking. Such guidelines should be informed by research assessing all levels of consumption, using methods that are assessed as reliable and valid over time. However, lifetime abstainers and past drinkers have usually been identified using retrospective questions covering large periods of time. These questions are likely to result in past drinkers remaining within samples of lifetime abstainers. This may go some way to explaining the mixed claims made about the health of non-drinkers relative to moderate drinkers.

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