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Gender and Social Pressure to Change Drinking Behavior: Results from the National Alcohol Surveys from 1984–2010

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Abstract

Objective—Research shows social and institutional pressure influences drinking, yet determinants of who receives pressure are understudied. This paper examines age, time period, and birth cohort (APC) effects on pressure to stop or reduce drinking among U.S. men and women.

Methods—Data were drawn from six National Alcohol Surveys (NAS) conducted from 1984 to 2010 (N=32,534). Receipt of pressure during the past year to quit or change drinking from formal (police, doctor, work) and informal (spouse, family, friends) sources was assessed.

Results—Determinants of pressure were similar for men and women but varied in strength. They included younger age, less education, and younger cohort groups. Cohort effects were stronger for women than men.

Conclusions—Cohort effects among women may be due to increased alcohol marketing to younger women and the changing social contexts of their drinking. Future studies should assess associations between drinking contexts, pressures, and outcomes.

Keywords

social pressure; gender; alcohol survey; cohort effect

Introduction

There is considerable work in the alcohol research field to suggest that the social network, interpersonal relationships, and the larger social context all contribute to the decision to use or abstain from alcohol (Homish & Leonard, 2008; Rosenquist, Murabito, Fowler, & Christakis, 2010; Skog, 1986). One common yet less studied social influence of alcohol use is the pressure from others to quit or change drinking behavior. Much of the research to date on pressure utilizes treatment samples even though the vast majority of problem drinkers in the general population do not seek treatment (Longabaugh, Beattie, Noel, Stout, & Malloy, 1993; Polcin & Weisner, 1999). Early work on US general population data by Room, Greenfield, and Weisner (Room, Greenfield, & Weisner, 1991) found that nearly half of all

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respondents reported suggesting to a friend or relative that they drink less alcohol or act differently when drinking and noted a substantial increase from 1979 to 1990 in the reported efforts of Americans to control another's drinking. In accordance with this was also a rise in the reported receipt of pressure from friends and family to drink less or act differently, demonstrating a possible change in values about alcohol use and temperance within the intimate social network.

Recent research by Polcin et al. (Polcin, Korcha, Greenfield, Bond, & Kerr, 2012), expanded on the work by Room and colleagues to include both informal (spouse, family, friends) and formal (police, doctor, work) sources of pressure. Polcin's work noted a spike in the receipt of pressure from 1984 to 1990 but an overall decline from 1984 to 2005. Purported reasons for the decline in more recent years included decreased alcohol consumption and alcohol related harms over the same time period. However, models controlling for these factors found demographic factors associated with the social context of drinking were also important (e.g., male, younger and less educated). Relative to other drinkers, these groups are more likely to drink in social contexts that elicit pressure, such as drinking while driving or drinking at bars or social events (Trocki, Greenfield, Michalak, & Piroth, 2006)[(Clark, 1985; Greenfield et al., 2011). Policies and prevention programs in the early 1980's designed to influence drinking contexts in addition to drinking per se might have played a role in reducing pressure. Examples include increasing the minimum drinking age as well as efforts by Mothers against Drunk Drivers (MADD) and prevention programs emphasizing harm reduction.

While our previous work on pressure found that age and time period effects were marked, we did not assess their relative influences within the context of birth cohort variables. Age, period, cohort (APC) analysis is a method to parse out relative the influences of each of these variables and it has been used in previous studies to understand drinking and drinking related problems (Kerr, Greenfield, Ye, Bond, & Rehm, in press; Keyes, Li, & Hasin, 2011). We use APC here to understand who received pressure about their drinking. Currently, we do not know whether age or time period effects found in our previous studies vary by birth cohort groups. For example, there could be factors related to entering the minimum drinking age during certain epochs that results in receipt of more or less pressure for individuals in that cohort group. These questions are important because they provide information about how society responds to alcohol problems and potential reasons for these responses. Moreover, examination of these questions can inform alcohol policy, prevention, and harm reduction efforts.

The current study examines the age, period and birth cohort effects of pressure to change drinking behavior. Our expectation was to find younger birth cohorts reporting more pressure. Our reasoning was that individuals who came of age more recently would be exposed to prevention activities that encouraged interactions among peers to limit drinking. We also believe that relatively recent policies and movements designed to limit drinking (e.g., stricter drunk driving laws, increase in the minimum drinking age, and groups like Mothers Against Drunk Driving) would increase pressure on younger cohorts.

Method

Data used for the analyses were from six National Alcohol Surveys (NAS) from 1984 to 2010. The surveys utilized representative in-person and face-to-face interviews conducted approximately every five years for adults 18 years old and over. All surveys oversampled for African-Americans and Hispanics with the exception of survey year 1990, which did not oversample. Additionally, survey years 2000, 2005, and 2010 oversampled for low population states. In-person interviews, using stratified clustered sampling were conducted in 1984, 1990, and 1995 while later surveys (2000, 2005, and 2010) conducted telephone interviewing using random digit dialing (RDD) and computer assisted telephone interviewing (CATI). While survey years 2000, 2005 and 2010 accessed respondents using CATI and RDD, the 2000 and 2005 surveys contacted respondents exclusively through landlines whereas the 2010 contacted respondents via landlines and cell phones. Response rates were 77% (1984), 70% (1990), 77% (1995), 58% (2000), 56% (2005), and 49.9% (2010, landline sample only). The drop in response rates for surveys using CATI and RDD is common for US telephone surveys given the widespread use of caller identification (Keeter, Kennedy, Dimock, Best, & Craighill, 2006). The study population includes 32,531 respondents with 5,180 in 1984, 2,058 in 1990, 4,917 in 1995, 7,502 in 2000, 6,782 in 2005, and 6,092 in 2010. Refusal to answer the pressure questions was rare (n=187; 0.6%) though the sample of cell phone respondents from the 2010 survey were not asked about receipt of pressure from all sources and were therefore excluded from the present paper (n=1,012; 3.1%).

Measures

Pressure to quit or change drinking behavior—Pressure is the dependent variable of interest and consists of six items measuring pressure from three informal sources of spouse, family, and friends and three formal sources of physicians, work, and police. We geared the wording of each item to how we believed pressure from each of the sources might have typically transpired. Four items asked whether the respondent experienced specific types of interactions that involved pressure to change drinking:

1. A physician suggested that I cut down on drinking.
2. People at work indicated I should cut down on drinking.
3. My spouse or someone I lived with got angry about my drinking or the way I behaved while drinking.
4. A police officer questioned or warned me about my drinking. Survey years differed slightly for this question. The 1984 and 1995 surveys asked if a policeman questioned or warned while survey years 2000, 2005, and 2010 asked if a police officer asked or warned the respondent.

Questions to identify pressure from family and friends asked whether “other people might have liked you to drink less or act differently when you drank” with response options that included parents, girl/boyfriend, and other relatives. The 1984, 1990, 1995 surveys asked about pressure from a “mother” and “father,” whereas 2000, 2005, 2010 asked about pressure from a “parent.” Also, the 1984 survey identified pressure from family and friends

conservatively because pressure was only asked is the respondent indicated if it broke up or threatened to break up the relationship. The 1990 survey asked about pressure from brother, sister, son and daughter which were not included in the pressure measure from family. Only pressure from parent, boy/girlfriend and other relatives was used from this survey.

All pressure questions were inclusive of the past 12 months and were included in all of the NAS years. Sources of pressure were grouped by formal (physician, police, work) and informal (spouse, friends, family) sources. Overall, 7.1% of respondents reported any pressure in the past year from any of the sources; Spouse/partner (3.5%), friends (2.3%) and family (3.4%) comprising the highest affirmation of pressure. Physician (1.2%), work (0.4%) and police (1.1%) were indicated less often. Previous assessment of pressure using the NAS have included receipt of informal pressure (Room, 1989; Room, et al., 1991; Schmidt, Ye, Greenfield, & Bond, 2007) or lifetime measures of formal and informal pressures (Hasin, 1994). Our measure of pressure include respondents that reported pressure in the past year and where possible, utilized pressure items that asked about specific actions from the source (i.e., spouse got angry, police officer warned).

Age, period, and cohort—Age is defined as the age of the respondent at one of the six survey years and coded into eight categorizations. Period is denoted as the year of the survey, collected at approximately 5-year intervals. Birth year was derived from self-reported year of birth with the exception of survey year 2010 in which 9% (n=696) of respondents refused to provide a date of birth. In these cases, birth cohort was estimated using survey year minus the age of the respondent. Most cohorts were grouped into ten-year increments (from 1935 to 1984) although the youngest birth cohort is inclusive of only eight years (1985 and 1992). Because pressure to change drinking was rare in respondents over the age of 50 and would result in unreliable estimates of pressure due to small sample sizes, respondents born before 1934 were grouped into one cohort.

Alcohol Consumption—Consumption of alcohol was calculated using a beverage-specific frequency of drinking (Greenfield & Rogers, 1999). Respondents were asked the frequency of drinking specific alcoholic beverages including wine/wine coolers, beer/malt liquor, and whiskey/liquor in the past year. If an affirmative response was given for a specific beverage, follow-up questions asked how often 1–2, 3–4, or 5–6 drinks were consumed for each beverage type with answer categories of ‘nearly every time’, ‘more than half the time’, ‘once in while’ and ‘never’. Codes were assigned with 0.9, 0.7, 0.3, 0.1, and 0 and applied to the frequency of consuming each beverage. Beverage volumes were summed and calculated to reflect daily volume for each respondent. A heavy drinking measure, defined as 5 or more drinks in a sitting on a weekly basis was calculated from these items.

Statistical Analyses

Because most of the survey years used oversampling, all data are weighted to reflect the US general population and take into account the stratified design of the earlier surveys using Stata 11. Data analysis began with descriptive data depicting sample characteristics and receipt of pressure by age, NAS dataset period, and cohort factors. We then used logistic

regression models to test how age period and birth cohort factors predicted receipt of pressure controlling for demographics.

Sample characteristics—Overall, the age groups were less represented among the 18–20 year olds (6.6%) and 21–24 year olds (7.3%) while ages 25–29, 30–34, 35–39, 40–44, and 45–49 ranged from 9% to 11% for each age categorization. Respondents that were 50 years and older comprised over a third of the sample (34.8%). The NAS survey year 1990 had the least representation among the surveys (6.3%), and survey years 2000 and 2005 accounted for a large portion of the sample at 44.0%. Persons born between 1955–1964 accounted for nearly a quarter of the total sample while birth cohort years 1985–1992 had the lowest rates (3.5%). Due to young age, respondents in birth cohort 1985–1992 are only included in the 2005 and 2010 survey years.

Results

Because formal and informal pressure to change drinking is more often directed toward men, the data were disaggregated by gender to understand how pressure directed toward women might differ. Table 1 displays past year receipt of pressure from informal (e.g., friends and family) and formal (e.g., work, police, and physician) sources by all categories of age, period, and cohort. For men and women informal sources of pressure were far more common that pressure from formal sources. Receipt of any pressure was most common among men and women in the 18–20 year range, at rates of 27.1% and 15.1% respectively, with lower rates of pressure reported in the subsequent age groups. In terms of pressure during NAS time periods, we found an increase between 1984 to 1990 (from 9.0% to 10.7% for the total sample), with small increases for both women (from 5.3% to 7.0%) and men (13.1% to 14.6%). The rates of pressure then decline after 1990. Beginning with the 1935–1944 cohorts, there was a trend of subsequent cohort groups to receive more pressure. This was the case for both men and women, although men displayed higher incidence rates than women in every cohort group, most notably the men born between 1985–1992 with nearly a quarter reporting at least one source of pressure in the past year.

Because receipt of pressure to quit or change drinking behavior is associated with heavy drinking (Polcin, et al., 2012), Table 2 identifies the percentage of men and women drinking 5 or more drinks in a single sitting on a weekly basis during the past year by receipt of pressure within age, period and cohort groups. The findings show that among those receiving pressure heavy drinking was least prominent in the youngest and oldest age groups for men and women. Over 37% of the men ages 18–20 and 50 were heavy drinkers. The range of heavy drinking for other male age groups receiving pressure was 39.7% (age 35–39) to 54.4% (age 21–24). For women who were age 18–20 who received pressure 19% were heavy drinkers and for women over age 50 the proportion was 14.2%. The range of heavy drinking for other female age groups receiving pressure was 17.6% (age 30–34) to 50% (age 45–49).

Findings for heavy drinking across NAS years showed an uneven trend, although men and women both showed an overall decline between 1984 and 2010. There was a similar decline in receipt of pressure over NAS years and volume of alcohol consumed was a strong

predictor of receipt of pressure in our multivariate model. The findings for heavy drinking and pressure among cohort groups were more complex. There was a very clear trend for more recent male and female cohorts to report more pressure, especially birth cohorts between 1985–1992 and 1975–1984. Beginning with the earliest birth cohort (born before 1934), there was an increase in reported pressure among each subsequent cohort for both men and women. However, heavy drinking among birth cohort groups did not follow a similar pattern. For men reporting pressure there was a relatively uneven trend of heavy drinking over cohort groups with the exception of the youngest cohort (1985–1992), where there was a lower rate of heavy drinking, 31.5% versus 38.6% – 46.7% for other cohorts. For women there was also an uneven trend of heavy drinking across birth cohort groups. However, the youngest cohort groups (1975–84 and 1985–1992) had a significantly lower proportions reporting heavy drinking (16.2% and 14.2% respectively) than most other cohort groups.

Adjusted logistic regression models identified the relative effects of age, time periods, and cohort groups on receipt of pressure to change drinking behavior (Table 3). Models controlled for demographic characteristics and consumption of alcohol. Men and women reported receipt of pressure more commonly in early survey years (1984, 1990, and 1995) compared to the most recent survey (2010). Effects of age, after controlling for time period, birth cohort, other demographics, and alcohol consumption, were significant for younger age groups (18–20 year old men and women) when compared with respondents age 35 and 39. However, the 18–20 year old age effect was stronger for women, (OR=3.2., CI= 1.3 – 7.6) than men (OR=1.9, CI= 1.1 – 3.4) and there were trends for more pressure among women age 21–24, 30–34, and 50+. Men age 21 to 24 trended toward reporting more pressure, but those age 40–49 and 50+ were trended toward reporting less pressure.

Cohort effects showed stronger differences by gender. Women born before 1945 were significantly less likely to report pressure to quit drinking compared to the reference category (women born between 1945 and 1954). Women born before 1934 were only 20% as likely as likely to receive pressure as those born 1945–1954. Women born after 1964 were significantly more likely to report pressure to change their drinking behavior. For example, women born between 1985 and 1992 were four and a half times more likely to receive pressure than the reference group. Women born between 1955 and 1964 were the only cohorts that did not show significant differences from the reference category. Although trends were in the same direction for men, cohort group influences were far less influential. Men born before 1934 were 50% less likely to report pressure compared to men born between 1945 and 1954 and men born between 1985 and 1992 trended toward receipt of more pressure.

Discussion

Pressure and Heavy Drinking

There was a clear relationship between heavy drinking and receipt of pressure. We found individuals receiving pressure had much larger proportions who were heavy drinkers than those not receiving pressure. In addition, daily alcohol volume consumed was a strong predictor of receiving pressure in our multivariate models. However, other factors appeared

to play a role in receipt of pressure as well. For example, the youngest age group for men and women had the largest percent reporting receipt of pressure. However, those who received pressure among this age group had relatively low proportions indicating they were heavy drinkers. Some of the older age groups showed the opposite relationship. Men and women age 40 to 49 had low proportions reporting pressure relative to other age groups. However, for those who did report pressure within this age group large percentages were heavy drinkers. These findings suggest factors other than heavy drinking contributed to receipt of pressure for younger drinkers. The minimum drinking age of 21 is an obvious reason why those under 21 might receive pressure in the absence of heavy drinking. However, the 21 to 24 age group also received pressure in relatively high proportions. Especially for women, the proportion reporting heavy drinking in this age group was not particularly large relative to other age groups. Thus, for the two youngest age groups social context factors related to where and when they drank may have played a factor.

The finding that both heavy drinking and receipt of pressure across NAS years showed an overall decline for both men and women is consistent with previous work showing heavy drinkers and those with alcohol related harms receive more pressure (Polcin et al, 2012). However, there were discrepancies between receipt of pressure and heavy drinking among cohort groups. Younger cohort groups received more pressure, yet they reported lower rates of heavy drinking. This finding was particularly salient for the two youngest cohort groups for women and it suggests that factors other than heavy drinking play a role in receipt of pressure among these cohorts.

Cohort Effects

Results for women strongly confirmed our expectation that younger cohort groups would receive more pressure, but the cohort results for men were modest. Part of our rationale was that prevention services and harm reduction policies targeting teens and young adults have increased in recent decades. We reasoned that younger cohort groups beginning their drinking careers would be exposed to these services, which would result increase social pressures from peers to modify drinking. However, if that were the case, one would expect equal increases in pressure among the younger cohorts of men as well as women, which is not what we found.

It is possible that increased exposure to prevention services among younger women, but not men, led them to be more comfortable confronting their peers about destructive drinking. However, additional research would be needed to confirm this contention. It could also be the case that prevention efforts and alcohol policies geared toward younger drinkers do have an effect, but that their effects are mitigated because they are juxtaposed to alcohol marketing geared toward younger ages (Saporito, 2012). Policies designed to regulate the environment in which alcohol is marketed show promise (Anderson, Chisholm, & Fuhr, 2009), but additional research is needed to establish their effects on different gender, age and cohort groups.

It was interesting that during a time of declining pressure (1990–2005) younger birth cohorts born 1965 or later were reporting receipt of more pressure. In our multivariate models this was particularly pronounce for women. One possible explanation is the convergence of

drinking patterns between young women and their male counterparts, with younger cohort groups of women consuming alcohol more similarly to their male counterparts than older female cohorts (Kerr, et al., in press; Keyes, et al., 2011). It is therefore understandable that they would receive more pressure. However, after controlling for alcohol consumption, younger women cohorts were still significantly more likely to receive pressure. Additionally, the rates of the youngest women cohorts reporting heavy drinking were lower than that of nearly all of the other women cohorts and their male counterparts. This suggests that factors other than heavy drinking must be influencing the increase in pressure among younger women cohorts.

Why are younger cohorts of women reporting more pressure?

We suggest that women in younger cohort groups are drinking in social contexts that are more likely to result in receipt of pressure (e.g., bars and other public forums). Moreover, economic and marketing factors may be significant influences affecting the changing contexts of where younger women drink. For example, over the past decade the U.S. has seen an economic downturn and, since 2002, over 13 states have repealed or eased their alcohol 'blue laws' forbidding the sale of alcohol on Sundays. The motivation for the change has been primarily to generate income from alcohol sales to compensate for the sagging economy (Bowers, 2009; Ewers, 2008). The elimination of blue laws has allowed bars and alcohol outlets to increase business hours, thus giving more opportunity for drinking occasions.

The increase in opportunities to drink might be affecting younger women more than men. To counteract recent economic decline, the alcohol industry has implemented a marketing strategy known as feminization of alcohol aimed specifically at young women (Saporito, 2012; Schultz, 2012). Alcohol marketers have developed product lines designed to attract women and sales indices show that the marketing is working; feminization of labels and product lines catering to a female audience are gaining marketing shares (Schultz, 2011). Most notably, Jim Beam has produced 22 products specifically targeting women including the popular Skinny Girl cocktail brand (Stanford, 2011). Recent research on marketing of alcohol suggests teenage girls are significantly more exposed to alcohol advertising in magazines than boys (John's Hopkins Bloomberg School of Public Health, 2010).

The increased alcohol availability and marketing toward younger women may influence drinking contexts among these female cohorts and may additionally influence behavior while drinking. NAS years 2000 and 2005 have seen a surge in the bar going behavior by women in their 20's (Trocki, et al., 2006). The heaviest drinking occasions occur most commonly in bars and other public contexts, and bar patronage is a common activity among younger drinkers (Clark, 1985; Greenfield, et al., 2011). Women with preferences for drinking in bars or in public contexts are more likely to report arguments, fighting, and drunk driving compared to women drinking in contexts where lighter drinking occurs (e.g., in the home) (Greenfield, et al., 2011; Nyaronga, Greenfield, & McDaniel, 2009; Wells, Graham, Speechley, & Koval, 2005). These public displays of aggression and detrimental behavior are more likely to be noticed by the close social network as well as come to the

attention of law enforcement and thereby result in more pressure to quit or reduce alcohol consumption.

Another factor influencing differences in receipt of pressure among younger cohort groups of men and women might be societal reactions to drinking that stigmatize some drinking behaviors among women. For example, research on situational norms indicates that there are some normative practices that condone certain drinking behaviors exhibited by men (e.g., drinking in bars or drunkenness), yet these same behaviors are less tolerated when displayed by women [27]. As younger cohort groups of women increase drinking in public social contexts, they may elicit a disproportionate amount of pressure relative to men, and particularly relative to their older female peers who drink in contexts that are more private.

Implications Policy, Prevention, and Future Research

Results from the study suggest it might be beneficial to consider a number of issues related to policy, prevention and future research. Alcohol policies regulating marketing and advertising need to consider the recent increase in targeting of young women. Consideration should be given to not only to ways that marketing practices influence alcohol consumption, but also the ways they might influence the changing circumstances where younger female cohorts drink, the drinking related pressures they receive, and potential harms they could incur. Of particular concern is that younger female cohorts entering the minimum drinking age could develop normative drinking practices that are more destructive and therefore elicit more pressure.

There are implications for development of evidence based prevention strategies as well. How and where younger women drink might be targeted in addition to simply limiting alcohol intake. Strategies might include education about the changing contexts of drinking among younger women and potential harms of drinking in those settings (e.g., bars). They might also include strategies geared toward inoculation by helping them strategize how to minimize alcohol intake as well as disruptive behaviors that elicit pressure in those settings.

Results suggest the need for additional research in a number of areas. First, although we know that receipt of pressure is associated with help seeking for alcohol problems (Korcha, Polcin, Kerr, Greenfield, & Bond, 2013) we do not know how that breaks down within an age, period, and cohort context. It cannot be assumed that because younger women cohorts receive more pressure about their drinking than older cohorts they will more readily seek out treatment or if treatment is necessary. Second, we do not know how pressure affects the amount of alcohol consumed or behaviors while drinking. For many individuals who apply pressure to others to change their drinking, especially informal sources of pressure, the goal is to reduce alcohol consumption and problem behavior, not necessarily enter treatment. Finally, we need to know more about the dynamics of pressure within different social contexts. For example, are some sources of pressure more effective than others at moderating drinking, containing disruptive behaviors, and facilitating help seeking? Does that change by the social context? Investigation of these issues could facilitate development of evidence based policies and prevention strategies that decrease hazardous or destructive drinking by more effectively targeting social context factors.

Limitations

An area of strength for the study is the collection of data at multiple time periods spanning 26 years. However, there are limitations and biases in this respect as well. There is potential for bias due to survey mode and the limitations associated with self-report measures (Schwarz & Oyserman, 2001). Small sample size, such as NAS survey year 1990, may introduce measurement error and the very young are not as well represented as other age groups. Cell phone respondents from the 2010 survey could not be included in the analyses because they were not asked all pressure questions which may result in biased estimates.

Women were less likely to report pressure and the resulting odds of reported pressure for the less represented age and cohort groups may be more unstable than for men. Additionally, the categorizations for birth cohort were based on relative generation epochs (e.g., “baby boomer” cohort between 1945–1964) but different categorizations of birth cohort, as well as age, may produce different estimates.

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Table 1

Percent received pressure to change drinking behavior in the past 12 months for age, period, and cohort by gender (weighted)[+].

	MEN (n=14,019)			WOMEN (n=18,512) %			TOTAL (N=32,531) %		
	Formal pressure	**Informal pressure**	**Any pressure**	**Formal pressure**	**Informal pressure**	**Any pressure**	**Formal pressure**	**Informal pressure**	**Any pressure**
Age									
18–20	9.3	24.7	27.1	1.9	14.3	15.1	5.9	19.9	21.5
21–24	10.2	21.3	23.4	3.2	8.6	9.8	6.6	14.9	16.5
25–29	4.0	12.4	13.9	1.4	5.4	5.8	2.6	8.9	9.9
30–34	3.8	10.9	12.2	0.9	5.0	5.4	2.3	7.9	8.7
35–39	3.8	9.6	11.2	0.8	2.9	3.1	2.4	6.3	7.2
40–44	4.2	8.9	10.5	1.0	2.6	3.1	2.5	5.5	6.6
45–49	2.8	6.7	7.8	1.0	2.0	2.3	1.9	4.4	5.1
50+	1.6	2.9	3.8	0.4	1.2	1.3	1.0	2.0	2.4
Period									
1984	4.8	11.8	13.1	1.3	4.8	5.3	2.9	8.1	9.0
1990	2.3	13.6	14.6	1.0	6.4	7.0	1.7	9.8	10.7
1995	4.7	10.7	12.5	0.6	3.8	3.9	2.6	7.1	8.1
2000	3.8	8.2	9.6	1.4	2.8	3.3	2.5	5.4	6.3
2005	2.8	6.9	7.7	1.0	3.2	3.6	1.8	5.0	5.6
2010	4.0	8.1	9.7	0.6	2.9	3.1	2.3	5.5	6.3
Cohort									
LE 1934	1.3	2.7	3.5	0.2	0.5	0.7	0.7	1.5	1.9
1935–44	2.2	4.7	5.7	0.6	1.8	2.0	1.3	3.1	3.7
1945–54	3.5	7.2	8.7	0.8	2.9	3.2	2.1	5.0	5.8
1955–64	3.4	9.9	10.9	1.4	4.1	4.6	2.4	7.0	7.7
1965–74	4.4	11.4	12.9	1.4	4.6	5.3	2.9	8.1	9.1
1975–84	7.3	16.9	18.7	1.7	8.4	8.8	4.5	12.7	13.8
1985–92	9.5	21.7	25.0	1.3	9.1	9.7	5.9	16.1	18.2

[+] informal and formal pressures are not mutually exclusive categories.

Table 2

Percent reporting 5+ drinks in a sitting at least weekly by pressure for age, period and birth cohorts.

	5 or more drinks in a sitting at least weekly			
	Men		Women	
	No pressure	Pressure	No pressure	Pressure
	%	%	%	%
Age				
18–20	5.1	37.5	1.8	19.0
21–24	12.0	54.4	1.5	21.1
25–29	9.6	45.8	2.7	20.2
30–34	9.1	44.9	1.9	17.6
35–39	8.0	39.7	0.8	44.1
40–44	5.2	43.9	2.0	32.5
45–49	5.5	46.2	1.9	50.0
50+	3.1	37.5	0.5	14.2
Survey Year				
1984	10.0	56.9	2.2	32.5
1990	4.6	36.1	1.3	14.2
1995	6.9	36.7	1.1	23.2
2000	5.2	44.9	0.9	23.8
2005	4.6	42.9	1.5	21.0
2010	5.3	37.2	0.8	17.9
Cohort				
LE 1934	2.7	44.4	0.4	7.9
1935–44	4.1	38.6	0.8	35.9
1945–54	6.0	46.7	1.2	23.9
1955–64	7.8	43.7	2.1	30.5
1965–74	6.9	43.7	1.3	22.9
1975–84	7.8	45.9	2.1	16.2
1985–92	6.9	31.5	0.1	14.2

Table 3

Estimated odds ratios of age, period, and cohort effects predicting past 12 month receipt of pressure to change drinking behavior.[a]

	Men			Women			Overall		
	OR	**95%**	**CI**	**OR**	**95%**	**CI**	**OR**	**95%**	**CI**
Marital status									
Married/living with partner (ref)	--	--	--	--	--	--	--	--	--
Never married	1.1	0.9	1.5	1.4&	1.0	1.9	1.3*	1.1	1.5
Widowed/separated/divorced	1.2	0.9	1.7	1.3	0.9	1.8	1.2	1.0	1.5
Educational Attainment									
LT college	1.3**	1.1	1.6	1.3&	1.0	1.7	1.2*	1.1	1.4
Any college+ (ref)	--	--	--	--	--	--	--	--	--
Gender									
Women (ref)	--	--	--	--	--	--	--	--	--
Men	--	--	--	--	--	--	1.7***	1.5	2.0
Daily alcohol volume (continuous)	1.5***	1.4	1.6	2.3***	2.1	2.6	1.6***	1.5	1.7
Age									
18–20	1.9*	1.1	3.4	3.2**	1.3	7.6	2.2**	1.4	3.6
21–24	1.5	0.9	2.5	2.0&	1.0	4.1	1.6*	1.0	2.4
25–29	1.0	0.7	1.6	1.4	0.7	2.6	1.1	0.8	1.6
30–34	1.0	0.7	1.4	1.7&	1.0	3.0	1.1	0.8	1.5
35–39 (ref)	--	--	--	--	--	--	--	--	--
40–44	1.1	0.8	1.7	1.6	0.9	2.9	1.2	0.9	1.7
45–49	0.9	0.5	1.4	1.3	0.7	2.5	1.0	0.6	1.5
50+	0.5&	0.3	1.1	2.2&	1.0	4.9	0.9	0.5	1.4
Period									
1984	1.9&	1.0	3.6	3.3**	1.4	7.8	2.2**	1.3	3.7
1990	2.5**	1.4	4.2	4.6***	2.3	9.3	3.0***	1.9	4.6
1995	2.0**	1.2	3.2	2.0*	1.0	3.8	1.9**	1.3	2.9
2000	1.2	0.8	1.7	1.2	0.8	2.1	1.2	0.8	1.6

	Men			Women			Overall		
	OR	**95%**	**CI**	**OR**	**95%**	**CI**	**OR**	**95%**	**CI**
2005	0.9	0.6	1.3	1.1	0.7	1.8	1.0	0.7	1.3
2010 (ref)	--	--	--	--	--	--	--	--	--
Cohort									
LE 1934	0.5*	0.3	0.9	0.2***	0.1	0.4	0.3***	0.2	0.6
1935–44	0.9	0.5	1.4	0.5*	0.3	1.0	0.8	0.5	1.1
1945–54 (ref)	--	--	--	--	--	--	--	--	--
1955–64	1.0	0.7	1.5	1.4	0.9	2.5	1.2	0.9	1.6
1965–74	1.3	0.8	2.3	2.4*	1.1	5.3	1.6&	1.0	2.5
1975–84	1.8	0.8	4.0	4.1**	1.4	11.9	2.4*	1.2	4.6
1985–92	2.6&	0.9	7.4	4.5*	1.1	19.1	3.0*	1.3	7.1

& p<0.10;

* p<0.05;

** p<0.01;

*** p<0.001

[a] The demographics of employment (employed vs. not) and ethnicity (white, black, Hispanic and other) were non-significant predictors in all models.