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Do gender differences in the relationship between living with children and alcohol consumption vary by societal gender inequality?

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**Running Title:** Alcohol Use, living with children and gender

## Abstract

**Introduction and aims.** To better understand the relationship between alcohol consumption and living with children, we assessed whether the association varied for men and women across diverse countries and whether this relationship was moderated by country-level gender inequality.

**Design and methods.** We used Hierarchical Linear Modelling to analyse data from 32 surveys conducted in 27 countries. Measures included whether the participant was a drinker versus abstainer in past 12 months, annual number of drinks consumed, whether the respondent lived with children, gender (male/female) and age of respondent, and country-level gender inequality measured using the Gender Inequality Index.

**Result.** Annual drinks consumed was significantly lower for women living with children. Men living with children were generally *more likely* to be drinkers, and the relationship between annual consumption and living with children was moderated by cultural gender equality: specifically, men in countries with higher gender equality drank less if they lived with children while the association for men in lower equality countries was nonsignificant.

**Discussion and conclusions.** Although lower alcohol consumption was found generally for women living with children, this relationship was found only for men in countries where there was more gender equality. Given the high risk of harm to children from heavy consumption by adults with whom they live, prevention efforts need to strengthen prevention of heavy

consumption by parents and other who live with children, especially for men who live with children in low gender equality countries.

**Keywords:** alcohol consumption, living with children, gender equality, gender differences

## Introduction

Children are at risk of a variety of harms related to alcohol consumption [1] and alcohol abuse [2-5] by their parents and other adults with whom they live, including physical harm and exposure to family violence [6]. Thus, stopping or reducing alcohol consumption can be an important harm prevention strategy for parents and other adults who live with children.

Accordingly, some research has found that parents drink less than non-parents, although this has not been found in all studies [7-13]. Parents may be motivated to drink less as a way of reducing risk of harms to children for whom they are responsible [14]. Other reasons why persons might reduce their drinking when they become parents include additional obligations associated with parenting [15] and lifestyle changes after becoming a parent such as drinking in different social contexts with lower consumption norms (e.g. home compared with other settings) [16].

To date research has focused on the effects of parenting and has not examined whether adults who live with children (whether or not they are the child's parent) are generally more likely to abstain or drink less compared with adults who do not live with children. In addition, lower alcohol consumption is likely to be related to gender or gender roles associated with parenting or childcare [7]. For example, parenting has been found to be more strongly associated with a reduction in drinking by women than by men [7, 8]. To the extent that this gender difference in the relationship of parenting with drinking reflects differences in gender roles generally (e.g. greater childcare responsibilities for women than for men), female adults may be more likely than male adults to drink less if they live with children (whether or not they are the parent).

Gender equality in the culture may also be a factor in the relationship between alcohol use and harms to others including children. For example, a US study found that state level indicators of gender equality moderated the relationship between binge drinking and harm to others associated with drinking [17]. In terms of gender roles, cross-cultural studies have found that men play a more active role in childcare in countries where there is greater gender equality [18, 19]. Thus, in countries with higher levels of gender equality where men are more involved in childcare, men as well as women may be more likely to reduce their alcohol consumption when they live with children. Men in low gender equality countries, on the other hand, may have less responsibility for childcare and, therefore, be less likely to reduce their drinking if they live with children. Thus, both gender of the adult and gender equality at the societal level might affect the relationship between drinking and living with children.

To assess whether living with children is associated with lower alcohol consumption and whether this association varies by gender of the drinker or cultural gender equality, we examined the relationship between alcohol consumption and living with children using data from 32 surveys conducted in 27 countries. We hypothesized that:

- (1) Overall men and women who lived with children would be more likely to abstain from drinking and, among drinkers, men and women living with children would drink less compared to people who did not live with children;

- (2) The relationship between living with children and abstaining/lower alcohol consumption would be stronger for women than for men because, for example, of women's greater role in caring for children;
- (3) The relationship between living with children and lower alcohol consumption would be stronger for men in higher versus lower gender equality countries where men may have a greater role in direct care to children.

### **Method**

This research uses data from: (i) the multi-national GENACIS collaboration (Gender, Alcohol, and Culture: An International Study) involving over 40 countries, including less affluent countries that had never previously conducted comprehensive surveys on alcohol consumption [20, 21]; (ii) the multi-national GENAHTO project (Gender and Alcohol's Harm to Others: Multinational Cultural Contexts and Policy Implications) [22-24, see also <http://genahto.org/>]; and (iii) the European Comparative Alcohol Study [25]. Countries from these projects with relevant data on living with children and comparable measures of drinking pattern were included.

### **Design and sampling**

The analyses included 28,417 men and 35,494 women who participated in 32 cross-sectional surveys in 27 countries from diverse areas of the world, including: Africa; Europe; North, South

and Central America; Asia; and Australia and New Zealand (see Table 1 for list of countries, geographic coverage of surveys, sample sizes and year conducted). Surveys were administered face-to-face except in: Australia, Canada, France, the second Ireland survey, Italy, Sweden and the second United Kingdom survey which were completed 100% by telephone; Isle of Man (57.5% face-to-face and 42.5% telephone); the first United States survey (72.0% face-to-face and 28.0% telephone); and Japan and New Zealand (self-administered and returned by postal mail). The response/completion rate for each country is shown in Table 1 (where available). Because of variations in sampling methods and recording of non-respondents, rates were not available for all surveys.

## Measures

**Demographic variables.** Participant's gender was recorded by the interviewer (or recorded on the questionnaire for self-administered surveys), and participants were asked for their year of birth. The age range of participants varied across surveys; therefore, analyses were limited to persons aged 18 to 65 years (18-64 for Peru) to maximise comparability of samples. Percent female and mean age of respondents are shown in Table 1.

**Living with children.** Participants were asked how many children under the age of 18 lived with them (under age 20 in Norway) at the time of the survey. In Japan, participants were asked with whom they lived, including their own or their spouse's/partner's children (less than 18 years



of age), their married or unmarried adult children (18 years and older) and other relatives. This variable was dichotomised as lives with children under 18 years of age (under 20 in Norway) (1) versus does not live with children (0).

**Drinking status.** In some countries, participants were asked if they drank any alcohol (more than a sip or taste) in the past 12 months (categorised as drinker vs. abstainer). For those countries that did not ask specifically about drinking status, participants were defined as abstainers if they answered “never” to the question on frequency of drinking in the past 12 months.

**Volume of alcohol consumption: number of standard drinks (12 g. absolute alcohol) past 12 months.** Annual number of drinks was calculated as the product of measures of quantity and frequency. For frequency, participants were asked overall frequency of drinking any kind of alcohol in the past 12 months. In some countries, beverage-specific questions on how often participants drank beer, wine, liquor and other alcoholic drinks in the past 12 months were asked before the overall frequency question. The frequency score was based on the maximum frequency reported either for a specific beverage or for drinking overall. Response categories varied slightly among countries. To ensure consistency across surveys, responses were converted into the following categories, which were then converted into estimated number of drinking days per week (and multiplied by 52 for number of drinks per year): never (abstainer, 0 days), less than once a month (0.12 days per week), 1-3 times a month (0.46 days), once or twice a week (1.5 days), 3 or 4 days a week (3.5 days) or 5 to 7 days a week (6 days).

For quantity, participants were asked about the usual number of standard drinks consumed on days they drank during the past 12 months. Because standard drink sizes vary across countries, responses were converted into number of drinks based on each drink containing 12g of absolute alcohol.

**Gender inequality.** Country- level gender equality was measured using the Gender Inequality Index (GII). The GII was developed in 2010 by the United Nations Development Forum to address some of the weaknesses of previous gender inequality measures [26]. The measure is comprised of the following sub-indices: reproductive health (maternal deaths per 100,000 live births, adolescent birth rate – i.e. births per 1000 women aged 15–19 years); empowerment (percentage of male and female population aged 25 years and older with at least some secondary education, percentage of parliamentary seats held by women); and labour market participation (female and male labour force participation rates for persons aged 15 years and older). These indices were chosen for their conceptual relevance, non-ambiguity, reliability, value added and power of discrimination. In addition, although gender equality is associated with income, the GII is less confounded with income level of the country than are other measures of gender equality [26]. For the present purposes, we chose to use the 2017 GII scores for all countries (shown in Table 1), rather than the GII for the year of the survey, because using scores for the same year for all countries provides the best way for *relative* comparison of gender inequality across countries.

The GII measures gender *inequality* using a scale between 0 and 1. To make the scale more easily interpretable, it was reverse coded to be a measure of *equality*, with higher scores meaning greater equality, and then multiplied by 10 to generate scores that ranged from 4.76 for India to 9.60 for Denmark (see Table 1).

### **Ethics**

Individual country surveys were reviewed according to procedures created to protect research participants in each country.

### **Analyses**

Regression analysis was conducted separately for male and female participants using Hierarchical Linear Modelling (V7.0.2) to adjust standard errors for nesting of individuals (level 1) within country (level 2). Using a Bernoulli model for dichotomous outcomes, odds ratios were computed for drinking status regressed on living with children (level 1), gender equality (level 2) and the cross-level interaction of living with children and gender equality. We also computed coefficients for annual number of standard drinks regressed on living with children (level 1), gender equality (level 2) and the cross-level interaction of living with children and gender equality. All analyses controlled for age because age of parent has been identified as a modifier of the relationship between parenthood and alcohol consumption [10, 13, 27]. All variables at the individual level (level 1) were grand mean centred and contained a random error component for the slope. To better understand the interaction of gender equality with living with children for

volume of consumption by male drinkers, we dichotomised gender equality into greater gender equality ( $GII < 0.200$ , 14 countries) and less gender equality ( $GII \geq 0.200$ , 13 countries).

## Results

Descriptive statistics relating to living with children, being a drinker and annual volume of alcohol consumption (drinks per year) are shown in Table 2, displayed separately for men and women and for each country. As evident in the table, the overall rate of abstaining across countries was 19.6% for male and 40.3% for female participants living with children, and 19.5% for male and 29.8% for female participants without children. However, rates of abstaining within individual countries varied from 3.5% for Isle of Man's male participants with children to 97.7% for female participants living with children in India.

Table 2 also shows the annual number of standard drinks consumed by male and female drinkers from each country by whether they live with children. As with rates of abstaining, there was considerable variability in consumption among drinkers from each country, with a low of 34.9 drinks per year among Sri Lankan women living with children to a high of 636.4 drinks for Ugandan women not living with children.

### Drinker versus abstainer

As hypothesized, living with children was negatively associated with being a drinker for women (shown in Model 1a in Table 3); however, this relationship was partly influenced by the high rate of abstaining and living with children for women from India and Sri Lanka. When these two countries were excluded from the analyses, the relationship between abstaining and living

with children was no longer significant for women (odds ratio 0.94,  $P = 0.155$ ). Contrary to prediction, living with children was *positively* associated with being a drinker for men, and the relationship remained significant when responses from India and Sri Lanka were excluded.

In terms of the relationship of gender equality and drinking, as shown in Table 3, for every increase in gender equality of 1.00 point (on the 10-point scale), the odds of being a drinker increase by 1.60 for men and 2.11 for women. The interaction of gender equality by living with children (Model 1b) was not significant for men or women, indicating that the relationship between living with children and drinking was not significantly modified by gender equality of the country.

#### **Annual number of standard drinks consumed**

Table 3 also shows two models for annual number of drinks consumed by drinkers, with the second model including the interaction of living with children by gender equality. This interaction was not significant for women; thus, the main effects model (Model 2a) is more appropriate for interpretation (i.e. gender equality did not significantly modify the link between living with children and volume of drinking). Thus, as shown Model 2a, living with children (vs. not living with children) was associated with women drinking 54 fewer drinks annually.

For men, on the other hand, there was a significant interaction of gender equality with living with children (Model 2b, Table 3). To explore this interaction, we conducted regressions of alcohol consumption on living with children for men in countries with greater versus less gender equality using the dichotomised GII score. As shown in Table 4, living with children was

associated with consuming 104 *fewer* drinks per year for men from high equality countries ( $P < 0.001$ ) but with 35 *more* drinks per year (compared to men not living with children) for men in countries with lower gender equality (nonsignificant).

### Discussion

The association between living with children and alcohol use varied by both gender and gender equality of the country. Women who lived with children were overall more likely to abstain from alcohol, although this relationship appeared to be mostly due to the high rates of abstaining and living with children in India and Sri Lanka and became nonsignificant when these countries were excluded from the analyses. On the other hand, men who lived with children were significantly *more* likely than those who did not live with children to have consumed alcohol in the past 12 months.

Women living with children drank significantly less than did women not living with children and this relationship was not significantly modified by cultural gender equality. For men, however, participants from countries with higher gender equality drank significantly less if they lived with children, while men who lived with children in countries with lower gender equality drank slightly more.

Strengths of the study include the participation of men and women from diverse countries in six continents, and this diversity contributes to the generalisability of the overall findings. An additional strength is the use of comparable questions across surveys. A possible limitation of the analysis is that surveys were done at different time periods and using different modes. In

addition, there was variability in response rates across countries. The extent that these sources of variability affect the findings regarding the relationship between drinking, living with children and cultural gender equality is unknown.

The analysis was strengthened by the use of hierarchical linear modelling to control for nesting of participants in countries and controlling for age of the respondent. A limitation of the study is that most surveys did not contain data on age of children which may moderate the relationship between living with children and alcohol consumption [28] and would be an important factor to consider in future research. The use of the GII as a measure of cultural gender equality is a strength because it was designed to improve previous measures by including four key dimensions and addressing deficits in previous measures of gender equality, such as confounding with country-level economic well-being. Nevertheless, higher societal gender equality tends to be associated with higher income (with some notable exceptions – see [26]). Thus, it is important for future research to investigate the independent influences of both country wealth and gender equality on alcohol consumption of men who live with children. Although a strength of this study was being able to examine drinking by all adults who lived with children (parents, other family, other non-family), a limitation was that the data were not available to compare findings for parents versus other adults in the household.

These findings of drinking by adults generally are consistent with previous studies of parental drinking showing a stronger relationship between living with children and alcohol consumption for women than for men [7, 8]. A Swedish longitudinal population-based analysis

[28] concluded that the lower risk of alcohol use disorder among women who had children (compared to women with no children) was likely causal – that is, due to the presence of children rather than to other possible differences between women with children and women without. However, more research is needed to explore the extent that the lower alcohol consumption among female adults living with children reflects lifestyle changes made related to parenting [16], a conscious decision to drink less because of childcare concerns [15], or possibly other factors.

For men, those living with children were *more* likely to drink (vs. abstain) compared to men not living with children, and this relationship was not significantly moderated by gender equality in the culture. This finding was unexpected and not easy to explain. More research is needed to better understand this finding.

Findings from previous research have been inconsistent regarding the relationship between men's alcohol consumption and living with children, with some results suggesting a significant reduction and others showing no relationship [7-9, 13]. Examining possible moderation by cultural gender equality, however, provides new knowledge regarding this relationship. Specifically, there was a strong and significant negative relationship between annual volume of consumption and living with children for men in countries with greater gender equality, while there was no significant relationship for men in countries with less equality. It is possible that men in high equality countries assume more childcare responsibilities than do men in lower equality countries, and it is this role with children that accounts for the difference in the



relationship between drinking and living with children [7]. In addition, paid paternity leave that is provided in some countries with greater gender equality may enhance both the extent of childcare by men and consequently the extent that heavier drinking is reduced by men because of childcare responsibilities. As well, if women in lower gender equality countries are seen as the primary caretaker of children, men in these countries may perceive less need to reduce their drinking, consistent with findings by Raitasalo [14] that drinking to intoxication in front of children is seen as more acceptable if there is another adult present to ensure the safety of the children.

Children are at risk of a variety of harms from drinkers in their environment [1, 6]. Although alcohol abuse or alcohol disorder by the mother may have a closer relationship to long-term damage to offsprings' mental health compared to abuse/disorder by the father [2-5], men in all cultures drink more than do women, sometimes much more [21] and are more likely to self-report harm to others from their drinking [29]; therefore, men's drinking has the potential to affect a larger number of children compared with women's drinking.

The finding that male drinkers consume less alcohol if they live with children in countries with greater gender equality offers new insight into possible factors that could lead to reduced alcohol-related harm to children. For example, interventions to increase gender equality in a country may form an important strategy for reducing harms to children from men's drinking. Alternatively, increasing men's responsibilities for direct care of children may lead to men making greater effort to reduce their alcohol consumption. An important area for future research

is to better understand the aspects of gender equality in the society that affect men's possible willingness or perceived need to consume less alcohol if they live with children.

### **Conclusions**

Because of harms to children from adult drinkers in the household, it is important to understand how living with children is associated with the drinking of adults. The results from this research across a large and diverse group of countries suggest that generally women who live with children consume less alcohol than do women who do not live with children. For men, on the other hand, the relationship between less alcohol consumption and living with children was significant only for male participants who lived in countries with higher gender equality. Given the high risk of harm to children from heavy consumption by adults with whom they live, prevention efforts need to not only strengthen prevention of heavy consumption by parents and others who live with children but also focus particularly on drinking by men living with children, especially in countries with less gender equality.

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Table 1. Country of survey, whether survey was part of GENACIS, GENAHTO or ECAS collaboration, geographic area of survey (if not national), year of survey, response rate, sample size, % female, Gender Inequality Index (GII) score for 2017 (higher score = greater inequality), GII score reverse coded and multiplied by 10, and mean age (standard deviation)

Country	Year of survey	Response rate/ completion rate <sup>1</sup>	Sample size (N)	% Female	2017 GII raw score	Reversed scored GII X 10	Mean age (SD)	
							Men	Women
All countries			63,911	55.54%			40.21 (13.25)	40.49 (13.02)
Argentina (GENACIS, Buenos Aires City & Province)	2003	Unknown	999	59.86%	0.358	6.42	38.07 (13.50)	41.02 (13.47)
Australia (GENAHTO)	2008	35%	2,234	59.36%	0.113	8.91	43.21 (13.16)	43.09 (12.58)
Brazil (GENACIS, Metro São Paulo)	2007	76%	1,809	57.82%	0.407	5.93	37.71 (13.33)	38.72 (13.51)
Canada (GENACIS)	2004-5	53%	12,250	56.37%	0.092	9.08	41.58 (12.66)	42.41 (12.35)
Chile (GENAHTO, 7 cities and surrounding areas)	2012-13	72%	1,344	53.72%	0.319	6.81	33.96 (12.00)	35.34 (12.89)
Costa Rica (GENACIS, Greater Metropolitan area)	2003	56%	1,156	66.96%	0.300	7.00	35.59 (12.80)	36.56 (12.30)
Czech Republic (GENACIS)	2002	73%	2,507	50.58%	0.124	8.76	40.25 (13.76)	39.96 (13.66)
Denmark (GENAHTO)	2011	61%	4,037	53.46%	0.040	9.60	42.32 (13.79)	43.57 (13.40)
France (ECAS)	2000	54%	997	52.46%	0.083	9.17	38.11 (12.67)	40.39 (13.54)
India (GENACIS, 5 regions in Karnataka state)	2003	NA (quota sampling)	3,244	52.68%	0.524	4.76	32.28 (11.44)	31.91 (11.25)
Ireland 1 (GENAHTO)	2010	NA (quota sampling)	797	51.19%	0.109	8.91	39.71 (13.68)	39.80 (13.09)
Ireland 2 (GENAHTO)	2015	37%	1,648	51.09%	0.109	8.91	43.15 (13.84)	44.22 (13.13)



Country	Year of survey	Response rate/ completion rate <sup>1</sup>	Sample size (N)	% Female	2017 GII raw score	Reversed scored GII X 10	Mean age (SD)	
							Men	Women
Italy (ECAS)	2000	47%	1,000	51.40%	0.087	9.13	40.71 (14.27)	41.08 (13.11)
Japan (GENACIS)	2001	75%	1,733	50.14%	0.103	8.97	43.59 (12.72)	44.12 (12.73)
Laos PDR (GENAHTO)	2013	99%	1,212	58.42%	0.461	5.39	41.96 (12.86)	38.68 (11.46)
New Zealand (GENACIS)	2007	50%	1,579	57.06%	0.136	8.64	44.41 (12.54)	43.77 (12.28)
Nicaragua (GENACIS, 5 midsized cities)	2005	Unknown	1,963	70.20%	0.456	5.44	34.76 (12.63)	34.09 (11.99)
Norway (GENACIS)	1999	Unknown	1752	52.40%	0.048	9.52	39.29 (12.41)	39.08 (12.45)
Peru (GENACIS, cities of Lima and Ayacucho)	2005	Unknown	1,389	65.73%	0.368	6.32	35.47 (13.12)	36.12 (12.20)
Spain (GENACIS, provinces of Galicia, Valencia, Cantabria)	2002	69%	1,470	49.86%	0.080	9.20	39.08 (13.40)	39.50 (13.41)
Sri Lanka 1 (GENACIS, 16 districts)	2002	Unknown	2,286	51.71%	0.354	6.46	39.37 (13.39)	38.42 (12.49)
Sri Lanka 2 (GENAHTO)	2013-14	93%	943	50.05%	0.354	6.46	41.17 (12.41)	39.05 (11.93)
Sweden (GENACIS)	2002	68%	4,476	50.67%	0.044	9.56	41.01 (13.51)	41.46 (13.43)
Thailand (GENAHTO)	2012-13	94%	1,603	59.01%	0.393	6.07	44.30 (12.18)	45.32 (12.04)
Uganda (GENACIS, districts of Kabale, Tororo, Lira and Wakiso)	2003	84%	1,373	51.49%	0.523	4.77	33.01 (10.55)	31.93 (10.49)
United Kingdom 1 (GENACIS, England and Wales)	2000	NA (quota sampling)	1,675	51.52%	.116	8.84	39.76 (12.85)	41.39 (12.98)
United Kingdom 2 (ECAS)	2000	41%	984	59.04%	0.116	8.84	40.20 (11.93)	41.18 (12.21)
United Kingdom 3 (GENACIS, Isle of Man)	2005	53%	760	53.29%	0.116	8.84	44.99 (12.77)	45.06 (12.54)

Country	Year of survey	Response rate/ completion rate <sup>1</sup>	Sample size (N)	% Female	2017 GII raw score	Reversed scored GII X 10	Mean age (SD)	
							Men	Women
United States 1 (GENACIS, females only)	2001	80%	1,005	100.0%	0.189	8.11	--	37.63 (11.57)
United States 2 (GENAHTO)	2014-15	60%	1,939	55.75%	0.189	8.11	44.08 (14.10)	46.02 (13.34)
Uruguay (GENACIS, several cities, primarily Montevideo (53.6% of interviews) and Canelones (11.6% of interviews))	2004	50%	1,000	62.40%	0.270	7.30	39.39 (14.07)	41.39 (14.11)
Vietnam (GENAHTO, 1 province in each of 6 regions)	2012-13	99%	1,447	49.97%	0.304	6.96	41.30 (11.26)	42.05 (10.50)

<sup>1</sup>Some countries had little experience in conducting surveys and did not collect sufficient data to estimate response rates; however, countries where surveys were unusual tended to have generally high participation. Also, countries used different methods of reporting non-response with some reporting response rates (including no one home) and others reporting completion rates. ECAS, European Comparative Alcohol Study; GENACIS, Gender, Alcohol, and Culture: An International Study; GENAHTO, Gender and Alcohol's Harm to Others: Multinational Cultural Contexts and Policy Implications.

Table 2. Country of survey, number and percent of participants in each survey who were drinkers/abstainers in past 12 months, and mean volume (and standard deviation) by survey, gender and whether the survey participant lived with children

Country	<u>Men</u>		<u>Women</u>		<u>Men</u>	<u>Women</u>
	Drinker	Abstainer	Drinker	Abstainer	Average # drinks/year (SD)	Average # drinks/year (SD)
<i>All countries</i>						
- lives with children	9444 (80.41%)	2301 (19.59%)	10,609 (59.65%)	7176 (40.35%)	483.21 (823.36)	167.26 (341.54)
- does not live with children	13,340 (80.45%)	3241 (19.55%)	12,500 (70.22%)	5300 (29.78%)	515.08 (793.41)	213.64 (370.70)
<i>Argentina (GENACIS)</i>						
- lives with children	128 (88.89%)	16 (11.11%)	230 (73.95%)	81 (26.05%)	510.30 (607.75)	71.108 (150.87)
- does not live with children	239 (93.00%)	18 (7.00%)	211 (73.52%)	76 (26.48%)	374.82 (552.55)	132.24 (181.50)
<i>Australia (GENAHTO)</i>						
- lives with children	390 (90.91%)	39 (9.09%)	671 (86.80%)	102 (13.20%)	529.03 (777.22)	190.92 (302.15)
- does not live with children	427 (89.14%)	52 (10.86%)	466 (84.27%)	87 (15.73%)	530.19 (850.48)	225.05 (301.94)
<i>Brazil (GENACIS)</i>						
- lives with children	274 (65.87%)	142 (34.13%)	205 (32.64%)	423 (67.36%)	443.03 (695.15)	108.39 (240.11)
- does not live with children	203 (58.50%)	144 (41.50%)	140 (33.49%)	278 (66.51%)	453.75 (669.82)	147.69 (457.66)
<i>Canada (GENACIS)</i>						
- lives with children	1491 (84.38%)	276 (15.62%)	2070 (76.89%)	622 (23.11%)	274.12 (402.34)	131.44 (218.82)
- does not live with children	2957 (82.64%)	621 (17.36%)	3240 (76.90%)	973 (23.10%)	388.97 (624.63)	161.12 (259.57)
<i>Chile (GENAHTO)</i>						
- lives with children	265 (80.79%)	63 (18.21%)	319 (68.16%)	149 (31.84%)	323.52 (537.37)	121.91 (302.89)
- does not live with children	239 (81.29%)	55 (18.71%)	178 (70.08%)	76 (29.92%)	346.63 (659.30)	217.55 (440.43)
<i>Costa Rica (GENACIS)</i>						
- lives with children	106 (70.20%)	45 (29.80%)	206 (44.40%)	258 (55.60%)	256.80 (415.65)	63.28 (106.34)

Country	<u>Men</u>		<u>Women</u>		<u>Men</u>	<u>Women</u>
	Drinker	Abstainer	Drinker	Abstainer	Average # drinks/year (SD)	Average # drinks/year (SD)
- does not live with children <i>Czech Republic (GENACIS)</i>	161 (69.70%)	70 (30.30%)	147 (47.42%)	163 (52.58%)	336.55 (510.12)	113.53 (208.32)
- lives with children	359 (93.25%)	26 (6.75%)	377 (82.31%)	81 (17.69%)	855.06 (861.15)	235.47 (421.11)
- does not live with children <i>Denmark (GENAHTO)</i>	760 (88.99%)	94 (11.01%)	635 (78.40%)	175 (21.60%)	898.85 (1061.53)	296.88 (481.83)
- lives with children	669 (95.98%)	28 (4.02%)	774 (91.49%)	72 (8.51%)	334.94 (365.19)	157.17 (214.20)
- does not live with children <i>France (ECAS)</i>	1130 (95.60%)	52 (4.40%)	1225 (93.37%)	87 (6.63%)	486.52 (571.39)	266.29 (323.37)
- lives with children	151 (86.78%)	23 (13.22%)	158 (69.30%)	70 (30.70%)	611.70 (1099.46)	179.18 (299.33)
- does not live with children <i>India (GENACIS)</i>	263 (87.67%)	37 (12.33%)	222 (75.25%)	73 (24.75%)	594.92 (704.06)	230.59 (298.66)
- lives with children	295 (44.83%)	363 (55.17%)	20 (2.32%)	842 (97.68%)	1185.81 (1401.15)	495.00 (748.76)
- does not live with children <i>Ireland 1 (GENAHTO)</i>	191 (28.85%)	471 (71.15%)	17 (4.70%)	345 (95.30%)	603.81 (911.40)	334.45 (652.15)
- lives with children	146 (86.90%)	22 (13.10%)	185 (83.71%)	36 (16.29%)	929.76 (1174.38)	421.43 (544.40)
- does not live with children <i>Ireland 2 (GENAHTO)</i>	183 (82.81%)	38 (17.19%)	144 (77.01%)	43 (22.99%)	1058.70 (1199.98)	450.84 (535.21)
- lives with children	225 (83.03%)	46 (16.97%)	274 (87.3%)	40 (12.7%)	446.40 (510.12)	194.1 (265.1)
- does not live with children <i>Italy (ECAS)</i>	443 (82.80%)	92 (17.20%)	432 (81.8%)	96 (18.2%)	709.75 (1109.28)	225.9 (305.7)
- lives with children	132 (91.03%)	13 (8.97%)	147 (75.00%)	49 (25.00%)	493.02 (535.08)	340.39 (587.68)
- does not live with children <i>Japan (GENACIS)</i>	302 (88.56%)	39 (11.44%)	258 (81.13%)	60 (18.87%)	574.10 (598.84)	294.57 (360.92)

Country	<u>Men</u>		<u>Women</u>		<u>Men</u>	<u>Women</u>
	Drinker	Abstainer	Drinker	Abstainer	Average # drinks/year (SD)	Average # drinks/year (SD)
- lives with children	402 (95.04%)	21 (4.96%)	337 (82.80%)	70 (17.20%)	606.45 (776.03)	158.52 (290.03)
- does not live with children	401 (90.93%)	40 (9.07%)	355 (76.84%)	107 (23.16%)	582.90 (777.05)	196.42 (448.07)
<i>Laos PDR (GENAHTO)</i>						
- lives with children	313 (86.9%)	47 (13.1%)	347 (68.31%)	161 (31.69%)	849.5 (1472.1)	296.22 (574.04)
- does not live with children	126 (87.5%)	18 (12.5%)	119 (59.50%)	81 (40.50%)	763.8 (1364.6)	329.38 (727.37)
<i>New Zealand (GENACIS)</i>						
- lives with children	197 (92.06%)	17 (7.94%)	320 (91.95%)	28 (8.05%)	348.97 (455.01)	194.08 (270.00)
- does not live with children	416 (89.66%)	48 (10.34%)	506 (91.50%)	47 (8.50%)	439.78 (649.35)	256.27 (305.95)
<i>Nicaragua (GENACIS)</i>						
- lives with children	115 (40.78%)	167 (59.22%)	92 (9.40%)	887 (90.60%)	504.47 (1230.43)	418.79 (1235.44)
- does not live with children	144 (47.52)	159 (52.48%)	56 (14.04%)	343 (85.96%)	766.12 (1317.70)	233.57 (750.31)
<i>Norway (GENACIS)</i>						
- lives with children	362 (96.02%)	15 (3.98%)	473 (94.60%)	27 (5.40%)	253.75 (266.39)	131.31 (163.46)
- does not live with children	423 (92.56%)	34 (7.44%)	387 (92.58%)	31 (7.42%)	505.16 (803.01)	170.49 (259.22)
<i>Peru (GENACIS)</i>						
- lives with children	200 (84.03%)	38 (15.97%)	395 (60.12%)	262 (39.88%)	118.23 (190.84)	44.75 (91.80)
- does not live with children	194 (81.51%)	44 (18.49%)	166 (64.84%)	90 (35.16%)	190.07 (450.51)	42.65 (84.79)
<i>Spain (GENACIS)</i>						
- lives with children	143 (73.33%)	52 (26.67%)	117 (48.75%)	123 (51.25%)	703.44 (860.67)	205.89 (282.42)
- does not live with children	398 (73.43%)	144 (26.57%)	266 (53.96%)	227 (46.04%)	615.01 (725.04)	257.36 (349.21)
<i>Sri Lanka 1 (GENACIS)</i>						
- lives with children	176 (61.32%)	111 (38.68%)	20 (5.25%)	361 (94.75%)	796.51 (1327.67)	34.85 (99.83)
- does not live with children	100 (54.35%)	84 (45.65%)	8 (8.79%)	83 (91.21%)	531.98 (1330.63)	47.13 (108.58)

Country	<u>Men</u>		<u>Women</u>		<u>Men</u>	<u>Women</u>
	Drinker	Abstainer	Drinker	Abstainer	Average # drinks/year (SD)	Average # drinks/year (SD)
<i>Sri Lanka 2 (GENAHTO)</i>						
- lives with children	360 (67.92%)	170(32.08%)	20 (2.79%)	696 (97.21%)	407.12 (574.33)	166.00 (278.80)
- does not live with children	376 (65.51%)	198 (34.49%)	25 (5.36%)	441 (94.64%)	485.39 (704.53)	123.64 (360.40)
<i>Sweden (GENACIS)</i>						
- lives with children	720 (93.14%)	53 (6.86%)	723 (83.39%)	144 (16.61%)	219.59 (279.59)	104.33 (129.98)
- does not live with children	1304 (90.87%)	131 (9.13%)	1208 (86.22%)	193 (13.78%)	275.69 (351.35)	132.55 (169.07)
<i>Thailand (GENAHTO)</i>						
- lives with children	231 (65.81%)	120 (34.19%)	154 (27.16%)	413 (72.84%)	730.37 (1370.31)	129.64 (382.69)
- does not live with children	213 (69.61%)	93 (30.39%)	128 (33.77%)	251 (66.23%)	654.63 (1236.63)	179.65 (422.36)
<i>Uganda (GENACIS)</i>						
- lives with children	234 (62.57%)	140 (37.43%)	203 (41.94%)	281 (58.06%)	1273.04 (1525.60)	398.60 (925.56)
- does not live with children	124 (42.47%)	168 (57.53%)	74 (33.18%)	149 (66.82%)	1015.72 (1318.32)	636.41 (1629.43)
<i>United Kingdom 1 (GENACIS)</i>						
- lives with children	294 (93.33%)	21 (6.67%)	383 (85.87%)	63 (14.13%)	466.35 (672.91)	216.66 (402.55)
- does not live with children	449 (90.34%)	48 (9.66%)	344 (82.49%)	73 (17.51%)	617.39 (751.61)	287.98 (392.21)
<i>United Kingdom 2 (ECAS)</i>						
- lives with children	134 (88.16%)	18 (11.84%)	229 (87.74%)	32 (12.26%)	892.87 (1300.51)	332.24 (444.35)
- does not live with children	227 (90.44%)	24 (9.56%)	269 (84.06%)	51 (15.94%)	1100.40 (1351.48)	456.93 (681.58)
<i>United Kingdom 3 (GENACIS, Isle of Man)</i>						
- lives with children	137 (96.48%)	5 (3.52%)	142 (91.03%)	14 (8.97%)	810.04 (1163.25)	331.35 (435.60)
- does not live with children	201 (94.37%)	12 (5.63%)	215 (86.35%)	34 (13.65%)	860.56 (1105.15)	321.69 (401.03)
<i>United States 1 (GENACIS, females only)</i>						

Country	<u>Men</u>		<u>Women</u>		<u>Men</u>	<u>Women</u>
	Drinker	Abstainer	Drinker	Abstainer	Average # drinks/year (SD)	Average # drinks/year (SD)
- lives with children	--	--	380 (78.19%)	106 (21.81%)	--	133.38 (239.91)
- does not live with children	--	--	414 (79.77%)	105 (20.23%)	--	259.72 (452.03)
<i>United States 2 (GENAHTO)</i>						
- lives with children	185 (68.27%)	86 (31.73%)	275 (65.48%)	145 (34.52%)	163.77 (247.68)	106.56 (227.57)
- does not live with children	431 (73.42%)	156 (26.58%)	422 (63.84%)	239 (36.16%)	390.45 (562.37)	171.38 (352.08)
<i>Uruguay (GENACIS)</i>						
- lives with children	106 (79.10%)	28 (20.90%)	174 (59.18%)	120 (40.82%)	410.66 (1023.77)	88.22 (151.12)
- does not live with children	199 (82.23%)	43 (17.77%)	202 (61.21%)	128 (38.79%)	459.13 (763.74)	156.40 (324.33)
<i>Vietnam (GENAHTO)</i>						
- lives with children	504 (84.85%)	90 (15.15%)	189 (31.14%)	418 (68.86%)	349.76 (642.96)	109.19 (239.58)
- does not live with children	116 (89.23%)	14 (10.77%)	21 (18.10%)	95 (81.90%)	344.13 (574.05)	75.79 (161.11)

ECAS, European Comparative Alcohol Study; GENACIS, Gender, Alcohol, and Culture: An International Study; GENAHTO, Gender and Alcohol's Harm to Others: Multinational Cultural Contexts and Policy Implications.

Table 3. Odds ratio based on hierarchical linear modelling regression of being a drinker vs. abstainer (Model 1)/b coefficients based on hierarchical linear modelling regression of annual number of drinks consumed by drinkers (Model 2) on living with children (level 1), country level gender equality (reverse coded Gender Inequality Index  $\times$  10) (level 2) and cross-level interaction of gender equality with living with children (controlling for age)

<b>Model 1.</b>	<b><u>Men (N = 28,326)</u></b>	<b><u>Women (N = 35,585)</u></b>
<b>Drinking status (drinker vs. abstainer)</b>	<b>Odds ratio (P value)</b>	<b>Odds ratio (P value)</b>
<b>Model 1a</b>		
Lives with children (level 1)	1.18 ( $P = 0.003$ )	0.90 ( $P = 0.036$ )
Gender equality (level 2)	1.60 ( $P < 0.001$ )	2.11 ( $P < 0.001$ )
<b>Model 1b</b>		
Lives with children (level 1)	1.18 ( $P = 0.002$ )	0.90 ( $P = 0.039$ )
Gender equality (level 2)	1.59 ( $P < 0.001$ )	2.18 ( $P < 0.001$ )
Gender equality $\times$ lives with children (cross level interaction)	0.98 ( $P = 0.469$ )	1.02 ( $P = 0.649$ )
<b>Model 2.</b>		
<b># drinks consumed annually by drinkers</b>	<b><u>Men (N = 22,415)</u></b>	<b><u>Women (N = 22,608)</u></b>
	<b>b coefficient (P value)</b>	<b>b coefficient (P value)</b>
<b>Model 2a</b>		
Lives with children (level 1)	-46.61 ( $P = 0.079$ )	-54.47 ( $P < 0.001$ )
Gender equality (level 2)	-6.93 ( $P = 0.816$ )	-5.14 ( $P = 0.735$ )
<b>Model 2b</b>		
Lives with children (level 1)	-38.65 ( $P = 0.117$ )	-53.64 ( $P = 0.002$ )
Gender equality (level 2)	-19.44 ( $P = 0.524$ )	-3.77 ( $P = 0.837$ )
Gender equality $\times$ lives with children (cross level interaction)	-32.76 ( $P = 0.036$ )	-2.39 ( $P = 0.868$ )



Table 4. Unstandardized b coefficient for annual volume of consumption based on regression of annual volume of consumption on living with children for male participants in higher versus lower gender inequality countries using hierarchical linear modelling (controlling for age)

<b>Volume (# drinks consumed annually)</b>	<b>b coefficient (p value)</b>
<i>Model 1. Countries with lower gender equality</i>	
Lives with children	(N = 5279) 34.56 ( $P = 0.424$ )
<i>Model 2. Countries with higher gender equality</i>	
Lives with children	(N = 16,686) -103.83 ( $P < 0.001$ )



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