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ORIGINAL PAPER

Understanding Alcohol and Tobacco Consumption in Asexual Samples: A Mixed-Methods Approach

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Abstract

Existing research suggests significant differences in alcohol and tobacco consumption trends according to one's sexual orientation. However, asexual people have not yet been included in these comparisons. In this mixed-methods, two-part study, we sought to compare group differences in alcohol and tobacco consumption among sexual orientations, focusing on asexual people, sexual people, and those in the "gray" area between asexual and sexual (i.e., "gray-asexual"). Data for Study 1 came from four British studies: National Surveys of Sexual Attitude and Lifestyles I, II, and III in 1990, 2000, and 2010 (NATSAL I, II, III) and Towards Better Sexual Health (TBSH) in 2000. Sample sizes for each study by gender are: NATSAL I—M: 1923 F: 3511; NATSAL II—M: 4604 F: 6031; NATSAL III—M: 6122 F: 7966; TBSH—M: 347 F: 552. Notably, asexual and gray-asexual respondents were found to consume significantly less alcohol and were more likely to abstain from drinking alcohol altogether, compared to allosexual respondents. Differences in tobacco consumption were only statistically significant for asexual respondents in two of three studies that included tobacco consumption. Each of the four studies also found that asexual and gray-asexual respondents were more likely to be non-drinkers (40.0–77.8%, asexual and 28.1–50.1% gray-asexual, non-drinkers, respectively) than allosexual respondents (10.2–27.2%, non-drinkers). Interviews conducted in Study 2 identified somatic, social, and psychological experiences and motivations that may shed light on the reasons for lower drinking frequencies among asexual individuals. Variability in alcohol consumption levels among asexual, lesbian, gay, and bisexual respondents, and the general population raises new questions about the motivations for why people consume alcohol.

Keywords Asexuality · Alcohol · Tobacco · LGBT · Gray-asexuality · Sexual attraction

Introduction

The past decade has seen a surge in empirical research on the topic of human asexuality. While the term "asexuality" has been used in the literature for decades, its use has traditionally referred to non-sexual behavior or has been linked with single-celled organisms. Definitions of human asexuality have evolved in parallel with this body of research and range from: people who have never experienced sexual attraction (Aicken, Mercer, & Cassell, 2013; Asexual Visibility & Education Network [AVEN], 2012; Bogaert, 2004, 2013) to a focus on the self-identification as asexual, related to a lack of interest in sexual activity or desire (Decker, 2014). Despite early speculations that asexuality may represent an extreme form of a sexual desire disorder, researchers have found no evidence to support this (Brotto, Yule, & Gorzalka, 2015) and have, instead, concluded that asexuality is best classified as a unique sexual orientation (Brotto & Yule, 2017; Yule, Brotto, & Gorzalka, 2015).

Alcohol, Smoking Behaviors, and Discrimination

Members of the LGBT community have been shown to have higher levels of both alcohol consumption and prevalence of smoking compared to the general population of all individuals and sexual orientations (Cochran & Mays, 2000;

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Greenwood & Gruskin, 2007; Stall, Greenwood, Acree, Paul, & Coates, 1999) while the population in the UK, from 1990 to 2010, has shown a decline in current smoking over time, including for the lesbian, gay, and bisexual communities (Office for National Statistics, 2018). In particular, a study in Canada has shown that LGBT people have disproportionate rates of heavy drinking, anxiety, mood, and co-occurring disorders, especially for those who self-identify as bisexual compared to non-LGBT people (Pakula, Shoveller, Ratner, & Carpiano, 2016). Greenwood and Gruskin (2007) suggested that increased alcohol and tobacco consumption among the LGBT community may be related, in part, to ongoing and persistent discrimination.

In early inquiries into the nature of asexuality, it was theorized that asexual people were "not likely to bring public attention or scrutiny, either positive or negative, [given their relative lack of sexual activity] unlike other sexual minorities (e.g., gay people). [Therefore] asexual individuals would not have had to face public scrutiny from the press, religious institutions, or the legal system" (Bogaert, 2004, p. 284). However, research suggests asexual people face negative bias and prejudice. In particular, evidence of prejudice or intergroup bias toward asexual people was revealed with heterosexual persons viewing asexual people less favorably than heterosexual people and other sexual minorities, particularly related to the value of an asexual contact partner, and measures of how "human" asexual people are perceived to be (i.e., "animalistic," "machine-like") (MacInnis & Hodson, 2012). In addition, heterosexual people reported "behavioral intentions toward discriminating against asexuals" (Hoffarth, Drolet, Hodson, & Hafer, 2016, p. 89), related to discomfort renting and hiring, and contact avoidance, although MacInnis and Hodson's findings also suggest that this discrimination may come from outgroup familiarity, or asexuality being an unknown, based on comparison to their control group (Hinderliter, 2013). On the receiving end, the Ace Community Survey reported that the most prevalent negative experiences their asexual spectrum respondents faced were "attempts or suggestions for how to fix or cure you" (45%), "online harassment" (29%), and "being excluded from social activities" (20%) (Bauer et al., 2018, p. 41). In addition, Parent and Ferriter (2018) found that, among university students, asexual people were 4.4 times more likely to report post-traumatic stress disorder and 2.5 times more likely to have experienced sexual trauma in the last 12 months compare to non-asexual people.

Hoffarth et al. (2016) note that anti-asexual bias reflects a particular kind of sexual prejudice, referring to biases held toward non-heterosexual orientations (MacInnis & Hodson, 2012). Marginalized identities which are subject to sexual prejudice likely share common experiences, but the nature of these experiences may manifest with significant differences; anti-asexual bias may stem from different beliefs compared to other forms of sexual prejudice. For example, anti-gay bias has been linked with strong, negative moral feelings toward homosexuality, and beliefs that homosexuality threatens certain societal, religious, or political values (Herek, 1988; Hoffarth et al., 2016; MacInnis & Hodson, 2012; Whitley, 2009). Asexuality may not be associated with "morally repugnant" attractions (Hoffarth et al., 2016, p. 90), which may lead people to think that asexual people are not the target of prejudice. However, anti-asexual bias may stem from beliefs that non-heterosexual orientations are "deficient," and are therefore "devalued and invalidated" (Herek, 2010; Hoffarth et al., 2016, p. 90).

When given the choices of "gay," "straight," and "bisexual" 45% of asexual respondents chose bisexual, with 49% of gray-asexual respondents choosing "bisexual" in the Ace Community Survey (Bauer et al., 2018). Given the higher levels of alcohol consumption among the LGBT community and the self-reporting associations with bisexuality within the asexual community, it is surprising that 42.3% of asexual respondents in the Ace Community Survey reported not having consumed alcohol in the past 12 months, and 23.8% reported having consumed alcohol only "once or twice" in the past 12 months (Bauer et al., 2018). Alcohol use in the Ace Community Survey (57.7%) was reportedly lower than the figure reported by the Substance Abuse and Mental Health Services Administration for individuals aged 12 and over (64.8%). While this finding may seem contrary to Greenwood and Gruskin's (2007) discrimination-based hypothesis prima facie, it may be that different experiences of discrimination between asexual and LGBT individuals warrant different coping styles.

Additionally, the Ace Community Survey respondents were predominantly American (60.4%), and American drinking cultures are not universal. Across different drinking cultures, there is significant variation in the dominant alcohol that is consumed (e.g., wine, beer, or spirits), national histories of temperance, drinking frequency, and the extent of intoxication that is normalized (Bloomfield, Stockwell, Gmel, & Rehn, 2003; Room & Mäkelä, 2000). The U.S. is widely considered to demonstrate a "dry" drinking culture, whereby alcohol is not built into everyday activities, access to alcohol may be restricted by state or county, abstinence rates are higher than those of countries with "wet" drinking cultures, and drinking occurs typically for the purpose of intoxication (Room, 1988). According to the Global Status Report on Alcohol and Health 2018 (2018) report, the average American aged 15 and over drinks an average of 13.7 L

of pure alcohol (i.e., ethanol) each year, with an average daily intake of 29.6 g. The Global Status Report on Alcohol and Health 2018 (2018) and Ritchie and Roser (2018) found that 31.1% of Americans aged 15 and over abstain from drinking alcohol.[1] Compared to the UK, which demonstrates elements of both wet and dry drinking cultures (Epidemiology of Alcohol Consumption, 2014, para 3), the average citizen consumes 15.6 L of alcohol each year, with an average daily consumption 33.7 g (Global Status Report on Alcohol and Health 2018, 2018). Alcohol abstinence rates in the UK are comparatively lower at 16.1% (Ritchie & Roser, 2018). These trends, however, are not representative of LGBT Americans, particularly with respect to disordered drinking behaviors among women. McCabe, Hughes, Bostwick, West, and Boyd (2009) found lesbian and bisexual women were three times more likely to have lifetime alcohol use disorders than heterosexual women. Drabble, Midanik, and Trocki (2005) found that lesbians are seven times more likely, and bisexual women 6.5 times more likely to meet the criteria for alcohol dependence as per the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; American Psychiatric Association, 2000). These trends were not identified among gay and bisexual men. These trends are, however, less pronounced outside of the U.S. (Bloomfield, Wicki, Wilsnack, Hughes, & Gmel, 2011).

It is unclear whether asexual people living in countries with more permissive attitudes toward alcohol consumption would demonstrate similar trends in alcohol abstinence. It is also worth mentioning that the Ace Community Survey utilized convenience sampling and has not been peer-reviewed, which warrants replication with other samples.

Gray-Asexuality: The "Gray Area" on the Sexuality Spectrum

The dominant definition of asexuality refers to those who "[do] not experience sexual attraction" (AVEN, 2012) or those who have "never been sexually attracted to anyone at all" (Aicken et al., 2013; Bogaert, 2004, 2013). However, asexuality is a heterogeneous group, with some individuals falling in the gray areas between allosexual and asexual. There has been very little empirical research done on this group, and certainly nothing published on the alcohol and tobacco consumption patterns of those identifying as gray-asexual.

In the asexual community, gray-asexuality is often used as a way to classify an amorphous area in between asexual and sexual that can be very difficult to describe ("The Gray Area," n.d.). These individuals include people who do not normally experience sexual attraction, experience little or infrequent sexual attraction, experience situationally specific sexual attractions, or whose experience of sexual attraction has changed over time (Hinderliter, 2009; Kinnish, Strassberg, & Turner, 2005). This definition is admittedly broad, which complicates efforts to taxonomize and operationalize what gray-asexuality means in a research context. However, the working definition of gray-asexuality is purposefully flexible and inclusive. Breadth is built into the definition of gray-asexuality to (1) create space for individuals who do not fit neatly within definitions of "asexual" and "sexual" and (2) to represent the vast array of gray-asexual identities that asexual spectrum individuals experience (personal communications, August 2019).

Hinderliter (2009) explained that it may be difficult for an asexual person to know whether they have experienced sexual attraction given that they may have no personal point of reference from which they can draw. Asexual people who experience romantic attractions are generally termed "romantic asexuals" and this subset of asexual people include a variety of romantic orientations (e.g., heteroromantic, panromantic), reflecting the gender of the person to whom the asexual person experiences romantic attraction toward. AVEN's 2014 census found that 22% of asexual respondents identified as heteroromantic, 5.1% homoromantic, and 32.2% bi- or panromantic (Ginoza et al. 2014). In contrast, those who do not experience romantic attraction self-identify as "aromantic asexuals." The Ace Community Survey Team's 2017 survey found that 46.46% of asexual spectrum respondents were also on the aromantic spectrum (Miller & Ace Community Survey Team, 2019, in press). The observation that sexual attraction is distinct from romantic attraction among asexual people is in line with Diamond's (2003) theory of romantic attraction which posits that the genderedness of attraction stems purely from sexual orientation. The notion of a romantic orientation, however, conflicts with Diamond's (2003) theory that gendered romantic orientation has "no intrinsic basis" (p. 175).

Gray-asexuals, as well as asexuals, represent a range of perspectives regarding personal feelings about participating in sexual activity, and about sex more generally. With regard to personal feelings of sexual participation, the Ace Community Survey Team's 2018 survey found that 51.3% of asexual respondents reported being sex-averse or sex-repulsed compared to only 16.1% of gray-asexual respondents. 23.5% of sexual respondents felt "indifferent" toward personal participation in sexual activity compared to 35.1% for gray-asexual respondents. Only 2.8% of asexual respondents indicated having "favorable" feelings toward their personal participation in sexual activity, compared to 12.0% for gray-asexual respondents. 15.7% of asexual respondents indicated they were "uncertain" of their stance on personal sexual participation, compared to 26.0% for gray-asexuals, with 6.6% asexual

[1] Alcohol abstinence was operationalized based on respondents indicating they had not consumed alcohol within 12 months of data collection.

respondents and 10.7% gray-asexual respondents choosing "other" (Bauer et al., in press).

Gray-asexual people may experience sexual attraction, sexual desire, and/or sex-drive in various combinations and/or only under specific circumstances ("Gray-A/Grey-A- AVENwiki," n.d.; "The Gray Area," n.d.). For the purposes of this study, based on the parameters of NATSAL I, II, III, and TBSH, we examined a portion of people who may identify as gray-asexual based on self-report of some degree of sexual attraction to the opposite sex, same sex, or both, but who explicitly prefer no sexual activity or are sexually satisfied without sexual activity. This definition does not represent the entirety of the gray-asexual community and could include people who identify as asexual or sexual, but may provide evidence of a group of people identifying in the realms of asexual and gray-asexual experiences, or somewhere in the gray area between asexual and sexual experiences.

Study 1: National Survey of Sexual Attitudes and Lifestyles: (NATSAL) I, II, and III, Toward Better Sexual Health

Research Question

Study 1 aimed to test the association between asexuality and alcohol and tobacco consumption. Using archival data, we tested the relationship between asexuality and alcohol and tobacco consumption, but also whether the relationship corroborates trends found among LGBT populations, and if it is repeated with gray-asexual respondents.

Method

Participants

The present set of analyses were based on data from the NATSAL databases from 1990 (NATSAL I), 2000 (NATSAL II), 2010 (NATSAL III), and a follow-up survey based on these censuses, Towards Better Sexual Health: A Study of Sexual Attitudes and Lifestyles of Young People in Northern Ireland (TBSH) in 2000. All data were accessed from the UK Data Archive as a retrospective study. For this type of study, formal consent was not required.

The NATSAL I, II, and III consist of nationally representative stratified probability sample surveys of households in Britain (England, Scotland, and Wales) (Erens et al., 2013; Johnson, Wadsworth, Wellings, & Field, 1994). The TBSH study used a mixed-methods approach based on an opportunistic sample, a quota sampling technique, and it was undertaken because Northern Ireland was not included in either the NATSAL I or II. Intentionally, the four surveys have many variables in common, allowing for a direct comparison between them. Participants exhibiting trouble with the survey either due to literacy or language problems were omitted from results in the NATSAL I, II, and III, while those questions were not included in TBSH. Participants whose first sexual experience was rape were omitted from the NATSAL I, II, and TBSH, while those whose first experience was forced were omitted from the NATSAL III, to differentiate asexuality from sexual aversion due to sexual trauma (Parent & Ferriter, 2018).

The NATSAL I surveyed 13,765 persons, face to face, from the ages of 16–59 with a response rate of 66.8%; of those respondents, 4434 were asked a long form survey that included the question about sexual attraction. Additional methodology is available in Johnson et al. (1994). The NATSAL II surveyed 12,110 persons, face to face, between the ages of 16–44 with a response rate of 65.4%, (Aicken et al., 2013), with additional methodology available in *National Survey of Sexual Attitudes and Lifestyles II: Technical Report* (Erens et al., 2001). The NATSAL III surveyed 15,162 persons, face to face, between the ages of 16–74 with a response rate of 57.7%, with additional methodology available in, *The third National Survey of Sexual Attitudes and Lifestyles (Natsal-3): Technical report* (Erens et al., 2013). The TBSH study was conducted by the University of Ulster and the Family Planning Association (Northern Ireland). It surveyed 1268 people, from the ages of 14 to 25 years with a 51.6% response rate, using self-administered questionnaires, with an additional 71 focus groups and 15 in-person interviews, with additional methodology available in *Sexual behavior of young people in Northern Ireland: First sexual experience* (Simpson, 2004).

Measures

Sexual Attraction Sexual attractions were determined by the variable sexual attraction, where respondents were asked to answer the following question: "I have felt sexually attracted…" and provided response options: "only to females, never to males"; "more often to females, and at least once to a male"; "about equally often to females and to males"; "more often to males, and at least once to a female"; "only ever to males, never to females"; and "I have never felt sexually attracted to anyone at all" (Erens et al., 2001). Other than asexual, which is described below, these responses are described in this article with the following labels: Only opposite-sex attraction, mostly opposite-sex attraction, about equal attraction, mostly same-sex attraction, and only same-sex attraction. Distributions of sexual attraction are shown in Table 1.

Asexuality Asexual participants were determined by the variable sexual attraction from NATSAL I, II, and III, and

Table 1 Distributions of asexual and gray-asexual across four studies

Sexual attraction	NATSAL I		NATSAL II		TBSH		NATSAL III	
	%	*n*	%	*n*	%	*n*	%	*n*
Asexual	1.35	60	0.47	52	1.62	15	0.73	108
Gray-asexual	4.42	196	2.85	313	8.53	79	4.66	693
Allosexual	94.23	4178	96.68	10,635	89.85	832	94.62	14,084

NATSAL National Survey of Sexual Attitudes and Lifestyles, *TBSH* Towards Better Sexual Health

Table 2 Alcohol consumption distribution across four studies

Alcohol consumption	NATSAL I		NATSAL II		TBSH		NATSAL III		
	%	*n*	%	*n*	%	*n*		%	*n*
None (0)	11.40	504	16.35	1798	15.82	155	None (0)	28.60	4240
Low (1)	74.94	3313	74.65	8212	70	686	< Recommended (1)	61.40	9103
Moderate (2)	11.88	525	6.96	766	11.53	113	> Recommended (2)	10	1483
High (3)	1.79	79	1.94	213	2.65	26		–	–
Mean[a]		1.04		0.94					0.81
SD		0.55		0.56					0.59

[a]From a range of 0–3 for NATSAL I, II, and TBSH. From a range of 0–2 for NATSAL III

NATSAL National Survey of Sexual Attitudes and Lifestyles, *TBSH* Towards Better Sexual Health

TBSH who responded: "I have never felt sexually attracted to anyone at all." There were no questions regarding romantic attraction included in the surveys. Percentages of asexual people by survey are shown in Table 1.

Gray-Asexuality In the absence of an option for respondents to self-identify as gray-asexual, the incremental category between asexual people was operationalized by a combination of two variable criteria from the NATSAL I and II, and TBSH, whereby gray-asexuality refers to "sexual people with no desire for sex." The first criterion was sexual attraction, to any combination of males or females, as described above. The second criterion was those who choose "prefer to have no sexual activity," from the question: "What is your ideal sexual lifestyle now?", where examples of other options include: "No regular partners but casual partners when I feel like it," "a few regular partners" or "Married, with no other sex partners." This question was removed in NATSAL III. Gray-asexual participants in NATSAL III were operationalized by those reporting sexual attraction, to any combination of males or females, as described above, who had not participated in sexual activity within the last year, and who responded that they "agree" or "strongly agree" to the question: "I feel satisfied with my sex life." Percentages of gray-asexual participants from the NATSAL I, II, III, and TBSH can be found in Table 1.

For the TBSH study, two versions of ideal lifestyle were asked: one's life now and one predicting into the future. This study used current ideal lifestyle, because of the extremely low percentage of "predicted" gray-asexual young people (0.43%). However, it is important to use caution when attributing all of the current gray-asexual young people as gray-asexual in general, due to their age.

Alcohol Consumption Alcohol consumption was derived from two questions: (1) On average, how often do you drink alcohol? and (2) About how many drinks do you have when you have any? Alcohol consumption included the following categories: 0 = those who do not drink (non-drinkers); 1 = low-consumption drinkers (women who consume 15 or less and men who consume 20 or fewer units of alcohol per week); 2 = moderate consumption drinkers (women who consume 16–34 and men who consume 21–49 units of alcohol per week); 3 = high consumption drinkers (women who consume 35 or more and men who consume 50 or more units of alcohol per week). NATSAL III reclassified alcohol consumption into: 0 = those who do not drink, 1 = those who drink less than recommended and 2 = those who drink more than recommended. The tipping point for more than recommended was greater than or equal to 20 units of alcohol on average per week for men or 15 or more units of alcohol for women on average per week. For clarity, a "unit" of alcohol (or a "standard drink") is 10 milliliters (8 g) of pure alcohol, as based on the concentration of ethanol in a given volume of an alcoholic beverage ("What is an alcohol unit?"). Units of alcohol were operationalized by multiplying how often someone drank, from the question "average frequency of alcohol consumption in the last 12 months" on a six-point scale from "not at all in the last 12 months" to "5 + days a week," by how much someone drank "average alcohol intake

Table 3 Tobacco consumption distribution across three studies

Tobacco consumption	NATSAL I		NATSAL II		NATSAL III	
	%	*n*	%	*n*	%	*n*
None (0)	42.21	1849	46.23	5085	50.69	7542
Low (1)	19.68	862	15.56	1712	21.69	3227
Moderate (2)	15.30	670	20.98	2308	18.21	2709
High (3)	22.81	999	17.15	1887	9.42	1401
Mean		1.19		1.09		0.86
SD		1.21		1.16		1.02

NATSAL National Survey of Sexual Attitudes and Lifestyles

when they do drink (excluding parties/special occasions)" on a 5-point scale from "0" to "> 6." Distributions of alcohol consumption are shown in Table 2.

For odds ratios, alcohol consumption was dichotomized into non-drinkers (1) and drinkers (0), where the odds are reported for the likelihood that respondents are non-drinkers.

Tobacco Consumption Tobacco consumption or smoking was derived from two questions: (1) Do you ever smoke cigarettes? and (2) About how many do you smoke a day? Smoking includes the following categories: 0 = those who have never smoked; 1 = ex-smokers; 2 = light smokers (people who smoke less than 15 cigarettes a day); 3 = heavy smokers (people who smoke 15 or more cigarettes a day). Distributions of tobacco consumption are shown in Table 3.

For odds ratios, tobacco consumption was dichotomized into never smokers (1) and smokers (0), where the odds are reported for the likelihood that respondents have never smoked.

Health Health was operationalized with one base question across all four studies: "For your age, would you describe your state of health as…" from 1 = "very good" to 5 = "very poor" or "very bad." In addition, NATSAL I, II, and III included "Do you have a permanent disability?" (1 = yes, 2 = no). TBSH had a similar question to the NATSAL II and III on limitations: "Is there anything about your body that restricts you in your work or leisure time activities?" and whether "Respondent's activities are limited by their disabilities?", respectively, both coded as (1 = yes, 2 = no). The NATSAL I and II included a question on whether the respondent "has had an illness for 3 months + in the last 5 years" (1 = yes, 2 = no). This question was removed in the NATSAL III and replaced with three sets of questions focusing on whether the respondent had a specific "serious physical health problem" listed on display cards, first for general health problems, and then one question for "male genital health condition" and an alternative question for "female genital health condition." Following Bogaert's (2013) health coding, each of these measures was coded where poor health or illnesses were higher scores, and then summed into one health measure. All three were coded as (1 = yes, 2 = no).

Importance of Religion Since religion can influence both sexual activity (Paul, Fitzjohn, Eberhart-Phillips, Herbison, & Dickson, 2000; Uecker, 2008) and alcohol consumption (Burkett, 1977; Michalak, Trocki, & Bond, 2007), importance of religion was included as a control: "Importance of religion and religious beliefs now" (1 = "very important" to 4 = "not important at all").

Statistical Analyses

This study used STATA 11.2 to perform statistical analyses. As mentioned previously, results reported are the original data results. The ethnic boost sample from the NATSAL II was not included.

Alcohol and smoking consumptions were compared using χ^2 tests as well as odds ratios using logistic regression, while controlling for certain demographic characteristics, such as age, gender, health, and importance of religion. An odds ratio equal to one was interpreted as equal to the baseline group, either sexual respondents for asexual and gray-asexual comparison or heterosexual respondents for the full spectrum of sexual orientations. An odds ratio > 1 indicated that the sample had greater odds of exhibiting the variable in question, while an odds ratio < 1 signaled that the subgroup had a lower odds of exhibiting the variable in question.

Results

Age

Asexual respondents were not significantly different in age from allosexual respondents in any of the four studies, while gray-asexual respondents had mixed results for age in comparison with sexual people, as shown in Table 4. In addition, in the NATSAL III, with its updated questions and therefore updated gray-asexual operationalization, the gray-asexual respondents were significantly older than the asexual and allosexual respondents.

Table 4 Gender and age comparisons between asexual, gray-asexual, and allosexual people across four studies

Variable	Asexual		Gray-asexual		Allosexual		Asexual to allosexual	Gray to allosexual	Asexual to gray
	M	SD	*M*	SD	*M*	SD	Age: *t* tests, % female: χ^2		
NATSAL I									
% Female	73.33	–	72.96	–	55.62	–	7.52**	22.88**	0
% Male	26.67	–	27.04	–	44.38	–			
Age	38.33	14.77	38.53	14.76	36.16	11.41	−1.46	−2.80**	0.09
Age by gender	F: 40.70 M: 31.81	F: 14.97 M: 12.41	F: 39.24 M: 36.58	F: 14.44 M: 15.56	F: 36.31 M: 35.96	F: 11.53 M: 11.25			
NATSAL II									
% Female	67.31	–	73.48	–	56.71	–	2.37	34.94**	0.85
% Male	32.69	–	26.52	–	43.29	–			
Age	30.13	10.01	29.25	9.47	31.03	7.88	0.82	3.93**	−0.62
Age by gender	F: 30.43 M: 29.53	F: 10.02 M: 10.28	F: 29.29 M: 29.12	F: 9.50 M: 9.46	F: 31.27 M: 30.73	F: 7.75 M: 8.04			
TBSH									
% Female	80	–	74.68	–	57.81	–	2.98	8.51**	0.19
% Male	20	–	25.32	–	47.19				
Age	16.8	2.54	17.24	2.37	17.67	4.76	0.7	0.79	0.65
Age by gender	F: 15.92 M: 20.33	F: 0.90 M: 4.16	F: 17.08 M: 17.70	F: 2.07 M: 3.10	F:17.72 M: 17.60	F: 4.52 M: 5.10			
NATSAL III									
% Female	67.59	–	64.36	–	57.96	–	4.10*	11.12**	0.43
% Male	32.41	–	35.64	–	42.04	–			
Age	35.23	18.57	51.1	19.87	37.77	16.39	1.6	−20.68**	7.79**
Age by gender	F: 34.81 M: 36.11	F: 17.74 M: 20.43	F: 53.71 M: 46.38	F: 18.38 M: 21.57	F: 37.56 M: 38.05	F: 16.02 M: 16.88			

NATSAL National Survey of Sexual Attitudes and Lifestyles, *TBSH* Towards Better Sexual Health

Significance *$p = .05$; ** $p < .01$

Sex

In two of the four studies (NATSAL I and III), asexual respondents (73.33% and 67.59%, respectively) had significantly higher percentages of female respondents compared to allosexual respondents (55.62% and 57.96%, respectively); $\chi^2 = 7.52$, $p < .01$ in NATSAL I and $\chi^2 = 4.10$, $p < .05$ in NATSAL III (Table 4). Gray-asexual respondents had significantly higher percentages of female respondents in all studies; χ^2 ranging from 8.51 to 34.94, all $p < .01$ (Table 4).

Alcohol Consumption

On average, asexual and gray-asexual respondents reported drinking less than allosexual respondents, across NATSAL I, II, and III (Table 5). Younger asexual and gray-asexual respondents from the TBSH study also drank significantly less than allosexual younger people, those 14 to 25 years of age. TBSH operationalized gray-asexual respondents to reflect those who preferred no sexual activity now, nor in the future. The breakdown of each sexual orientation option indicated considerable variability within the gay, lesbian, and bisexual communities and contrasting to the asexual community.

While 40.0–77.8% of asexual respondents did not drink, only 10.2–27.2% of allosexual respondents did not drink, across all four studies. The findings for alcohol consumption among gray-asexual respondents were between 28.1 and 50.1%, an intermediate level between the asexual and allosexual groups, across all four studies.

A series of odds ratio tests showed that asexual respondents were significantly less likely to drink alcohol compared to allosexual people, where the variable was dichotomized into drinkers and non-drinkers, controlling for age, sex, health, and importance of religion; odds ratio between 0.05 and 0.19, $p < .01$ for all four surveys, described as asexual respondents being 95% to 81% less likely to drink alcohol compared to allosexual people with those controls (Table 5). Gray-asexual respondents were also significantly less likely to drink alcohol compared to allosexual people, where the

Table 5 Distribution of alcohol consumption across four studies

Alcohol consumption	NATSAL I		NATSAL II		TBSH		NATSAL III		
	%	*n*	%	*n*	%	*n*		%	*n*
Asexual									
None (0)	40.00	24	71.15	37	71.43	10	None (0)	77.78	84
Low (1)	55.00	33	23.08	12	28.57	4	< Rec (1)	17.59	19
Moderate (2)	5.00	3	3.85	2	0	0	> Rec (2)	4.63	5
High (3)	0	0	1.92	1	0	0			
Mean	0.65		0.37		0.29		Mean	0.27	
SD	0.58		0.66		0.47		SD	0.54	
Gray-asexual									
None (0)	28.06	55	41.85	131	35.44	28	None (0)	50.14	346
Low (1)	61.22	120	55.27	173	60.76	48	< Rec (1)	44.06	304
Moderate (2)	9.69	19	1.92	6	3.8	3	> Rec (2)	5.08	40
High (3)	1.02	2	0.96	3	0	0			
Mean	0.84		0.62		0.68	–	Mean	0.56	
SD	0.63		0.58		0.54	–	SD	0.6	
Allosexual									
None (0)	10.20	425	15.33	1630	12.71	104	None (0)	27.16	3810
Low (1)	75.87	3160	75.48	8027	71.27	583	< Rec (1)	61.4	8780
Moderate (2)	12.08	503	7.13	758	13.08	107	> Rec (2)	10	1438
High (3)	1.85	77	1.97	209	2.93	24			
Mean	1.06		0.97		1.06		Mean	0.83	
SD	0.54		0.61		0.61		SD	0.59	
Total observations		4421		10,989		911			14,826
χ^2	109.71***		276.71***		66.50***		300.46***		
Odds ratio of non-drinkers									
Allosexual	1		1		1		1		
Gray-asexual	0.37** CI (0.27–0.53)		0.35** CI (0.28–0.45)		0.29** CI (0.17–0.49)		0.41** CI (0.35–0.48)		
Asexual	0.19** CI (0.11–0.33)		0.09** CI (0.05–0.18)		0.05** CI (0.02–0.18)		0.13** CI (0.09–0.22)		

Compared to allosexual people, and controlling for age, sex, health, and importance of religion

NATSAL National Survey of Sexual Attitudes and Lifestyles, *TBSH* Towards Better Sexual Health

Significance: ** $p < .01$; *** $p < .001$

Table 6 Odds ratio drinkers and non-drinkers across four studies

Sexual attraction	NATSAL I	NATSAL II	TBSH	NATSAL III
Only opposite-sex attraction	1	1	1	1
Mostly opposite-sex attraction	1.58	1.77**	0.88	1.60**
About equal attraction	0.57	0.97	0.48	0.87
Mostly same-sex attraction	1.68	1.33	1.54	1.69*
Only same sex	–	0.69	1.80	1.55
Gray-asexual	0.37**	0.35**	0.30**	0.42**
Asexual	0.19**	0.10**	0.05**	0.14**
Total observations	4421	11,000	911	14,826

Compared to allosexual people, and controlling for age, sex, health, and importance of religion

NATSAL National Survey of Sexual Attitudes and Lifestyles, *TBSH* Towards Better Sexual Health

Significance * $p < .05$; ** $p < .01$

variable was dichotomized into drinkers and non-drinkers, controlling for age, sex, health, and importance of religion; odds ratio between 0.29 and 0.41, $p < .01$ in all four studies, described as gray-asexual respondents were 71% to 59% less likely to drink alcohol compared to sexual respondents with those controls (Table 5).

Compared to heterosexual respondents, asexual respondents were significantly less likely to drink, in all studies, where the variable was dichotomized into drinkers and non-drinkers, controlling for age, sex, health, and importance of religion; odds ratio between 0.05 and 0.19, $p < .01$ for all four studies (Table 6). Compared to heterosexual respondents, gray-asexual respondents were also significantly less likely to drink in all studies, where the variable was dichotomized into drinkers and non-drinkers, controlling for age, sex, health, and importance of religion; odds ratio between 0.30 and 0.42, $p < .01$ in all studies (Table 6).

There were not enough asexual or gray-asexual respondents who fell into the high drinking category to do statistical analysis for the NATSAL I, II, or TBSH (one total respondent in the asexual category and five total respondents in the gray-asexual category across all three studies combined). For the NATSAL III, which had an updated scale of none, those who drank less than recommended, and those who drank more than recommended, dichotomized into those who drank more than recommended vs those who either did not drink or drank less than recommended, asexual respondents were less likely to drink more than recommended compared to heterosexual respondents, non-significantly—likely due to the small sample size (five asexual respondents reported drinking more than recommended), controlling for age, sex, health, and importance of religion; odds ratio 0.54, $p < .19$. Gray-asexual respondents were less likely to drink more than recommended compared to heterosexual respondents controlling for age, sex, health, and importance of religion; odds ratio 0.58, $p < .01$.

In addition to asexual and gray-asexual respondents, other orientations were considered, where two sexual attraction groups were significantly more likely to drink (Table 6). First, a series of odds ratio tests showed that respondents who were more often attracted to the opposite sex, but at least once to the same sex were significantly more likely to drink alcohol compared to heterosexual respondents in two of the four studies (NATSAL II and III) where the variable was dichotomized into drinkers and non-drinkers, controlling for age, sex, health, and importance of religion; odds ratio 1.77, $p < .01$ in NATSAL II and odds ratio 1.60, $p < .01$ NATSAL III (Table 6). Second, a series of odds ratio tests showed that respondents who were more often attracted to the same sex, but at least once to the opposite sex were significantly more likely to drink alcohol compared to heterosexual respondents in the NATSAL III, controlling for age, sex, health, and importance of religion; odds ratio 1.69, $p < .05$ (Table 6). Two sexual attraction response groups were not significantly more or less likely to drink in comparison with heterosexual respondents: those who were only attracted to the same sex and those with about equal attraction to each sex. Percentile distributions of alcohol consumption by sexual attraction for the most recent data, NATSAL III, can be found in Table 6. All lesbian, gay, and bisexual attractions had significantly more respondents who drank more than recommended compared to heterosexual respondents; odds ratio for only same sex attraction 1.82, $p = .03$ (CI 1.06–3.13); more often attracted to the same sex, but at least once to the opposite-sex odds ratio 1.88, $p < 0.1$ (CI 1.20–2.94); equal attraction odds ratio 1.75 $p = .02$ (CI 1.12–2.73); more often attracted to the opposite sex, but at least once to the same sex odds ratio 1.85, $p < .01$ (CI − 1.56 to 2.19).

Tobacco Consumption

Asexual respondents were significantly less likely to consume tobacco compared to allosexual respondents in two of the three studies reporting tobacco consumption (NATSAL II and III), where the variable was dichotomized into never smokers and smokers, controlling for age, sex, health, and importance of religion; odds ratio 0.28 $p < .01$ in NATSAL II and 0.33, $p < .01$ in NATSAL III. In other words, asexual respondents were 72% and 67% less likely, respectively, to have smoked compared to allosexual respondents (Table 7). Odds ratios were only significant for gray-asexual participants in NATSAL II, where the variable was dichotomized into never smokers and smokers, with controls for age, sex, health, and importance of religion; odds ratio 0.74, $p < .01$, described as gray-asexual respondents were 26% less likely to have smoked compared to allosexual respondents with those controls. χ^2 tests showed differences between the smoking distribution, but only for the NATSAL II and III studies; $\chi^2 = 35.05$, $p > .01$ NATSAL II and $\chi^2 = 66.57$, $p > .01$ NATSAL III (Table 7).

Study 2: Identifying Motivations Underlying Reduced Drinking Frequency in Asexual Samples

Research Question

The findings from Study 1 raised several questions about the experiences and motivations underlying the relationship between the lower alcohol and tobacco consumption among asexual and gray-asexual respondents compared to the allosexual groups. Study 2 was therefore designed to explore participants' narratives and lived experiences to identify variables which may account for their (reduced) drinking behaviors. Given that the significantly different results for

Table 7 Distribution of cigarette smoking across three studies

Tobacco consumption	NATSAL I		NATSAL II		NATSAL III	
	%	*n*	%	*n*	%	*n*
Asexual						
Never smoked (0)	49.15	29	76.92	40	76.85	83
Ex-smoker (1)	8.47	5	1.92	1	8.33	9
Light smoker (2)	16.95	10	13.46	7	9.26	10
Heavy smoker (3)	25.42	15	7.69	4	5.56	6
Mean	1.19		0.52		0.44	
SD	1.29		1		0.88	
Gray-asexual						
Never smoked (0)	46.60	89	54.31	170	49.13	340
Ex-smoker (1)	15.18	29	11.18	35	26.3	182
Light smoker (2)	15.71	30	15.65	49	11.42	79
Heavy smoker (3)	22.51	43	18.85	59	13.15	91
Mean	1.14		0.99		0.89	
SD	1.23		1.21		1.06	
Allosexual						
Never smoked (0)	41.91	1731	45.84	4875	50.56	7119
Ex-smoker (1)	20.05	828	15.76	1676	21.60	3036
Light smoker (2)	15.25	630	21.18	2252	18.59	2620
Heavy smoker (3)	22.78	941	17.15	1824	9.26	1304
Mean	1.19		1.10		0.87	
SD	1.20		1.18		1.02	
Total observations		4380		10,992		14,879
χ^2	7.96		35.05**		66.57**	
Odds ratio of non-smokers						
Allosexual	1		1		1	
Gray-asexual	0.81 CI (0.60–1.10)		0.74* CI (0. 59–0.94)		0.95 CI (0.80–1.12)	
Asexual	0.72 CI (0.42–1.22)		0.28** CI (0.15–0.54)		0.33** CI (0.21–0.53)	

Compared to allosexual people, and controlling for age, sex, health, and importance of religion

NATSAL National Survey of Sexual Attitudes and Lifestyles

Significance: * $p < .05$; ** $p < .01$

alcohol consumption were more consistent than what was found for tobacco use, Study 2 was designed to focus only on alcohol use.

Method

Participants

Participant data were collected in two stages. The first stage of collection took place in New York City, where participants gathered for an open-ended, focus group style discussion about asexuality and attitudes toward alcohol. This sample is referred to as "NYC sample," and research was conducted by the first author. A second sample was recruited from Vancouver, where different participants were recruited for more in-depth, one-on-one interviews based on conversations from the New York City focus groups. This sample is referred to as the "VAN sample," and research was conducted by the second author.

The NYC sample consisted of 40 participants, whose ages ranged from approximately 18–35 years, while the VAN sample consisted of 12 participants, whose ages ranged from 18 to 48 years. Some participants who were below the legal drinking ages in the U.S. and British Columbia were retained for analysis, as some underage teenagers consume alcohol. The American Center for Disease Control (CDC) suggests that 11% of all alcohol in the U.S. is consumed by youth aged 12–20 (Fact Sheets—Underage Drinking, 2018); when Canadian youth between the ages of 12–17 were surveyed about their drinking habits, 25.6–44.0% reported having

consumed alcohol within the previous 12 months (Heavy Drinking, 2018, 2019; Summary of Results for the Canadian Student Tobacco, Alcohol and Drugs Survey, 2016–2017, 2018).

Participants reported diverse gender identifications in both samples, including a balance of women, men, and gender non-conforming. For both samples, participants were recruited via opportunistic sampling methods through social media platforms (Facebook, Tumblr), and through the Asexual Visibility & Education Network (AVEN) website. Among the 12 from the VAN sample, 10 identified as asexual and two identified as gray-asexual. The VAN sample was comprised of five participants who abstained from drinking alcohol entirely and seven participants who were "low-consumption social drinkers." "Low-consumption" drinking was operationalized here as it was defined in Study 1. For the purpose of this study, "social drinking" reflects said low-consumption drinking tendencies that take place predominantly in social settings with friends or family, although on rare occasions participants may consume a single drink at home alone. Among alcohol abstinent participants, one participant was below the legal drinking age in British Columbia at the time of data collection (see Appendix).

Procedure

Focus Groups The NYC sample, facilitated by the first author, met for an informal meet-up where participants shared their thoughts related to alcohol, as well as their alcohol-related drinking habits and behaviors. Participants were presented with open-ended questions to gauge general habits, trends, and experiences they may have had in relation to alcohol, as well as the ability to determine if they were consciously aware of any thoughts, beliefs, or attitudes that influenced their drinking behaviors. Responses were noted and used as the basis for the interviews that would take place in the next phase of data collection.

Interviews Prior to the commencement of these interviews, the second author screened participants for familial and personal histories of alcoholism, medications that limited drinking behavior, physical and mental health conditions that limited or restricted alcohol consumption, and other social or religious customs that would limit drinking behaviors. Two participants did not qualify for interviews—the first on the basis of liver problems unrelated to alcohol and the second due to religious prohibition of alcohol. These two participants were also the only participants who identified explicitly as gray-asexual. The remaining sample self-defined as asexual. For the remaining eligible participants ($n = 10$), interviews were conducted via online audio–video chat platforms (i.e., Skype Messenger, Google Hangouts) or in-person. Interviews were semi-structured to assess whether themes generated in the focus groups were corroborated among the VAN sample, and also to allow for new data to emerge, if applicable. Interview questions assessed participants' attitudes toward alcohol, attitudes toward sex, past and current alcohol-related behaviors, and past and current sex-related behaviors. The interviewer also asked about frequency of alcohol consumption, situational, and social influences on alcohol consumption, attitudes and experiences related to alcohol, and whether alcohol consumption was related to concerns related to health and safety.

Qualitative Analysis

The purpose of the focus group was to generate preliminary data to help guide interview questions, rather than to generate data for analysis. Due to the informal nature of the focus group, participants' experiences were interpreted semantically without a specific analytical framework. These initial responses provided a loose structure for the subsequent semi-structured interviews.

The second author and two assistant coders (who were not co-authors) independently coded interviewee responses for common themes and experiences related to sexual behavior, attitudes toward sex, alcohol-related behaviors, and attitudes toward alcohol. Researchers utilized the six-phase thematic analysis approach outlined by Braun and Clarke (2006). Unlike thematic decomposition analysis or grounded theory, this approach is not necessarily bound to a particular theory. While this offers researchers a certain degree of flexibility, the burden then falls to researchers to make explicit their analytic choices. With consideration to the mixed-methods nature of the study, analysis was grounded in a critical realist epistemology.

During the first phase, the second author transcribed interviews before disseminating transcripts to the other coders. All coders familiarized themselves with transcript data independently. Coders analyzed data inductively, with codes qualifying at the semantic level rather than the latent. Coders also kept a reflexivity journal during this time. Since coders represented different sexual orientations, inclusive of asexuality, reflexivity journals allowed coders to engage with their own (a)sexuality and how their experience may influence their interpretation of raw data. During Phase 2, coders discussed their initial codes. To qualify as a potential theme, at least two of three coders had to have logged the relevant codes in their coding logs. In the event coders did not agree on common codes, discussion would ensue to clarify interpretations of transcript data. If an agreement could be reached, codes were retained for further analysis and adjusted as necessary. If an agreement could not be reached, the codes were discarded. Codes were organized collaboratively into themes during Phase 3 and reviewed during Phase 4, during which themes were consolidated, split, or discarded as

Table 8 Qualitative themes

Themes	Abstain subthemes	Social drinking subthemes
1. Somatic response	A1 Negative A1.1 Don't like the taste of alcohol ($n=3$) A1.2 Don't like sensations related to intoxication ($n=3$) A1.3 Don't like "hangover" effects ($n=2$)	S1.1 Positive S1.1.1 Alcohol in small amounts can help "take the edge off" ($n=2$) S1.2 Neutral S1.2.1 Low tolerance ($n=4$) S1.3 Negative S1.3.1 Don't like sensations related to intoxication ($n=3$)
2. Social and environmental factors	A2 Neutral A2.1 Not interested in alcoholic venues and events ($n=3$) A2.2 Financial factors ($n=2$) A2.3 Underage ($n=1$)	S2.1 Positive S2.1.1 Fun, social activity ($n=2$) S2.2 Neutral S2.2.1 Following actions of peer group ($n=3$) S2.3 Negative S2.3.1 Coping with discomfort (social) ($n=2$) S2.3.2 Coping with discomfort (sexual) ($n=1$)
3. Cognitive and psychological factors	A3.1 Neutral A3.1.1 Lack of interest in drinking alcohol ($n=4$) A3.2 Negative A3.2.1 Loss of control ($n=3$) A3.2.2 Experienced trauma while intoxicated in the past ($n=1$) A3.2.3 Experienced trauma perpetrated by intoxicated individual ($n=1$) A3.2.4 Knows others who have experienced trauma while intoxicated ($n=2$)	S3.1 Positive S3.1.1 Facilitates relaxation ($n=2$) S3.2 Neutral S3.2.1 Disinterested in drinking outside of social situations ($n=6$) S3.3 Negative S3.3.1 Loss of control ($n=3$) S3.3.2 Vigilance related to personal safety ($n=5$)

appropriate. Themes were "defined and refined" during Phase 5, and data were reported in the final phase.

Due to logistical constraints, all coding was done manually without software.

Results

Participant data were organized into three main themes: somatic responses to alcohol, social and environmental factors, and cognitive and psychological factors. Different subthemes emerged among non- and social drinking subgroups. Participants who abstained from drinking alcohol entirely reported neutral and negative attitudes related to and experiences related to alcohol. Social drinkers, on the other hand, reported attitudes toward and experiences related to alcohol that were positive, neutral, and negative (Table 8).

Somatic Responses

Both non- and social drinkers described somatic experiences related to alcohol consumption. Non-drinkers reported exclusively negative somatic experiences. Among non-drinkers, three participants reported they abstained from drinking, in part, due to their aversion to the taste of alcohol (subtheme A1.1).

> I just don't like the taste of alcohol. (P7)
> [Alcohol] tastes terrible. (P4)

They also reported they did not like the sensations they experienced when they had consumed alcohol in the past (subtheme A1.2).

> When I [used to drink], I didn't like it much. It [alcohol] felt kinda heavy in my stomach, if that makes any sense. Felt a bit…weighted down. (P1)

Two participants reported that the "hangover" effects associated with drinking contributed, in part, to their alcohol abstinence (subtheme A1.3). Participants noted these effects after drinking approximately 1.4 American standard drinks (equivalent to 16.9 fluid ounces of 4.5% ABV beer).

> Honestly, one glass of wine was enough to do me in. The mornings after drinking were always rough. (P7)

Social drinkers, on the other hand, reported positive, neutral, and negative somatic experiences. Two participants noted that alcohol in moderation could help facilitate relaxation after a stressful day (subtheme S1.1.1).

> A glass of wine [at home, alone,] at the end of a long day helps take the edge off, you know? (P5)
> […] Sometimes a drink [with friends] can help me relax. (P9)

Social drinkers also expressed that their drinking was moderated, in part, by a relatively low tolerance to alcohol ($n = 3$, subtheme S1.2.1).

> It doesn't take much to get me drunk and I don't like being *drunk*–drunk. So that takes care of that, pretty much. (P5)
> If I have more than two drinks, you'll find me on the floor! [Laughs] (P2)

Like their non-drinking counterparts, some social drinkers also reported an aversion to the sensations of intoxication ($n = 3$, subtheme S1.3.1).

> I never really thought about *why* I don't drink much, but now that I'm thinking about it…I guess I don't really like the way it feels? To be drunk, I mean. It just feels…I'm not sure how to describe it, but it's not pleasant. (P10)
> One or two drinks, I can handle it, but more than that and I start to feel…eugh…kinda sick. (P6)

Social and Environmental Factors

Both alcohol abstinent and social drinkers described social and environmental factors that influenced their drinking behaviors. Non-drinkers reported exclusively neutral experiences. Three non-drinking participants reported that they tended to avoid environments which facilitated or encouraged drinking, such as bars and clubs, largely because those environments did not appeal to them.

> Clubbing? God, no. Loud music, crowds, body spray, the skeezy vibe [sexualized atmosphere]…I think I could only get through that if I were drunk off my ass, and I'm not about to do that. (P4)

Non-drinkers also raised the issue of costs associated with alcohol, and spending money on alcohol was not a priority for them ($n = 2$).

> It's [alcohol] expensive! I've got student loans and bills to pay off [Laughs]! (P8)

Social drinkers reported positive, neutral, and negative social and environmental factors that influenced drinking behaviors. Two participants explained that drinking socially was an enjoyable way to spend time with friends (subtheme S2.1.1).

> We [my friends and I] can just press pause on all the craziness going on, have a pint and just…just talk… yeah…everyone's so busy these days and there's no time to actually sit down and hang out. (P10)

As a neutral experience, social drinkers reported they were sometimes motivated to drink in order to match the actions of their social group. Participants noted they were not necessarily intrinsically motivated to drink for its own sake, nor did they feel explicitly pressured by their peers to drink (subtheme S2.2.1, $n = 3$).

> People don't often explicitly pressure me into drinking, but it does feel weird to be the only person without a glass. (P6)

Negative experiences emerged among social drinkers, particularly pertaining to drinking alcohol socially to cope with social or sexual discomfort (subtheme S2.3.1, $n = 2$, and subtheme S2.3.2, $n = 1$ respectively).

> I'm super awkward and I get nervous in groups. I think when I drink…I, yeah, part of it is to dull the anxiety. Damn, that doesn't sound good, does it? (P5, subtheme S2.3.1)

> P9: Before I knew I was aro-ace [aromantic and asexual], I did the dating thing. Hated every minute of it, but I didn't know any better, I thought there was something wrong with me for feeling that way. [D]rinking was the only way to cope with all the…the, uh…discomfort? Discomfort isn't strong enough to describe it. I could only have sex when I drank, as part of it. I drank a lot back then and I was miserable.
> Researcher: Mhmm…What I'm hearing is that you drank as a way to deal with those feelings, and to– to be able to do what you felt like you were supposed to do in that situation. Would, uh…would you say that's accurate?
> P9: Yeah! I—yeah, drinking was the only way I could do it.
> Researcher: Mhmm, mhmm. If you're comfortable answering, is that still something you experience? Using alcohol to cope with social pressure, I mean?
> P9: I—hmm…I don't—I don't drink as much as I used to, like I said before. It helps now that I know I'm [aro-ace], I'm not in the situations I used to be [in].
> Researcher: Not dating or in potentially sexual situations, you mean?
> P9: Yeah, I'm not doing those things so the feelings isn't– the pressure isn't there. (P9, subtheme S2.3.2).

Cognitive and Psychological Factors

Both non- and social drinkers reported cognitive or psychological factors that influenced their drinking habits. Non-drinkers reported neutral and negative experiences. All non-drinking participants described a fundamental lack of interest in drinking alcohol (subtheme A3.1.1; $n = 4$).

> Drinking is kind of pointless to me. (P6)
> Even before I [experienced trauma] while drunk, I was never really…really that motivated to drink? Maybe motivated isn't the right word, but yeah. (P7)

This lack of interest in drinking alcohol also emerged among one abstinent participant who was below the legal drinking age in British Columbia at the time of data collection.

> Actually getting alcohol is a pain when you're underage anyway. I'm not super into drinking, or the idea of drinking or whatever, but like…that's an extra thing that gets in the way of actually getting alcohol. If it was easier to get and if I cared enough to come up with ways to get it [alcohol], it might be different but I'm not sure. (P3)

Subthemes related to non-drinking participants' negative cognitive or psychological drinking experiences are presented together below, due to their interrelated nature. Three non-drinking participants reported experiencing a "loss of control" when under the influence of alcohol that was aversive enough to contribute to abstaining from alcohol consumption (subtheme A3.2.1). This theme also appeared among the social drinking sample, which will be explored in more detail (see subtheme S3.3.1).

> If the hangover itself weren't enough [of a deterrent], the actual feeling of being drunk might be. Even if you don't drink enough to get drunk, you don't have the same control [over your body] as you normally do. (P1)
> I can't give up control like that. Too many things can happen, or…or go wrong, and there won't be anything you can do, you know? […] Someone might hurt you, there are dangers. (P4)

The experience of "loss of control" also appeared alongside experiences of personal and adjacent trauma related to alcohol. The same three participants who reported experiencing "loss of control" as an aversive experience also reported some combination of the following: experience of personal trauma while intoxicated (subtheme A3.2.2, $n = 1$), experience of being traumatized by an intoxicated co-drinker (subtheme A3.2.3, $n = 1$), and having close friends experience trauma while intoxicated (subtheme A3.2.4, $n = 2$).

> I've only been drunk a couple of times and I was sexually assaulted both times. […] I have really strong bad associations with drinking. (P4, subtheme A3.2.2)
> Too many of my friends have been [assaulted] when they got drunk […] and they were blamed for it. It's so fucked. Seeing what they went through was so, so awful. I can't actually describe how awful it was and it's so common. I don't want to be a statistic. (P3, subtheme A3.2.4)

Social drinkers reported positive, neutral, and negative cognitive and psychological experiences. Related to positive somatic experiences (see subtheme S1.1.1), some social drinkers reported that drinking in moderation could help them feel psychologically at ease (subtheme S3.1.1, $n = 2$).

> A beer or two helps me loosen up when I'm with friends. Not just physically though, mentally too. […] I tend to censor myself a lot and…I dunno, a drink or two can sometimes help me get past that. (P2)

Under neutral experiences, all participants in the social drinking subgroup expressed a lack of interest in drinking alcohol outside of social settings (subtheme S.3.2.1). Some participants ($n = 3$) indicated they may also have a drink alone at home if they so choose, but these instances are very rare (i.e., approximately once in a 3-month period).

> I guess I'd say I drink socially? I'm not a big drinker and I don't keep alcohol in my house, aside from the odd bottle of this and that I might get from time to time […] usually as gifts. [I]f I'm out and people are drinking, I may have a drink. (P10)
> I enjoy [alcohol] from time to time, but I rarely buy any for myself [to drink at home]. Once it's open, the rest of the bottle usually ends up going to waste. I feel bad about wasting it […] and I paid for it, and it's there, so sometimes I end up drinking it. (P8)

Social drinkers reported negative experiences that were thematically similar to non-drinking participants. Like their alcohol abstinent counterparts, social drinkers also reported negative experiences related to losing control over themselves and their environment when under the influence of alcohol (subtheme S3.3.1, $n = 3$).

> Everything feels gritty when I do [drink]. Even when my head feels clear, I catch myself saying and doing things that kind of make me go, "woah, hang on, what's happening?" (P6)
> It's kind of ironic but I'm a flirty drunk. [Laughs] I don't want anything to happen but I still do and say things…I'm lucky nothing has happened to me, but the fact that…that it could and someone would think I was leading them on freaks me out a bit. (P5)

Social drinkers also reported concerns related to their personal safety in environments where alcohol is present. This theme emerged among all women and non-binary participants in the social drinking subgroup (subtheme S3.3.2, $n = 5$).

> People drink, one thing leads to another, people go home with someone at the end of the night. I don't want any of that stuff. I just want to dance and have a good time. […] I have had experiences where people get aggressive when I turn down a sexual encounter. (P8)

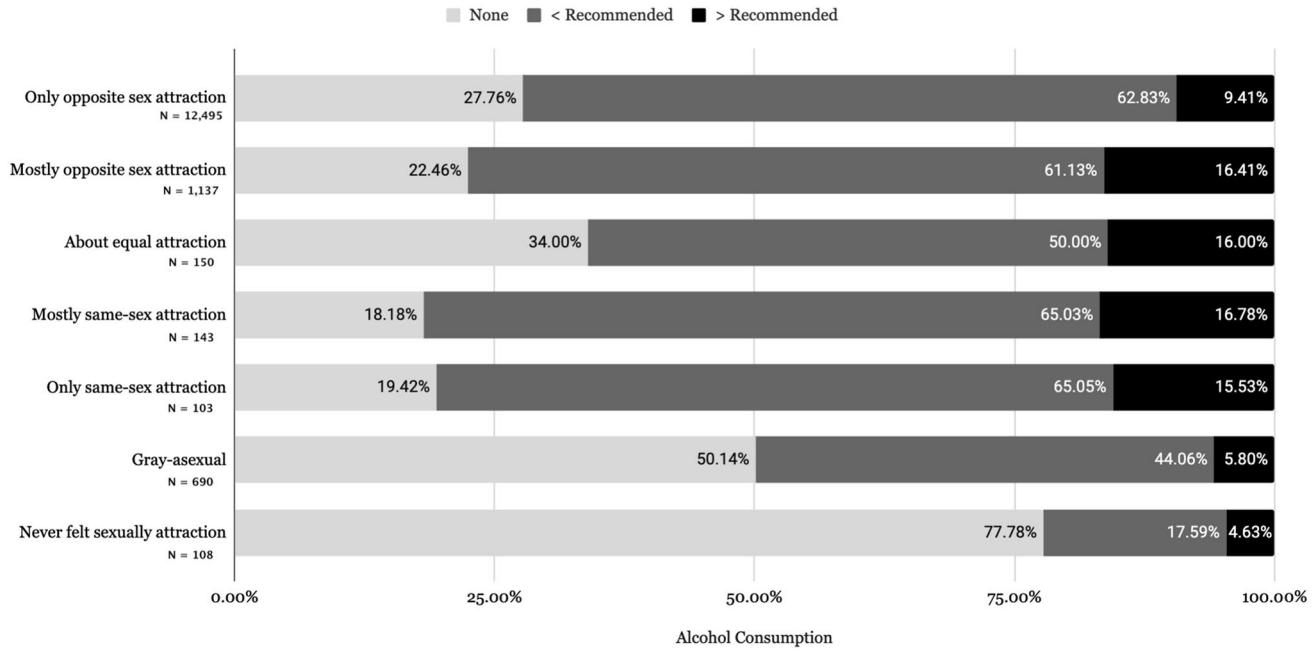

Fig. 1 Alcohol consumption by sexual attraction in NATSAL III

Discussion

Study 1

Findings from Study 1 demonstrated consistently significant results for alcohol consumption, with mixed findings for tobacco consumption. A notable percentage of asexual people reported that they did not drink (40.0–77.8%) compared to sexual people (10.2–27.2%). Gray-asexual respondents who did not drink fell between asexual and allosexual individuals (28.1–50.1%) which is consistent with the concept that gray-asexual people are on a spectrum between allosexual and asexual.

This is an interesting finding considering drinking behavior trends among LGBT people, although this finding is consistent with observations of North American asexual samples, in spite of different drinking cultures (Bauer et al., 2018). In addition, two sexual attraction groups were not significantly more or less likely to drink in comparison with heterosexual respondents: those who were only attracted to the same sex and those with about equal attraction to each sex, where those with about equal attraction to each sex had lower odds of drinking in all of those statistically nonsignificant results (0.48–0.97). More clearly visible in Fig. 1, the percentage of respondents with equal attraction to both sexes who drank more than recommended (i.e., binge drinking) fell in line with the other lesbian, gay, and bisexual attraction groups, creating a split, where those with equal attraction had more non-drinkers, while maintaining a similar percentage of heavy drinkers. It is possible that the higher number of non-drinkers in the equal attraction group included respondents who identified with the asexual spectrum, who have experienced sexual attraction more than "never," based on higher proportions of asexual identified people choosing bisexual when an explicit asexual option is not given (Bauer et al., 2018). Conversely, it could be that more respondents with equal sex attraction have stopped drinking when they used to drink, perhaps too heavily, or for other reasons. Research exploring this finding is needed in order to better understand this pattern and the reasons for it.

Regarding the difference in drinking frequency between asexual and LGBT individuals, there are a few possible interpretations of this finding. Greenwood and Gruskin (2007) highlighted elevated rates of alcohol and tobacco consumption among LGBT individuals in relation to environmental and biopsychosocial risk factors. It is difficult to make direct comparisons with asexual samples as there is not yet robust empirical research that profiles how asexual people experience discrimination. Beyond preliminary research highlighted earlier, asexual individuals have expressed experiences of prejudice in the form of pathologization of their asexual identity, from peers and medical professionals alike, through blogs, essays, and personal communications (Asexuality exists, n.d.; Kaye, 2018; Petter, 2017). Asexual people also highlight struggles with invisibility and lack of awareness, which is reflected in a lack of educational resources to teach others about their identity, identity invalidation, erasure, and poor representation in media (UK Asexuality

Conference, personal communications, July 8, 2018). It would be overly simplistic, perhaps, to challenge the "coping hypothesis" Greenwood and Gruskin posited in light of our findings. It is possible that the nature of prejudice faced by the asexual community manifests differently than other LGBT groups, which may prompt different coping styles. Research exploring asexual individuals' experiences of prejudice and discrimination is needed to further understand this phenomenon.

It is also worth highlighting the role of bars and clubs in LGBT spaces to understand discrepancies in LGBT and asexual drinking habits. Historically, gay bars were the epicenter of LGBT life and culture and were one of few places where LGBT individuals could gather and socialize, and more crucially, one of the only spaces where same-sex interaction might be possible. While the role of gay bars has diminished somewhat with the advent of technology (e.g., websites, apps, etc.), the association of LGBT culture, sex, and alcohol remains. The centralizing of alcohol and sex to these gathering places is important to consider, especially for LGBT individuals who are active in LGBT spaces and communities. In contrast, the asexual community's earliest gathering places were online spaces, with the most notable website, AVEN, being founded by David Jay in 2001. To date, there are no permanent, asexual-specific gathering places offline, like bars or cafes, and many asexuals avoid bars and clubs due to their overtly sexualized atmospheres (personal confidential communications, August 2019). These differences are also worth considering when examining the drinking habits of these two communities.

Patterns of tobacco consumption showed significant differences between asexual people in the two more recent NATSAL studies (II and III), with more asexual people never smoking (76.9% for both) compared to allosexual people (45.8–50.6%), but no significant group differences in NATSAL I. These results occurred during a decline in current smoking from 1990 to 2010, for those in the UK, and therefore, the results found here are likely heavily influenced by that declining trend (Office for National Statistics, 2018). While both alcohol and tobacco use can be coping based, it is possible that tobacco does not have the same myopic and social lubricating effects as alcohol (Pedersen, LaBrie, & Kilmer, 2009; White, Fleming, Catalano, & Bailey, 2009). To the best of our knowledge, there does not appear to be evidence supporting a relationship between tobacco and sex-related goals and motivations. This may suggest the possibility of different and distinct motivations that mediate alcohol-related behaviors compared to tobacco-related behaviors. Said differently, sex-related goals may play a part in alcohol consumption, but perhaps not with tobacco consumption. Future research may find meaningful distinctions between these behaviors and their underlying motivations.

Study 2

Findings from the qualitative study provided some insight into the motivations related to lower drinking rates among asexual people. Among non-drinking participants, motivations underlying alcohol abstinence appeared to corroborate findings from existing research in other non-drinking samples: a lack of interest in drinking alcohol, aversion to taste, aversion to effects of alcohol, and financial concerns have been observed among alcohol abstinent groups (Bernards, Graham, Kuendig, Hettige, & Obot, 2009). The overlap of emergent themes between this study and the existing literature may suggest commonalities in what motivates people to abstain from drinking alcohol regardless of sexual orientation. Other emergent themes, notably concerns related to safety or experiences of past trauma, have not been cited as significant motivators of alcohol abstinence in existing literature.

Positive and neutral social motivations to engage in social drinking have also been observed (Kuntsche, Knibbe, Gmel, & Engels, 2006); regarding negative experiences, however, there is relatively little research on what tempers drinking frequency among social drinkers or what the prevalence of emergent somatic or psychological themes are in other samples. Considering the overall scarcity of the literature on this topic, findings should be interpreted with caution.

Somatic Responses

Asexual participants' negative somatic responses to alcohol, independent of intoxication, were found among alcohol abstinent and social drinking participants. The reason for this, however, is not immediately apparent. Considering the relative novelty of asexuality research more broadly, it is unclear whether there is a physiological basis for this phenomenon or whether complex psychosocial interactions influence what could be psychosomatic responses to alcohol, with the latter being a somaticized response of threat perception or safety-related vigilance. Another possibility is that individuals who are intrinsically motivated to drink may do so in spite of negative somatic effects, if they feel the pros of drinking outweigh the cons. For asexuals, who may not have an intrinsic motivation to drink, they may either be more cognizant of the negative somatic effects of drinking, or otherwise not feel the tradeoff of drinking alcohol is worth the physical effects.

Social and Environmental Factors

Among the social drinking subgroup, participants reported positive and neutral social drinking motives, notably for the purpose of social facilitation and for conforming to group behaviors. Drinking for the purposes of enjoyment and social facilitation have been identified in existing research

and occurs among individuals of different sexual orientations. However, socially motivated drinking has been found to correlate with moderate alcohol use, whereas the asexual sample in this study was comparatively low-consumption social drinkers (Kuntsche et al., 2006). It is possible that social motivations to drink may meaningfully contribute to the initial onset of social drinking behavior, but perhaps not for sustained drinking in the same social event, once the perceived social need has been met.

Social drinking participants also reported a desire to follow the actions of their social group; while they did not report explicit pressure to drink from their peers, participants described experiences that suggest a response to normative social influence and subsequent implicit social pressure to conform to group behaviors. Response to implicit social pressures may function as a means of obtaining social approval and preserving positive self-concept in the context of a social dynamic (Cialdini & Goldstein, 2004). For socially marginalized individuals, social pressures to drink may be particularly important in order to "fit in" or gain conditional acceptance to a social group. For heteroromantic asexuals in mainstream straight settings, or non-heteroromantic or non-cisgender asexuals in LGBT settings, adopting the behaviors of others, or "behaving correcting," may be necessary to "fit in."

Social drinkers also reported being motivated to drink to cope with social or sexual discomfort. Coping-based drinking motivations are well established in the literature; interactional and motivational models of alcohol consumption discuss coping-based drinking in detail (Abbey, Smith, & Scott, 1993; Cox & Klinger, 1988). Correlates of coping-based drinking motivations have been identified at the personality level, notably high neuroticism and high trait anxiety in young women (Kuntsche et al., 2006); however, few other correlates have been empirically examined. There is relatively little research on the relationship between social or sexual anxiety and alcohol consumption outside of heavy episodic or problematic drinking. Further research into correlates and predictors of coping-based drinking outside of problematic drinking will offer meaningful insight.

Cognitive and Psychological Factors

The most common psychological subtheme among both subgroups was a fundamental lack of interest in drinking alcohol. The interaction between a lack of interest in alcohol consumption and alcohol use is unclear, however. It is possible that a lack of interest in alcohol fails to facilitate drinking, as an interactional model of drinking might suggest. A lack of interest in drinking alcohol has been identified as a motivator of alcohol abstinence among non-asexual samples (Bernards et al., 2009); however, it is difficult to determine what accounts for the significantly higher proportion of alcohol abstinence among asexual individuals in addition to a lack of interest in drinking, and indeed the other motivations identified in Bernards et al.'s study.

While participants in Study 2 describe limiting alcohol consumption, or avoiding sexually coded environments as a deliberate, protective strategy against unwanted sexual contact, this does not necessarily address why asexuals report a fundamental lack of interest in drinking alcohol. It may be that this disinterest in drinking is, in part, a post hoc rationalization of aversive experiences or internalized attitudes about associations of alcohol and sex-related goals or behaviors. In other words, expressing a lack of interest in alcohol as a reason for limiting drinking behaviors or avoiding certain environments (e.g., "I don't go to bars/I don't drink because I'm not interested in drinking) presents less of a psychological threat than acknowledging a salient threat to one's personal safety (e.g., "I don't go to bars/I don't drink because I'm worried that someone will take advantage of me").

As previously mentioned, findings among social drinkers suggest a lack of interest in drinking alcohol for its own sake, but rather as a means to participate in social exchange. This may relate to experiential enhancement to amplify positive emotions associated with social interaction (Buckner, Eggleston, & Schmidt, 2006) or perhaps to expectancies of alcohol, self-disclosure, and meaningful interaction (Caudill, Wilson, & Abrams, 1987). Social and enhancement motivations to drink alcohol are not unique to asexual people. However, social motivation in the absence of intrinsic motivation to drink alcohol raises certain questions; with differences in the frequency of alcohol consumption and number of drinks per consumption event in mind, it is worth considering the degree to which social motivations account for initial engagement in social drinking behaviors versus sustained drinking in a given social setting. Said differently, if an individual engages in social drinking to meet social needs, social or enhancement motivations may account for the initial onset of a social drinking event; once the social need has been met, however, there may no longer be sufficient motivation to engage in sustained drinking, thus tempering the number of drinks consumed per event.

Negative psychological factors, notably those related to concerns for personal safety, emerged among abstinent and social drinking subgroups, regardless of personal or adjacent experiences of trauma. This emerged among three of four participants in the abstinent subgroup and five of six participants in the social drinking subgroup, all of whom were women or gender non-conforming. The relationship between alcohol consumption and sexual behavior is well documented; existing research suggests a positive correlation between alcohol use and sexual behavior in terms of frequency and risky sexual behavior, such as not using contraceptives (Cooper, 2002; Markos, 2005; Weinhardt & Carey, 2000). Alcohol consumption and sexual assault have been modeled to suggest a complex interaction of peer environment and heavy

drinking, pre-existing attitudes about women (in the case of heteronormative models of sexual assault), alcohol's influence on aggressive behavior, endorsement of coercion to initiate sex, and alcohol as a signal for sexual intention (Abbey, 2002). The relationship between alcohol consumption and potentially erroneous interpretation of sexual cues (Abbey, McAuslan, & Ross, 1998), and reduced attention to threatening cues have also been documented (Melkonian & Ham, 2018). Alcohol negates affirmative consent according to Canadian criminal law and, according to sex educators, college policy administrators, and sexual violence prevention organizations, alcohol undermines affirmative sexual consent where the law is not explicit ("Alcohol and Consent," n.d.; "What Consent Looks Like," n.d.). This association between alcohol and sex, in terms of sexual facilitation and risks related to unwanted sexual contact, may be a deterrent for asexual people to consume alcohol at a comparable rate to other samples, and also to attend social functions in environments where alcohol is readily accessible. This may be especially true for individuals who identify as women, who are perceived as women, or who are gender non-conforming, who may be at an increased risk of unwanted sexual contact in social situations where alcohol is present. Issues of unwanted sexual contact, coercion, harassment, and assault are certainly not unique to the asexual community; however, asexual respondents may be more cognizant of, or cautious in these types of situations. If asexual individuals are more likely to turn down sexual encounters, they may also be more likely to experience hostility or personal threat. This may play a part in the avoidance of situations of environments where alcohol consumption and sexually coded interactions are common.

As noted by Bogaert (2012), this association between alcohol consumption and sex, or sexuality, further elucidates that the study of asexuality reveals as much, if not more, about sexuality as a whole, than it reveals about asexuality. Asexuality, in essence, can serve as a control variable for the relationship between alcohol consumption and sexuality. When sexual attraction is removed from the interaction between sexuality and alcohol consumption, the consumption of alcohol decreases, indicating a meaningful relationship between sexual attraction and alcohol consumption. This relationship between attraction and alcohol consumption can be used in future research to understand more thoroughly the relationship between alcohol consumption and sexual behaviors outlined above.

Finally, we were not able to make any claims about the predictive factors that accounted for sobriety or social drinking habits among asexual individuals. To the best of our knowledge, there is not yet research available on motivations for alcohol abstinence among individuals without a history of personal or familial alcoholism, nor is there robust literature on drinking motivations among non-heavy episodic or non-problematic drinkers. Considering the absence of a robust empirical baseline for sexual social drinkers and non-drinkers, it is difficult to make informed comparisons between asexual and allosexual samples.

Limitations

Theory

Asexuality, as an empirical field of study, is still largely in its infancy. Previous theories explaining asexuality were based on an idea that asexuality was pathological in nature, which is to say, based in sexual dysfunction or illness. While there is now research to support asexuality as an orientation that exists independently of sexual dysfunction (Bogaert, 2004, 2013; Yule et al., 2015), exploratory research is needed to fill the chasm of information before more detailed, in-depth hypotheses can be developed.

Influence of Drinking Cultures on Transferability of Findings The authors would like to highlight the potential impact of drinking cultures on this study's findings. Drinking cultures in North America and the UK differ meaningfully in many respects, most notably in terms of minimum drinking ages, attitudes toward public drinking, and normative drinking habits. This may influence the transferability of our findings to asexual samples in other drinking cultures.

Biases and Exclusions As with any research on the LGBT community, consideration must be paid to sampling methodology. Meyer and Wilson (2009) offered an extensive review of lesbian, gay, and bisexual sampling, and some of the unique challenges facing researchers who study lesbian, gay, and bisexual populations. These individuals may be measured and defined according to sexual behavior or history, which may not necessarily indicate self-identification. For instance, a man who reports having exclusively same-sex sexual encounters over a six-month period may be grouped with gay men in a particular study, although he may identify as bisexual. Conflating sexual behavior and history with self-identification may distort the accuracy of research data. Additionally, identifying as LGBT is still socially stigmatized and individuals may not be comfortable disclosing their identity to researchers. LGBT individuals who have internalized this stigma more deeply may reflect differences in personality, well-being, or psychopathology.

While Meyer and Wilson (2009) did not include asexual people in their review, Hinderliter (2009) noted many of these challenges impact asexuality research. Challenges in operationally defining asexuality, or gray-asexuality, have been explored throughout this study, all of which have serious implications for data accuracy in asexuality research. This may be especially true for asexual individuals who are not

heteroromantic, who may be restricted to a choosing a single option during demographic data collection. Furthermore, the definition of gray-asexuality used in this study in no way encompasses all gray-asexual people in the gray-asexual community ("Gray-A/Grey-A-AVENwiki," n.d., "The Gray Area," n.d.). For example, an orientation within gray-asexuality that was not addressed in this study is one of demisexuality, where individuals only experience sexual attraction after forming a strong emotional bond or romantic bond with another person (AVEN, 2012; "Demisexual," 2013). Operationalizing respondents in this report as those who have experienced sexual attraction, are not sexually active, and are sexually satisfied both over and under sample those who would identify as gray-asexual, simultaneously; not all respondents who fall into that category may self-identify as such. For example, those who are in a relationship, but are not yet ready to have sex with a partner may be sexually satisfied not having sex, but have experienced sexual attraction. On the other hand, those who self-identify as gray-asexual, but are sexually active would be excluded, and those who self-identify as gray-asexual but are not sexually satisfied would similarly be excluded. Those not sampled who self-identify as gray-asexual may be more similar to the asexual respondents in these studies, where their alcohol and tobacco consumption are even lower than currently reported, or may be more similar to sexual respondents. Without the option to self-identity, it is unfortunately unknowable; however, the approximation operationalized in this article attempted to have a starting point. It is also worth restating that TBSH data concerning young gray-asexuals should be interpreted cautiously due to their age.

As with their LGBT counterparts, being asexual also carries a certain stigma; individuals who have internalized these attitudes may be reluctant to participate in asexuality-based research, as actively identifying with asexuality may inspire or worsen negative self-perceptions, or threaten one's self-concept. There may be additional sampling challenges unique to asexuality studies, whereby asexual people may not participate in studies on sexual lifestyles and attitudes that do not specifically address asexuality if they are not sexually active (Aicken et al., 2013). This may also impact the gray-asexual population, although further research is required to assess the impact of this trend on gray-asexual people. The potential impacts may manifest in an underreporting of asexuality's prevalence overall, or in oversampling asexual people who engage in sexual activity.

Given that asexuality awareness is not yet universal, individuals who have not yet discovered their asexuality may confound romantic attraction with sexual attraction, as they would have no reason to doubt their ability to experience sexual attraction, nor would they know what sexual attractions feels like if they have never experienced it (Hinderliter, 2009). Individuals who have not yet come across asexuality who may otherwise identify with it may not be represented accurately in research.

In informal conversations with LGBTQ[2] people who also identify as asexual, roughly half of individuals expressed the desire to be counted as LGBTQ over asexual when taking part in research if demographic questionnaires did not allow respondents to choose more than one option to reflect their sexual orientation (personal communications, March 2013–January 2016). These individuals would choose to answer based on their romantic orientation, which would reflect LG attraction, rather than their (a)sexual orientation, unless a study was specifically focused on asexuality. While participants explained they would rather not have to "choose" one part of their identity over another for research purposes if they could avoid it, the preference to be counted as LGBT rather than asexual is largely based in experience related to what is colloquially referred to as the "ace discourse," a predominantly Tumblr-based inter- and intra-community debate between and within LGBT and asexual communities, about whether asexuality should inherently be considered a part of the LGBT community. In its early days, circa 2013, the core point of contention at the center of this discourse is whether or not asexuality is inherently LGBT, or whether asexuality can only be considered LGBT if lesbian, gay, or bisexual attraction or transgender or non-binary identity are also present. The crux of the argument questioned whether cisgender and heteroromantic asexuals were "basically straight" and therefore should not included in the LGBT community, or if asexual and aromantic identities, regardless of other descriptors, were fundamentally LGBT. Based on a narrow application of Marxist-feminist ideology, discussions were centered around the experience of structural and systemic oppression, and whether or not that was necessary for inclusion into the LGBT community. Now that asexuality is more widely recognized within LGBT organizations, the nature of the discourse has shifted considerably—to the extent that it is ultimately disingenuous to suggest the ace discourse is a discourse at all. While the original language of the ace discourse remains, current-day "exclusionists," a small but vocal minority those who do not believe asexuality belongs under the LGBT umbrella, engage in hostile rhetoric and online harassment. In extreme cases, for example, some exclusionist arguments center around ideas that (1) asexuals who date non-asexuals are abusing their partners by virtue of their orientation (e.g., acephobiaisajoke, 2017), a point once endorsed by popular sex columnist, Dan Savage (Savage, 2011; he has since retracted this viewpoint (Savage, 2014)),

[2] While the acronym LGBT has been used in this article, and is generally more commonly used in research, the authors interviewed individuals who specifically identified as "queer"; we wanted to reflect this distinction.

or (2) including asexuality in comprehensive sex education is part of "an unnerving trend to "recruit" children," for them to be groomed for exploitation and molestation (Borcheller, 2019, para 9). Exclusionists who endorse these viewpoints have also infiltrated "ace positivity" online spaces to harass asexuals (e.g., Disk-horse, 2017), going so far as to tell young asexuals to kill themselves (e.g., fucking-deactivated, 2016, cited by Herefortheace, 2016). Considering that Tumblr's demographic is primarily comprised of teenagers and young adults, these behaviors are all the more troubling—both in terms of who is doing the harassing and who is being harassed. At the time of data collection (2016–2017), participants who had experience with the ace discourse explained that, while their homo-, bi-, or panromantic attraction would not be questioned or subject to scrutiny in LGBT communities or contexts, their asexuality may not be treated with the same respect or given the same legitimacy. This self-report bias may indicate further underrepresentation of asexual people in research. It is worth restating that asexual and LGBT individuals with early histories of sexual trauma were excluded from this study. This is significant, as LGBT individuals are more likely to experience sexual violence than heterosexuals. Bisexual women and transgender individuals report the highest rates of sexual violence among the LGBT community; LGBT people of color are at higher risk of sexual violence than their white counterparts. For example, 46% of bisexual women have experienced rape, compared to 17% of heterosexual women, 48% of whom experienced their first rape between the ages of 11 and 17 (Sexual Assault and the LGBT Community, n.d.). The Ace Community Survey (2016) found that, of participants who were willing to answer questions about sexual violence, 37.5% of asexual spectrum respondents reported having been sexually assaulted in their lifetime, with a mean age of 14.4 years for age of first experience of sexual violence. Given the prevalence of early sexual trauma in LGBT and asexual communities, our findings should be considered in light of these exclusions. Finally, the samples recruited from NYC and VAN were small and participants were recruited through convenience sampling means. This may influence the generalizability of our findings.

This study examined the relationship between asexuality and the consumption of alcohol and tobacco, compared to other members of the population. Data from Study 1 came from four surveys examining sexual attitudes and behaviors, three national probability surveys in the UK and one which focused on young people in Northern Ireland. We deliberately included individuals who identified as gray-asexual, a population who exist within the realm of asexual identities.

Overall, we found that up to 77.8% of asexual respondents in this study reported that they did not drink. Consistent with the closeness of gray-asexual to asexual people, gray-asexual respondent's levels of alcohol consumption fell between the allosexual and asexual samples (28.1–50.1%). While the overall asexual levels of alcohol consumption were not consistent with the available literature on drinking patterns among other sexual minority groups, our findings appeared consistent with informal conversations with asexual people and surveys of asexual samples (Five College Queer Sexuality and Gender Conference, personal communications, March 2, 2013; Ace NYC Meet Up Group, personal communications, March 16, 2013–January 2016; UK Asexuality Conference, personal communications, July 8, 2018; Bauer et al., 2018). Differences in tobacco consumption among the different samples were statistically significant in two of the four studies.

Qualitative findings suggest somatic, social, and psychological factors may mediate drinking behaviors among alcohol abstinent and social drinking asexual people. Non-drinking participants reported neutral and negative experiences that influenced their drinking behaviors, while social drinking participants reported positive, negative, and neutral experiences. While many themes identified in this study were not unique to asexual individuals, the interaction between alcohol consumption and sexuality when sexual attraction is removed offers meaningful insights into the relationship between alcohol consumption and sexuality. For asexual individuals, the relationship between a fundamental lack of interest in drinking alcohol and social motivations to drink warrant further study. Future research is also needed to identify what accounts for the exponentially higher percentage of alcohol abstinence among asexual individuals compared to other populations, and to what extent the absence of sexual attraction is underlying these patterns.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval Ethics was approved by the University of British Columbia Behavioural Research Ethics Committee.

Informed Consent Written consent was obtained from all participants.

Appendix

Allosexual attraction	NATSAL I		NATSAL II		TBSH		NATSAL III	
	%	*n*	%	*n*	%	*n*	%	*n*
Gray-asexual	100.00	196	100.00	313	100.00	79	100.00	693
Only same sex	1.02	2	0.64	2	1.27	1	0.14	1
Mostly same-sex attraction	0.00	0	0.96	3	0.00	0	0.72	5
About equal attraction	2.55	5	0.64	2	1.27	1	1.44	10
Mostly opposite-sex attraction	8.16	16	7.03	22	3.80	3	3.32	23
Only opposite-sex attraction	88.27	173	90.73	284	93.67	74	94.37	654
Allosexual	100.00	4178	100.00	10,635	100.00	832	100.00	14,084
Only same sex	0.50	21	0.63	67	1.92	16	0.73	103
Mostly same-sex attraction	0.41	17	0.84	89	1.56	13	1.02	143
About equal attraction	0.43	18	0.83	88	1.92	16	1.07	151
Mostly opposite-sex attraction	5.24	219	8.74	929	7.45	62	8.09	1140
Only opposite-sex attraction	93.42	3903	88.97	9462	87.14	725	89.09	12,547

VAN Sample Demographic Information

NATSAL National Survey of Sexual Attitudes and Lifestyles, *TBSH* Towards Better Sexual Health

Participant	Age	Gender	Ethnicity	Drinking status	Sexual orientation	Romantic orientation
P1	28	Man	Other	Alcohol abstinent	Asexual	Heteroromantic
P2	35	Woman	White	Social drinker	Asexual	Heteroromantic
P3	18	Woman	White	Alcohol abstinent	Asexual	Aromantic
P4	19	Non-binary	White	Alcohol abstinent	Asexual	Panromantic
P5	26	Woman	East Asian	Social drinker	Asexual	Heteroromantic
P6	48	Man	South-East Asian	Social drinker	Asexual	Homoromantic
P7	25	Non-binary	Other	Alcohol abstinent	Asexual	Aromantic
P8	21	Woman	East Asian	Social drinker	Asexual	Heteroromantic
P9	31	Woman	Other	Social drinker	Asexual	Biromantic
P10	29	Non-binary	White	Social drinker	Asexual	Panromantic

VAN Vancouver sample

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