




## RESEARCH ARTICLE

# Beliefs and attitudes about men's alcohol-related sexual harassment and aggression (BAMASHA): Development and initial validation of a new scale

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## Abstract

**Background:** Men's perpetration of sexual violence (SV) toward women in drinking venues is a pervasive yet understudied phenomenon with significant downstream consequences for women. Although men's negative attitudes and beliefs toward women play an important role in SV, current attitude measures are limited in that they do not focus on SV specific to drinking contexts, thereby precluding understandings of SV in this context. As such, we developed and evaluated a measure of beliefs and attitudes about men's alcohol-related sexual harassment and aggression (BAMASHA) toward women in drinking venues to better understand this ubiquitous problem.

**Methods:** Young heterosexual men ( $N=330$ ,  $M_{\text{age}}=22.66$ ,  $SD=2.09$ ) completed an online survey that included 82 BAMASHA items developed to assess eight theoretical dimensions/sub-dimensions derived from past research. The survey also measured sexual aggression perpetration in drinking venues and well-established correlates of SV including drinking patterns, rape myth acceptance, hostility toward women, stereotypes about drinking women, and alcohol expectancies regarding sexual behavior.

**Results:** Item analysis resulted in a 24-item inventory with exploratory and confirmatory factor analyses suggesting a unidimensional factor structure. The resultant measure and its 12-item short form also explained sexual aggression perpetration toward women in drinking venues when controlling for associated constructs.

**Conclusions:** Findings underscore the unique contributions of the BAMASHA for sexual aggression perpetration and its utility in the context of drinking venues compared to measures of attitudes and beliefs toward SV more generally.

## KEYWORDS

alcohol, beliefs and attitudes, drinking venues, measurement, sexual violence

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## INTRODUCTION

Sexual violence (SV) is a form of gender-based violence encompassing both sexual harassment and sexual assault (Canadian Women's Foundation, 2022). SV is a global public health problem with negative immediate and long-term physical and psychological impacts on targets (we use the word "target" since not all targets of sexual assault identify as victims or survivors) (Cotter & Savage, 2019; Shin & Salter, 2022), and large economic costs to society (e.g., \$4.8 billion in 2009; Government of Canada, 2014). Although SV is experienced by all genders, SV happens mostly to women while most perpetrators are men (Cotter, 2021; Kearl, 2018). Thus, to inform SV prevention, research is needed to better understand factors contributing to perpetration by men toward women.

Young adulthood is a time of life when people are seeking romantic/sexual partners and drinking venues play a key role in this activity. A study of large capacity venues in Toronto, Canada, found that most venues functioned as "sexual marketplace" bars with these venues especially likely to be frequented by the youngest adults (under 25 years) (Purcell & Graham, 2005). Drinking venues are especially high risk for many forms of SV perpetrated by young men and directed at young women, ranging from unwanted touching or kissing, grabbing a woman's butt or breast, persistence in unwanted advances, verbal harassment, and full sexual assault (Becker & Tinkler, 2021; Brooks, 2011; Graham, Bernards, Abbey, et al., 2014; Graham, Bernards, Wayne Osgood, et al., 2014; Tinkler et al., 2018). Indeed, alcohol-related sexual harassment and aggression (ASHA) was found to be one of the most common forms of aggression observed in one study (Graham, Bernards, Abbey, et al., 2014), and another study (Graham, Bernards, Wayne Osgood, et al., 2014) found that over half of a randomly selected sample of female bar-goers had been the target of ASHA *on a single night out*. A more recent study of people aged 18+ on a night out in the UK found that women were four times as likely as men to report ever experiencing ASHA (Quigg et al., 2024). Correspondingly, approximately 90% of a sample of young college men in the US reported using sexually aggressive advances in drinking venues, including actions such as grabbing a woman's butt, stroking a woman's leg, or intentionally brushing up against a woman from behind while dancing (Thompson & Cracco, 2008).

ASHA has a wide range of negative consequences for women, including immediate impacts (making women feel violated, angry, ashamed, objectified, and afraid; Graham et al., 2017; Haskell & Randall, 2019) and long-term impacts (losing one's sense of confidence, well-being, and freedom; experiencing nightmares, disrupted sleep, and rumination; Brooks, 2011; Haskell & Randall, 2019; Quigg et al., 2020). Moreover, objectifying behaviors, including sexual harassment and unwanted sexual attention (Gervais & Eagan, 2017), have downstream consequences for targets, including subsequent self-objectification (i.e., viewing and evaluating the self as a sexual object), depression, anxiety, sexual dysfunction, and eating disorder symptoms (Roberts et al., 2018). As such, it is critical to develop measurement tools that can aid in the development of

evidence-informed interventions to reduce perpetration of ASHA, especially in drinking venues.

### Understanding men's ASHA perpetration in drinking venues: Gaps in the literature

While alcohol consumption is commonly linked to SV perpetration (Abbey et al., 1998; Testa & Cleveland, 2017), theoretical models of SV perpetration recognize the contributions of multiple factors (Basile et al., 2016) with growing evidence that *violence-supportive beliefs and attitudes* play a key role (Testa & Cleveland, 2017; see Waterman & Edwards, 2022). Studies of physical violence between men in drinking venues point to an important explanatory role of men's normative beliefs and attitudes about alcohol-related aggression in bars (Dumas et al., 2015; Graham & Wells, 2003; Wells et al., 2007, 2011). For example, a scale measuring men's beliefs and attitudes about aggression between men in bars was found to be associated with men's perpetration of physical violence in bars, controlling for known explanatory factors (Wells et al., 2013).

Qualitative and ethnographic research on ASHA in bars illuminates common gendered beliefs that may increase the likelihood of ASHA perpetration, such as men believing they are expected to seek and initiate sexual contact while women are expected to be passive gatekeepers (Becker & Tinkler, 2015; Thompson & Cracco, 2008). Men's explanations for ASHA reflect common gendered beliefs, such as that ASHA results from: women not being careful enough; women wearing revealing clothing and therefore inviting attention; men "just being drunk;" or normal and consensual sexual interactions in the bar (Becker & Tinkler, 2015). Additionally, evidence suggests that unwanted sexual acts are often done as part of men's entertainment or peer pressure (Becker & Tinkler, 2015; Graham, Bernards, Abbey, et al., 2014; Thompson & Cracco, 2008). The highly permissive and sexualized nature of drinking venues (Purcell & Graham, 2005) may promote and foster normative attitudes and beliefs that are specific to these settings (Becker & Tinkler, 2015). Thus, men's normative beliefs and attitudes specifically relating to ASHA in drinking venues are likely important in explaining ASHA perpetration, over and above broader gendered beliefs and attitudes.

### The need for a validated measure of attitudes about sexual harassment and aggression specific to drinking venues

Several measures of general beliefs and attitudes toward SV (including assault, aggression, and/or harassment) have been developed and found to be significantly associated with SV perpetration (Abbey et al., 1998, 2001; Burgess, 2007; Forbes et al., 2004); however, these measures do not adequately address the nature of men's beliefs and attitudes about ASHA specific to drinking venues. For example, only three of 22 items in the well-validated and widely used Illinois Rape Myth Acceptance Scale (IRMA; Payne et al., 1999) ask about beliefs

related to alcohol use, and these items do not refer specifically to drinking venues. Given that many ASHA behaviors are perceived by men as normative when they occur in drinking contexts (Thompson & Cracco, 2008) and that women who go to drinking venues expect to be targets of ASHA (Papp & McClelland, 2020), understanding beliefs and attitudes that make ASHA uniquely acceptable in drinking venues represents an important gap in knowledge. Thus, a measure focused specifically on men's beliefs and attitudes regarding ASHA in drinking venues is an important step toward understanding and preventing this most common form of SV.

## Objectives

Our aim was to develop and validate a measure of beliefs and attitudes about men's alcohol-related sexual harassment and aggression ("BAMASHA") toward women in drinking venues. The specific objectives were to: (1) develop and validate a multi-dimensional model of BAMASHA; (2) assess the extent that BAMASHA contributes unique variance in ASHA perpetration compared to existing measures of beliefs and attitude measures related to SV generally, controlling for drinking pattern measures (i.e., frequency of drinking in bars, heavy episodic drinking); and (3) develop and validate a short-form of BAMASHA for use in research where beliefs and attitudes are not the central focus (e.g., evaluation of ASHA prevention programs).

## METHOD

### Development of BAMASHA

The development of items for BAMASHA was guided by a theoretical predictive model adapted from research and theory regarding physical aggression by men toward other men in drinking venues (Wells et al., 2007, 2013). As described elsewhere (Graham et al., 2024), dimensions of the BAMASHA model drew on the following: (1) the theory of planned behavior (Fishbein & Ajzen, 1975), which describes the explanatory roles of personal approval, social norms (i.e., perceived peer approval), and expected positive and negative consequences of social behavior (Morrison et al., 2002); (2) Situational crime prevention theory (Clarke, 1997) which highlights the perpetrator's expected positive and negative consequences in the environment for committing a crime as well as perceived consequences for the target; (3) research and theory regarding gender roles and scripts, including men's conformity to masculine norms (Benson & Archer, 2002; Hermann et al., 2018; Miller et al., 2014; Waterman & Edwards, 2022), and traditional gender norms regarding sexual encounters in drinking venues, such as men being expected to be the initiators and display sexual prowess and women expected to be the gatekeepers and blamed if targeted because of the way they dress or behave (Becker & Tinkler, 2015; Cowley, 2014); and (4) theories regarding perceived effects of alcohol on aggression and the excuse values of alcohol

(Room, 2001) for men while women's intoxication is seen as making them perceived as more blameworthy (Becker & Tinkler, 2015).

Based on these theories, BAMASHA was constructed to measure six key dimensions, with two sub-dimensions for the latter two: (i) personal approval; (ii) perceived peer approval; (iii) perceived normality; (iv) perceived gender roles and scripts; (v) expected consequences for (a) perpetrator and (b) target; and (vi) role of alcohol for (a) perpetrator and (b) target. As in previous research in which we developed a measure of beliefs and attitudes about male-to-male alcohol-related physical aggression ("BAMARA") (Wells et al., 2013), our aim was to use this model to develop two versions of the BAMASHA: a comprehensive measure suitable for epidemiological research focused on understanding men's beliefs and attitudes related to ASHA as well as a shorter measure for brief assessments in applied research such as evaluations of SV prevention programs.

Drawing on existing theory and research described above, a pool of over 200 items was initially developed reflecting beliefs and attitudes across the above eight dimensions/sub-dimensions. Prior to pilot-testing the measure, we conducted focus groups with 38 young men (aged 18 to 26) to ensure that there were sufficient items for full coverage of all dimensions in the model and to create new items as needed (Graham et al., 2024). Focus group discussions were also used to ensure that items reflected the terminology used by young adult males, without using slang or phrases of limited general parlance.

## Procedure

### Pilot test

A pilot test of the draft inventory of 129 items was first conducted using a sample of 291 young adult men ( $M_{\text{age}}=22.52$ ,  $SD=3.01$ ) recruited in the community in 2019. To reduce burden, half of the participants were randomly assigned to receive 65 items, and the other half received the remaining 64 items. Participants were asked to indicate how much they agreed or disagreed with each item on a 5-point scale, to indicate whether the question was unclear, confusing, or difficult to answer, to indicate any words or phrases they did not understand, and to make suggestions to improve clarity or ease of answering. Based on participants' responses, the inventory was reduced to 82 items after removing unclear or redundant items and items with highly skewed distributions. This 82-item inventory was then used in the present psychometric analyses.

### Main sample

The primary sample was collected during the COVID-19 pandemic between December 2020 and January 2021. Due to restrictions and lockdowns during the pandemic, we recruited participants for an online survey using an existing web panel (Asking Canadians) hosted by the survey firm, Delvinia, and their partner webpanels

(e.g., Prodege, SampleGurus, Research for Good, Go Branded Research) in which participants earn loyalty/reward points (e.g., gas, travel, or credit card rewards) or other incentives for completing surveys. Email invitations were sent to existing web panel members who identified as men and were in the eligible age range. After providing informed consent, participants were asked to confirm they met the following eligibility criteria before proceeding with the survey: (1) self-identify as men; (2) aged between 19 and 25 years, (3) resident of Canada; and (4) been to a drinking venue at least once in the 6 months prior to the start of the COVID-19 pandemic. Delvinia delivered anonymized data to the researchers. The study was approved by the Centre for Addiction and Mental Health (CAMH) Research Ethics Board (REB# 087/2019).

## Participants

Of 12,287 invitations sent to men in the eligible age range, 1102 individuals responded. The survey company screened 613 who did not meet eligibility criteria, 77 who did not complete the survey, and 24 who completed the survey in less than 4 min and were thus deemed unusable; no demographic information was collected for those screened out. To ensure the appropriateness of the sample, additional screening was done. Because the focus of the analyses was on sexual aggression by men toward women, participants were asked to report their sexual orientation (gay, bisexual, two-spirited, homosexual, pansexual, asexual, heterosexual/straight, queer, other—please specify) as part of the screening process, and 29 participants who indicated their sexual orientation as gay or homosexual were excluded. To reduce bias or errors due to inattention and response sets, those who gave the same response to 75 or more of the items in BAMASHA ( $n=15$ ) were excluded. We also removed from the sample participants with missing responses on more than 20% of BAMASHA items ( $n=5$ ) or perpetration items ( $n=9$ ). After screening, the final sample size for the present analyses was 330, although cell sizes for specific analyses varied depending on item missingness, as indicated in the Results section.

## Measures

### Beliefs and attitudes about men's alcohol-related sexual harassment and aggression (BAMASHA)

The 82-item BAMASHA inventory included 10–12 items per dimension and sub-dimension, with items presented in random order in the questionnaire. In both the primary and secondary samples, respondents were given the following instructions: “The questions refer to general opinions about sexual behavior at bars and clubs. Please indicate how much you agree or disagree with each of the following statements. For each statement below, please remember that these behaviors refer to situations in bars and clubs” and were

provided with the following scale beside each item: 1—*strongly disagree*, 2—*disagree*, 3—*neither disagree nor agree*, 4—*agree*, 5—*strongly agree*. As described below, after a series of analyses, the final version of BAMASHA included 24 items (BAMASHA shown in Table 1; the full set of 82 items are available from the first author), while the short form of BAMASHA included 12 items (BAMASHA-SF).

### Perpetration of sexual aggression and harassment in drinking venues

Participants completed the common sexual harassment and aggression in drinking environments scale (C-SHADE) (Graham et al., 2023) recently developed and validated using the present data. The scale includes 10 common forms of ASHA (e.g., “A guy pretends to grab a girl's butt/breast to make his friends laugh”) with the following introduction: “Think about the times when you were at a bar or club in the 6 months prior to the COVID-19 pandemic. How often have you done anything like what the guy(s) did in each of the following? In all descriptions, both the guy(s) and the girl in their early 20s are at a bar or club and they do not know each other.” Response options were rated on a 5-point scale from *very often* (5) to *never* (1). Items were averaged, with higher scores indicating more frequent ASHA in drinking environments. About 72% of participants reported perpetrating at least one type of ASHA on the C-SHADE. The measure showed high internal consistency ( $\alpha=0.96$ ) and was significantly correlated with perpetration of SV generally and with other known factors associated with SA.

### Drinking patterns

#### *Frequency of drinking in bars*

Participants were asked how frequently they went to a bar, club, or pub (number of times in 6 months prior to the COVID-19 pandemic) using an open-ended question.

#### *Heavy episodic drinking*

Participants who indicated they drank any alcohol in the past year ( $n=305$ ) were asked how often they drank five or more standard drinks on a single day in the year before the pandemic. An image was shown on the screen of typical beverages (i.e., beer, wine, liquor) indicating the corresponding amount for a Canadian standard drink (i.e., 13.5g of absolute alcohol). Response categories were converted to days per year as follows: every day=365, 5 or 6 days a week=286, 3 or 4 days a week=182, once or twice a week=78, 1 to 3 days a month=24, less than once a month=6, and never=0.

### Measures for assessing convergent validity

We included several measures of attitudes toward SV to assess the convergent validity of the BAMASHA based on previous research

TABLE 1 Final Beliefs and Attitudes About Men's Alcohol-Related Sexual Harassment and Aggression (BAMASHA) toward women scale and item statistics ( $N=330$ , varies slightly for each item).

Scale (Cronbach's alpha)/items (BAMASHA-SF items in bold)	M (SD)	CFA loading, Long F, Short F
1. My friends think a girl should feel flattered if a guy grabs her ass at a bar <sup>ii</sup>	2.22 (1.26)	0.850
2. If a girl wears provocative clothing at a bar, it means she is okay with some guy grabbing her butt <sup>iv</sup>	2.31 (1.31)	0.845
3. If a girl does not want to be hit on, she should not go to a bar <sup>iii</sup>	2.57 (1.43)	0.824
4. When girls say "no" at a bar, they are often playing hard to get <sup>iv</sup>	2.41 (1.26)	0.823
5. A girl should expect that some guy will grab her ass at a bar <sup>iii</sup>	2.44 (1.37)	0.818
<b>6. Girls who show off their bodies at a bar are open to any guy touching them<sup>iv</sup></b>	2.45 (1.31)	<b>0.807</b>
7. Girls like it when guys they do not know grind against them and touch their bodies on the dance floor <sup>v(b)</sup>	2.38 (1.27)	0.797
<b>8. Bars go by different rules, so you just expect guys to grab and grind against girls they do not know<sup>iii</sup></b>	2.34 (1.26)	<b>0.796</b>
9. If a girl at a bar acts like she is not interested, that means you should keep trying <sup>i</sup>	2.26 (1.27)	0.784
<b>10. A guy who goes around a bar grabbing girls' asses, does not mean any harm<sup>i</sup></b>	2.16 (1.22)	<b>0.775</b>
11. My friends sometimes encourage me to grab or grope girls at a bar <sup>ii</sup>	2.33 (1.38)	0.774
12. When guys are out together at a bar, it is fun to make comments to girls about their bodies to see how they react <sup>v(a)</sup>	2.29 (1.29)	0.765
13. You can get away with grabbing girls at a bar if you are drunk <sup>vi(a)</sup>	2.12 (1.23)	0.749
<b>14. A girl should feel flattered if a guy she does not know compliments her body at a bar<sup>i</sup></b>	2.52 (1.24)	<b>0.745</b>
15. Being drunk at a bar is a great excuse for saying and doing things to girls that you would not do sober <sup>vi(a)</sup>	2.15 (1.32)	0.735
16. Girls at bars like the attention when guys they do not know make comments about their bodies <sup>v(b)</sup>	2.54 (1.22)	0.732
<b>17. If you keep hitting on a girl at a bar after she refuses, there is a good chance she will change her mind<sup>v(a)</sup></b>	2.23 (1.26)	<b>0.722</b>
18. It's a girl's responsibility to stay sober if she doesn't want guys to take advantage of her <sup>vi(b)</sup>	2.45 (1.42)	0.718
<b>19. My friends would encourage me to keep trying with a girl even after she says no<sup>ii</sup></b>	2.43 (1.33)	<b>0.718</b>
20. When a girl is drunk at a bar, she is more open to any guy approaching her <sup>vi(b)</sup>	2.71 (1.31)	0.712
<b>21. When a guy is drunk at a bar, you can't expect him to know when to stop hitting on a girl<sup>vi(a)</sup></b>	2.54 (1.32)	<b>0.704</b>
22. Telling a girl at a bar she has a nice body is a good way to get her interested in you <sup>v(a)</sup>	2.66 (1.23)	0.688
<b>23. Bar staff have more important things to do than protecting girls from guys who are just trying to hook-up<sup>i</sup></b>	2.64 (1.23)	<b>0.649</b>
24. It's up to girls to be clear when they do not want to be touched at a bar <sup>iv</sup>	3.06 (1.36)	0.545
		<b>0.561</b>
BAMASHA (24 items)	( $\alpha=0.96$ )	
BAMASHA-SF (12 items)	( $\alpha=0.91$ )	

Note: Items correspond to the following dimensions: (i) personal approval; (ii) perceived peer approval; (iii) perceived normality; (iv) perceived gender roles and scripts; (v) expected consequences for (a) perpetrator and (b) target; and (vi) role of alcohol for (a) perpetrator and (b) target. Response options for items ranged from 1 (*strongly disagree*) to 5 (*strongly agree*).

(Abbey et al., 1998, 2001; Briere & Malamuth, 1983; Burgess, 2007; Forbes et al., 2004; Payne et al., 1999; Strain et al., 2015). To reduce response burden, each participant was randomly assigned to receive only half of the alternative attitude measures, with both samples receiving approximately the same number of items. Subsample A received the Illinois rape myth acceptance and alcohol and sexual

drive (Women), while Subsample B received hostility toward women, alcohol and sexual drive (Self) and stereotypes of drinking women.

#### Rape myth acceptance (Sample A)

A modified version of the Illinois rape myth acceptance short-form (IRMA-SF; McMahon & Farmer, 2011, originally developed and

validated by Payne et al., 1999) was used to assess general attitudes and beliefs toward sexual assault. In this 22-item revised version, the word "rape" was replaced with "sexual assault." The scale included a 5-point response scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) (Cronbach's alpha=0.96).

#### *Hostility toward women—short-form (Sample B)*

The 10-item hostility toward women—short-form (HTW-SF; Lonsway & Fitzgerald, 1995) was used to assess participants' negative attitudes toward women. Response items were modified from True/False to a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores reflecting greater hostility. Items which reflected positive attitudes toward women were reverse scored (Cronbach's alpha=0.84).

#### *Alcohol and sexual drive-women (Sample A)*

The alcohol and sexual drive (Women) 6-item subscale was used from the larger alcohol expectancies regarding sex, aggression, and sexual vulnerability questionnaire (Abbey et al., 1999). Items were rated on a 5-point scale from 1 (*not at all*) to 5 (*very much*), with higher scores indicating higher perceived greater sexual drive of women when drinking (Cronbach's alpha=0.95).

#### *Alcohol and sexual drive-self (Sample B)*

To assess the perceived effects of alcohol on one's sexual drive, the alcohol and sexual drive-self (ASD-S) 6-item subscale was used from the larger alcohol expectancies regarding sex, aggression, and sexual vulnerability questionnaire (Abbey et al., 1999). Items were rated on a 5-point scale from 1 (*not at all*) to 5 (*very much*), with higher scores indicating higher perceived greater sexual drive for oneself when drinking (Cronbach's alpha=0.95).

#### *Stereotypes of drinking women (Sample B)*

Stereotypes about drinking women that can be used to justify forced sex was assessed using a 5-item scale (SDW; shortened version developed by Pegram et al., 2018). Past research has indicated the SDW is associated with sexual assault perpetration, especially toward victims who have been drinking (Pegram et al., 2018). Items were rated on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*) with higher scores indicating greater endorsement of stereotypes (Cronbach's alpha=0.92).

#### *Control variables*

Age, student status, and relationship status were included as control variables. Participants were asked to report their age in an open text box. To assess student status, participants selected their present employment situation: working for pay (full time or part time), self-employed, going to school, or caring for family. This variable was dichotomized into two categories: student (1), non-student (0). Relationship status was assessed by asking participants if they were currently married, living with a partner, in a relationship/dating but not living with the person, not in a relationship/single, or other (open text box). This variable was

recoded to a dichotomous variable: in a relationship (1) versus not in a relationship (0).

## Analysis

Descriptive statistics, including means, standard deviations, and bivariate correlations among the measures were examined in SPSS 27.0. Initial confirmatory factor analyses (CFA) were then conducted in MPlus 8.8 with items specified as ordinal and using the weighted least squares means and variances adjusted (WLSMV) estimator to test the hypothesized multidimensional structure of BAMASHA. Subsequent exploratory factor analyses (EFAs) using the same estimator were used to assess dimensionality of the items, and subsequent CFAs were conducted on the final version BAMASHA and the short BAMASHA (BAMASHA-SF). With the use of the WLSMV estimator, the analyses are based on available data. The amount of missing data in our analyses was less than 6% for most of the covariances in the data matrix. Model fit was evaluated using Hu and Bentler's (1999) cutoff criteria of close to 0.95 for TLI and CFI, a value less than 0.08 for SRMR, and a value less than 0.06 for RMSEA. Reliability analyses were conducted in SPSS 27.0 (Cronbach's alpha and item-total correlations) to examine internal consistencies of BAMASHA and BAMASHA-SF. Means and bivariate correlations were calculated for each of the measures in SPSS 27.0. Multiple linear regression models were computed in SPSS 27.0 to assess how BAMASHA uniquely predicted ASHA perpetration in the whole sample and in Subsamples A and B, controlling for the criterion and demographic variables. A sample size of 300 was deemed appropriate for testing scale properties (factor structure, reliability and validity) (Rouquette & Falissard, 2011).

## RESULTS

In terms of demographics, the average age of participants was 22.66. Most participants identified their ethnicity as white ( $n=158$ , 47.9%) followed by Chinese ( $n=50$ , 15.2%), South Asian ( $n=21$ , 6%), and Black ( $n=21$ , 6%) and most were non-students ( $n=239$ , 72.9%). Additionally, 59.9% of participants identified as not in a romantic/dating relationship. Descriptive results for other validation and control variables included in the analyses are shown in Table 2.

### Item pool analysis and reduction: Constructing the final BAMASHA measure and its short form

An initial CFA of the items with the eight proposed dimensions/sub-dimensions did not converge to a proper fit (i.e., non-positive matrix). Inspection of that solution revealed a failure to distinguish between many dimensions, with correlations among many dimensions above

**TABLE 2** Means, percentages and correlations of explanatory variables with BAMASHA, BAMASHA-SF and perpetration of sexual aggression in drinking venues.

	M (SD) or percent (%)	Range	Correlation with BAMASHA	Correlation with BAMASHA-SF	Correlation with C-SHADE
BAMASHA	2.43 (0.93)	1–5	–	0.977***	0.538***
BAMASHA-SF	2.50 (0.91)	1–5	0.977***	–	0.493***
Perpetration of sexual aggression in drinking venues (C-SHADE)	2.05 (1.06)	1–5	0.538***	0.493***	–
Age	22.66 (2.09)	19–25	0.024	0.008	0.085
Student (vs. non-student)	27.6%		–0.060	–0.062	–0.085
In a relationship (vs. not in a relationship)	40%		0.073	0.048	0.089
Number of times in a bar (in 6 months prior to COVID)	8.65 (16.26)	1–180	0.020	0.005	0.058
Frequency of heavy episodic drinking (5 or more drinks, days per year)	63.24 (98.89)	0–365	0.322***	0.306***	0.360***
<i>Convergent Variables</i>					
Illinois Rape Myth Acceptance (IRMA-SF) (Sample A)	2.73 (0.96)	1–5	0.905***	0.900***	0.458***
Alcohol and sexual drive: perceptions about women (ASD-W) (Sample A)	2.83 (1.15)	1–5	0.621***	0.626***	0.370***
Hostility to women (HTW) (Sample B)	2.62 (0.80)	1–5	0.651***	0.622***	0.396***
Alcohol and sexual drive: perceptions about self (ASD-S) (Sample B)	2.68 (1.26)	1–5	0.461***	0.439***	0.416***
Stereotypes about drinking women (SDW) (Sample B)	2.11 (1.14)	1–5	0.779***	0.744***	0.548***

Note: \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ . Range of response options for items ranged from 1 (*strongly disagree*) to 5 (*strongly agree*) or 1 (*not at all*) to 5 (*very much*).

0.90 to 0.95. As a result, a first EFA was conducted on the initial item pool of 82 items. Inspection of the eigenvalues, scree plot, and loadings revealed a very strong single factor and a negligible second factor. Inspection of the first unrotated factor indicated that six items had small negative loadings. These were removed and the EFA was repeated with 76 items. The scree plot of this second EFA clearly indicated a very strong factor with the possibility of a second factor (see [Figure 1](#)). Inspection of the geomin oblique rotated solution indicated that the second factor was not well defined with many strong secondary loadings on the first factor and loadings on negatively keyed items, providing support for a one-dimensional rather than a multidimensional model.

To inform refinement of BAMASHA, we took into consideration findings from previous research indicating that men hold a range of beliefs and attitudes about alcohol-related aggression (Wells et al., 2013), and about ASHA specifically (Graham et al., 2024). Thus,

while the inventory was found to be unidimensional, we judged that the final measure should retain items from each of the hypothesized dimensions as well as the three main types of ASHA observed in bars and self-reported by women (i.e., verbal harassment/non-contact aggression, persistence, physical contact/touching) to ensure that the full spectrum of attitudes and beliefs were reflected. However, the support for a single factor suggested that the full inventory of attitudes and beliefs toward ASHA could be captured with a smaller set of items than was needed for measuring men's attitudes toward male-to-male aggression (Wells et al., 2013). Given coverage of both different types of ASHA and the eight dimensions, we judged that 24 items would be sufficient for a theoretically comprehensive measure.

To select the final items for BAMASHA, four authors (SW, KG, SB, and TD) did an initial selection of items taking into consideration the content of the items as well as inter-relationships among

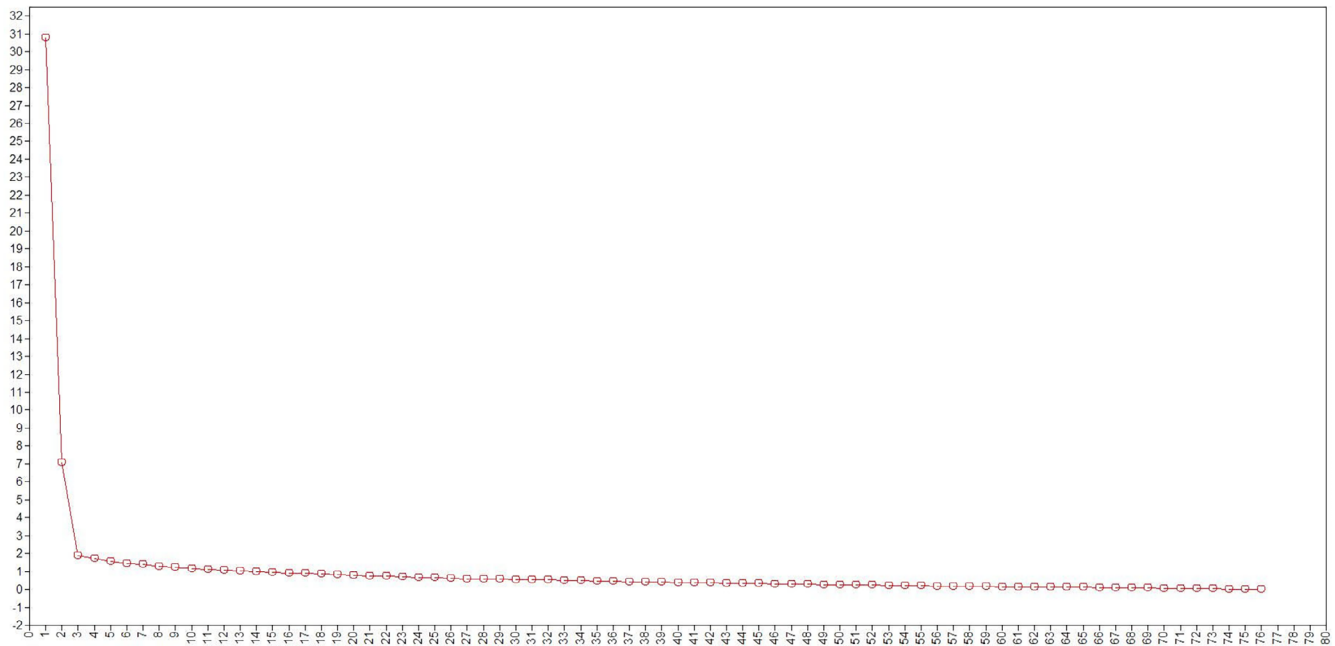


FIGURE 1 Scree plot from the exploratory factor analysis ( $N=330$ , 76 items).

items. We used this approach rather than using item response theory (IRT) or similar statistical analyses to avoid the possibility that important types of ASHA or key theoretical dimensions might be eliminated using a completely statistical method for selecting items. Specifically, four authors independently selected three to five items from each of the eight proposed theoretical dimensions and sub-dimensions, taking into consideration the following: relationship of each item with the overall construct (i.e., factor loading), inter-item correlations of items (to ensure both relationship to the construct as well as avoiding redundancy), frequency distribution of each item to ensure that highly skewed items were not included, face validity of the item, and diversity of item pool to represent different forms of ASHA (e.g., verbal harassment, persistence, and touching). We also took into consideration brevity and simplicity of language—that is, with two items generally equal on other considerations, the shortest and clearest item would be chosen to reduce response burden and minimize inattentive responding. The choices from the four authors were pooled for discussion and final item selection. Discussion among the authors continued until consensus was reached, resulting in 24 items that would comprise the final BAMASHA scale.

Finally, as with the measure of male-to-male aggression (Wells et al., 2013), we also developed a short form of the measure (BAMASHA-SF). Again, four authors (SW, KG, SB, and TD) independently selected at least one item from each hypothesized dimension (thus covering the full range of attitudes and beliefs); high factor loadings; and clearest/most concise wording to ensure ease of use by participants and discussion among the authors continued until consensus was reached for a 12-item short form. Descriptive statistics for the items for both measures are shown in Table 1.

### Confirmatory factor analysis

Confirmatory factor analysis (CFA) using the WLSMV estimator (Li, 2016) was then conducted to confirm the unidimensional factor structure of both BAMASHA and BAMASHA-SF. Both versions provided excellent fit to the data (BAMASHA:  $\chi^2(276)=561.47$ ,  $p<0.001$ , CFI=0.98, TLI=0.97, RMSEA=0.06 (90% CI=0.05, 0.07), SRMR=0.04; BAMASHA-SF:  $\chi^2(54)=119.76$ ,  $p<0.001$ , CFI=0.99, TLI=0.98, RMSEA=0.06 (90% CI=0.05, 0.08), SRMR=0.03), and had high internal consistency (Cronbach's  $\alpha=0.96$  and 0.91, respectively).

### Convergent validity

Means, standard deviations, and bivariate correlations among measures are presented in Table 2. BAMASHA and BAMASHA-SF were highly inter-correlated ( $r=0.98$ ) and both correlated highly with perpetration, with a slightly higher correlation of perpetration with the full BAMASHA ( $r=0.54$ ) than with BAMASHA-SF ( $r=0.49$ ).

Correlations between both versions of the BAMASHA and related measures of attitudes about sexual aggression toward women, hostility toward women, and alcohol's role in sexual aggression showed excellent support for convergent validity with medium-large sized correlations ranging from 0.46 to 0.91. Of note, the correlation between the IRMA-SF and both versions of the BAMASHA were very high (i.e.,  $r=0.91$  and 0.90, respectively). Age, student status, relationship status, and bar frequency were not significantly associated with either version of the BAMASHA. Frequency of heavy episodic drinking was associated with both



versions of the BAMASHA ( $r=0.32$  for the BAMASHA and  $r=0.31$  for the BAMASHA-SF).

### Association of BAMASHA with ASHA perpetration in drinking venues, controlling for other variables

The first step involved regression analyses for the full sample and all variables except attitude measures (Table 3). For regression models that included attitude measures, separate regressions were done for Sample A which included ASD-W, IRMA-SF and Sample B (ASD-S, HTW, and SDW) (Table 4). Prior to the analyses, we tested assumptions for linear regression and confirmed homoscedasticity, linearity, and normality. In addition, we tested for the presence of multicollinearity by examining VIF scores. VIF scores for BAMASHA and SDW were  $>2$  to  $<3$ , and for all other criterion variables, VIF scores were  $>1$  and  $<2$ , indicating low multicollinearity. When BAMASHA and IRMA-SF were included in the same model, however, the VIF score was 5.5, suggesting high multicollinearity; therefore, analysis with Sample A excluded IRMA-SF. To compare the relative power in predicting ASHA

TABLE 3 Multiple linear regression of ASHA perpetration on the BAMASHA Scale controlling for sociodemographic and alcohol consumption measures.

	Total sample, N = 302	
	St. coeff.	p-value
BAMASHA	<b>0.538</b>	<b>&lt;0.001</b>
Adj. $R^2$ /Nag. $R^2$	0.287	
BAMASHA	<b>0.528</b>	<b>&lt;0.001</b>
Age	0.073	0.136
Student	-0.026	0.593
In a relationship	0.048	0.305
Adj. $R^2$	0.288	
BAMASHA	<b>0.527</b>	<b>&lt;0.001</b>
Age	0.070	0.153
Student	-0.023	0.635
In a relationship	0.052	0.271
Days in bar	0.048	0.308
Adj. $R^2$	0.288	
BAMASHA	<b>0.526</b>	<b>&lt;0.001</b>
Age	0.037	0.464
Student	-0.038	0.456
In a relationship	0.032	0.512
Days in a bar	0.027	0.581
Frequency of heavy episodic drinking (5 or more drinks, days per year)	<b>0.116</b>	<b>0.021</b>
Adj. $R^2$	0.306	

Note: For student and relationship, 0 was coded as not a student/not in a relationship and 1 was coded as student/in a relationship. Bold values reflect significance at  $p < 0.05$ .

for BAMASHA versus IRMA-SF, we conducted a separate analysis of Sample A including IRMA-SF but excluding BAMASHA.

Table 3 shows regression models for the full sample with ASHA perpetration (C-SHADE) regressed on BAMASHA, starting with a model including only BAMASHA and adding in demographic and alcohol variables in subsequent steps. The overall prediction of ASHA perpetration with this model was  $R^2=0.31$ , the coefficient for BAMASHA was 0.53 (controlling for other variables), and the only other significant variable was frequency of heavy episodic drinking (coefficient=0.12).

Table 4 shows regression models for the C-SHADE regressed on BAMASHA for Samples A and B controlling for demographic, alcohol, and attitude variables (excluding IRMA-SF). Including these additional measures resulted in a reduction in the coefficient for BAMASHA from 0.53 to 0.47 for Sample A and 0.23 in Sample B. No other variables were significant for Sample A. Of note, Stereotypes about drinking women (SDW) was strongly associated with perpetration (coefficient of 0.36) controlling for other variables in the model, including BAMASHA. Adding the three attitude scales to the

TABLE 4 Multiple linear regression of ASHA perpetration on the BAMASHA Scale controlling for sociodemographic, alcohol consumption, and attitude measures.

	Sample A (n = 141)		Sample B (n = 149)	
	St. coeff.	p-value	St. coeff.	p-value
BAMASHA	<b>0.471</b>	<b>0.000</b>	<b>0.228</b>	<b>0.039</b>
Age	0.070	0.342	-0.013	0.852
Student	-0.027	0.711	-0.035	0.620
In a relationship	-0.003	0.967	0.029	0.655
Days in a bar	-0.058	0.438	0.093	0.161
Frequency of heavy episodic drinking (5 or more drinks, days per year)	0.119	0.108	<b>0.164</b>	<b>0.018</b>
Alcohol and Sexual Drive: Perceptions about Women (ASD-W) (Sample A)	0.010	0.909	na	na
Hostility to women Scale (HTW) (Sample B)	na	na	-0.025	0.778
Alcohol and Sexual Drive: Perceptions about Self (ASD-S) (Sample B)	na	na	0.115	0.147
Stereotypes about Drinking Women (SDW) (Sample B)	na	na	<b>0.363</b>	<b>&lt;0.001</b>
Adj. $R^2$ /Nag. $R^2$	0.286		0.393	

Note: na = variables not included in model since convergent variables were placed in two subsamples (Samples A and B) to reduce participant burden. For student and relationship, 0 was coded as not a student/not in a relationship and 1 was coded as student/in a relationship. Bold values reflect significance at  $p < 0.05$ .

TABLE 5 Multiple linear regression of ASHA perpetration on the IRMA-SF Scale controlling for sociodemographic, alcohol consumption, and attitude measures.

	Sample A (n = 141)	
	St. coeff.	p-value
Illinois Rape Myth Acceptance (IRMA-SF) (Sample A)	<b>0.379</b>	<b>0.001</b>
Age	0.114	0.159
Student	-0.029	0.716
In a relationship	0.017	0.833
Days in a bar	-0.057	0.473
Frequency of heavy episodic drinking (five or more drinks, days per year)	0.129	0.105
Alcohol and Sexual Drive: Perceptions about Women (ASD-W) (Sample A)	0.090	0.362
Adj. R <sup>2</sup> /Nag. R <sup>2</sup>	0.208	

Note: Separate model for IRMA-SF was necessary due to high collinearity (VIF = 5.5) with the BAMASHA when included in the same model. For student and relationship, 0 was coded as not a student/ not in a relationship and 1 was coded as student/in a relationship. Bold values reflect significance at  $p < 0.05$ .

model increased the variance accounted for (Adj. R<sup>2</sup>) in explaining perpetration from 0.31 to 0.39 in Sample B. As found with the full model, frequency of heavy episodic drinking was positively and significantly (coefficient of 0.16) associated with ASHA perpetration in the Sample B model.

Table 5 shows a regression model for Sample A for ASHA perpetration regressed on IRMA-SF (excluding BAMASHA). As shown, the coefficient for IRMA-SF was 0.38, lower than the coefficient of 0.47 found for BAMASHA in comparable analysis shown in Table 4, and an Adj. R<sup>2</sup> of 0.21 for IRMA-SF versus an Adj. R<sup>2</sup> = 0.29 for BAMASHA.

## DISCUSSION

We developed a novel inventory assessing beliefs and attitudes about men's alcohol-related sexual harassment and aggression (ASHA) toward women in drinking venues based on extensive preliminary research and theory. Analyses indicated that these beliefs and attitudes formed a unidimensional measure rather than the eight distinct dimensions/sub-dimensions originally hypothesized. Given this structure, we used an iterative approach to construct a 24-item instrument (BAMASHA) to capture the various concepts of beliefs and attitudes men have toward ASHA. Convergent validity of BAMASHA was supported by significant positive associations with similar constructs, including rape myth acceptance, hostility toward women, stereotypes about drinking women, and alcohol expectancies about sexual drive for women.

The unexpected finding of uni-dimensionality of BAMASHA contrasted with previous findings of men's clear multi-dimensional

beliefs and attitudes related to men's aggression toward other men in drinking venues (Wells et al., 2013). Ethnographic and interview research involving young men indicates highly complex social structures within which they view aggression between men in drinking venues as well as the positive relationship of this violence with social status and friend connections (Benson & Archer, 2002; Wells & Graham, 2003). In contrast, men may be uncomfortable and therefore spend less time thinking about ASHA, resulting in less nuanced understandings and perceptions of ASHA than is true for physical aggression between men. Uni-dimensionality of BAMASHA may also be explained by the normality (Thompson & Cracco, 2008) and general acceptance of ASHA in drinking venues (Tinkler et al., 2018). Perhaps due to a lack of consideration of or recognition that incidents of unwanted sexual contact, sexual objectification, and harassment in bars are actually forms of sexual assault (Becker & Tinkler, 2021), men may not identify nuances and complexities in the perpetration of sexual aggression in the same manner as they do for physical violence between men. Finally, uni-dimensionality may be explained by response bias, with the sample possibly reflecting people with somewhat narrow views about ASHA. Thus, it will be important in future research to confirm uni-dimensionality of the inventory in different samples of men.

The high correlations of BAMASHA with other measures of SV-supportive attitudes supported the validity of the measure. However, the very high correlation with the scale of rape myth acceptance (IRMA-SF) (McMahon & Farmer, 2011), despite the specific focus of BAMASHA on ASHA perpetration in drinking venues, raises the question of the added contribution of BAMASHA. There are several possible explanations for very high correlation of BAMASHA with IRMA-SF. First, as noted above, perhaps men's beliefs and attitudes regarding sexual aggression in public drinking venues are uni-dimensional and reflect an underlying overall endorsement of rape myths in this context. Second, three items regarding alcohol-related sexual assault on the IRMA-SF may have increased the overlap between the two measures. However, in a post-hoc sensitivity analysis omitting the three alcohol-related items from the IRMA-SF, the IRMA-SF was still significantly correlated with BAMASHA and BAMASHA-SF ( $r$ 's = 0.89), and there were no significant differences in results of the multiple regression analyses for Sample A. A third possible explanation is that the BAMASHA scales and IRMA-SF items had the same response options and were located next to one another in the survey instrument. Finally, it is possible that both the lack of dimensionality of the BAMASHA scales and the high correlation between the BAMASHA scales and IRMA-SF are a function of the use of an online sample and/or online survey approach, which may have resulted in reduced variability in responses. Thus, replication is important.

It should be noted, however, that when BAMASHA and IRMA-SF were compared in regression models using the same set of control variables, while both measures were strongly associated with ASHA perpetration (consistent with evidence and theory that violence-supportive beliefs and attitudes are important explanatory factors for SV; Waterman & Edwards, 2022), BAMASHA explained about

8% more variance in ASHA perpetration than did IRMA-SF. Thus, despite the high correlation between BAMASHA and IRMA-SF, these findings suggest that the BAMASHA could be a useful contextual measure for explaining additional variance in alcohol-related sexual aggression in drinking venues, above and beyond general measures of rape myth acceptance. Further, supporting latent state–trait models which posit that people's attitudes, beliefs, and personality traits can vary across different contexts (Steyer et al., 2015), BAMASHA is useful to further explore how attitudes and beliefs in the context of social drinking settings specifically compare to general rape myth acceptance.

Heavy episodic drinking (i.e., consuming five or more drinks in 1 day) was also associated with perpetration of ASHA, controlling for all other measures, although this variable did not reach  $p < 0.05$  level of significance for Sample A. This finding aligns with past literature linking heavy episodic drinking to ASHA perpetration in bars (Cleveland et al., 2019). Many prevention initiatives focus on women's drinking to reduce their vulnerability to ASHA leading to women assuming responsibility for occurrence of ASHA (Brooks, 2011). These results suggest that a better and more direct approach to SV prevention might be to reduce men's heavy episodic drinking, consistent with experimental research (Abbey et al., 2014; Crane et al., 2016) showing a causal association between higher alcohol consumption and SV perpetration.

Finally, a short version of BAMASHA was constructed (BAMASHA-SF) for use when a brief assessment is needed. Analyses from the present sample suggest only a weak advantage of the longer scale (slightly higher correlation with perpetration) but further research is needed to evaluate the relative advantage of the longer scale and its theoretical dimensions, given its more extensive coverage of the various aspects of men's attitudes toward ASHA. Although the full BAMASHA may be the best option when the focus of the research is explicitly on attitudes, BAMASHA-SF could be a valuable tool for applications where questionnaire space is limited such as evaluating the effects of interventions designed to change commonly accepted norms and behaviors. For example, sexual assault intervention programs that target men could measure BAMASHA-SF at baseline, post-intervention, and longitudinally to see if these programs are effective at shifting men's normative attitudes and beliefs and ASHA perpetration in drinking venues. In contrast, the full BAMASHA provides a more comprehensive account of the inventory and can be used in future psychometric research and epidemiological studies examining explanatory models of beliefs and attitudes and ASHA behaviors. Such research is needed to confirm uni-dimensionality of BAMASHA in different samples (e.g., student samples, bar patrons, etc.) and to further explore the best models for explaining sexual assault perpetration.

These findings may have applications for future research to inform prevention of ASHA in drinking settings. Although numerous sexual assault intervention programs have been developed and tested over the last 30 years, with some notable exceptions (see e.g., Gidycz et al., 2011; Salazar et al., 2023; Senn et al., 2017; Zinzow et al., 2018), they have shown limited effectiveness

(DeGue et al., 2014). Although it is important to provide women with knowledge and tools to avoid, deflect, and protect themselves from sexual assault, it is also important to develop effective interventions that address the root of the problem—normative attitudes and beliefs held by men that support and promote ASHA in drinking venues. These programs should concentrate on shifting attitudes and correcting misperceptions at the individual and/or peer group level, given that attitudes and beliefs have been found to be the most robust predictors of SV perpetration (Waterman & Edwards, 2022), and that attitudes and beliefs about SV more broadly tend to be shared by peer groups (Swartout, 2013).

## Strengths and limitations

A major strength of the current paper is the rigorous approach that led to the development of the items in BAMASHA, the psychometric analysis of the inventory, and the introduction of a novel contextual measure. An additional strength of the study is its diversity. Unlike many studies comprised solely of college or university samples, the current sample included many non-students (>70%) as well as people of various ethnicities other than white (>47.9%). The study also had several limitations. First, the sample relied on young participants in a national web-based panel who were motivated to participate by loyalty points; plus, the response rate to the initial invitation sent to potential participants was low. Thus, the sample may not be representative of the general population of young men in Canada. However, as reported by Graham et al. (2023) in previous analyses using these data, the perpetration rate of sexual aggression generally found with the modified version of the SES (Koss et al., 2007) was comparable to those found in some other samples from a similar age group (Dardis et al., 2016). Also, the high rate of perpetration found in our sample (i.e., 71.9%) corroborates generally high rates of victimization and perpetration found in other studies (see Quigg et al., 2020). Nevertheless, further research using representative samples is needed to confirm the present findings. Another limitation is that the online survey was somewhat long, including measures of related constructs, perhaps making nuances among different items on the measures difficult to notice. Relatedly, participants may have become careless in their responding. While we used several approaches to reduce the effects of inattentive responding, such as removing participants from the sample who showed clear evidence of inattention, we may not have eliminated all such effects. Another limitation of this study is that the inventory focused on men's alcohol-related sexual harassment and aggression toward women and did not consider beliefs and attitudes that may be predictive of violence toward people of diverse genders and sexual minorities, which is an area for future research to consider. Finally, data collection took place in 2020 during the COVID-19 pandemic. While we restricted recruitment to young men who had been to a bar in the past 6 months, it is possible that their beliefs and attitudes about sexual behaviors in bars may not have been as salient compared to other time periods. Thus, further research is needed to confirm the findings.

## CONCLUSION

The present findings suggest that BAMASHA and BAMASHA-SF may be promising measures for assessing young men's beliefs and attitudes as they pertain to alcohol-related sexual aggression in drinking venues such as bars and nightclubs. Although analyses suggested that BAMASHA was unidimensional, rather than multidimensional as predicted, and the measure was correlated highly with general rape myth acceptance, BAMASHA explained more variance in ASHA perpetration than IRMA-SF suggesting that this new measure could play an important role in understanding how men's attitudes relate to SV and in evaluating the effects of interventions designed to change men's normative attitudes and beliefs about SV and harassment in the specific context of drinking venues.

## CONFLICT OF INTEREST STATEMENT

The authors have no real or perceived conflict of interest to declare.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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