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Gender and Country Differences in Alcohol-Aggression Expectancy and Alcohol-Related Intimate Partner Violence

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ABSTRACT

Drinking is associated with a higher rate of violent offending among males and a higher rate of violent victimization among females. Using comparable self-reported data, this study examines between the United States ($n = 2,363$) and Japan ($n = 1,660$) whether the gender difference in alcohol-related Intimate Partner Violence (IPV) is explained by alcohol-aggression expectancy. The results indicate that though males are more likely than females to expect that alcohol would make them more aggressive, alcohol-aggression expectancy cannot explain the gender difference in alcohol-related IPV. In both countries, instead, alcohol use of males most strongly accounted for the gender difference in alcohol-related IPV.

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Empirical research reports a strong association between alcohol use and violence, especially within the criminal justice system (Berthelot et al. 2015; Fagan 1990; Felson et al. 2008a; Felson, Teasdale, and Burchfield 2008b; Mustaine and Tewksbury 2009; Parker and Rebhun 1995; Sherley 2005). About 36% of victims of violent crime perceived that their perpetrators were under the influence of alcohol (Rand et al. 2010; see Greenfeld 1998 for an earlier report); more than 35% of state inmates and 20% of federal inmates who are serving time for violent crimes were under the influence of alcohol at the time of the offense (Rand et al. 2010; see Greenfeld 1998 for an earlier report); about 40% of convicted homicide and assault offenders were drinking at the time of the offense (Greenfeld 1998); and almost half of all victims of homicide (Kuhns et al. 2011) and 37% of sexual assault victims (Hindmarch and Brinkmann 1999) tested positive for alcohol. Moreover, alcohol use is associated with an escalation of violence and an exacerbation of the risk and the seriousness of injuries resulting from violent interactions (Greenfeld 1998; Martin and Backman 1997; Rand et al. 2010).

Alcohol, gender, and violence

Although alcohol use is associated with an increased confrontation with violence for both genders (Bachman and Peralta 2002; Hoaken and Pihl 2000), the strength of this association varies by gender, such that alcohol use is more strongly associated with violence for males compared to females (Giancola and Zeichner 1995; Nolen-Hoeksema 2004; Scott, Schafer, and Greenfield 1999). Empirical research, for instance, reports that 35% of male inmates (compared to 22% of female inmates) in jail were under the influence of alcohol at the time of their offense (James 2004); alcohol was present in more than 50% of male-perpetrated (but only 27% of female-perpetrated) violence (Pernanen 1991); and alcohol was present in 53% of male (while only 38% of female) victims of homicide (Sheehan

et al. 2012). Males are overall more likely than females to state that alcohol use was a reason for causing an injury to another person or damage to property (Perkins 1992) or being aggressive in general (Crawford 1984), and more male than female arrestees report heavy and frequent alcohol use prior to their arrest (Nunes-Dinis and Weisner 1997).

Moreover, there is a gender difference in the way alcohol use is associated with violence, with empirical research reporting overall a higher rate of violent offending among males (Collins and Messerschmidt 1993; Giancola and Zeichner 1995) and a higher rate of violent victimization among females (Kuhns et al. 2011; Nolen-Hoeksema 2004; Parks and Fals-Stewart 2004) upon an increased alcohol use. The National Incident-Based Reporting System (NIBRS) reports that of all violent incidents involving alcohol, 80% have been perpetrated by male offenders whereas only 40% of all such incidents involved male victims (Rand et al. 2010). It is not surprising, therefore, that much of the empirical research on alcohol and violence has focused on alcohol's role in violent offending among males and violent victimization among females, especially with interpersonal violence such as intimate partner violence.

Alcohol and Intimate Partner Violence

Intimate Partner Violence (IPV) can be defined as “any behaviour within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship” (Krug et al. 2002: 89). Gender differences are more evident in IPV than in other interpersonal violence, except for sexual assault (Testa et al. 2011), with violence perpetrated by males on their female partners being more common and injurious compared to violence perpetrated by females on their male partners (Kantor and Jasinski 1998). According to U.S. Department of Justice estimates, about 80% of all homicide and manslaughter that occurs between intimate partners involved female victims (Greenfield et al. 1998).

Moreover, alcohol is highly prevalent in IPV (Fals-Stewart 2003; Graham, Plant, and Plant 2004) with more than half of all violent episodes occurring in a residence or home where alcohol is involved (Rand et al. 2010). Unlike most other interpersonal violence, however, where both offender and victim tend to be intoxicated, IPV tends to involve only one, usually a male perpetrator, who has been drinking at the time of the incident (Martin and Bachman 1997; Pernanen 1991). Moreover, Greenfield et al. (2009) note a gender difference in the type of alcohol-involved victimization, such that females are more likely to be victims of IPV as a result of others' drinking whereas males are more likely to be victims of alcohol-related physical assaults by other males. Like research on alcohol and violence more generally, much empirical research on alcohol use and IPV, therefore, has also focused on alcohol-related IPV perpetrated by males on their female partners, finding an increasing risk of IPV when male perpetrators have been drinking alcohol (see for a review, Graham et al. 2011). Other empirical studies have found a significant positive association between alcohol use and victimization among females (see for a review, Devries et al. 2013).

Both experimental and correlational studies have consistently found an association between alcohol use and violence (for a review, see Exum 2006) and the gender difference in this association. Explanations that focus solely on pharmacological effects of alcohol on aggression, however, cannot fully account for the gender differences in how alcohol use is associated with IPV, or more generally violence, unless alcohol's pharmacological effect on aggression varies by gender. Needed also are sociopsychological explanations that focus on social and cultural factors, such as alcohol-aggression expectancy, that might account for the gender difference in how alcohol use is associated with violence.

Gender, culture, and alcohol-aggression expectancy

The significant effect of our “response expectancy” on all facets of our experience, including mood, reaction to medications, and behaviors, has been noted for a long time (Kirsch 1999:3). Specifically related to alcohol, alcohol expectancy refers to our expectation of the pharmacological effect of alcohol, for instance, on aggression (see for a review, Goldman, Darkes, and Del Boca 1999; Nicolai,

Demmel, and Moshagen 2010; Powers et al. 2015). The learned disinhibition hypothesis states that alcohol's impairing effect on our ability to inhibit deviance results not from its pharmacological effect but from our expectation of its pharmacological effect (Collins 1983). Numerous studies have shown a strong effect of alcohol expectancy on behaviors and moods, including the expectation of alcohol's effect on aggression influencing aggressive behaviors while being intoxicated (e.g., Beck and Heinz 2013).

Empirical research consistently finds that males are more likely than females to expect that alcohol would make them more aggressive (Barnwell, Borders, and Earleywine 2006; Borders, Barnwell, and Earleywine 2007). This gender difference could be explained by gender norms that shape our beliefs concerning what behaviors are accepted in any given situation, including those associated with alcohol use and violence. Because gender norms are in general more strongly restricting of female behaviors and interactions compared to those of males (Blume 1997; Eagly and Wood 1991; Eron and Huesmann 1989; Kunkel and Nielsen 1998; Tibbetts and Herz 1996) and alcohol use and violence have historically been more strongly condemned among females compared to males, gender norms could explain why males are more likely than females to expect alcohol would make them more aggressive. The present study, therefore, examines whether or not alcohol-aggression expectancy accounts for the expected gender difference in alcohol-related IPV, or more specifically, why alcohol use is more likely to be related to violent offending among males and violent victimization among females.

Similarly, empirical research indicates that the association between alcohol intoxication and violence varies across societies and cultural drinking norms (MacAndrew and Edgerton 1969; Parker 1993). Like gender norms, cultural norms surrounding drinking affect how people drink and the beliefs concerning behaviors associated with alcohol use that are considered acceptable or problematic, such as excessive drinking, public display of intoxication, and alcohol-related violence (Greenfield and Room 1997; Room and Mäkelä 2000). Most societies, moreover, apply a unique set of behavioral norms for drinking, and behaviors that are considered problematic under normal circumstances, such as rowdiness, are often tolerated while under the influence of alcohol (MacAndrew and Edgerton 1969; Room 2001). MacAndrew and Edgerton (1969) go so far to state that behaviors associated with alcohol intoxication are culturally induced, rather than pharmacologically induced, thereby explaining why aggression and violence are more strongly associated with alcohol intoxication in some groups of people and societies than in others that associate it with joyousness and happiness (for a review, see Room 2001). Some empirical studies, moreover, indicate that aggressive behaviors vary more widely across cultures than between genders (Rohner 1976; see for a more recent example, Bernards and Graham 2013), suggesting the importance of considering cultural and structural factors, in addition to pharmacological factors, in explaining alcohol-related violence.

As in much of social science, a lack of empirical research conducted outside North America, especially cross-cultural research that compares two or more distinct cultures, is a major limitation of research on alcohol and aggression/violence (Room 2001). Even rarer is cross-cultural research that tests theories of alcohol and violence, such as alcohol expectancy and the learned disinhibition hypothesis. Room (2001) indeed notes only four empirical studies that compared alcohol expectancy across countries. The present study, therefore, attempts to fill this critical gap in the literature by examining cross-nationally between the United States and Japan alcohol-aggression expectancy as an explanation for the gender difference in alcohol-related IPV.

In cross-national research, Japan offers an interesting contrast to Western industrialized societies because of their similarities in terms of modernization and subsequent economic, political, and structural change and their differences particularly in terms of culture (Nakane 1970; Reischauer 1988). Compared to the United States, a society that is relatively more egalitarian in terms of gender, Japan exhibits greater gender inequality in many aspects of social life, including division of labor (Ochiai 2014), attitude toward gender roles (Treas and Widmer 2000), and participation in higher education (OECD 2004) and the labor market (United Nations

Statistics Division 2007). Empirical research indicates that societies characterized by greater gender inequality more strongly prescribe gender norms concerning all aspects of behaviors and social interactions (Kashima et al. 1995; Nayak et al. 2003), including alcohol use and violence, thus creating greater gender differences in these behaviors (including deviance indicated by Kobayashi, Sharp, and Grasmick 2008). Cross-cultural research, for instance, indicates a greater gender difference in alcohol use in societies that adhere to more traditional gender roles compared to egalitarian societies (Gefou-Madianou 1992; Wilsnack et al. 2000). Empirical studies also find a greater occurrence of IPV perpetrated by males on their female partners, and violence against women in general, in societies with higher levels of gender inequality (Archer 2006). The gender differences in alcohol use, IPV, alcohol-aggression expectancy, and the association between alcohol use and IPV are, therefore, all hypothesized to be greater in Japan compared to the United States.

Hypotheses

Based on the review of literature, the following five hypotheses were generated and tested in the present study:

- H1:** There is a gender difference in the association between alcohol use and IPV, such that alcohol use is more strongly associated with IPV offending for males and with IPV victimization for females.
- H2:** There is a gender difference in alcohol-aggression expectancy, such that males are more likely than females to expect that alcohol would make them more aggressive.
- H3:** The association between alcohol use and *IPV offending* varies by alcohol-aggression expectancy, such that drinking and IPV offending are more strongly associated among those who expect that alcohol would make them more aggressive than among those who do not expect that alcohol would make them more aggressive, while the association between drinking and *IPV victimization* does not vary by alcohol-aggression expectancy.
- H4:** The gender difference in alcohol-aggression expectancy explains the gender difference in the association between alcohol use and IPV.
- H5:** All hypothesized gender differences in the associations among alcohol use, IPV, and alcohol-aggression expectancy are greater in Japan than in the United States.

Data and measures

The U.S. and Japanese data used to test the five hypotheses are from the GENACIS (*Gender, Alcohol, and Culture: An International Study*) project. GENACIS is an ongoing international project involving 35 countries that focuses on country and gender differences in the extent of alcohol consumption and its negative consequences, including IPV (see for more information, Wilsnack 2012). A nationally representative sample was selected in both countries and given a comparable survey on the use of alcohol and alcohol-related problems. In addition to the language in which survey was administered, the wording of the survey questions used in two countries also differed slightly. The Japanese survey used a standard GENACIS questionnaire, adopted in most of the GENACIS surveys. The U.S. survey, on the other hand, used a questionnaire developed independently, but similar to the standard GENACIS questionnaire, and included the same measures of alcohol consumption, alcohol problems,

and demographics, but asked slightly different questions on IPV and alcohol-aggression expectancy (see below).

Because the primary dependent variable is IPV, respondents who were not married or did not live with a romantic partner were excluded ($n = 1,951$ or 45.20% of U.S. respondents and $n = 555$ or 24.63% of Japanese respondents). Additionally, those who had a missing value on the majority of the items used to create a problem drinking scale ($n = 3$ U.S. respondents and $n = 117$ Japanese respondents), either of IPV items ($n = 23$ Japanese respondents), and an alcohol-aggression expectancy item ($n = 17$ U.S. respondents and $n = 24$ Japanese respondents) were excluded.¹ Finally, after excluding U.S. respondents who were outside the age range of the Japanese sample (see Footnote 2), the analyses were conducted with 2,343 U.S. and 1,532 Japanese respondents. Abstainers who do not drink alcohol were not excluded because their exclusion would result in a small variance on the IPV measure. All variables were created separately by country with missing values of each variable imputed with either the mode (for nominal and ordinal variables) or the mean (for interval-ratio variables) of that variable in the respective country sample.

Demographic variables

Besides dummy variables measuring *country* (U.S. = 1) and *gender* (males = 1), five variables that capture basic sociodemographic variations across two samples were controlled in all multivariate analyses. *Age* is an interval-ratio variable.² *Underage child* is a dummy variable that measures whether or not the respondent lived with at least one underage child (= 1). *Educational attainment* is a dummy variable (some college degree or higher=1). *Household income* is a dummy variable (greater than the sample median category³ = 1). *Employment status* is a dummy variable (employed full time = 1). Descriptive statistics of five control variables and *gender* calculated separately by *country* are shown in Table 1. As compared to the Japanese sample, the U.S. sample was significantly younger and had significantly higher proportions of males and those with some college or a higher education level, as well as those who live with at least one underage child and those who were not employed full time.

IPV

A variable measuring IPV was created based on respondents' answers to two questions concerning their experiences with IPV offending and victimization. The Japanese and U.S. surveys differ slightly in terms of the indicator wording,⁴ the specific behaviors used to measure IPV,⁵ and the reference period in the two questions. The U.S. survey was more restrictive in terms of the behaviors (e.g., the Japanese survey includes "other," an all-encompassing IPV-behavior category) and the reference period (i.e., past year for

¹Because these three measures (problem drinking, IPV, and alcohol-aggression expectancy) are dependent and theoretical variables that are critical for the present study, cases with a missing value on these measures were excluded. The analyses done with missing values imputed instead of excluded, however, produced results that are identical to the results reported here.

²The Japanese sample was limited to persons who were between the ages of 20 and 70 years old. U.S. respondents who were younger than 20 or older than 70 were, therefore, excluded to match the age range of the two samples.

³Household income was originally measured as an ordinal variable in both countries. The median income category for the present study used for the U.S. sample was \$30,000 and for the Japanese sample was ¥7 million, calculated separately for each country.

⁴The U.S. questions asked, "In the past year, has your (husband/wife/partner) ever done one of the following things?" (victimization) and "In the past year, have you ever done one of the following things to your (husband/wife/partner)?" (offending). The Japanese questions asked (in Japanese), "People can be physically aggressive in many ways, for example, punching, or in some other way. What is the most physically aggressive thing your spouse/partner has done to you during the last 2 years?" (victimization) and "What is the most physically aggressive thing you have done during the last 2 years to your spouse/partner?" (offending).

⁵Behaviors referred to in the two IPV questions in the U.S. questionnaire were: "thrown something at you," "pushed, grabbed, shoved," "slapped, hit, bit, kicked or tried to hit," "beat up, choked, burned or scalded," "threatened with a knife or gun," and "used knife or gun." Behaviors referred to in the two IPV questions in the Japanese questionnaire were: "push, shove, grab, slap, punch, kick, beat up, throw something at you, hit you with an object, threaten you, threaten you with a weapon, cut you with a knife, and other."

Table 1. Descriptive statistics of control and theoretical variables and frequency and percentage distributions of IPV.

Control variables	U.S. (n = 2,343)	Japan (n = 1,532)	Significance test ¹
Gender	54.55% males	50.65% males	$\chi^2 = 5.635^*$
Mean age (SD)	40.71 (12.70)	48.25 (11.84)	$t = -18.547^{***}$
Underage child	62.01% living with underage child	47.85% living with underage child	$\chi^2 = 75.627^{***}$
Educational attainment	37.77% with some college or higher	31.33% with some college or higher	$\chi^2 = 16.840^{***}$
Household income	48.49% earned more than the median category	51.76% earned more than the median category	$\chi^2 = 3.980^*$
Employment status	60.22% employed full time	72.85% employed full time	$\chi^2 = 65.073^{***}$
	U.S. (n = 2,343)		Japan (n = 1,532)
	Males (n = 1,278)	Females (n = 1,065)	Significance test ³
Mean problem drinking (SD)	1.555 (1.623)	0.8019 (1.213)	$t = 12.501^{***}$
Alcohol-aggression expectancy ²	16.28%	12.30%	$z = 7.417^{**}$
Victimization only	63 (4.93%)	27 (2.54%)	20 (2.58%)
Offending only	45 (3.52%)	90 (8.45%)	48 (6.19%)
Both victimization and offending	121 (9.47%)	127 (11.92%)	45 (5.80%)
Neither victimization nor offending	1,049 (82.08%)	821 (77.2%)	663 (85.44%)
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Neither victimization nor offending	1,049 (82.08%)	821 (77.2%)	663 (85.44%)

¹Significance test of difference between two countries.

²The percentage of respondents who expect that alcohol would makes them more aggressive.

^{3, 4} Significance test of difference between males and females.

^{1,3,4}All significance tests are two-tailed tests with * $p < .05$, ** $p < .01$, *** $p < .001$

the U.S. survey and last two years for Japanese survey). Therefore, a caution is in order when comparing the results on IPV across these two countries. However, the primary focus of the present study is the comparison of the *gender differences* in the associations among problem drinking, alcohol-aggression expectancy, and IPV, rather than the comparison of the *country differences* in the estimated values of these variables. The IPV questions in the two surveys are comparable enough to allow us to combine answers in each survey into a variable, called *IPV*, with the following four categories: “victimization only,” “offending only,” “both victimization and offending,” and “neither victimization nor offending.” Frequency and percentage distributions across these four categories of *IPV* are shown in Table 1, which indicate overall that while the experience of IPV was equally prevalent across gender in the Japanese sample (15%), it was more prevalent among females (23%) compared to males (18%) in the U.S. sample.

Problem drinking

Although there are different measures of drinking examined with the GENACIS project, a scale measuring problem drinking was created because the items used to create this scale were the most comparable drinking measures available for two samples. Each of the seven items used for the problem drinking scale measured respondents’ experience in the past 12 months with alcohol-related consequences indicative of heavy and dependent drinking. All seven items were measured as “yes” or “no” of having in the past 12 months: “drunk enough to feel the effects of the alcohol,” “felt sick as a result of drinking,” “taken drink to get over any of the bad aftereffects of drinking,” “found that you were not able to stop drinking once you had started,” “needed a first drink in the morning to get yourself going after a heavy drinking session,” “had a feeling of guilt,” and “been unable to remember what happened the night before because you had been drinking.” A *problem drinking* scale was created by summing the number of “yes” answers on the seven items ($\alpha = 0.71$ and the mean of 1.21 with the *SD* of 1.50 for the U.S. sample and $\alpha = 0.76$ and the mean of 0.72 with the *SD* of 1.23 for the Japanese sample). Descriptive statistics of *problem drinking* calculated separately by *country* and *gender* are shown in Table 1. As expected, males in both countries engaged in a significantly higher level of problem drinking than females.

Alcohol-aggression expectancy

A variable *alcohol-aggression expectancy* was created based on respondents’ answers to a question regarding their expectation of alcohol’s effect on their own aggression. The wording of the question used to create this variable differed slightly across the two countries.⁶ *Alcohol-aggression expectancy* is a dummy variable coded one for those who expect that alcohol would make them more aggressive. The percentage of respondents who expected that alcohol would make them more aggressive calculated separately by *gender* and *country* is shown in Table 1. As expected, males in both countries were significantly more likely than females to expect that alcohol would make them more aggressive.

Analysis results

Because *IPV* is a (multi)nominal variable with four categories, multinomial logistic regression analysis with “neither victimization nor offending” as the reference category was used as a primary analytical technique. Three types of analysis results produced by multinomial logistic regression analysis are reported for most models. First, the likelihood ratio tests of the main effects of independent variables on the dependent variable as a whole were examined to compare across

⁶The U.S. question asked, “If you were to drink enough alcohol to feel the effects, what are the chances that you would become aggressive?” with answer choices: “a very strong chance,” “a strong chance,” “some chance (50/50),” “not much chance,” and “no chance at all.” The question in the Japanese survey asked “When you drink, how true would you say it is that you become more aggressive toward other people?” with answer choices: “usually true,” “sometimes true,” and “never true.”

gender and *country* the significance of the associations between *problem drinking* and *overall IPV* and between *alcohol-aggression expectancy* and *overall IPV*. Second, the parameter estimates of the individual effects of independent variables on each category of the dependent variable were examined to compare across *gender* and *country* the significant associations between *problem drinking* and each of the specific categories of IPV and between *alcohol-aggression expectancy* and each of the specific categories of IPV. Finally, the likelihood ratio tests of overall models were examined to compare the model fit across *gender* and *country*. All multivariate models were assessed for assumptions and multicollinearity and were significant at the .05 significance level. The following analysis results compared across *country* on the *gender* differences related to the five hypotheses are reported: (1) *IPV*, (2) the association between *problem drinking* and *IPV*, (3) *alcohol-aggression expectancy*, and (4) the association between *problem drinking* and *IPV*, controlling for *alcohol-aggression expectancy*.

IPV

In order to establish a baseline model of the country and gender differences in *IPV*, *IPV* was regressed on *gender* separately by *country*. The likelihood ratio tests (see top of Model 1, Table 2) show that *gender* was significantly associated with *IPV* in both countries ($\chi^2 = 29.01, p < .001$ for the U.S. sample and $\chi^2 = 14.15, p = .003$ for the Japanese sample).

The parameter estimates (see bottom of Model 1, Table 2), however, indicate that *gender* was differentially associated with categories of the *IPV* in the two countries. Consistent with the expectation, females were significantly more likely than males to experience “victimization only” and males were significantly more likely than females to experience “offending only” in the Japanese sample. The gender difference in *IPV* was unexpectedly reversed in the U.S. sample, on the other hand, where males were significantly more likely than females to experience “victimization only” and females were significantly more likely than males to experience “offending only.” The findings in the U.S. sample are, however, consistent with some studies (e.g., Archer 2006) that found a higher rate of aggression among females toward their male partners, though not necessarily a higher degree of aggression that results in greater injuries. Indeed, behaviors used to create *IPV* varied greatly in the degree of seriousness and aggression from “pushing or grabbing” to “used a knife or gun,” and thus, it is possible that even though the rate of offending is higher among females compared to males in the U.S. sample, the degree of seriousness and aggression is higher among males compared to females. When the analysis was run with two countries combined (see the combined results in Table 2), the parameter estimate for the interaction term between *country* and *gender* was significant for “victimization only” and “offending only,” confirming the inverse results of the association between *gender* and *IPV* found across the two countries. In both countries, there was no significant gender difference in the likelihood of experiencing “both offending and victimization.”

Problem drinking and its association with IPV

The inverse results found across countries on the gender difference in *IPV*, albeit unexpected results for the United States, provide an interesting cross-national context to examine gender differences in associations among problem drinking, alcohol-aggression expectancy, and *IPV*. In the next set of analyses, *country* and *gender* differences in *problem drinking* were examined first, and then the *gender* difference in the association between *problem drinking* and *IPV* was examined across *country*.

First, country and gender differences in the level of problem drinking were examined by regressing *problem drinking* on *country* and *gender* using ordinary least squares analysis (see the combined model in Table 3). The results indicate that the U.S. respondents engaged in a significantly higher level of problem drinking ($\beta = .106, p < .001$) than Japanese respondents. The analysis run separately by *country* (see the separate models in Table 3) show that, as expected, males in both countries engaged in a significantly higher level of problem drinking than females ($\beta = .258, p < .001$

Table 3. Multiple regression analyses¹ with problem drinking and alcohol-aggression expectancy as dependent variables, separated by country and for a combined sample.

	U.S. (n = 2,343)				Japan (n = 1,532)				Combined (n = 3,875)			
	b	S.E.	β	p	b	S.E.	β	p	b	S.E.	β	p
Problem drinking ²												
Intercept	1.587	0.145		0.000	1.592	0.187		0.000	1.326	0.125		0.000
Country (U.S. = 1)									0.308	0.046	0.106	0.000
Gender (males = 1)	0.776	0.062	0.258	0.000	0.753	0.064	0.307	0.000	0.765	0.045	0.269	0.000
R ²	0.107				0.157				0.145			
Alcohol-aggression expectancy ³												
Intercept	-1.308	0.291		0.000	-0.888	0.426		0.037	-1.238	0.274		0.000
Country (U.S. = 1)									0.068	0.158	1.070	0.669
Gender (males = 1)	0.301	0.128	1.351	0.019	1.266	0.169	3.546	0.000	1.173	0.154	3.232	0.000
Country $\times$ Gender									-0.831	0.191	0.435	0.000
Nagelkerke R ²	0.027				0.099				0.058			

¹Control variables are age, underage child, employment status, household income, and educational attainment.

²Ordinary least squares regression results with two-tailed tests.

³Binary logistic regression results with two-tailed tests.

in the U.S. sample and $\beta = .307$, $p < .001$ in the Japanese sample). The gender difference, however, did not differ significantly across two countries.

Second, the gender difference in the association between problem drinking and IPV was examined. The likelihood ratio tests separated by *country* and *gender* (see the top of Model 1, Table 4) show that *problem drinking* was significantly associated with IPV among all groups, except Japanese females. The parameter estimates separated by *country* and *gender* (see the bottom of Model 1, Table 4) show gender differences in both countries in how problem drinking and IPV are associated. While *problem drinking* had significant positive associations with all three categories of IPV among U.S. males, it had significant positive associations with “offending only” and “both victimization and offending” among U.S. females and Japanese males. Among Japanese females, *problem drinking* had a significant positive association with “offending only.”⁷ Our results, therefore, indicate some gender differences in the alcohol-related IPV in both countries.

Additionally, the analysis run separated by *country* (see Model 2, Table 2) shows that problem drinking explained some of the gender difference in IPV. There were, however, country variations that reflect the inverse association between *gender* and IPV across countries. For U.S. respondents, *problem drinking* explained away the gender difference in “victimization only” or why males were more likely than females to experience “victimization only” but failed to explain the gender difference in “offending only” or why females were more likely than males to experience “offending only.” For U.S. respondents, moreover, the inclusion of *problem drinking* strengthened the gender difference in “both offending and victimization,” indicating that females were more likely than males to experience “both offending and victimization” after controlling for *problem drinking*. The change in the significance of *problem drinking* is explained by the stronger association between *problem drinking* and “both offending and victimization” for females compared to males in the U.S. sample (see Model 1, Table 4). For Japanese respondents, on the other hand, *problem drinking* explained away the gender difference in “offending only” or why males were more likely than females to experience “offending only” but failed to explain the gender difference in “victimization only” or why females were more likely than males to experience “victimization only.” The latter finding among Japanese respondents is understandable given that *problem drinking* overall did not have a significant association with “victimization only” among either gender in Japan (see Model 1, Table 4). Indeed, *problem drinking* was associated with “victimization only” only among U.S. males, consistent with how problem drinking explained away the gender difference in “victimization only” among U.S. respondents. Among Japanese respondents, *problem drinking* was significantly associated with the experience with “both offending and victimization,” but this significance came mainly from the significant association between these two variables among males in the Japanese sample.

Our results, overall, indicate some gender differences in the association between problem drinking and IPV in both countries. Contrary to the hypothesis, however, there is no clear gender difference in the type of IPV (i.e., victimization or offending) associated with problem drinking. Instead, our findings suggest that problem drinking is more strongly associated with IPV in general (be it victimization or offending) among males compared to females in both countries. This gender difference might explain why gender difference in “victimization only” among U.S. respondents and in “offending only” among Japanese respondents became insignificant once *problem drinking* was controlled. Not only did males in both countries engage in a higher level of problem drinking than females, but males were also more likely than females to experience “victimization only” in the U.S. sample and “offending only” in the Japanese sample.

Finally, to compare across *gender* and *country* the increase in the proportion of the variance of IPV explained from the baseline model with only control variables to the model with *problem drinking*, the likelihood ratio tests for the significance of two models were calculated separately by

⁷This may be the case of Simpson's paradox (Pearl 2014) in which a significance of a relationship between two variables may change once another variable is introduced.

Table 4. Multinomial logistic regression analysis^{1,2,3} regressing IPV on problem drinking and alcohol-aggression expectancy separated by country and gender.

Likelihood ratio tests main effects of IPV		U.S. (n = 2,343)										Japan (n = 1,532)															
		Males (n = 1,278)					Females (n = 1,065)					Males (n = 776)					Females (n = 756)										
		Model 1		Model 2			Model 1		Model 2			Model 1		Model 2			Model 1		Model 2								
	2	df	p	2	df	p	2	df	p	2	df	p	2	df	p	2	df	p	2	df	p	2	df	p			
IPV	Problem drinking	51.9	3	0	34.569	3	0.000	34.09	3	0	26.233	3	0.000	18.16	3	0	12.774	3	0.005	6.429	3	0.092	4.436	3	0.218		
	Alcohol-aggression expectancy				13.032	3	0.004				9.355	3	0.025				4.628	3	0.201				3.196	3	0.362		
Parameter estimates of individual effects of IPV		b	S.E.	OR	p	b	S.E.	OR	p	b	S.E.	OR	p	b	S.E.	OR	p	b	S.E.	OR	p	b	S.E.	OR	p		
Victimization only	Intercept	-0.422	0.611	0.490	-0.151	0.682	0.824	-1.759	0.824	0.033	-1.851	1.033	0.073	-0.768	1.188	0.518	-0.904	1.280	0.480	-0.967	0.907	0.286	-1.209	1.124	0.282		
	Problem drinking	0.282	0.075	1.325	0.000	0.265	0.078	1.303	0.001	0.174	0.152	1.190	0.252	0.069	0.157	1.071	0.663	0.082	0.164	1.086	0.617	-0.425	0.328	0.654	0.194		
	Alcohol-aggression expectancy				0.296	0.331	1.344	0.371			-0.087	0.646	0.917	0.893			-0.149	0.558	0.861	0.789			-0.298	0.770	0.742	0.699	
Offending only	Intercept	-2.96	0.694	0.000	-2.268	0.757	0.003	-0.78	0.496	0.116	0.094	0.578	0.871	-1.957	0.796	0.014	-1.853	0.840	0.027	-1.709	0.923	0.064	-1.424	1.068	0.183		
	Problem drinking	0.275	0.086	1.317	0.001	0.222	0.090	1.248	0.014	0.197	0.091	1.217	0.031	0.124	0.096	1.132	0.197	0.322	0.095	1.380	0.001	0.310	0.100	1.363	0.002	0.321	0.154
	Alcohol-aggression expectancy				0.766	0.358	2.151	0.032			0.934	0.310	2.545	0.003			0.136	0.342	1.145	0.691			0.316	0.602	1.372	0.409	
Both victimization and offending	Intercept	-0.77	0.440	0.083	-0.078	0.493	0.874	0.106	0.483	0.827	0.548	0.565	0.332	-0.572	0.791	0.470	-0.066	0.841	0.937	0.406	0.659	0.537	1.064	0.756	0.159		
	Problem drinking	0.350	0.056	1.420	0.000	0.295	0.059	1.344	0.000	0.427	0.073	1.532	0.000	0.396	0.076	1.485	0.000	0.307	0.096	1.360	0.001	0.239	0.103	1.270	0.020	0.090	0.153
	Alcohol-aggression expectancy				0.770	0.236	2.160	0.001			0.458	0.295	1.582	0.120			0.736	0.347	2.088	0.034			0.741	0.425	2.096	0.082	

¹The category, "neither victimization nor offending," is set as the reference category.

²Control variables are age, underage child, employment status, household income, and educational attainment.

³Parameter estimates of individual effects of IPV are examined using Two-Tailed Significance Tests.

country and *gender* (first two columns of Table 5). The results indicate that both models were significant for all four groups. The improvement in models resulting from adding *problem drinking* was calculated by subtracting *chi-square* values of the two models (fourth column in Table 5), which once again indicated that *problem drinking* was significant in explaining IPV in every group, except Japanese females. Overall, confirming the earlier results, the model fit compared across four groups indicates that *problem drinking* was more strongly associated with IPV among males than among females in both countries. The results, therefore, suggest that to the extent there is an association between *problem drinking* and IPV, it is the *problem drinking* of males in both countries that is associated with IPV (whether for victimization or offending). Additionally, the model fit compared across four groups indicates that *problem drinking* was more strongly associated with IPV among U.S. respondents than among Japanese respondents, and indeed, the association was even stronger for U.S. females compared to Japanese males, while it was nonexistent among Japanese females.

Alcohol-aggression expectancy and problem drinking's association with IPV

There was a gender difference in the association between problem drinking and IPV in both countries, though not in the ways hypothesized among the U.S. respondents. In the final set of analyses, *country* and *gender* differences in *alcohol-aggression expectancy* were examined first, and *country* differences in how *alcohol-aggression expectancy* explains the *gender* difference in the association between *problem drinking* and IPV were examined second by adding *alcohol-aggression expectancy* to the model.

First, *country* and *gender* differences in the expectation of aggression associated with alcohol use were examined by regressing *alcohol-aggression expectancy* on *country* and *gender* using logistic regression analysis (see the combined model in Table 3). The results indicate that, consistent with the hypothesis, the gender difference in *alcohol-aggression expectancy* was significantly greater in the Japanese sample compared to the U.S. sample. The analysis run separately by *country* (see the separate models in Table 3) indicates that Japanese males had 3.55 times higher odds ($p < .001$) than Japanese females and U.S. males had 1.35 times higher odds ($p = .019$) than U.S. females of expecting that alcohol would make them more aggressive.

Second, how *alcohol-aggression expectancy* explains the *gender* difference in the association between *problem drinking* and IPV was examined across *country* by regressing IPV on *problem drinking*, while controlling for *alcohol-aggression expectancy*. The likelihood ratio tests run separately by *country* and *gender* (see top of Model 2, Table 4) indicate that *alcohol-aggression expectancy* had a significant association with IPV only among U.S. respondents. The parameter estimates (see bottom of Model 2, Table 4) show in more detail the *country* and *gender* differences in the *alcohol-aggression expectancy's* association with IPV and suggest five major findings.

First, *alcohol-aggression expectancy* was not associated with the likelihood of experiencing "victimization only" among any of the four groups, and thus, *gender* remained significantly associated with this category of IPV among Japanese respondents (see Model 3 of Table 2). In other words, neither *problem drinking* nor *alcohol-aggression expectancy* could explain why females were significantly more likely than males to experience "victimization only" in the Japanese sample. This finding is, however, expected, because *alcohol-aggression expectancy* concerns with alcohol's effect on aggression and violent offending, and thus, is less likely to be associated with the likelihood of experiencing violent victimization.

Second, all of the significant associations between *problem drinking* and IPV remained significant after *alcohol-aggression expectancy* was included in the model, except for the association between *problem drinking* and "offending only" among females in both countries. The finding indicates that *alcohol-aggression expectancy* explains the association between *problem drinking* and the experience with "offending only" among females in both countries. Among males in both countries, on the other hand, *problem drinking* had a direct association with IPV after controlling for *alcohol-*

aggression expectancy. Some of the gender differences in *problem drinking's* association with IPV, therefore, can be explained by the gender difference in *alcohol-aggression expectancy*.

Third, although Japanese males were significantly more likely than any other groups to expect that alcohol would make them more aggressive, *alcohol-aggression expectancy* had no significant association with “offending only” among them. The only category of IPV associated with *alcohol-aggression expectancy* among Japanese males was “both offending and victimization.” Among Japanese females, neither *problem drinking* nor *alcohol-aggression expectancy* had any significant association with any of the categories of IPV. Among Japanese respondents, therefore, problem drinking, and more specifically the problem drinking of males, but not their alcohol-aggression expectancy, explained the gender difference in the likelihood of experiencing “offending only,” while neither the problem drinking nor the alcohol-aggression expectancy of females explain the gender difference in the likelihood of experiencing “victimization only.” Among U.S. respondents, on the other hand, although *alcohol-aggression expectancy* had a significant association with the likelihood of experiencing “offending only” among both males and females, it cannot explain why females were more likely than males to experience “offending only,” as *gender* remained significant in the combined model (see Model 3, Table 2). Among U.S. respondents, like Japanese respondents, there was a significant association between *alcohol-aggression expectancy* and “both offending victimization” among males but not among females.

Fourth, in order to test Hypothesis 3, which stated that the association between alcohol use and IPV offending varies by alcohol-aggression expectancy, such that alcohol use and IPV offending are more strongly associated among those who expect that alcohol would make them more aggressive, while the association between alcohol use and IPV victimization does not vary by alcohol-aggression expectancy, an interaction term between *alcohol-aggression expectancy* and *problem drinking* was examined in the model separated by *country* and *gender*. Contrary to the hypothesis, the interaction term was significant only among Japanese males on “both offending and victimization” (results not shown). Consistent with the expectation, the positive association between *problem drinking* and this category of IPV was experienced more strongly among those Japanese males who expected that alcohol would make them more aggressive than those who did not expect that alcohol would make them more aggressive.

Finally, in order to compare the increase in the proportion of the variance of IPV explained from the model with *problem drinking* to the model with both *problem drinking* and *alcohol-aggression expectancy*, the likelihood ratio tests for the significance of the models were calculated separately by *country* and *gender* (see columns 2 and 3 of Table 5). The improvement in the two models resulting from adding *alcohol-aggression expectancy* was calculated for each of the four groups by subtracting the *chi-square* values of the two models (see column 5 in Table 5). The results once again indicate that *alcohol-aggression expectancy* was not significant in explaining IPV among either genders of Japanese respondents, while it was significant in explaining IPV among both genders of U.S. respondents.

Discussion

Our results overall provide some support for the five hypotheses and, based on the review of literature, generate four major implications and offer suggestions for future research.

First, there was a significant gender difference in the level of problem drinking in both countries. Consistent with the expectation, males in both countries engaged in a significantly higher level of problem drinking than females. Contrary to Hypothesis 5, however, this gender difference did not vary significantly across the two countries.

Second, consistent with Hypothesis 1, the association between problem drinking and IPV varied by gender in both countries, but in an unexpected way among U.S. respondents. Among Japanese respondents, while problem drinking was positively associated with IPV offending among males, it was not associated with any of the categories of IPV, including IPV victimization, among females.

Table 5. Likelihood ratio tests for significance of the multinomial logistic regression models with IPV as the dependent variable by country and gender.

Country/gender subgroups	(1)			(2)			(3)			(4)			(5)			(6)		
	χ^2	df	p	χ^2	df	p	χ^2	df	p	χ^2	df	p	χ^2	df	p	χ^2	df	p
U.S. males (n = 1,278)	120.774	15	0.000	172.67	18	0.000	185.702	21	0.000	51.896	3	0.000	13.032	3	0.005	64.928	6	0.000
U.S. females (n = 1,065)	148.985	15	0.000	183.070	18	0.000	192.426	21	0.000	34.085	3	0.000	9.356	3	0.025	43.441	6	0.000
Japan males (n = 776)	55.086	15	0.000	73.250	18	0.000	77.877	21	0.000	18.164	3	0.000	4.627	3	0.201	22.791	6	0.000
Japan females (n = 756)	51.285	15	0.000	57.714	18	0.000	60.91	21	0.000	6.429	3	0.093	3.196	3	0.362	9.625	6	0.141

Among Japanese respondents, moreover, problem drinking explained away the gender difference in the likelihood of experiencing IPV offending but not of IPV victimization. Among Japanese respondents, overall, problem drinking was associated with IPV only among males, and more specifically male perpetrators of IPV, but not among females on any categories of IPV. Unlike Japanese respondents, among U.S. respondents, problem drinking of IPV victims, and specifically male victims, was important in explaining their own IPV victimization, as the problem drinking explained away the gender difference in the likelihood of experiencing IPV victimization. Additionally, in contrast to Japanese respondents, the problem drinking of females and not just of males was important in explaining overall IPV among U.S. respondents. The model fit compared across four groups indicates that problem drinking was more strongly associated with IPV among males compared to females in both countries, and problem drinking was more strongly associated with IPV among U.S. respondents compared to Japanese respondents.

Third, consistent with Hypothesis 2, males in both countries were significantly more likely than females to expect that alcohol would make them more aggressive. Consistent with Hypothesis 5, moreover, the gender difference in alcohol-aggression expectancy was significantly greater among Japanese respondents than U.S. respondents. Indeed, while Japanese males had almost four times higher odds than Japanese females of expecting that alcohol would make them more aggressive, the gender difference in alcohol-aggression expectancy found among U.S. respondents was relatively small.

Fourth, contrary to Hypothesis 4, alcohol-aggression expectancy overall accounted for only some of the gender differences in the association between problem drinking and IPV in both countries. The inclusion of alcohol-aggression expectancy in the model produced no significant difference in the association between problem drinking and IPV, except among females on IPV offending in both countries, suggesting that alcohol-aggression expectancy explains the association between problem drinking and the experience with IPV offending only among females. Alcohol-aggression expectancy overall had no significant association with the likelihood of experiencing IPV victimization in either country. Indeed, problem drinking among U.S. males was the only independent variable significantly associated with the likelihood of experiencing IPV victimization. The failure of alcohol-aggression expectancy in explaining the gender difference in alcohol-related IPV results from weak associations between alcohol-aggression expectancy and IPV offending among Japanese males and between alcohol-aggression expectancy and IPV victimization among U.S. males. Additionally, neither problem drinking nor alcohol-aggression expectancy explained the higher likelihood of experiencing IPV victimization among Japanese females, compared to Japanese males, nor among U.S. males, compared to U.S. females. Indeed, neither problem drinking nor alcohol-aggression expectancy had a significant association with IPV among Japanese females, suggesting that the problem drinking of their male perpetrators might more strongly associate with Japanese females' experience with IPV. The same cannot be said about U.S. respondents, however, as there was no significant association between problem drinking and offending among U.S. females. For U.S. males, their own problem drinking, and not the problem drinking of female perpetrators, seems to be more strongly associated with their higher likelihood of experiencing IPV victimization compared to U.S. females. In addition, although alcohol-aggression expectancy was significantly associated with IPV offending among both genders in the United States, neither problem drinking nor alcohol-aggression expectancy explained the higher likelihood of experiencing IPV offending among females compared to males. Both problem drinking and alcohol-aggression expectancy were overall significantly more likely to explain IPV of males, compared to females, and of U.S. respondents, compared to Japanese respondents.

The present study contributes to the cross-national research on alcohol-related IPV by examining alcohol-aggression expectancy as an explanation for the gender difference in the association between problem drinking and IPV in the United States and Japan. Gender and country differences in problem drinking's association with IPV confirm the importance of taking into account factors besides pharmacological effects of alcohol on violence. When only a single country is examined, as in most empirical studies of alcohol and violence, and a gender difference is found, it is difficult to

explicate why such gender difference exists because gender is usually treated as a proxy for a multitude of different factors, including biological sex differences and gender norms. The present study is unique in that country differences can be attributed not to biological differences but rather to structural and cultural differences, assuming that alcohol has a similar pharmacological effect on aggression when two populations are compared. Japan also provides an interesting contrast to the United States because these two countries differ in terms of their levels of gender inequality and how strongly gender norms are prescribed.

The present study has several limitations that suggest directions for future studies. First, the data collection method differed between the U.S. and Japanese data. Some empirical research suggests that the method of data collection (e.g., face-to-face interviews vs. telephone or postal surveys) can affect the validity of data, especially when sensitive personal questions are asked; other research, however, does not find such differences (see Greenfield and Kerr 2008). Second, the GENACIS data also varied in the wording of some questions in the U.S. and Japan surveys. The most important concern may be how the questions about IPV were asked across the two samples, and though the questions were similar enough to allow us to create a comparable IPV variable, the U.S. survey used more restricting questions about IPV than the Japanese survey. Thus country differences found in the present study need to be interpreted with a caution. Given the higher prevalence of IPV among U.S. respondents compared to Japanese respondents found in the present study, it is possible that the country differences would be even greater had the U.S. survey used a less restrictive, more identical measure of IPV.

A third limitation is the inherent difficulty of interpreting self-reports of IPV, particularly of IPV offending. Although many early studies of IPV asked (or reported) only about males' offending and females' victimization, more recent surveys have increasingly asked both males and females about both offending and victimization. Such surveys, especially in higher-income countries, often find that women report similar or even somewhat higher rates of IPV offending, as we found among U.S. respondents in the present study, and a high prevalence of "mutual competency" where both parties are involved in the escalation of IPV (Cochran et al. 2011). Such findings are difficult to interpret due to the lack in most IPV measures of questions about severity and questions that allow proactive or unprovoked acts of aggression to be distinguished from reactive or self-defensive aggressive behaviors (see Graham et al. 2008). Future multinational studies of IPV would be strengthened by the use of more nuanced, context-specific IPV measures that allow inferences about the severity and the proactive versus reactive nature of intimate aggressive behaviors. The unexpected findings among U.S. respondents may indeed reflect a greater tendency of IPV episodes in the United States to involve aggression and victimization by both partners as an escalation of conflict from initially verbal conflict, and that such verbal conflict may not seem like aggression to men (more than to women), resulting in more men claiming they were victims and not aggressors (see for a review on the gender difference in the perception of IPV, Russell and Kraus 2016).

Fourth, although the present study used an empirically derived scale of problem drinking, more general and objective measures of drinking, especially the frequency and typical quantity of drinking, could more directly test the pharmacological disinhibition hypothesis against the learned disinhibition hypothesis. Fifth, our problem drinking scale does not measure the engagement in drinking immediately preceding IPV involvement. Thus, even if a respondent engages in a higher level of problem drinking, this does not mean that he/she was drinking at the time of IPV involvement. Finally, our cross-sectional data pose a limitation in explicating the causal order of the variables. It is possible that our dependent variable, IPV, could affect problem drinking or alcohol-aggression expectancy, rather than the other way around. It is also possible that problem drinking and IPV are both manifestations of an underlying problem in one's life (e.g., marital problem) that shares a common cause (Costello, Anderson, and Stein 2014), and thus they might have no causal association with each other. In order to explicate the causal sequence among the theoretical variables and IPV, it is important to utilize longitudinal data that include measures of respondents' drinking and alcohol-aggression expectancy that temporally precede their IPV involvement.

Conclusions

As expected from previous studies, the present study found gender differences in the association between problem drinking and IPV in both the United States and Japan. Overall, problem drinking had a stronger association with IPV among males compared to females in both countries. Contrary to our hypothesis, however, while problem drinking had significant positive associations with all three categories of IPV among U.S. males, it had significant positive associations with “offending only” and “both victimization and offending” among U.S. females and Japanese males. Among Japanese females, problem drinking had no significant association with IPV. Additionally, although males were more likely than females in both countries to expect that alcohol would make them more aggressive, alcohol-aggression expectancy cannot explain the gender difference in the association between problem drinking and IPV in either the United States or Japan. The failure to find expected patterns among Japanese respondents could be attributed to two factors. First, neither problem drinking nor alcohol-aggression expectancy was associated with IPV victimization among Japanese females, thus these variables cannot explain why Japanese females were more likely than Japanese males to experience IPV victimization. Second, while problem drinking was significantly associated with IPV offending among Japanese males and even though they were the most likely of all groups to expect that alcohol would make them more aggressive, alcohol-aggression expectancy was not associated with IPV offending among Japanese males. Thus, problem drinking had a direct association with IPV offending among Japanese males and explained why they were more likely than Japanese females to experience IPV offending. Among Japanese respondents, therefore, the problem drinking of males explains the gender difference in IPV. Similarly, among U.S. respondents, the failure to find expected patterns appears to be due to the failure of alcohol-aggression expectancy to explain IPV among males. Although problem drinking had positive associations with both IPV offending and IPV victimization among U.S. males, alcohol-aggression expectancy did little to explain their overall IPV. In both countries, therefore, it is the males’ drinking that explained the gender difference in IPV, whether for victimization or offending, and contrary to the learned-disinhibition hypothesis, alcohol-aggression expectancy could not explain the gender difference in the association between problem drinking and IPV.

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