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Examining the Effects of Drinking and Interpersonal Protective Behaviors on Unwanted Sexual Experiences in College Women

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Abstract

Introduction—Recent evidence suggests interpersonal protective behaviors (IPBs) may be more effective than alcohol-based strategies at decreasing alcohol-related sexual consequences.

However, no studies have examined individual IPBs to assess their unique influences on specific sexual consequences. The current study used a longitudinal design to examine the direct effects of typical weekly drinking and specific IPBs on unwanted sex. IPBs were also examined as moderators of the relationship between drinking and unwanted sex.

Methods—Randomly sampled female drinkers attending a northeastern university ($N = 191$) completed a baseline survey measuring typical weekly drinking and IPBs and a six-month follow-up assessing unwanted sex. Bootstrapped regression examined the effects.

Results—Drinking predicted unwanted sex after accounting for IPBs (range of $bs = .008-.009$, $SE = .005$, 95% CI $[-.000, .02]$). Vigilance-related IPBs were negatively associated with unwanted sex after controlling for drinking ($b = -.052$, $SE = .025$, 95% CI $[-.107, -.008]$). The IPB

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Note:

PB protective behavior

IPB interpersonal PB

APB alcohol-based PB

Contributors

Sell and Turrissi wrote the manuscript. Scaglione and Hultgren designed the study and collected the data. Sell conducted the statistical analyses. Mallett provided substantive feedback on drafts of the manuscript. All authors contributed to and have approved the final manuscript.

Conflicts of Interest

All authors declare that they have no conflicts of interest.

“Talking to people who know one’s potential dating or sexual partner to find out what s/he is like” significantly moderated the drinking - unwanted sex relationship ($b = -.009$, $SE = .004$, 95% CI $[-.018, -.003]$). At above- average drinking levels, women who used this IPB more frequently reported fewer episodes of unwanted sex.

Conclusion—Findings revealed obtaining information about a potential partner significantly reduced the impact of drinking on unwanted sex for heavier drinkers. Future research examining how women implement this IPB may clarify its role in reducing unwanted sex.

Keywords

college students; drinking; protective behaviors; unwanted sex

1. Introduction

An estimated twenty percent of college women experience sexual assault (Fisher, Cullen, & Turner, 2000; Krebs et al., 2011). Evidence suggests a significant proportion of the sexual assaults reported by young women occur in the context of dating relationships and may result from the misattribution of consent (Lim & Roloff, 1999). For example, men typically rely on nonverbal indicators of consent and may misperceive friendly demeanor as a signal of consent when a woman does not actually consent to sex (Jozkowski & Wiersma, 2015). In addition, a woman’s partner may erroneously assume that because she has consented to one sexual activity (e.g., oral sex), she also then consents to other forms of sex (e.g., vaginal intercourse; Harrington & Leitenberg, 1994). Misattribution of consent is more likely to occur when one or both individuals engage in high-risk drinking, as alcohol can significantly impair both a perpetrator’s judgment and a victim’s capacity to resist unwanted sexual advances (Abbey, 2002).

In recent years, nonconsensual sexual experiences have come to the forefront as an important public health issue. The CDC’s 2011 National Intimate Partner and Sexual Violence Survey found that nearly 1 in 10 women over age 18 reported being involved in a sexual act when they were drunk, high, drugged, or passed out over a twelve-month period. It was noted that these women did not necessarily classify their experience as “rape,” although their reports were that the sex was unwanted (Breiding et al., 2014). In 2014, President Obama launched the *It’s On Us* campaign to raise public awareness about sexual assault on college campuses. A major theme surrounding this initiative is the principle that if an individual does not or cannot consent to a sexual act, it is rape (Somanader, 2014). With this campaign has come a call to action to enhance existing interventions to more directly address consent and reduce unwanted sexual experiences.

Alcohol-based interventions primarily focus on strategies to reduce drinking but generally do not directly address contextual risk factors inherent in drinking situations (Scaglione et al., 2015). As a result, no single approach has been successful at reducing alcohol-related sexual consequences and unwanted sex (Larimer & Cronce, 2007; Mallett, Marzell, & Turrise, 2011). Recent evidence suggests interpersonal protective behaviors (IPBs), because they are more inclined to address contextual factors (Scaglione et al., 2015), may be an effective tool for reducing alcohol-related sexual consequences (Mallett et al., 2015). What

remains unclear is whether their efficacy depends on the specific sexual consequence and specific IPB examined, and to what extent IPBs attenuate the association between risky drinking and the specific sexual consequence. The present study used a prospective longitudinal design to examine these questions in a sample of female college student drinkers.

1.1. Drinking and unwanted sex

Heavy drinking predicts various sexual consequences in college females (Abbey, 2002; Scott-Sheldon, Senn, Carey, Urban, & Carey, 2013; Testa & Hoffman, 2012; Testa, Hoffman, & Livingston, 2010; Turner, Bauerle, & Shu, 2004). However, not all women drink heavily (Dawson, Grant, Stinson, & Chou, 2004), and not all heavy drinkers are at equal risk for sexual consequences (Scott-Sheldon, Carey, & Carey, 2010). Furthermore, it is unclear how drinking is related to unwanted sex in particular because unwanted sex can be operationalized numerous ways. The tendency has been to broadly define unwanted sex as any nonconsensual sexual contact, ranging from unwanted touching and kissing to unwanted oral, vaginal, or anal sex (Flack et al., 2007, 2008; Koss & Oros, 1982; Palmer, McMahon, Rounsaville, & Ball, 2010).

Some critics argue unwanted sex should be defined in the manner that rape is traditionally defined, counting only those experiences that involve unwanted oral, vaginal, or anal penetration (Fisher, 2004). The current study defined unwanted sex as when an individual has any type of sex she really does not want when drinking. Drinking was defined as weekly drinking to include all drinker types (i.e., light, moderate, heavy).

1.2. Interpersonal protective behaviors, drinking, and unwanted sex

Protective behaviors (PBs) are harm reduction strategies employed before, during, or after drinking to lower one's risk of negative alcohol-related consequences (Palmer et al., 2010). For example, a woman may decide to pace her drinks before she arrives at a party. While at the party, she may alternate alcohol with non-alcoholic beverages. After leaving the party, she may call a taxi. Previous work has generally not distinguished between different types of PBs, but several studies have indicated the benefits of classifying PBs into alcohol-based PBs (APBs) and interpersonal PBs (IPBs; Mallett et al., 2015; Scaglione et al., 2015). APBs focus on controlling alcohol intake (e.g., pacing and limiting drinks), whereas IPBs are socially based, non-drinking strategies (e.g., walking home with a friend). Research suggests PBs can reduce sexual consequences in women (Lewis, Rees, Logan, Kaysen, & Kilmer, 2010; Palmer et al., 2010); however, most studies have examined APBs in conjunction with IPBs (Delva et al., 2004; Martens, Ferrier, & Cimini, 2007; Martens et al., 2004). A recent study found IPBs, but not APBs, reduced alcohol-related sexual consequences measured as a composite score (Mallett et al., 2015). No published studies have examined whether specific IPBs, when drinking, may have stronger relationships with reduced unwanted sex. Understanding the role of specific IPBs in reducing specific sexual consequences may strengthen intervention efforts (Larimer & Cronce, 2007).

1.3. Current study

Previous examinations of unwanted sex have generally been cross-sectional. With cross-sectional designs, it is difficult to establish temporal order. For example, it is possible that unwanted sex precedes changes in drinking and IPBs. To ensure that drinking and IPB use preceded (and therefore predicted) unwanted sex, the present study employed a longitudinal design that followed participants for six months. Drinking and IPB use were measured at baseline. Unwanted sex was measured at a six-month follow-up.

The study had three aims (see Figure 1). Aim 1 assessed whether drinking had a direct effect on unwanted sex (Path A). We hypothesize that individuals who drink more in a typical week will experience unwanted sex more frequently. Aim 2 assessed whether specific IPBs had direct effects on unwanted sex (Path B). We hypothesize to find an association between each IPB and unwanted sex, such that individuals who use a particular IPB more frequently will report fewer instances of unwanted sex. Finally, Aim 3 assessed whether specific IPBs reduced (i.e., moderated) the impact of drinking on unwanted sex (Path C). We hypothesize that the more frequently individuals use each IPB, the weaker the relationship between drinking and unwanted sex will become.

2. Method

2.1. Recruitment and participants

Participants were randomly selected from the registrar's database of currently enrolled students at a large, public northeastern university and invited to participate in a study on drinking and PBs. Web-based surveys were administered in March (baseline) and September (follow-up) 2012. Data collection was timed to avoid overlap with spring break and the summer months in order to capture typical patterns of drinking and IPBs that occur during a college semester.

Participants received a pre-notification letter and e-mail invitation containing a link and Personal Identification Number (PIN) for accessing the baseline survey. Up to three e-mail reminders were sent to those who did not complete the survey initially. The same procedures were used at follow-up. Participants were paid \$30 at baseline and \$15 at follow-up. All procedures were reviewed and approved by the university's Institutional Review Board.

As part of a larger study on college student risk behaviors, 900 students were invited, of which 508 (56%) completed the baseline survey. Of these, 191 participants (37.6%) identified as female drinkers and were included in the current study. At follow-up, retention was high (88%; $n = 168$) and consistent with similar web-based approaches (Larimer et al., 2007; Turrissi et al., 2013). There was no evidence of attrition bias with respect to demographic variables, baseline drinking, or IPBs. At baseline, the women in the sample were, on average, 19.43 ($SD = 0.98$) years old. A variety of racial/ethnic backgrounds were represented (7.9% Asian, 3.7% Black or African American, 5.3% multi-racial or other, and 5.2% Hispanic), although the majority (83.2%) were Caucasian. Approximately 17% reported sorority affiliation.

2.2. Measures

2.2.1. Unwanted sex—Unwanted sex was assessed at the six-month follow-up using an item adapted from the Young Adult Alcohol Problem Screening Test (YAAPST; Larimer, Lydum, Anderson, & Turner, 1999; Wood, Johnson, & Sher, 1992). Participants were asked, “During the past five months, how often have you had sex when you really didn’t want to because you had been drinking?” Answer choices ranged from *Never* to *40 times or more*.

2.2.2. Typical weekly drinking—Typical weekly drinking was measured at baseline using the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985). Participants reported the number of drinks they consumed on each day of a typical week over the past 30 days. Daily totals were summed to estimate typical weekly drinking.

2.2.3. Interpersonal protective behavior use—IPBs were assessed at baseline using the Dating Self-Protection Against Rape Scale (DSPARS; Moore & Waterman, 1999). Participants reported how often they used each IPB in the past six months on a five-point scale of *Never* (0), *Rarely* (1), *Sometimes* (2), *Usually* (3), and *Always* (4). Sample items include, *How often did you:* a) Let a friend or family member know where you were and whom you were with; b) *Meet in a public place instead of a private place* (see Table 1).

2.3. Analytic Procedures

2.3.1. Factor analysis of IPBs—IPB items were subjected to a principal components factor analysis with oblimin rotation (permits correlations between factors to the extent they exist). The analysis revealed two multiple-item factors with loadings greater than 0.70 that generally reflected vigilance (four items; $\alpha = 0.81$) and reliance on social strategies (three items; $\alpha = 0.65$). The analysis also revealed six items that were not associated with either factor due to low loadings (< 0.3). Together these analyses resulted in a total of eight IPB constructs (i.e., two factors and six individual items); see Table 1.

2.3.2. Regression analyses—Hierarchical bootstrapped linear regression was used to examine 1) the main effect of typical weekly drinking on unwanted sex, controlling for an IPB, 2) the main effect of an IPB on unwanted sex, controlling for drinking, and 3) the moderation effect of an IPB on the relationship between drinking and unwanted sex. Predictors were mean-centered (i.e., typical weekly drinking, IPB constructs). Bootstrapping was used to obtain asymmetrical 95% confidence intervals as opposed to making assumptions about the underlying distributions of the variables.

In Step 1, unwanted sex was regressed onto the main effects of typical weekly drinking (see Figure 1, Path A) and a single IPB construct (e.g., vigilance; see Figure 1, Path B). This analytic approach permitted the examination of the main effect controlling for the other predictor. In Step 2, the product of drinking and the IPB (e.g., vigilance) was added to assess the interaction (see Figure 1, Path C). These analyses were repeated for each of the IPBs; a total of eight models were computed. Significance was determined by examining the value of the regression coefficients relative to the asymmetrical confidence intervals for a given effect. If the upper and lower limits of the confidence intervals did not contain the value of zero, the effect was considered significant at the $p < .05$ level. Using this approach also

reduced the likelihood of type I errors because the asymmetrical confidence intervals were obtained from 2000 samples. Main effects of drinking and IPBs on unwanted sex were only evaluated in the Step 1 analyses because of their conditional nature when examined in conjunction with the product terms. Follow-up analyses of significant interactions comparing means of unwanted sex at different levels of drinking and IPB use along a continuum (e.g., average (at the mean); above-average (+1sd above mean); below-average (−1sd below mean) were conducted using Tukey's HSD. All analyses (i.e., factor analysis, regression) were conducted in IBM SPSS Statistics, Version 21.

3. Results

3.1. Descriptive statistics

Preliminary analyses examined prevalence of IPB use, drinking, and unwanted sex and correlations among predictors. Regular IPB use was defined as reporting “usually” or “always” (Table 1). The mean number of drinks consumed during a typical week was 10.65 ($SD = 7.98$). At follow-up, the reported frequency of unwanted sex during the past five months was 7.7% ($n = 13/168$). Correlations among drinking and IPBs are displayed in Table 2.

3.2. Aim 1: Main effect of typical weekly drinking on unwanted sex

Findings were inconsistent when controlling for IPBs. Drinking had a significant unique association with unwanted sex when either “paying attention to a potential partner's alcohol/drug intake” ($b = .009$, $SE = .005$, 95% CI [.000054, .022]), or “*carrying enough money for a taxi*” ($b = .008$, $SE = .005$, 95% CI [.000014, .020]) were controlled. When the other IPBs were controlled, drinking did not have a significant unique association with unwanted sex.

3.3. Aim 2: Main effects of IPBs on unwanted sex

Not all IPBs had a significant unique association with unwanted sex after controlling for drinking. Only vigilance-related IPBs had a significant unique association with unwanted sex ($b = -.052$, $SE = .025$, 95% CI [−.107, −.008]).

3.4. Aim 3: IPBs as moderators of the relationship between drinking and unwanted sex

Finally, the results found that while most IPBs did not significantly moderate the relationship between drinking and unwanted sex, the IPB “talking to people who know one's potential dating or sexual partner to find out what s/he is like” did moderate this relationship ($b = -.009$, $SE = .004$, 95% CI [−.018, −.003]). Post-hoc examination of this Aim 3 interaction effect revealed significant differences in unwanted sex between average and above-average users of this IPB for above-average levels of drinking ($p < .05$; see Table 3.). Above-average drinkers who used above-average levels of this IPB reported fewer unwanted sexual experiences than above-average drinkers who used average levels of this IPB.

4. Discussion

The purpose of the current study was to provide clarification on the effects of typical weekly drinking and IPBs, and whether IPBs attenuated drinking's effects on unwanted sex in

college women drinkers. The latter is significant in that most prevention efforts focus on reducing drinking as a means of reducing risk. Although it is difficult to argue with recommendations to reduce risky drinking, a large percent of college students continue to drink in a precarious manner despite warnings. Thus, alternative prevention efforts focusing on the use of IPBs may help reduce the harmful effects of drinking on unwanted sex.

To begin, the effects of drinking were inconsistent when IPBs were also considered. Our findings revealed that drinking was positively associated with unwanted sex after controlling for the IPBs of paying attention to a potential partner's substance intake and carrying enough money for a taxi. In contrast, the effects of drinking on unwanted sex were not reliable when other IPBs were considered. The former significant effects of drinking are consistent with studies that have shown a positive relationship between alcohol use and unwanted sex (Davis, George, & Norris, 2004; Flack et al., 2007, 2008; Harrington & Leitenberg, 1994; Larimer et al., 1999; Palmer et al., 2010). One potential explanation for the differences is that previous studies simply have not controlled for the effects of specific IPBs when examining the drinking – unwanted sex relationship. This explanation would suggest that prevention efforts to reduce risky drinking might not be entirely sufficient to reduce unwanted sexual experiences. More work is needed to identify specific IPBs that may bolster sexual assault prevention programs.

A second potential explanation for the inconsistent relationship between drinking and unwanted sex is methodological differences between the current study and prior research. The most notable difference is the present study examined the relationships longitudinally, whereas previous studies were cross-sectional. Another difference is in how drinking was operationalized. The present study measured typical weekly drinking, whereas other studies have assessed actual or perceived intoxication (Davis et al., 2004; Flack et al., 2007; Harrington & Leitenberg, 1994) and whether alcohol was involved during a specific sexual encounter (Flack et al., 2008). Together, these methodological differences would suggest that the rigor employed in the current study elucidates the complexity in the relationship between drinking and unwanted sex. In the end, however, the inconsistent findings speak to the importance of conducting additional research to determine whether prevention efforts that target IPBs in addition to drinking are needed.

Turning the focus to the IPB – unwanted sex relationship, the findings suggest that the more vigilance-related IPBs participants utilized (e.g., meeting in a public place; being aware of exits), the fewer unwanted sexual experiences they reported. This finding is consistent with other research suggesting IPBs may directly reduce sexual consequences (Mallett et al., 2015). Interestingly, no other IPBs had a direct influence on unwanted sex after controlling for drinking. Given that other studies have not examined specific IPBs and unwanted sex or any other specific sexual consequences, it is plausible that these other IPBs can still have utility. More research is needed to be able to make strong recommendations to students about whether they should continue to use them or abandon their use.

Finally, the third question of whether IPBs attenuated drinking's effects on unwanted sex revealed that "talking to people who know one's potential dating or sexual partner to find out what s/he is like" significantly reduced drinking's impact on unwanted sex. Further

examination revealed this benefit was primarily for individuals who drank at above-average levels, suggesting that when individuals drink heavily, this IPB's utility in reducing unwanted sex increases. Approximately half of the sample reported regularly using this IPB, suggesting that women would likely be receptive to stronger messages about its importance. In the context of interventions such as brief motivational interviewing or personalized feedback, drinkers who report experiencing unwanted sex may be encouraged to develop strategies about how to talk to people who know their potential dating or sex partners.

4.1. Limitations and future directions

The current study makes a unique contribution to the prevention literature by prospectively examining the efficacy of various IPBs in reducing unwanted sex among female drinkers. However, it is not without limitations. First, our finding that most of the IPBs did not significantly reduce drinking's impact on unwanted sex should be interpreted with caution. Unwanted sex was endorsed at a modest rate relative to other published reports. For example, Larimer et al. (1999) used similar measures to examine drinking and unwanted sex and found that over 22 percent of women reported an unwanted sexual experience. However, they assessed unwanted sex over one's lifetime, whereas the current study asked about experiences that occurred during the past five months. Furthermore, they exclusively sampled sorority members, who are at elevated risk of experiencing alcohol-related sexual consequences relative to other college women (Bannon, Brosi, & Foubert, 2013). Regardless, it is possible that the current study had less statistical power to detect significant effects because a smaller proportion of our sample endorsed unwanted sex. Thus, efforts should be made to replicate these findings in larger samples reporting over longer periods.

Second, there are several unknowns about the IPB of "talking to people who know one's potential partner" that should be explored in future work. For example, it is uncertain why the heaviest drinkers benefited from more frequent use of this IPB, whereas lighter drinkers did not. One possible explanation for this finding is that routinely heavy drinkers may obtain more practice utilizing this IPB; this should be examined in future studies. Similarly, little is known about how women use this behavior. There are unanswered questions about whom women approach to obtain information about a potential partner, what types of questions they ask, and whether their referents and/or questions change as a function of intoxication. Future research should explore these issues and identify individual differences that may affect this IPB's efficacy.

Finally, future work should examine intraindividual variability in drinking across events, to ascertain whether certain IPBs are more or less effective at reducing unwanted sex in different contexts (e.g., when away with friends at college vs. home on break). Students' alcohol intake tends to vary throughout the year, with greater consumption occurring during certain holidays and events (Neighbors et al., 2011). It is possible women who are not typically heavy drinkers may benefit from certain IPBs during heavy drinking events. Exploration of such issues using a diary-based or event-level approach may provide insight into the IPBs that are most likely to be efficacious in reducing unwanted sex across individuals and contexts.

4.2. Conclusion

The current study found benefits for the IPBs of vigilance and “talking to people who know one’s potential partner to find out what s/he is like.” It may be advantageous for health care professionals to recommend these strategies to women who report a history of high-risk drinking and unwanted sex, in settings such as brief motivational interviews or annual wellness exams. However, because little is currently known about how women use these behaviors, future research should identify individual differences in implementation that may influence these IPBs’ efficacy.

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Highlights

- We examined the main effects of drinking and specific IPBs on unwanted sex.
- We examined whether specific IPBs moderated drinking's impact on unwanted sex.
- Drinking and unwanted sex were positively related when considering two IPBs.
- Vigilance IPBs and unwanted sex were negatively related after controlling drinking.
- The IPB "talking to people who know a potential partner" reduced drinking's impact.

Figure 1. Theoretical Moderation Model

Note: Path A represents Aim 1 (direct effect of drinking on unwanted sex), Path B represents Aim 2 (direct effect of specific IPBs on unwanted sex), and Path C represents Aim 3 (IPBs as a moderator of the relationship between drinking and unwanted sex).

Table 1

Factor Loadings, Means (SDs), and Endorsement Rates for IPBs.

How often do you...?	Factor Loading	M (SD)	% Who Endorsed Regular Use
“Vigilance” factor (4 items; $\alpha = 0.81$)			
Meet in a public place instead of a private place	0.72	2.54 (1.06)	52.9
Try to be aware of where other people are who may be able to help you in case of an emergency	0.70	2.37 (1.25)	50.2
Make yourself aware of exits from the area where you and a potential dating or sexual partner might be	0.89	1.62 (1.42)	29.8
Consider using self-defense strategies or common/household objects against your current or potential dating partner if he/she were to become sexually aggressive	0.85	1.02 (1.37)	17.8
“Reliance on social strategies” factor (3 items; $\alpha = 0.65$)			
Have a trusted friend(s) be with you or walk home with you	0.77	3.18 (0.94)	84.8
Let a friend or family member know where you are and whom you are with	0.75	3.14 (0.90)	81.7
Communicate your sexual boundaries directly and assertively to potential dating or sexual partners	0.76	2.96 (1.20)	72.2
Items that did not load onto either factor, examined individually (6 items)			
Make sure you know where your drink has been at all times		3.46 (0.85)	88.5
Pay attention to your potential dating or sexual partner's alcohol/drug intake		2.78 (1.15)	67.5
Provide for your own transportation so you do not have to depend on someone else		2.69 (1.16)	64.4
Carry enough money with you to get a taxi in case of an emergency		2.80 (1.22)	63.9
Talk to people who know your potential dating or sexual partner to find out what he/she is like		2.31 (1.40)	52.4
Try not to be alone with a potential dating or sexual partner		1.81 (1.29)	30.3

Note: M = Mean; SD = Standard Deviation; Regular Use is defined as a behavior which is endorsed as being used “usually” or “always.”

Table 2

Correlations Among Predictors.

	1	2	3	4	5	6	7	8	9
1. Typical weekly drinking	1.00								
2. Vigilance	-0.14	1.00							
3. Reliance on social strategies	0.06	0.29**	1.00						
4. Knowing where drink has been at all times	-0.20**	0.23**	0.39**	1.00					
5. Paying attention to partner's alcohol/drug intake	-0.13	0.44**	0.49**	0.32**	1.00				
6. Providing for own transportation	-0.04	0.30**	0.30**	0.20**	0.40**	1.00			
7. Carrying enough money for a taxi	-0.10	0.36**	0.17*	0.33**	0.10	0.22**	1.00		
8. Talking to people who know potential partner	0.18*	0.37**	0.23**	0.05	0.45**	0.23**	0.18*	1.00	
9. Trying not to be alone with potential partner	-0.09	0.51**	0.23**	0.16*	0.26**	0.26**	0.23**	0.27**	1.00

Note:

**
 $p < .01$;

*
 $p < .05$.

Table 3

Post-Hoc Examination of Aim 3 Interaction Effect, Reflecting Unwanted Sex Means for Drinking (columns) and “Talking to People Who Know One’s Potential Dating or Sex Partner” (rows).

<i>“Talking to People Who Know One’s Potential Partner”</i>	Typical Weekly Drinking		
	Below-Average	Average	Above-Average
Average	0.13	0.05	−0.03
Above-Average	0.11	−0.07	−0.25
Mean Difference	0.02	0.12	0.22*

Note: Average denotes at the mean; above-average denotes one standard deviation above the mean; below-average denotes one standard deviation below the mean. Means that are significantly different are bolded.

* Indicates that mean difference exceeds Tukey’s HSD critical difference, $p < .05$.