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Sexual Assault Related Distress and Drinking: The Influence of Daily Reports of Social Support and Coping Control

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Abstract

A history of sexual assault (SA) is often associated with increased distress and heavy drinking. One's ability to cope with the distress and seek social support has been associated with drinking more generally. However, SA-related distress, drinking, and the extent to which a woman engages in adaptive coping or seeks social support is known to vary day-to-day. The goal of the present investigation was to examine the moderating influence of perceived coping control and social support on the event-level association between SA-related distress and drinking. This study included 133 college women with a history of SA who reported recent heavy drinking. Participants provided daily reports of their SA-related distress, perceived coping control, perceived social support, and alcohol consumption every day for 30-days. Results of generalized estimating equation models suggest that coping control moderated the association between distress and drinking such that those with less perceived coping control drank more as their SA-related distress increased from their average. Although social support did not moderate between distress and drinking, decreases in perceived social support were associated with more drinking on that day. Results suggest that daily deviations in SA-related distress may influence alcohol consumption more than average levels of distress, especially among women with low coping control. Interventions for women with SA histories should help them build coping skills as well as adequate social support in order to reduce drinking.

Keywords

sexual assault; distress; drinking; coping behavior; social support

1. Introduction

Sexual assault (SA) and heavy alcohol use are significant public health concerns among college women. Studies suggest that 50% of college women have experienced some form of sexual aggression, with 12–28% of these women reporting attempted or completed forced sexual intercourse since the age of 14 (Abbey, Ross, McDuffie, & McAuslan, 1996; Brener,

McMahon, Warren, & Douglas, 1999; Walsh et al., 2012). An assessment of SA among college women suggested that 27% had experienced some form of SA since enrolling in college (Gross, Winslett, Roberts, & Gohm, 2006). SA has been associated with elevated drinking rates. For example, freshmen women with SA were more likely to report drinking and in particular heavy episodic drinking (i.e., consuming 4 or more drinks within 2 hours) than freshmen women with no SA (Ross et al., 2011). Further, sexual assault can result in increased distress including symptoms of posttraumatic stress disorder (PTSD; Messman-Moore, Long, & Siegfried, 2000), which in turn is also associated with increased drinking and alcohol-related problems (Hruska & Delahanty, 2012; Messman-Moore, Ward, & Brown, 2009; Read, Ouimette, White, Colder, & Farrow, 2011).

The use and success of coping strategies implemented in response to post-assault distress may play an important role in survivors' psychological adjustment and alcohol use following SA. Engagement in avoidant coping, such as denial, self-distraction, self-blame, problem avoidance, social withdrawal, and behavioral disengagement, has generally been associated with greater distress (e.g., Bedard-Gilligan, Cronce, Lehavot, Blayney, & Kaysen, 2014; Frazier, Mortensen, & Steward, 2005; Ullman, 1996; Ullman, Townsend, Filipas, & Starzynski, 2007; Ullman & Peter-Hagene, 2014; Valentiner, Foa, Riggs, & Gershuny, 1996) among SA survivors. Avoidance behaviors may lead to withdrawal from support networks (Ullman et al., 2007) and have been associated with reduced perceptions of control (Frazier et al., 2005), thereby potentially compounding negative affect and leading to increased alcohol use. The use of approach-oriented coping strategies following SA, such as joining a support group, seeking mental health services, and emotional expression, has been associated with improved outcomes (e.g., Ullman, 1996; Frazier, et. al., 2005). However, more recent conceptualizations of coping emphasize the importance of situational factors that influence an individuals' use and success of specific coping strategies such as interpersonal and social resources (Skinner, Edge, Altman & Sherwood, 2003) and the availability and quality of social support (Ullman, 1996; Ullman et al., 2007; Ullman & Peter-Hagene, 2014).

Few studies have examined the role of coping in daily use of alcohol to reduce event-level SA-related distress; however avoidant coping efforts have been implicated in the comorbidity between PTSD symptoms and alcohol use disorders generally (Hruska, Fallon, Spoonster, Sledjeski, & Delahanty, 2011). Among a sample of motor vehicle accident survivors, the relationship between avoidant coping and PTSD symptoms was stronger for those with a history of alcohol use disorders (Hruska et al., 2011). Endorsement of drinking to cope was also found to mediate between child sexual abuse and alcohol problems (Grayson & Nolen-Hoeksema, 2005). We are aware of only one study to have examined the role of coping in the link between alcohol use and distress among SA survivors. In this study, findings revealed positive associations between avoidant coping, PTSD symptoms, and sexual assault among a large sample of college women; however, no meaningful associations were found between avoidant coping and alcohol use (Bedard-Gilligan et al., 2014). Accordingly, little is known regarding the use or success of coping in relation to alcohol use and SA-related distress.

Social support is a resource and specific coping strategy that may help to mitigate or buffer distress associated with SA (Coyne & Downey, 1991). For example, disclosure of SA has been associated with receipt of more positive social reactions, which may help to reduce SA-related distress (Ullman & Filipas, 2001). Relationships comprise an important aspect of women's social development. During ages in which socialization commonly includes alcohol use, such as among college-age women, drinking to cope when emotional support is not available may seem normative. As a result, women with low support from family and friends may turn to drinking in the absence of supportive intimacy (Gleason, 1994). Further, PTSD is associated with social withdrawal and may result in loss of social supports over time (King, Taft, King, Hammond, & Stone, 2006; Laffaye, Cavella, Drescher, & Rosen, 2008; Lansford et al., 2002), which could lead to increases in daily drinking (Mohr et al., 2001). In contrast, women who receive social support may be less likely to drink as the perception that one has received emotional support when needed is likely to attenuate SA-related distress.

The majority of studies evaluating relationships between sexual assault and drinking have utilized cross-sectional methodologies, which cannot assess how SA-related distress and drinking covary in real time. Event-level studies generally suggest that negative affect is associated with alcohol consumption (Armeli, Conner, Cullum, & Tennen, 2010; Armeli, Tennen, Affleck, & Kranzler, 2000; Mohr et al., 2001; Rankin & Maggs, 2006; Simons, Gaher, Oliver, Bush, & Palmer, 2005; Swendsen et al., 2000) and daily reports of stress and negative affect have been associated with increased cravings to drink (Cleveland & Harris, 2010; Oslin, Cary, Slaymaker, Colleran, & Blow, 2009). Fluctuations from daily averages in PTSD symptoms have also been shown to predict daily drinking urges and drinking behavior (Kaysen et al., 2014; Simpson, Stappenbeck, Luterek, Lehavot, & Kaysen, 2014). The relationship between daily level SA-related distress and drinking may vary depending on use of alternative coping or receiving social support. College women tend to cope with distress within their social context and alcohol risks should be assessed in real-time to assess dynamic fluctuations among distress, social support, and drinking (DeLongis & Holtzman, 2005). The inclusion of measures of coping and social support at the event level adds this necessary contextual or temporal specificity.

The present study sought to examine the influence of perceived coping control and social support on the daily association between distress associated with women's SA experiences and drinking. To our knowledge, no known studies have examined these associations at the event-level, which is needed given the day-to-day variability in the use and success of coping strategies and availability of social support. Understanding these associations at the daily level is critical for intervention development and refinement. This study sought to examine several hypotheses: (H1) Greater SA-related distress will be associated with more drinking on the same day; (H2) Less coping control will be associated with more drinking that same day and will moderate the association between SA distress and drinking such that greater SA distress will be associated with more drinking among those with less coping control; and (H3) Less social support will be associated with more drinking that same day and will moderate the association between distress and drinking such that greater distress will be associated with more drinking for those with less social support.

2. Method

2.1 Participants and Procedures

A total of 11,544 undergraduate women were randomly selected from a registrar list of students attending a large northwest university and were mailed and e-mailed an invitation to complete a 20-minute online screening survey. Of those, 729 completed the screening survey, met study criteria of being 18 years or older, consuming 4 or more drinks on one occasion at least twice in the past month, and reported experiencing sexual victimization (at least one incident of childhood sexual abuse OR adult sexual assault prior to the past three months), and completed a pre-monitoring assessment. In order to be considered eligible for participation, the participants' reported sexual assault had to have occurred more than three months prior to the screening in order to select a sample of women whose PTSD symptoms had persisted past the point at which natural recovery following trauma was most likely to occur (Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992). Additional information regarding participant recruitment procedures is described in Kaysen et al., 2014. Participants with a history of sexual victimization and at least one intrusive and one hyperarousal PTSD symptom in the past month ($n=264$) were invited to participate in 30 days of electronic daily diary assessment, and 136 (51.5%) participated. Of those, 3 were excluded for having significant missing data on the dependent variable (i.e., only 10% or fewer available observations) resulting in a final sample of 133 women.

The mean age for the final sample was 20.1 years old ($SD=1.4$). Ethnicity included 71.8% White, 11.5% Asian, 2.3% Black, and 14.4% multi-ethnic or other ethnicity. At the time of screening, 12.2% were freshmen, 25.2% sophomores, 37.4% juniors, and 25.2% seniors. A majority of the women had experienced some type of adult sexual victimization (94.0%). These included completed rapes (21.8%), alcohol involved rapes (53.4%), alcohol involved assaults that did not involve penetration (64.7%), and coercive sexual assaults (60.9%). Just under half of the participants (43.6%) experienced child sexual abuse. Over half of the women (57.1%) met diagnostic criteria for PTSD according to the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition* (DSM-IV; American Psychiatric Association [APA], 1994).

The daily monitoring portion of the study consisted of two daily assessments, one before noon and one after seven p.m., for 30 days. Each participant received a personal digital assistant (PDA) device. In the training session, participants selected a two-hour period in both the morning and evening to complete assessments. An alarm was set for the start of their assessment window to alert them to complete their surveys. PDA assessments took on average 4 minutes to complete. Participants were paid \$45 for screening and pre-monitoring assessments, \$1 for each daily assessment completed, a \$2 bonus for completing both assessments in one day, and a \$10 bonus for completing 14 assessments (or 7 days) in a row. Participants could earn a total of \$215 for completing all assessments. All procedures were approved by the university's Institutional Review Board.

2.2 Screening Assessment

The study was comprised of three phases, a screening assessment to determine eligibility criteria, a pre-monitoring assessment, and then a four week monitoring period. The screening survey contained measures on demographics, trauma exposure, and alcohol consumption, whereas the pre-monitoring assessment included a measure of PTSD. Daily monitoring assessments included measures of distress related to their worst sexual assault experience, alcohol consumption, coping, and social support received.

2.2.1 Alcohol use—The Quantity Frequency Questionnaire (QF; Dimeff, Baer, Kivlahan, & Marlatt 1999) was used as a measure of peak drinking over the past month. Participants were included who endorsed drinking four or more drinks at least twice over the past month. A drink was defined as 12 oz. of beer, 10 oz. of microbrew or wine cooler, 4 oz. of wine, or 1 cocktail with 1 oz. of 100-proof liquor or 1.25 oz. of 80-proof liquor.

2.2.2 Sexual assault—Sexual assault in adulthood was assessed by the Sexual Experiences Survey (SES; Koss & Gidycz, 1985; Koss & Oros, 1982). Adult sexual assault was defined as “unwanted oral-genital contact, vaginal/anal intercourse, and/or penetration by objects since the age of 14.” Sexual victimization included attempted and completed unwanted oral, vaginal, and anal sexual intercourse. Response options for each of 18 experiences were 1= *yes* and 0= *no*.

2.2.3 Childhood sexual abuse—The Childhood Victimization Questionnaire (CVQ; Finkelhor, 1979) assessed sexual victimization prior to age 14. Childhood sexual abuse was defined as “any sexual activity that seemed coercive or forced and occurred before the age of 14 with someone 5 or more years older.” Participants were asked which, if any, of eleven unwanted sexual experiences, ranging from a sexual invitation to intercourse, had happened to them. Response options were 1= *yes* and 0= *no*.

2.3 Pre-Monitoring Assessment

2.3.1 PTSD symptomatology—The Posttraumatic Diagnostic Scale (PDS; Foa, Cashman, Jaycox, & Perry, 1997) was used to assess PTSD diagnostic status and symptom severity. Participants were asked to focus on their worst unwanted sexual experience and indicate how much each of the 17 PTSD symptoms had bothered them in the last month. Response options ranged from 0= *not at all* to 3= *almost always*. PTSD diagnostic status was assigned based on meeting criteria B (1 intrusive symptom), C (3 avoidance symptoms), and D (2 hyperarousal symptoms) of the DSM-IV (APA, 1994). The 17 items were summed for a total PTSD symptom severity score and demonstrated excellent internal reliability ($\alpha = .92$).

2.4 Daily Monitoring Assessments

2.4.1 Alcohol consumption—Once a day participants were asked, “How many standard drinks have you had in the past 24 hours?” The same definition of a standard drink used in screening was provided. Standard drinks could be typed into the PDA. If the participant did not consume alcohol, they could either type in 0 or click the response “I did not drink.”

2.4.2 Sexual assault related distress—At each assessment a single item was used to assess how often participants experienced distress regarding their worst unwanted sexual experience since the last monitoring assessment. Response options ranged from 0 = *not at all* to 4 = *almost always*. Responses to the morning and evening assessments were averaged to represent daily distress.

2.4.3 Coping control—At each assessment, participants were asked to think about all of the things they did to cope or deal with their distress that day and then indicated how much control they felt they had over their distress (“*Based on all the things you did to cope, or deal, with distress today, how much control do you feel you had over it?*”) from 0 = *no control* to 6 = *complete control*, and how much they were able to decrease their distress (“*Based on all the things you did to cope, or deal, with distress today, how much were you able to decrease it?*”) from 0 = *not at all* to 6 = *completely*. Responses to the two items at both the morning and evening assessments were highly correlated, $r = .82, p < .001$, and so were averaged to reflect the average coping control for each day.

2.4.4 Social support—At each assessment, participants were asked to indicate how much they agree with the statement “Since the last assessment, you have gotten emotional support from your family and friends.” Response options ranged from 0 = *strongly disagree* to 5 = *strongly agree*.

2.5 Data Analyses

Our primary analytic goal was to examine whether there were daily associations between SA-related distress and drinking, and if this association was moderated by coping control or social support. We conducted separate generalized estimating equation (GEE; Hardin & Hilbe, 2003) models for coping control and social support, which account for the nested nature of our data (i.e., repeated daily assessments within individuals). We first ran models that included only the main effects of SA-related distress and either coping control or social support on drinking, and then ran models that included the interactions between SA-related distress and either coping control or social support. Because drinking was a positively skewed count variable, GEE models were estimated using a negative binomial distribution with a log link function. These models provide incidence rate ratios (IRRs), which serve as a standardized effect size and reflect the percentage increase or decrease in the rate of drinking as a function of another variable while holding all other variables constant.

To examine the within-person association between changes in daily SA-related distress and the number of drinks consumed each day, we centered SA-related distress at the person mean (i.e., subtracted an individual’s overall mean from each of their SA-related distress score). We also included average (i.e., person-mean) SA-related distress in both models to examine between-person associations. To examine whether social support or coping control moderated these within- or between-person associations, both social support and coping control were centered at the person mean and interactions between them and both the average and daily SA-related distress variables were included. Also included in the models were measures of baseline PTSD severity centered at the grand mean, an indicator for weekend versus weekday (0 = *weekday* and 1 = *weekend*), and a monitoring day variable to

account for any possible change in responding over time (e.g., reporting less drinking toward the end of their assessment period).

3. Results

Out of a possible 3,990 monitoring days, data were collected for 2,494 (62.5%) days. On average participants provided data for 18.8 ($SD=7.7$) days during their 30-day daily monitoring assessment period. Participants reported drinking an average of 1.7 ($SD=1.5$) drinks per week and consumed on average 7.3 ($SD=8.0$) drinks per week. Descriptive statistics for the primary variables are provided in Table 1.

We conducted two GEE models to examine the association between SA-related distress and coping control on drinking (Table 2, Model 1), and whether daily coping moderated the association between average and daily SA-related distress and drinking (Table 2, Model 2). Results suggest that drinking decreased over the 30 days of monitoring, and more drinking was reported on the weekend compared to weekdays. As hypothesized, there was a significant main effect of daily SA-related distress on drinking. The more a woman's level of distress increased above her average, the more she drank on that day. Additionally, there was a main effect of coping control on drinking such that the more a woman's coping control increased above her average, the more she drank on that day. Also, as hypothesized there was a significant interaction between SA-related distress and coping control. As shown in Figure 1, women who reported less coping control drank more as their SA-related distress increased that day. Specifically, among those with less coping control, the number of drinks consumed increased by 9% for every 1-point increase in SA-related distress. However, women who reported more coping control drank about the same regardless of their level of SA-related distress. Baseline PTSD symptom severity and average SA-related distress were not associated with drinking.

We conducted two additional GEE models to examine the association between social support and drinking (Table 3, Model 3), and whether social support moderated the association between average and daily SA-related distress and drinking (Table 3, Model 4). Results suggest that there was a significant main effect of daily SA-related distress on drinking with greater daily deviations from their own average level of SA-related distress associated with more drinking. There was also a significant main effect of social support such that less support was associated with more drinking. Social support did not moderate the association from a person's average level of SA-related distress or their daily deviation in SA-related distress and drinking.

4. Discussion

This study is the first to examine the moderating influence of coping control and social support on the daily association between SA-related distress and alcohol use. Consistent with hypotheses, as daily SA-related distress increased from the person's average level, alcohol consumption increased (H1). Coping control moderated this association such that drinking increased as daily SA-related distress increased among those who reported less coping control, whereas daily SA-related distress was not associated with drinking among

those with more coping control (H2). Social support did not moderate the association between SA-related distress and drinking as expected; however, less social support on a given day was associated with increased drinking (H3). Findings shed light on the impact of SA-related distress on drinking, and suggest that increases in distress above and beyond the person's average is an important predictor of daily drinking among survivors of SA.

Our findings that increased SA-related distress was associated with increased drinking is consistent with prior research demonstrating increased alcohol consumption, alcohol-related problems, and likelihood to drink to intoxication among SA survivors (e.g., Bedard-Gilligan, Kaysen, Desai, & Lee, 2011; Hughes, McCabe, Wilsnack, West, & Boyd, 2010; Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997; Maniglio, 2011; Reed, Amaro, Matsumoto, & Kaysen, 2009; Ross et al., 2011). Further, our results suggest that an increase in SA-related distress above and beyond a person's average level is significantly associated with drinking that same day, whereas the overall average level of distress was not. This provides further support and refinement of the self-medication hypothesis (Khantzian, 2003), which posits that survivors of SA drink in order to alleviate their distress. Future studies should continue to assess for differences in associations between average distress and drinking, as compared to associations between daily deviations in distress and drinking. This difference has implications for interventions that aim to reduce alcohol consumption among survivors of SA. Clinicians could help women to monitor for elevated distress in order to plan adaptive coping responses or seek social support to reduce drinking on those high-risk days.

Results also highlighted the role of perceptions of coping control and social support in drinking behavior among survivors of SA. Contrary to our expectations, as women's coping control increased above their average levels, the number of drinks they consumed on that day increased. Because we did not ask participants what they did to cope, it is possible that they coped by drinking. However, in relation to their SA-related distress, it was women who reported less coping control who drank more as their SA-related distress increased above their average, while those who reported more coping control drank about the same regardless of their level of SA-related distress. This suggests that women who have less perceived coping control are influenced by day-to-day increases in distress more than women who have more perceived coping control. Future studies should attempt to determine which specific coping strategies are used on a given day and how the types of strategies used may interact with SA-related distress to influence drinking behavior. With regards to social support, results indicated that participants who reported less perceived support engaged in more drinking on that day. These findings are consistent with prior studies documenting the link between receiving positive social support and reduced psychological distress among SA survivors (Ullman, 1996; Ullman & Filipas, 2001). Accordingly, women with reduced access to effective coping strategies and sources of support may turn to alcohol use as a means to cope with their distress. Coping and social support both represent adaptive coping strategies that can serve to protect survivors of SA from increased drinking and potential problems associated with heavy drinking. Interventions aimed at reducing drinking among women with a history of SA should include coping skills acquisition and efforts designed to increase access to and utilization of social support.

Results from the present study are subject to limitations. First, our sample was comprised of college women from one university who endorsed a recent heavy drinking episode and either child or adult SA. This may limit the generalizability of results to other college samples, non-college women, male SA survivors, those without a history of heavy drinking, or those who experienced traumas other than SA. Additionally, the current study relied exclusively on self-report measures of psychological distress, alcohol use, coping control, and social support, which may be subject to under- or over-reporting given the sensitive nature of these topics. Although the daily assessment of these variables is a notable strength of our study, it also required that we limit our assessments of each construct in order to minimize participant burden. For example, we were not able to query women regarding the specific coping strategies they used. Further, daily assessments may introduce some bias in that participants could have attributed their drinking to elevated SA-related distress and then responded to items in a manner consistent with this belief. Given the decrease in drinking observed across the daily monitoring assessment period, it is possible that being asked to monitor one's alcohol consumption every day influenced participants' actual behavior. Although we attempted to address this issue by controlling for monitoring day in our analyses, it is possible that the associations of interest were impacted by the observed decrease in drinking.

4.1 Conclusion

In conclusion, findings highlight the importance of coping abilities and social support in the drinking behavior of female survivors of SA. Additionally, daily deviation in SA-related distress appears to be an important factor in alcohol consumption beyond average levels of distress, especially among those who have less coping control. Interventions for women with SA histories should include self-monitoring skills for days with heightened need for coping skills or social support to reduce drinking.

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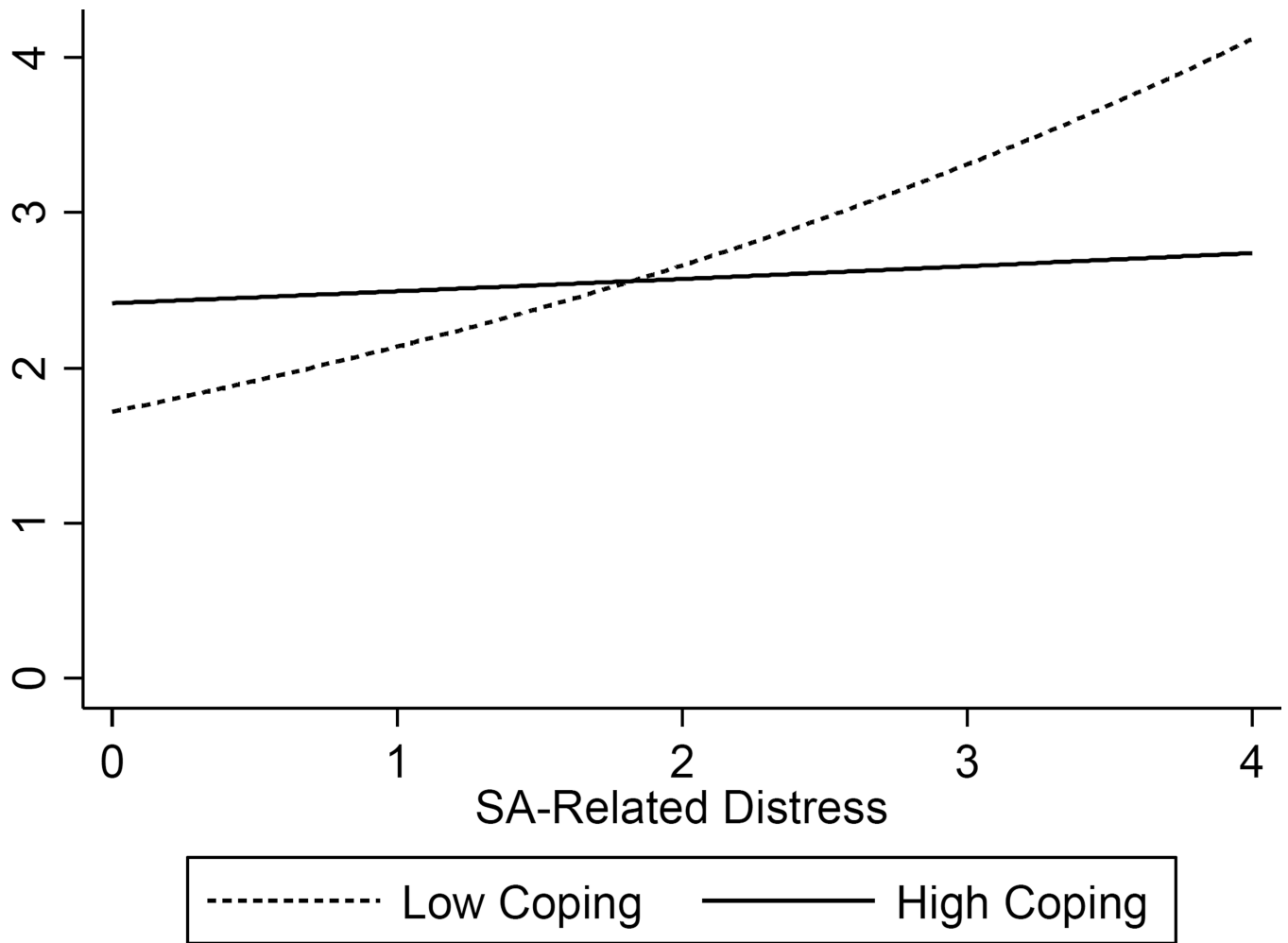


Figure 1. Coping control moderates the association between daily SA-related distress and the number of standard drinks consumed that day. For illustrative purposes, coping control is shown at 1 standard deviation above (i.e., High Coping) and below (i.e., Low Coping) the mean.

Table 1

Descriptive statistics of study variables

	Observed Range	Mean	SD
Average number of drinks per day	0 – 25	1.2	2.6
Baseline PTSD symptom severity	2 – 38	13.4	8.0
Average SA-related distress	0 – 4	0.5	0.8
Coping control	0 – 6	3.2	1.4
Social support	0 – 5	2.2	1.4

Note. PTSD = posttraumatic stress disorder; SA = sexual assault; SD = standard deviation.

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Table 2

GEE model for coping predicting daily number of drinks consumed

	Model 1		Model 2	
	<i>b</i>	<i>IRR</i> [95% CI]	<i>b</i>	<i>IRR</i> [95% CI]
Monitoring day	-0.01***	0.99 [0.99, 0.99]	-0.01***	0.99 [0.99, 0.99]
Weekend	0.55***	1.73 [1.54, 1.95]	0.56***	1.74 [1.55, 1.96]
Baseline PTSD symptom severity	0.01	1.00 [0.996, 1.01]	0.01	1.00 [0.996, 1.01]
Average SA-related distress	0.07	1.07 [0.94, 1.22]	0.06	1.06 [0.93, 1.20]
Daily SA-related distress	0.13**	1.14 [1.04, 1.24]	0.12**	1.13 [1.04, 1.23]
Coping control	0.13***	1.13 [1.07, 1.20]	0.12***	1.13 [1.07, 1.20]
Average distress × coping control			-0.03	0.97 [0.86, 1.09]
Daily distress × coping control			-0.10*	0.91 [0.84, 0.99]

Note. IRR = incidence rate ratio; CI = confidence interval; PTSD = posttraumatic stress disorder; SA = sexual assault.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3

GEE model for social support predicting daily number of drinks consumed

	Model 3		Model 4	
	<i>b</i>	<i>IRR</i> [95% CI]	<i>b</i>	<i>IRR</i> [95% CI]
Monitoring day	-0.01 ***	0.99 [0.99, 0.99]	-0.01 ***	0.99 [0.99, 0.99]
Weekend	0.57 ***	1.76 [1.57, 1.98]	0.57 ***	1.76 [1.57, 1.98]
Baseline PTSD symptom severity	0.01	1.01 [0.997, 1.01]	0.01	1.01 [0.997, 1.01]
Average SA-related distress	0.06	1.06 [0.94, 1.21]	0.06	1.06 [0.93, 1.21]
Daily SA-related distress	0.11 *	1.12 [1.03, 1.22]	0.11 *	1.12 [1.03, 1.22]
Social support	-0.06 *	0.95 [0.90, 0.999]	-0.06 *	0.95 [0.89, 0.998]
Average distress × social support			-0.02	0.98 [0.87, 1.10]
Daily distress × social support			0.01	1.01 [0.93, 1.09]

Note. IRR = incidence rate ratio; CI = confidence interval; PTSD = posttraumatic stress disorder; SA = sexual assault.

* $p < .05$.

*** $p < .001$.