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College Student Employment and Drinking: A Daily Study of Work Stressors, Alcohol Expectancies, and Alcohol Consumption

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Abstract

We examined the within-person relationships between daily work stressors and alcohol consumption over 14 consecutive days in a sample of 106 employed college students. Using a tension reduction theoretical framework, we predicted that exposure to work stressors would increase alcohol consumption by employed college students, particularly for men and those with stronger daily expectancies about the tension reducing properties of alcohol. After controlling for day of the week, we found that hours worked were positively related to number of drinks consumed. Workload was unrelated to alcohol consumption, and work-school conflict was negatively related to consumption, particularly when students expressed strong beliefs in the tension reducing properties of alcohol. There was no evidence that the effects of work stressors were moderated by gender. The results illustrate that employment during the academic year plays a significant role in college student drinking and suggest that the employment context may be an appropriate intervention site to address the problem of student drinking.

Keywords

EMPLOYMENT; WORK STRESSORS; COLLEGE STUDENTS; ALCOHOL; ALCOHOL EXPECTANCIES

Alcohol use and abuse is common among college students and is among the more significant health threats to that population. National surveys indicate that 40–44% of college students engage in binge drinking and that binge drinking rates have remained stable after increasing through the 1990's (Office of Applied Studies, 2006; Wechsler, 2000; Wechsler, Lee, Kou, Seibring, Nelson, & Lee, 2002). Alcohol use is also linked annually to thousands of early deaths, accidental injuries, and health problems among college students (Hingson, Heeren, Winter, & Wechsler, 2005). The epidemic rate of alcohol abuse and attendant health problems underscores the importance of identifying risk factors that contribute to college student drinking. In particular, identifying readily modifiable risk factors offers the

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possibility of developing programs and policies to combat excessive drinking by college students. The purpose of the present study is to identify job characteristics related to drinking by college students, as well as to examine alcohol expectancies that may moderate those relationships.

Working has become increasingly common for college students, with estimates of employment rates ranging from 48% to 77% (National Center for Education Statistics, 2002; 2005). Moreover, approximately 30% of full-time college students work more than 20 hours per week (NCES, 2005). Although theorists have recognized paid work as a domain of developmental transition for college students that may lead to alcohol use (Schulenberg & Maggs, 2002), we are aware of only one study examining relationships between college student employment and drinking. Using data from a national, cross-sectional survey of college health behaviors, Leppel (2006) found that part-time work was associated with a reduced likelihood of binge drinking for women and men working less than 20 hours per week, and for women but not men working 20–39 hours per week. Leppel (2006) suggested that working may reduce commitment to the college drinking culture, though working may also simply decrease the opportunity to drink. Despite this finding, we believe there is both a theoretical and empirical basis to expect that working during the academic year may be a risk factor for increased alcohol consumption. In the sections that follow, we use tension reduction theory as a framework to understand work-related drinking and review the extant literature on work and alcohol use by adolescents and adults.

Tension Reduction Theory and Work-Related Alcohol Use

Tension reduction theory provides a theoretical perspective relevant to the consideration of the association between work and college student drinking. The theory holds that people consume alcohol to reduce tension and stress (Greely & Oei, 1999). Thus, a key proposition of the theory is that people are motivated to consume alcohol when they experience stressors (Greely & Oei, 1999; Sayette, 1999). In this way, alcohol can serve as a means of regulating negative emotions arising from work stress (Frone, 1999). For college students whose primary life domain is school, working may constitute a burden that creates stress. Researchers have found, for example, that longer hours worked by students are related to interrole conflict and decreased job satisfaction (Butler, 2007; Markel & Frone, 1998). Most full-time college students classify themselves as “students who work” rather than “employees who take classes,” and many report that they would rather not work during the academic year (Curtis & Williams, 2002; NCES, 2002). Thus, working during the academic year may be perceived as an impediment to achieving academic and longer-term personal goals, creating stress for working students.

Although there is little research on the relationship between work and alcohol consumption by college students, research on non-college student adolescent populations is consistent with the view that working is a risk factor for increased alcohol consumption. A number of studies have found that work status (e.g., Staff & Uggen, 2003; Wu, Schlenger, & Galvin, 2003) and hours worked (e.g., Bachman & Schulenberg, 1993; Mortimer, Finch, Ryu, Shanahan, & Call, 1996; Steinberg, Fegley, & Dornbusch, 1993) are positively related to adolescent alcohol consumption. Among the few examinations of qualitative work characteristics and adolescent alcohol use, greater job autonomy was related to greater alcohol consumption (Staff & Uggen, 2003; Mortimer, 2003). Mortimer (2003) concluded that alcohol use is among the more robust associations with adolescent employment.

In contrast to the literature on adolescent workers, which primarily focuses on the relationship between drinking and work status (i.e., employed or not) or hours worked, the literature on adults has primarily focused on the relationship between psychosocial work

stressors and alcohol consumption. Research on adult workers is generally consistent with the view that work stress is associated with increased alcohol consumption (Frone, 1999). A wide range of stressful workplace characteristics has been linked to increased alcohol consumption, including hazards or dangers (Leigh, 1995), problems and hassles (Delaney, Grube, Greiner, Fisher, & Ragland, 2002; Steptoe, Lipsey, & Wardle, 1998), job demands or workload (Frone, 2008; Frone, Russell, & Cooper, 1997a; Hagihara, Tarumi, & Nobutomo, 2001), and work-family conflict (Frone, Russell, & Cooper, 1997b; Frone, Russell, & Barnes, 1996). Other studies, however, find no relationship between work stressors and alcohol use (e.g., Greenberg & Grunberg, 1995; Wiesner, Windle, & Freeman, 2005). These mixed findings suggest the potential for moderator variables that may make individuals more or less vulnerable to stress-induced drinking (Cooper, Russell, & Frone, 1990), an issue we address in more detail later in the paper.

The literature on employment and alcohol consumption suffers from a serious methodological limitation; namely, the study designs are overwhelmingly cross-sectional in nature (Frone, 1999). Although a few longitudinal studies exist in both the adolescent and adult employment literatures (e.g., Crum, Muntaner, Eaton, & Anthony, 1995; Frone et al., 1997b; Mortimer et al., 1996), these studies employ panel designs that examine the impact of substantially lagged work characteristics (e.g., one to four years) on alcohol consumption. Although there is no theoretical basis for determining the appropriate time lag between the measurement of work-related variables and alcohol use, a growing number of studies indicate that alcohol use varies significantly from day-to-day among adults (e.g., Armeli, Carney, Tennen, Affleck, & O'Neil, 2000; Carney, Armeli, Tennen, Affleck, & O'Neill, 2000; Muraven, Collins, Shiffman, & Paty, 2005) and college students (e.g., Flynn, 2000; Hussong, Galloway, & Feagans, 2005; Park, Armeli, & Tennen, 2004).

The findings of these daily studies have two important implications for research on characteristics of college student employment and drinking. First, they highlight the necessity of frequently sampling alcohol use to fully capture the dynamic complexity of any existing relationships. Second, given that a significant portion of the total variation in daily drinking is due to variation within-persons, between-person factors such as the college environment or demographics can never explain that variability. Thus, models of daily drinking by college students must include factors that vary within-persons, and recent studies suggest that job characteristics are such a factor, displaying significant day-to-day variation (Butler, Grzywacz, Bass, & Linney, 2005; Teuchmann, Totterdale, & Parker, 1999). To date, however, most daily studies have focused on the relationship between the valence of daily work experiences (i.e., overall positive or negative) and alcohol use by adults (Armeli, Tennen, Affleck, & Kranzler, 2000; Carney et al., 2000). More recently, Liu, Wang, Zhan, and Shi (2009) found that daily work stressors were related to alcohol consumption and desire to drink by Chinese workers.

In the present study, we focused on three characteristics of work that should vary daily and may be associated with drinking by college students. We assumed that hours worked would be positively related to drinking by college students, just as they are for adolescents. As mentioned previously, many college students would prefer not to work during the academic year. To the extent that working leads students to have negative feelings about work, greater hours worked should be related to increased alcohol consumption. Workload, defined as the amount of work, was expected to be positively related to alcohol use. Workload is a recognized work stressor and, as noted above, is related to increased alcohol use by adults (e.g., Frone, 2008). Finally, interrole conflict between work and school was also expected to be positively related to alcohol consumption. Interrole conflict is defined as a negative state of tension (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964), and studies reviewed above have linked a form of interrole conflict (i.e., work-family) to increased alcohol consumption

(e.g., Frone et al., 1997b). Although we are not aware of research linking work-school conflict to alcohol use, other studies of work-school conflict suggest that the construct has patterns of relationships that are similar to those found with work-family conflict (Butler, 2007). Thus, based on propositions derived from tension reduction theory and empirical research on job characteristics and alcohol consumption, we advanced the following hypothesis:

Hypothesis 1

Daily (a) hours worked, (b) workload, and (c) work-school conflict are positively related to daily alcohol consumption.

Individual Differences and Stress-Induced Drinking

Although the findings on work characteristics lend support to a theory of stress-induced drinking, researchers have argued that some people may be particularly prone to drink in response to work stress (Cooper et al., 1990; Cooper, Russell, Skinner, Frone, & Mudar, 1992; Frone, 1999). In particular, individual differences in beliefs about the effects or consequences associated with alcohol use may increase susceptibility to stress induced drinking. Researchers have found, for example, that there is a stronger association between work stress and alcohol consumption for individuals who believe that alcohol helps them relax (Grunberg, Moore, & Greenberg, 1998; Grunberg, Moore, & Greenberg, 1999). Likewise, Frone et al. (1993) found that work-family conflict was associated with problem drinking only for people with strong expectations that alcohol reduces tension. In contrast, Cooper et al. (1990) did not find that positive expectancies regarding the effects of alcohol moderated the relationship between work distress and alcohol consumption.

Other studies employing daily diary designs have examined alcohol expectancies as moderators of the relationship between daily stress and drinking, but the expectancies were conceptualized as stable properties of individuals rather than as varying states (e.g., Armeli et al., 2000; Armeli et al., 2007). However, given that alcohol expectancies are cognitions, it is reasonable to expect that they would vary over time, perhaps even from day-to-day. Related research on coping provides ample evidence that coping strategies vary daily and that variation in daily coping is related to alcohol consumption (e.g., Park et al., 2004; Tennen, Affleck, Armeli, & Carney, 2000). Arneil, Mohr, Todd, Maltby, Tennen, Carney, and Affleck (2005) found that alcohol expectancies showed significant daily variation. They estimated that the within-person variability for tension reduction expectancies, such as those examined in the present study, was 65%. However, they did not examine daily expectancies as a moderator of stress-related drinking. We believe that alcohol expectancies may be more likely to moderate relations between work stress and drinking when both are measured daily, reflecting more proximal relationships.

Hypothesis 2

The relationship of daily (a) hours worked, (b) workload, and (c) work-school conflict with alcohol consumption is stronger for participants when they have stronger expectations about alcohol's tension reducing properties.

In addition to beliefs about the effects of alcohol, there is some evidence that the relationship between work stress and alcohol consumption also varies systematically by gender. These differences appear to be due to gender differences in expectations about the relaxing effects of alcohol (Rohsenow, 1983). Wiesner et al. (2005) found that the relationship between low skill variety and heavy drinking was stronger for young men than women. Similarly, Lennon (1987) found that low job complexity was related to alcohol use for men but not women. However, as with the research on alcohol expectancies, the findings

are not unequivocal. Frone et al. (1993) did not find that gender moderated associations between work-family conflict and heavy drinking, and Carney et al. (2000) did not find that the relationship between daily negative work events and alcohol consumption was moderated by gender. On the whole, these findings suggest that the relationships between work factors and drinking may vary by gender. Based on this research, we predicted that gender would moderate relations between daily work stressors and alcohol consumption:

Hypothesis 3

The relationship of daily (a) hours worked, (b) workload, and (c) work-school conflict with daily alcohol consumption is stronger for men than women.

Some of the inconsistency in findings related to individual difference moderators of relationships between work stressors and alcohol consumption may be due to higher order interactions among the individual differences. In particular, if men are more likely to drink in response to stress because they are more likely to believe that alcohol is relaxing (Rohsenow, 1993), then men with strong beliefs about the beneficial effects of alcohol may be particularly vulnerable to stress induced drinking. Although these higher order interactions have not been explored in the context of work stressors, there is evidence of such interactions in the context of general life stress. For example, Cooper et al. (1992) found that negative life events were related to alcohol use for men with positive alcohol expectancies but not women. Similarly, Armeli et al. (2000) found that beliefs in positive outcomes or a sense of carelessness from drinking increased daily stress related drinking for men but not women. These findings suggest that men in particular are vulnerable to drinking in response to stress when they hold positive beliefs about the consequences of drinking. Thus, we predicted the following three-way interaction:

Hypothesis 4

Alcohol expectancies strengthen the relationship of daily (a) hours worked, (b) workload, and (c) work-school conflict with daily alcohol consumption for men more than women.

Method

Participants

The participants were 106 full-time college students enrolled at a public university in the Midwestern U.S. for an average of 14.6 semester credit hours. All participants were employed for five or more hours per week, drank alcohol, and had easy access to a computer with an internet connection at night. We chose five hours as a minimum cut-off to screen out participants who may have worked irregularly or on a temporary basis. The participants were predominantly women (74%), white (93%), and the average age was 20.59 ($SD = 1.43$). The participants represented 36 different college majors (21% psychology) and were recruited through a departmental research participation pool and announcements in select classes. This recruitment strategy precludes any calculation of response rate.

Procedure

All surveys for the study were completed on the internet, and the data were sent over an encrypted connection and secured in files protected by username and password. After providing informed consent, participants completed a contact information form as well as an initial questionnaire that included demographic questions and other items. Incentives in the form of course credit and a random drawing for two iPod music players were provided based on completion-level of the study.

For the daily portion of the study, participants were instructed to access a study website and complete a survey for 14 consecutive days about their daily experiences. The participants completed the daily surveys during weeks 13 and 14 of a 16-week Spring academic semester. Although participants were instructed to complete the daily surveys before they went to bed for the night, they were told that surveys submitted before 11:00 the following morning would be considered usable. Approximately 22% of our responses were in the morning (i.e., after 0600 hours) rather than evening. One concern with daily diary studies is participant compliance with survey submission requirements (e.g., Bass, Linney, Butler, & Grzywacz, 2007; Stone, Shiffman, Schwartz, Hufford, & Broderick, 2002), so several procedures were put in place to encourage compliance. First, participants were told that 12–14 usable surveys were necessary to qualify for the incentives. Second, all participants had access, through a study homepage, to contact information for the project manager who was available late each night of the study. Third, a list of participants who had not yet completed a daily survey was generated every morning, and a polite reminder was emailed to those individuals. We found that 31% of participants completed all 14 of the required surveys, and 77% of participants completed at least 12 of the 14 required.

Measures

With the exception of the demographic variables collected during the baseline survey, participants were asked to respond to the items based on their daily experiences. Cronbach's alpha reliability was calculated on day seven.

Earnings—Total daily earnings in dollars (U.S.) were reported by participants on the daily survey. This variable was included to control for “drinking money” that might confound the interpretation of relationships involving other level-one variables, particularly hours worked. The percentage of variance that was within-person for earnings was 47.1.

Number of drinks—Daily alcohol use was reported as the number of standard drinks (i.e., one 12-ounce beer or wine cooler, one four-ounce glass of wine, one one-ounce shot of liquor straight or in a mixed drink) consumed on that day.

Hours worked—The daily hours worked on and off campus were reported separately and were summed to create a measure of total daily hours worked. Few participants worked both on and off campus, and exploratory analyses revealed similar patterns of relationships for each work location, justifying a more parsimonious model containing a single measure of hours worked. The percentage of variance within-person for this variable was 92.9.

Work-school conflict—Daily levels of interrole conflict between work and school were measured with the four-item scale developed by Markel and Frone (1998). The response scale for the items was *Strongly Disagree* (1) to *Strongly Agree* (5). Cronbach's alpha reliability for the scale was .88, and 57.4% of the scale variance was within-person.

Workload—Daily workload was measured with two items developed for this study. One was similar to an item from Karasek's (1979) job demands scale, though shortened and made for a daily reference. We also included a more global item referencing workload in general. The items were, “I did not have to work very hard,” and “My job was demanding.” The response scale for the items was *Never/Very Rarely* (1) to *Always/Very Often* (5). Cronbach's alpha reliability was .77, and the 55.7% of the scale variance was within-person.

Tension reduction alcohol expectancy—The daily expectancy that drinking alcohol would reduce tension was measured with the three-item scale developed by Brown, Christiansen, and Goldman (1987). Because the original items were intended to measure

global beliefs (e.g., “alcohol reduces tension”), we modified item phrasing to make them appropriate for daily responses whether or not alcohol was consumed on that day (e.g., “Alcohol would have helped or did help me feel less tense.”). The response scale for the items was *Strongly Disagree* (1) to *Strongly Agree* (5). Cronbach’s alpha reliability for the items was .89, and 61% of the scale variance was within-person.

Results

Analyses

Although a total of 1,285 observations were made in the study, the analyses presented below are based on 611 observations of work days. The data were analyzed using HLM 6.0 where days constituted the level-1 variables and persons constituted the level-2 variables. We modeled alcohol consumption, a zero-inflated count variable, using a Poisson distribution with a log-link function. As is common with count data, the variance in alcohol consumption was substantially larger than the mean, so we corrected for overdispersion. The three work stressor variables were estimated as random effects, and we used person centering for the level-1 predictors (i.e., centered on the within-person daily average) and grand-mean centering for the level-2 predictors (Hoffman & Gavin, 1998).

Studies of both college students and non-collegiate adults typically find that alcohol consumption follows a weekly pattern, increasing on the weekend and ebbing during the remainder of the week (e.g., Armeli et al., 2000; Park et al., 2004). This temporal patterning presents a problem for the analysis of daily data because it can result in observations that are not independent (West & Hepworth, 1991). Following the practice of other researchers (Armeli et al., 2000; Mohr et al., 2005), we controlled for weekly patterns of alcohol consumption by including six dummy day-of-week variables in the models. We found above average (within study) rates of drinking on Thursday, Friday, and Saturday, and below average rates of drinking on other weekdays.

Correlations

The correlations presented in Table 1 are between-person, calculated after averaging across study days. It is worth noting that the two variables conceptualized as moderators, gender and tension reduction alcohol expectancies, were not correlated. We found that men consumed more drinks on average than women. Among the variables conceptualized as work stressors, workload and work-school conflict were significantly and positively correlated. However, hours worked were unrelated to either workload or work-school conflict. Average earnings were positively related to hours worked, as would be expected, and they were also positively related to work-school conflict.

Variability in Tension Reduction Alcohol Expectancies

As this is one of the first studies to conceptualize alcohol expectancies as a within-persons factor varying daily, as opposed to a stable between-persons factor, we conducted several analyses to determine the utility of measuring alcohol expectancies daily. We found that 61% of the total variance in our daily measure of tension reduction expectancies was within-person, suggesting that beliefs in the tension reducing properties of alcohol do vary significantly from day-to-day. Although the baseline (i.e., between-person) measure of tension reduction expectancies was a significant predictor of daily tension reduction expectancies ($t = 2.56, p = .01$), the baseline measure accounted for a modest 6% of the between-person variance in daily expectancies. This result is generally in line with the amount of variance in daily coping attributable to trait-level coping (Todd, Tennen, Carney, Armeli, & Affleck, 2004). Finally, when number of drinks consumed was regressed on a model containing tension reduction expectancies measured at both level-1 (i.e., daily) and

level-2 (i.e., baseline), only the level-1 measure was significant. Combined, these results suggest that measuring tension reduction expectancies daily has utility for predicting alcohol consumption.

Hypothesis Tests

Before presenting the results of hypothesis testing, we obtained two findings worth noting that were not part of any formal hypothesis. First, after controlling for day of the week and with no other variables in the model, we found that daily work status (i.e., working or not) was negatively related to alcohol consumption ($b = -.22$). Second, we included daily earnings in our model to control for “drinking money,” but found that earning more money on a day was associated with decreased alcohol consumption.

As shown in Table 2, we compared model fit by examining the reduction in unexplained variance associated with various nested models. Adding the daily work variables (model 3) to an unconditional model containing controls for day of the week (model 2) resulted in a 53% reduction in the within-person variance estimate. Adding daily tension reduction alcohol expectancies and its interaction with the daily work stressors (model 4) further reduced the within-person variation in alcohol consumption 9.7%. Next, we tested conditional models by adding gender as a level-2 variable. The addition of gender as a predictor of the intercept (model 5) resulted in a 10% reduction in the level-2 variance. However, adding gender as a predictor of the level-1 slopes (model 6) resulted in a smaller 2% reduction in level-2 variance. Moreover, none of the hypothesized interaction terms involving gender was significant, so hypotheses three and four were not supported. The reduction in level-2 variance from model five to six is likely due to a non-predicted significant interaction between tension reduction expectancies and gender, such that alcohol expectancies were more strongly related to consumption for men than women ($b = -.36$, $p = .02$). In sum, the model tests suggest that the “intercepts as outcomes” model provides the most parsimonious fit to the data, so we retained that as our final model. Parameter estimates from the test of that model are presented in Table 3.

We found mixed support for hypotheses regarding relationships between the variables conceptualized as work stressors and daily alcohol consumption. As predicted in hypothesis 1a, daily hours worked were positively related to alcohol consumption. Contrary to hypothesis 1b, daily workload was unrelated to alcohol consumption. Finally, opposite to our prediction in hypothesis 1c, daily work-school conflict was negatively related to daily alcohol consumption.

Hypothesis two, predicting that the relationship between daily work stressors and alcohol consumption is stronger on days when tension reduction expectancies are greater, was not supported. There were non-significant interactions between daily tension reduction expectancies and daily hours worked (H2a), as well as between expectancies and daily workload (H2b). We did obtain a significant interaction between daily tension reduction expectancies and daily work-school conflict on alcohol consumption. However, as shown in Figure 1, the shape of the interaction was not consistent with hypothesis 2c. Tests of the simple slopes using procedures detailed in Aiken and West (1991) revealed that there was a strong negative relationship between work-school conflict and alcohol consumption when tension reduction expectancies were high ($b = -.76$, $p = .001$), but the relationship was not significant when expectancies were low ($b = -.27$, $p = .07$). As explained above, neither hypotheses three nor four were supported.

Discussion

The purpose of this study was to examine within-person relationships between specific work variables conceptualized as stressors and alcohol use by employed college students using a daily diary research design. We also examined whether gender and daily beliefs regarding the tension reducing properties of alcohol moderated the relationship between the stressors and alcohol use. Overall, we found that daily work status (i.e., working or not) was negatively related to alcohol consumption, though the relationships among job characteristics and drinking were more complex. Of three work stressors examined, only greater hours worked daily were associated with increased alcohol consumption. In contrast, greater daily work-school conflict was associated with decreased alcohol consumption. Finally, daily workload was unrelated to consumption. As these relationships are within-person, we want to emphasize that they cannot be attributed to confounding between-person factors that may be related to both employment characteristics and drinking (e.g., family variables, living arrangements, etc.). Although we did not find that the associations between the work stressors and alcohol use were moderated by gender, we did observe an interaction between work-school conflict and tension reduction alcohol expectancies, which we discuss in more detail below.

Work Stressors and Alcohol Use

Perhaps the most important finding in this study is that college students drank more on days when they worked more hours. This finding is consistent with those from longitudinal studies of adolescents showing a positive association between hours worked and alcohol consumption (e.g., Mortimer et al., 1996; Steinberg et al., 1993). This congruency suggests that college students, despite their greater maturity and more autonomous living arrangements, are similar to adolescents in how working impacts their alcohol use. The finding also suggests that reducing the hours students work may reduce student drinking. However, reducing student work hours as a prescription for the college student drinking problem should be considered in the context of college costs. From 1986 to 2004, college tuition and fees rose 240% and textbook prices rose 200% (U.S. Government Accountability Office, 2004). In the absence of increased financial aid, many college students will have to work to afford higher education. Our findings suggest that work-study programs, in which students are provided a job as a form of financial aid, may exacerbate student drinking by increasing hours worked.

Daily earnings, which were highly correlated with work hours, were negatively related to daily drinking. Although not the focus of our study, we included daily earnings in our model to control for “drinking money” that could produce a spurious relationship between hours worked and consumption. Our results suggest that, among working students, greater daily earnings do not seem to promote drinking. Yet, it is possible that accrued greater earnings may provide students with more money that they could spend on leisure-time activities, such as drinking.

Interrole conflict has long been recognized as a stressor by organizational researchers (Kahn et al., 1964), and several studies in the adult occupational stress literature have linked higher levels of work-family conflict to increased alcohol use and a greater likelihood of alcohol dependence (e.g., Frone, 2000; Frone et al., 1997b). However, in the present study, greater daily interrole conflict between work and school was associated with decreased alcohol consumption. This relatively strong negative effect appears responsible for the negative relationship between daily work status (i.e., working or not) and drinking; when we control for work-school conflict, the relationship between work status and drinking is no longer significant. We believe the discrepancy between our findings and those from studies of work-family conflict may be attributed to fundamental differences in the nature of the role

domains that are in conflict. Whereas interrole conflict between work and family arises from incompatibilities between a principally task domain (i.e., work) and a principally social domain (i.e., family), interrole conflict between work and school arises from incompatibilities between two task domains, one of which (i.e., school) is clearly primary for most students. On days when work conflicts with school, drinking would likely exacerbate tension because it would presumably impede one's ability to accomplish school tasks. Although increasing work-school conflict as a means of reducing alcohol consumption would likely have other negative consequences (Butler, 2007), our findings do suggest that students are likely to drink less when they have school work to accomplish and minimal time to accomplish it. More generally, these findings suggest that there may be substantive differences between forms of interrole conflict that are worthy of further study (cf., Frone, 2003).

The only work stressor unrelated to alcohol consumption in this study was workload. This finding stands in contrast to several studies reporting a positive association between workload and alcohol use by adults (e.g., Frone, 2008; Frone et al., 1997a; Hagihara et al., 2001; Steptoe et al., 1998). However, Frone (2003) similarly did not find an association between workload and alcohol use by young workers, some of whom were young college students. We believe that the part-time nature of student work may preclude an association between workload and alcohol use, especially if the relationship is due to mental or physical exhaustion. Although college students may find their jobs more or less demanding from day-to-day, the toll of those demands is likely to be less if the work is part-time rather than full-time. Subjective measures of workload are likely to be within-job relative, such that students may report their job as more demanding relative to other work days but not in an absolute sense. In lieu of workload, future studies may wish to examine physical and mental exhaustion as a predictor of alcohol consumption.

Alcohol Expectancies and Gender Moderators

A unique contribution of the present study was our conceptualization of tension reduction alcohol expectancies as a person state rather than trait. Our findings indicate that tension reduction expectancies do, in fact, show significant within-person variability. Moreover, we found that a daily measure of tension reduction expectancies better predicted alcohol consumption than a trait-level measure. These findings highlight the utility of including individual factors that display within-person variability in daily models of drinking. Although we only examined one type of alcohol belief, we think it is likely that other types of alcohol beliefs will also show within-person variability and may similarly prove to be good predictors of consumption (Armeli et al., 2005). Conceptualizing these beliefs as states rather than traits also suggests that interventions designed to change beliefs about alcohol may be efficacious for reducing consumption (Bennett & Lehman, 2003).

Although we found that students with stronger daily tension reduction expectancies tended to drink more, these beliefs did not generally influence drinking related to work stressors. The one exception was a moderating effect for tension reduction expectancies on the relationship between work-school conflict and alcohol consumption. Contrary to our prediction, the relationship between work-school conflict and drinking was more strongly negative for participants with greater expectations that consuming alcohol would reduce tension. As we suggested previously, drinking when work-school conflict is high may increase tension, as alcohol consumption is likely to interfere with being able to complete schoolwork. When tension reduction expectancies are high, individuals may be more cognizant of the impact of drinking on tension, and therefore may be more likely to abstain if they believe that drinking will exacerbate tension. In simpler terms, these individuals might endorse a statement similar to "I'd like to drink to reduce this tension, but I can't because it will make things worse." Although this result may partially be an artifact of

measuring daily alcohol expectancies, it does suggest that alcohol promoting beliefs may not always increase vulnerability to stress induced drinking (cf., Armeli et al., 2000).

We found that men drank more on average than women, and the relationship between tension reduction expectancies and drinking was stronger for men. However, gender did not moderate relationships between the work stressor variables and alcohol consumption, nor were there any three-way interactions among gender, work stressors, and tension reduction expectancies. Past studies have found that men are particularly vulnerable to work stress induced drinking (e.g., Armeli et al., 2000; Wiesner et al., 2005), and our null results may be due to a couple of factors. First, our sample was predominantly female, and we may have had inadequate power to test the cross-level interactions involving gender. Second, past studies were not focused on a college student sample. College student drinking differs markedly from that by other groups, including same-aged peers (National Institute on Alcohol Abuse and Alcoholism, 2002). Although college men tend to drink more than college women, the factors that lead to greater alcohol consumption for men or women may differ in a collegiate sample. For example, Park et al. (2004) found that college women were more likely to drink in response to event stress (not necessarily work related) than men. Our findings suggest that other factors besides gender, perhaps the alcohol context at work (e.g., Frone, 2003), are likely to play a larger role in work stress related drinking by college students.

Limitations and Conclusions

There are several methodological limitations of the present study. First, our sample was a convenience sample of full-time students at a medium-sized, four-year, residential state university. We urge caution in generalizing our results to other college student samples, particularly those at vastly different institution types, such as liberal arts or community colleges (cf., Presley et al., 2002). Second, our measures were all self-reported and the number of scale items for some constructs was limited due to the constraints of a daily survey design. The concern when all variables are self-reported is that the observed relationships will be inflated due to common method variance. We believe concerns over common method variance are more justified when the study predictors and criteria are attitudinal in nature and more easily influenced by common biases such as social desirability (Spector, 2006). In contrast, the present study included a fairly objective predictor (daily hours worked) and a non-attitudinal criterion (alcohol consumption). Indeed, research suggests that daily alcohol reports correlate strongly with blood alcohol level ($r = .56$) (Perrine, Mundt, Searles, & Lester, 1995). Although some of our constructs had to be self-reported (e.g., work-school conflict), there would be value in conducting future studies including objective indicators of job characteristics as are available on the U.S. Department of Labor's occupational information network (O*NET). Finally, all of our participants completed the diaries at the same point in the semester. Given the temporal variability of alcohol consumption over the academic year (e.g., Del Boca, Darkes, Greenbaum, & Goldman, 2004), it is possible that the study timeframe may have affected our findings.

In a review of the research on work stress and alcohol consumption, Frone (1999) called for more daily research designs and more research on young workers, and the present paper contributes to both of those literatures. Although the contribution of the employment context to college student drinking has been relatively ignored, our results provide an impetus for future research by demonstrating that daily characteristics of work are related to student drinking. Our results also suggest that the employment context may be an appropriate venue for alcohol interventions targeted at college students. Organizations employing large numbers of college students may want to incorporate substance abuse prevention as part of their normal training (cf., Bennett & Lehman, 2001), both to improve worker health and to reduce costs associated with alcohol abuse (e.g., Beaumont & Hyman, 1987). This is

especially true for interventions targeting drinking motivated by tension reduction, an expectancy which is strongly related to alcohol problems (e.g., Carey & Corriea, 1997). Our findings also suggest opportunities for cooperation between university student services geared toward employment and those focused on counseling students with alcohol problems.

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Figure 1.
Interaction between tension reduction (TR) alcohol expectancies and work-school conflict on alcohol consumption.

Table 1

Between-Person Descriptive Statistics and Correlations

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Gender	0.26	--						
2. Earnings	34.50	16.08	.10					
3. Hours worked	2.22	1.26	.12	.41**				
4. Work-school conflict	2.47	0.50	.03	.19*	.03			
5. Workload	2.85	0.74	-.06	.15	-.12	.26**		
6. Alcohol expectancy	2.71	0.66	.01	.09	-.03	.17	.10	
7. Number of drinks	1.46	1.47	.27**	-.04	.05	.03	.02	.35**

Note.

*
p < .05.
**
p < .01.

Men = 1 and women = 0. Value in the mean column for gender is the ratio of men to total sample. Except gender, variables were assessed daily and statistics were calculated after pooling within-person.

Table 2Within- (σ^2) and Between-Person (τ) Variance Estimates for Nested Models

Model	σ^2	τ
1. Null	3.97	.49
2. Unconditional: Day controls	3.30	.51
3. Unconditional: Work variables	1.54	.96
4. Unconditional: Alcohol expectancies	1.39	.99
5. Conditional: Intercepts as outcomes	1.40	.89
6. Conditional: Intercepts and slopes as outcomes	1.46	.87

Note. Each model is nested in the subsequent row's model. The null model does not contain any predictors. The unconditional models contain the level-1 predictors listed, and the conditional models include gender as a level-2 predictor.

Table 3

Hierarchical Linear Model of (Log) Alcohol Consumption

	b	SE	t
Gender	.63	.24	2.61**
Earnings	-.02	.01	-1.99*
Hours worked (H)	.13	.07	1.98*
Work-school conflict (W)	-.55	.15	-3.64**
Workload (L)	-.12	.12	-0.99
Alcohol expectancies (A)	.86	.11	7.52**
H × A	-.02	.03	-0.52
L × A	-.08	.10	-0.80
W × A	.33	.13	2.54*

Note.

*
 $p \leq .05$.

**
 $p \leq .01$.

Models estimated after controlling for day of week (contrasts not presented). The level-2 intercept is -0.62.