

FACTORS CONTRIBUTING TO YOUNG WORKER ATOD

USE BOTH ON AND OFF THE JOB

By

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ABSTRACT

The present study was designed to evaluate whether workplace factors such as permissive culture or workplace stress are associated with the day-to-day use of alcohol, tobacco or other drugs (ATOD) among young adult workers ($N = 187$). Previous research has found stronger relationships between ATOD use and workplace factors when ATOD use was measured on and off the job separately. To isolate on the job factors from off the job ATOD use, participants were asked to complete daily diary entries regarding their workday. It was predicted that workers who report stressful workdays and ATOD-tolerant workplace cultures will report more ATOD use. While this study revealed no direct link between stress factors and ATOD use, participants in more ATOD-tolerant work environments were more likely to use.

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CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

The causes and consequences of alcohol, tobacco, and other drug (ATOD) use among workers are major concerns for researchers and organizations. Substance use has been shown to impair task performance, lead to accidents and injuries, increase absenteeism and turnover, and elevate health care costs (Frone, 2003). The scope of this problem has been made evident through national survey data, revealing that the majority of illicit drug users are employed and that over 10% of workers admit to heavy or binge drinking (Bennet & Lehman, 2001). The focus of the present study is to identify workplace and personal factors that are related to ATOD use among young adult workers in a typical workweek.

Key Definitions and Distinctions

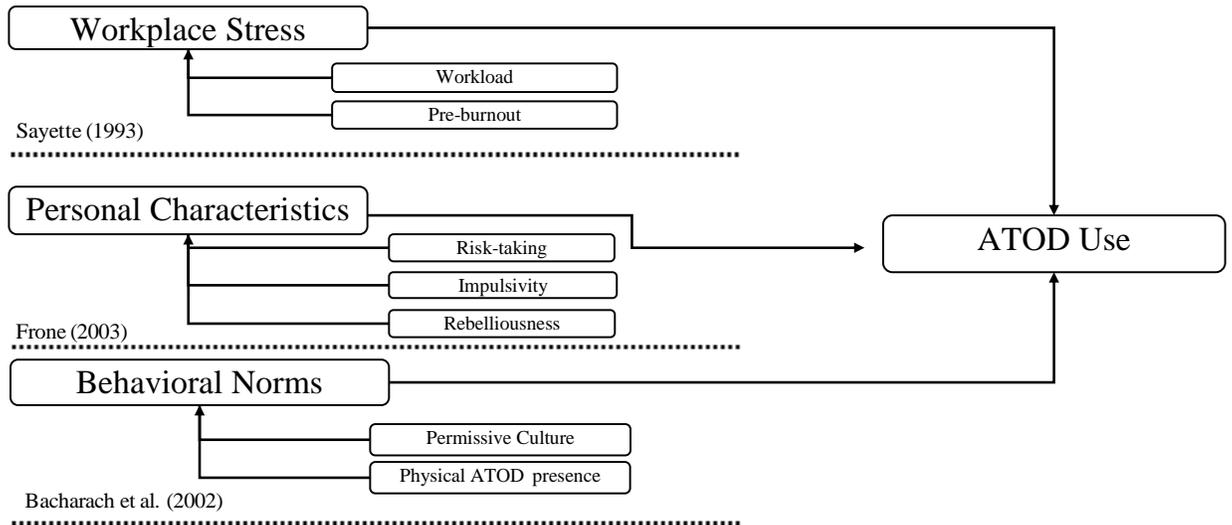
For the sake of clarity, a few definitions must be provided. *Illicit drugs* are those that are actually illegal, and for that reason, are often thought of as the most deviant or harmful; it has been found that more than 17% of the total workforce admits to using illicit drugs (Frone, 2006). Problematic use of alcohol is more difficult to pinpoint as its consumption is legal and not thought of as deviant in many circumstances, but Frone (2008) reported that 73.6% of American workers use alcohol in some regard.

It is also important to draw a distinction between drug use in the *workforce* and drug use in the *workplace*. A discussion of drug use in the workforce refers to the use of drugs by individuals who are members of the workforce, while drug use in the workplace is the use of drugs by workers while physically in the work environment. In other words, workplace use is nested in workforce use. According to Frone (2006), a more comprehensive definition of

workplace drug use includes ATOD use that employees engage in either right before their work hours or during their work hours.

Before identifying specific work environment and personal factors that may predict or contribute to workplace ATOD use, it is helpful to identify the processes by which ATOD use may be associated with workplace events. Figure 1 represents an integration of the three primary models used to explain or predict workplace ATOD use. Of particular relevance to the framework outlined in the figure is Sayette’s (1993) appraisal-disruption model of stress.

Figure 1. Conceptual Model of Workplace Factor Effects on ATOD Use



According to this model, a drug’s ability to regulate stressor-induced negative emotions is highest when the drug is used prior to exposure to the stressor. In other words, when an individual anticipates that his or her workday will be stressful, he or she will be more likely to self-medicate with ATOD before coming to work that day in hopes that the substance will mitigate anticipated stressful events (Sayette, 1993).

Similarly, in line with the stress-induced substance use model, ATOD use that occurs during or immediately after the workday would more likely be an effort to mitigate the stress or

strain experienced while at work (Frone, 2008). As yet another alternative, if an individual experiences the stressor first, he or she might be motivated to use ATOD after the event to regulate negative emotions. This can also be explained by the appraisal-disruption model (Sayette, 1993) because the appraisal of an event as stressful can be reduced by the consumption of ATOD.

Applying the integrated model summarized in Figure 1, the present study was designed to examine ATOD use among members of a sample of young workers. A major goal of this study was to establish whether there are factors present in the work environment that allow for, or potentially *encourage*, youth employees to engage in ATOD use. This might manifest itself through a stressful work environment that creates a need for a coping strategy or one in which ATOD use is readily accepted as part of the workday. Several workplace factors have been studied in relation to employee drug or alcohol use; the following factors were incorporated into the present study because of their relevance to a young adult population. The following sections outline each part of the above model in more detail.

Workplace Stress

Some of the common stressors that have previously been studied in relationship to drug use are work overload, job insecurity, and rigid deadlines (Frone, 2008; Trice, 1992). Frone posited that perhaps it is the feelings of inadequacy experienced by those who are dealing with such stressors that makes them so detrimental. He found that there was a relationship between ATOD use and work stress when drug use before, after, and during the work day was measured, but that this effect disappeared when drug use was only measured within the physical workplace. These findings underscore the far-reaching influence of workplace stressors on worker behaviors even outside the physical and psychological work environment. Although Frone (2008) found

that work stressors were more strongly related to substance use when the above temporal conditions were considered, the cross-sectional nature of his data provided a weak basis for establishing causal direction and reliable relationship estimates. The following hypothesis is based on these previous findings.

Hypothesis 1: Daily stress levels are positively related to ATOD that occurs both on and off the job.

Behavioral Norms

Another work environment factor that has been linked to workplace ATOD use is the presence of supportive or unsupportive behavioral norms regarding ATOD use. Members of organizations rely on learned norms regarding what is expected of them, to decide how much or how little to engage in any sort of deviant behavior in the workplace (Ames & Janes, 1992). This becomes especially relevant in regard to ATOD use as there could actually be a workplace culture (either at the organizational or small managerial unit level) that not only allows, for example, consumption of alcohol, but actually encourages it by making it a part of the social and political environment of the organization (Bacharach, Bamberger, & Sonnenstuhl, 2002).

According to research conducted by Bacharach et al. (2002), norms that permit drinking are positively related to alcohol use and may both mediate and moderate the effects of other risk factors associated with the work environment that have been linked to problem drinking (e.g., Even if an individual who expects a stress-reducing outcome from having a cocktail with lunch, she refuses to use because her supervisor has a zero-tolerance policy for substance use). Because this study utilized a daily-diary method of self-report, it is also possible to gather information about the physical presence of drugs and alcohol on a day-to-day basis as a second measure of permissive workplace norms, a measure that has yet to be utilized in a workplace substance use

study. In light of all of this, and considering the work environments often filled by young adults, it was expected that:

Hypothesis 2: Daily behavioral norms encouraging ATOD use are positively related to daily ATOD use both on and off the job.

Hypothesis 3: Daily physical presence of ATOD in the workplace is positively related to daily ATOD use both on and off the job.

Personal Factors

To further extend previous workplace ATOD research, three specific individual difference characteristics likely to be associated with young workers' ATOD use were also considered. Rebelliousness, impulsivity, and risk taking have been individually linked to ATOD use among adolescent samples as well as to workplace and workforce ATOD use among a young adult population by Frone (2003). All three individual difference factors partially comprise one larger construct known as *behavioral* undercontrol, which is the tendency to allow short-term incentives to drive behavior while actively ignoring signals of impending negative consequences (Frone).

Frone (2003), who investigated these three components of behavioral undercontrol in a sample of employed adolescents, found that overall substance use was related to impulsive and risk-taking personalities. He also found a link between rebellious personalities and alcohol use on the job. A similar relationship was not found for marijuana use, potentially because the illicit nature of this drug precluded participants from responding honestly. Because we are interested the same population of workers, we predicted to replicate these findings:

Hypothesis 4: Young adult workers with risk-taking, impulsive, and rebellious personalities are more likely to use ATOD both on and off the job.

ATOD Use among Younger Workers

The present study adopted the definition of young workers as being those in late adolescence, between the ages of 18 and 21 (Frone, 2003), but also extended the population of interest to those in their mid-twenties, maintaining congruence with recent research conducted by Butler, Dodge, and Faurote (2010). A primary reason for studying this population is that these individuals are entering the workforce at the same age as when ATOD use is often increasing and very little research has been done to date on this target population. A second reason for focusing on young workers in this study is that changing demographics within the workforce have created a situation in which young workers are likely to confront different challenges when establishing their own self-efficacy, performance, and success than those experienced by older and more experienced workers. Young workers are learning workforce and workplace norms at the same time as they are testing societal norms regarding ATOD use and learning coping strategies that will accompany them throughout adulthood.

For these reasons, identifying factors in the work environment that may contribute to ATOD use at this age is particularly important (Frone, 2003). At present, given the limited empirical literature in this area, it would seem that the factors contributing to workplace ATOD use among young workers are the same factors that contribute to workplace ATOD use for older workers. Because this notion is based on little empirical study, however, the present study attempted to test the general research question that the factors predicting ATOD use among young workers are different than the factors that have been identified in the literature already for adult workers. For the sake of comparison, the results of the present study can be compared against Bachararch et al. (2002). In particular, using the same measures of workplace culture (supervisory control and ability items as well as coworker drinking norm items) as the current

study, they found that workplace culture effects were the strongest predictor of ATOD use; however, they did not find an effect for workplace stress factors for an adult population. Additionally, Frone's (2003) study of alcohol and marijuana use among young workers considered six domains of risk factors (demographic, personality, substance use outcome expectancies, workplace substance availability, workplace social control, and work stressors). Frone found that, while demographic risk factors mirrored those found in the general population, there was no relationship between outcome expectancies for young adults as had been found among an adult worker sample (Cooper, Frone, Russell & Mudar, 1995). Rather, it was the workplace social availability of alcohol and other drugs that most strongly predicted adolescent ATOD use.

The present study was, therefore, designed to begin addressing links between certain personality and work environment characteristics, and ATOD use among young adults. To replicate and extend previous research, a daily diary study method was implemented to address Frone's (2008) assessment that cross-sectional data are insufficient for understanding the link between workplace factors and ATOD usage. To our knowledge, the only other study to do this within a sample of young workers was Butler, Dodge, and Faurote (2010). They implemented an online daily survey procedure to compare daily work stressors to daily alcohol consumption among employed college students. They found no relationship between workload and ATOD when using a two-item job demands scale. We seek to further explore this relationship with different measures and to investigate other factors along with it that might better explain young adult worker ATOD use.

CHAPTER II

METHOD

Participants

Undergraduate students ($N = 187$) were recruited from large lecture courses at a moderately sized public university in the southeastern United States. Volunteer participants were awarded class credit for their participation. Men (70), women (106), and those of unspecified gender ranging from age 18-25 ($M = 21$, $SD = 2.04$) participated. The distribution of participants' ethnicities was White (76.8%), African American (13.5%), Native American/Alaskan Native (1.1%), Asian/Pacific Islander (2.7%) and Hispanic (1.1%). Inclusion criteria required students to be working at least a part-time job, defined as one in which they worked at least 15 hours per week.

Materials

Daily diary-type entries were gathered via internet-based structured questionnaires that assessed perceived job-related stress and situational norms, as well as information pertaining to the temporal context and nature of personal ATOD use patterns. Participants were asked to report the time of all work shifts and whether any substance use occurred during the course of each day. A preliminary baseline internet-based survey was also administered to gather personality and demographic information. Copies of these data collection instruments are provided in the appendix.

Measures

Workload. There were two measures of workload in this study: General stress levels and Quantitative workload.

General Stress. Workload in terms of stress was measured with the Stress in General Scale (SIG) by Stanton, Balzer, Smith, Parra, and Ironson (2001). The SIG is a 15-item scale that is designed to measure whether respondents feel stressed about their work on a particular day; therefore it was a logical choice for measuring work stress in a daily diary-type study. The scale is made up of two subscales: Pressure and Threat. Example items are “*demanding,*” “*pressured,*” or “*hectic*” and respondents can indicate “*yes,*” “*no,*” or “*?*” for each item. Reliability was satisfactory for both scales; the average Cronbach’s alphas across all seven days of data collection were .85 for *Pressure* and .82 for *Threat*.

Quantitative workload. Quantitative workload was measured with the Quantitative Workload Inventory (QWI) developed by Spector and Jex (1998). A sample item is “*How often does your job require you to work very hard?*” The scale has five items that are responded to on a five-point response scale from *Less than once per month or never* to *Several times per day*. Cronbach’s alpha was .82.

Risk-taking. Risk-taking, or sensation-seeking, is the degree to which individuals pursue novelty, complexity or intensity (Stephenson Velez, Chalela, Ramirez, & Hoyle, 2007). The current study will measure risk-taking with the eight-item Brief Sensation Seeking Scale (BSSS8) developed by Stephenson and colleagues (2007). They found that, when used to measure impulsivity among both English and Spanish speaking workers, BSSS8 scores correlated positively with both alcohol and tobacco use. The scale has two items for each of four subscales: *Experience Seeking*, *Thrill and Adventure Seeking*, *Disinhibition*, and *Boredom Susceptibility*, but will collapsed into one general sensation-seeking scale for analysis in the current study. Responses on the BSSS8 are five-point scales ranging from *strongly disagree* to *strongly agree*. Cronbach’s alpha was .74 for the current sample.

Impulsivity. Impulsivity, the extent to which individuals act without considering the consequences of their behavior (Frone, 2003), will be measured with the Rook and Fisher Buying Impulsiveness Scale (1995). The nine-item scale, originally designed to measure impulsivity when making purchasing decisions was adapted for use in this study by changing context-specific items to general-context items. An example of a generalized item is “*Do now, think about it later’ describes me.*” The scale had a Cronbach’s alpha of .88 for context-specific impulsivity (Rook & Fisher, 1995). The current study used a scale which was not context-specific and found an alpha of .61.

Rebelliousness. Rebelliousness is defined by Frone (2003) as “the extent to which individuals are defiant and frustrated when exposed to regulations, cannot freely govern their behavior, or cannot initiate independent decisions.” The current study measured rebelliousness with the 11-item revised Hong Psychological Reactance Scale that was implemented by Frone (2003). They found a Coefficient alpha of .86 among a young adult population. A sample item is “*Advice and recommendations make me want to do just the opposite.*” Responses were gathered on a five-point Likert-type scale ranging from *strongly disagree* to *strongly agree*. Reliability for this scale was high; Cronbach’s alpha was .83.

Permissive ATOD norms. Permissive drinking norms were measured two ways. General permissive drinking norms were measured one time with two coworker drinking norm items and three supervisory contact items used by Bacharach and colleagues (2002). Coworker drinking norm items asked how many drinks they feel their coworkers would find acceptable to consume after work as well as during lunch. Supervisory contact items addressed the frequency of contact participants’ supervisors (scored on a seven-point response scale ranging from *never* to *very frequently*), the willingness of the supervisor to confront workers who might have an

alcohol or drug problem (scored on a seven-point response scale ranging from *not true* to *very true*), and the supervisor's ability to identifying workers who might have a drug or alcohol problem (scored on a seven-point response scale ranging from *not true* to *very true*).

Additionally, daily permissive drinking *and* drug use norms were measured by asking participants if anyone at work had mentioned alcohol, tobacco or other drug use during their workday. The three-item Supervisor Willingness scale had a Cronbach's alpha of .74, and the three-item Supervisor Ability scale had equally high inter-item reliability of .70.

Physical Presence of ATOD. Physical presence of ATOD at the workplace was measured daily by asking participants if anyone at work had used alcohol, tobacco or other drugs during their workday (Yes or No).

Participant ATOD use. Participant's ATOD use was measured by asking the question "Did you engage in the use of alcohol, tobacco, or other drugs today?" Participants then responded dichotomously with a "yes" or "no" response. They were also provided with an open-ended item to describe the nature of the use.

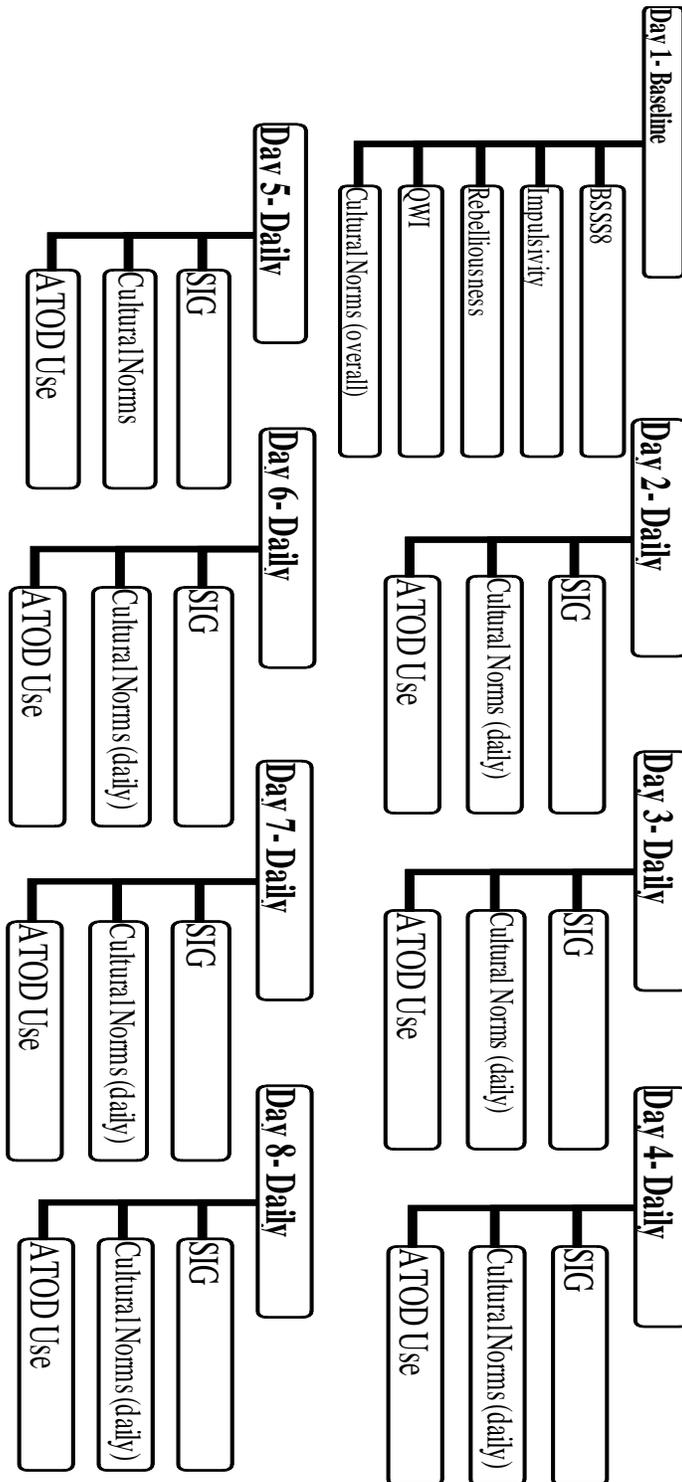
Temporal context of alcohol and drug use. When Frone (2008) measured the temporal relationship of alcohol use to participants' workdays, he asked participants how often during the last 12 months they used alcohol in each context (before work, during the workday, or after work). The current study seeks to eliminate hindsight bias by collecting data on the workday begin and end times, and the exact time of day that participants engaged in ATOD use. Because participants logged on these times every day, self-report error and biases should be decreased significantly from the original cross-sectional methodology utilized by Frone.

Procedure

Participants were recruited from undergraduate courses. They were asked to complete a brief daily survey every day for the period of one full week (seven days). To limit the chance of individuals responding well after a day had passed, thereby increasing the risk of hindsight bias, each day's questionnaire was only available to participants from 12:00 p.m. to 10:00 a.m. on the following day. Additionally, participants responded to one baseline questionnaire that included items regarding demographic information, personality measures, job type, and parental ATOD use, as well as the QWI and overall behavioral norms items. The baseline survey was available online only during the first two full days of data collection. Participants received automated prompts via email reminding them to take each day's survey.

Two extra credit course points were given for completing the baseline survey and then participants were awarded half of a point for every daily survey completed to encourage continued participation. Additionally, those students who did not want to participate in the daily surveys or did not qualify for participation were offered an alternative extra credit assignment that was worth two extra credit points. Participants were never asked to reveal the name of the organization for which they work, nor any other information that could compromise their anonymity. Figure 2 illustrates the procedure for all eight days of data collection.

Figure 2. Data Collection Procedure



CHAPTER III

RESULTS

Analyses

To prepare the data for analysis, several preliminary operations had to be performed. First, the daily responses had to be matched with baseline data by comparing the ID codes that participants generated each time they provided data. Two participants were not included in the final dataset because they did not complete the baseline survey. The final dataset included 185 total participants.

Situational norms were measured by counting the number of times that ATOD substances were reported to be present either physically or conversationally in the work environment. Each of these instances was given a score of one and all were combined to reflect each participants' daily work norms score. The next necessary step was to determine if participants used ATOD during work hours from the self-report data. In other words, it had to be determined whether the ATOD use time fell between the reported start and end times of each work shift. All times were coded 1-24, "1" representing 12 a.m. and 24 representing 11 p.m. Contingent syntax was written that created a flag variable with a value of "1" if the value of the *usetime* variable fell between the values of the *workstart* and *workend* variables. Because some second and third shift workers began work at a lower-coded time than they ended (e.g. they worked from 6 p.m. to 1 a.m., coded 19 to 2), 24 was added to those participants' end times so that their use time could accurately be flagged as at work or not at work.

Lastly, daily data was averaged across days and average total use and stress variables were computed for each participant. Because this study dealt with college students, it was also

advantageous to consider weekdays separately from weekends, under the assumption that use behavior might change when participants did not have pressing academic responsibilities. For this reason, the daily data was also averaged separately across all weekend nights (Thursday, Friday, and Saturday) and across all week nights (Sunday-Wednesday).

Results

Overall ATOD use was found to be very low for the sample; only 32% of participants reported using any ATOD at all during the study period. Out of the total use reported, 48.9% was alcohol use, 40.4% was tobacco use, and 10.6% was the use of other drugs, specifically, marijuana. Given this low usage prevalence, it was decided that the most meaningful analyses would be based not at the daily level or any one type of use, but rather all use at the weekly and weekday vs. weekend level. Therefore stress and behavioral norms scores were averaged across days to provide more stable representations of these measures over the study period. After collapsing across days, and across weekend versus week days, scores were recoded into dichotomies wherein if participants used at least one day during that period, they were given a score of 1 and if they did not use at all, they were given a score of 0. There was not enough at-work ATOD use to be considered separately from overall use. Means and standard deviations for all analyzed variables are reported in Table 1.

To investigate the relationship between stress and ATOD use, *Pressure* and *Threat* scales from the SIG were correlated with day-to-day, overall, week day, and weekend ATOD use. Because the distribution of ATOD use was positively skewed and scores were dichotomous, point biserial correlations were performed. They are particularly appropriate when one variable is continuous and the other is dichotomous and are computed with the formula for the Pearson product moment correlation (Glass & Hopkins, 1995).

Table 1. Descriptive Statistics for All Main Study Variables.

	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Sex	n/a	n/a													
2. Age	21.06	0.15	.18 *												
3. ATOD Use	n/a	n/a	-.05 *	.10											
4. Quantitative Workload	16.41	4.79	-.10	.00	-.09										
5. Pressure	5.06	0.34	-.17	.00	.11	.32 **									
6. Threat	4.92	0.35	-.16	-.02	.04	.21 *	.72 **								
7. Supervisor Contact	5.16	0.07	-.06	.00	-.10	.12	-.14	-.23 *							
8. Supervisor Ability	4.88	0.12	-.15 *	.07	-.19 *	.15	-.05	-.07	.28 **						
9. Supervisor Willingness	5.67	0.11	.02	.07	-.14	-.02	-.11	-.19	.22 **	.61 **					
10. Conversational ATOD Presence	0.28	0.03	-.19	-.07	.49 **	-.01	.27 **	.19 *	-.07	-.24 *	.01				
11. Physical ATOD Presence	0.18	0.31	-.06	-.08	.38 *	-.07	.10	.14	-.06	-.36 **	-.15	.69 **			
12. Rebelliousness	2.81	0.59	.18 *	.09	.03	-.11	.10	.11	-.11	-.39 **	-.16 *	.12	.20 *		
13. Impulsivity	3.07	0.61	.04	.05	-.18	.11	.07	.10	.01	-.20 *	-.11	-.11	-.02	.38 **	
14. Risk-Taking	3.43	0.72	.08	.11	-.11	.22 **	-.06	-.08	-.14	-.12	-.06	-.11	.03	.06	.36 **

Note. *N* = 111-175 for Daily Variables, *N* = 185 for Baseline Variables; * *p* < .05, ** *p* < .01; Female coded 1 = Female, 0 = Male; Values for ATOD Use and other dichotomous variables are Phi Correlation Coefficients; Values for one continuous and one dichotomous variables are Point Bicalerial Correlations Coefficients.

There was no significant relationship identified between stress and ATOD use in terms of overall average ATOD use and average Pressure stress, $r = .11, p = .25$ or Threat stress, $r = .04, p = .67$. Similarly, when considering average weekend versus average week day ATOD use, there were only very weak positive correlations for both average weekend Pressure, $r = .18, p = .12$, and average weekend Threat, $r = .07, p = .59$ for weekend use. When weekday use was analyzed, there was a very weak negative correlation between use and Pressure, $r = -.07, p = .54$, and a weak positive correlation between use and Threat, $r = .04, p = .74$. Lastly, the results of the QWL were correlated with overall ATOD use and no relationship was found, $r = -.09, p = .36$. These results, therefore, did not support Hypothesis 1.

To address the second hypothesis, daily behavioral norms were compared to daily ATOD in a series of phi correlations, which are appropriate when both variables are dichotomous. While the presence of behavioral norms encouraging use was significantly correlated with participant use on one of the seven days, $r = .42, p = .00$, there was no consistent trend across the other six days indicating a stable influence of behavioral norms on ATOD use. When considered on average across all seven days, however, when use was collapsed across all days and compared to overall presence of ATOD use in conversation, a significant correlation was identified, $r = .49, p = .01$. Additionally, point biserial correlations showed support for a relationship between inadequate supervisor ability to control ATOD use and overall participant ATOD use, $r = .19, p = .05$. Lastly overall weekend and weekday use were compared to overall weekend and weekday norms. Significant positive relationships were found for both weekday, $r = .51, p = .00$, and weekend, $r = .41, p = .00$, norms and ATOD use. Thus, when overall ATOD use was considered along with aggregated norms for use, Hypothesis 2 was supported.

Physical presence of ATOD use in the workplace was compared to participants' own

ATOD use using phi correlations. Similar to the analyses involving the conversational presence of ATOD, there was no relationship between day-to-day physical presence and participant ATOD use with the exception of one day, $r = .49, p = .00$. However, when overall coworker use was compared to overall participant use across the whole seven day period, there was a significant phi correlation, $r = .38, p = .05$. Lastly overall weekend and weekday use were compared to overall weekend and weekday coworker use. Significant positive relationships were found for both weekday, $r = .39, p = .05$, and weekend, $r = .50, p = .00$, use. These findings support Hypothesis 3.

Personality was only measured at baseline and then compared to average ATOD use across the study period. Point biserial correlations were performed to test the relationships between risk taking, impulsivity, and rebelliousness personality scales and ATOD use. As can be seen in Table 1, there was no significant relationship between rebelliousness, impulsivity, or risk taking personalities and ATOD use.

CHAPTER IV

DISCUSSION

This study was designed to test the hypothesized links between personality and work-related variables and young adult ATOD use. Individuals within this particular population are simultaneously developing their careers and coping strategies, so it is advantageous to examine whether the workplace could be encouraging maladaptive behaviors. The sample size for this study was consistent with the only other known study of its kind. Butler et al. (2010) had a final sample of 106 participants. There was very little ATOD use found among this sample of young workers. Frone (2003) also found a relatively low prevalence rate of alcohol use among young workers, with most participants rating their frequency of alcohol and marijuana in a typical day as very low. However, Butler et al., who collected daily alcohol use data, found that the average young worker drank about one drink a day. This is in stark contrast to the current study in which the majority of participants did not use ATOD on any day during the study period.

It was expected that workers who experienced more work-related stressors would be more likely to self-medicate or use ATOD (Hypothesis 1). While there was no link between workplace stress and participant ATOD use, results did indicate a significant relationship between pressured work environments and coworker use. This indicates that there was a significant link between stressful work environments and individual's desire to use ATOD. As a sample, participants in this study did not report very much ATOD use at all so it was difficult to link their behavior to work conditions. However, this link between stress and coworker ATOD use found in this study use suggests a potential need to replicate among a different sample.

This study revealed several interesting relationships between situational norms in the workplace and young worker ATOD use. While no consistent day-to-day link between norms and use was found, participants who reported that ATOD was conversationally and physically present in their work environment were more likely to use themselves. It should be noted that this relationship is not necessarily causal, as an alternative explanation is that young adults choose to work with other people who have similar ATOD use behaviors and/or attitudes. However, it is also reasonable to assume that individuals who hear their coworkers talk about using or watch their coworkers use eventually change their behavior to either fit in or cope—especially if coworker use or talk of use is usually a result of a stressful work day. This assumption is grounded in the results of other workplace ATOD studies that have found permissive norms in the workplace to be the best predictor of participant use, and in some cases, to be more important than the physical availability of ATOD (Bacharach et al., 2002; Frone, 2003).

A negative relationship was found between participant ATOD use and supervisor ability to identify whether a worker is using. These results are consistent with those found by Bacharach et al. (2002) who found a link between supervisor ability and participant ATOD use using the same supervisor variables. Because workplace ATOD use was so rare and not considered separately from overall use, these results indicate that participants with supervisors who they believe care about their wellbeing and would be able to identify if they have a drug or alcohol problem were less likely to use in general. Workplace supervision conditions, in other words, affected their ATOD use on and off the job. These findings are plausible given that although Frone (2008) was not able to find a causal relationship between workplace factors and

ATOD use on the job, he found support for the theory that the workplace culture affects worker behavior off the job.

The final hypothesis was intended to replicate the results of Frone (2003) where young adults who had rebellious, risk-taking, and impulsive personalities would be more likely to use. This did not appear to be the case for the present sample. Interestingly, individuals who were more rebellious rated their supervisors as more inept, suggesting that perhaps rebellious individuals might not believe that their supervisors are able to identify that they are using ATOD. The fact that there was no observed link between personality and ATOD use speaks to a larger result of this study. Young people in this sample were not found to be heavy users of ATOD—in fact, almost 70% of participants did not report using any ATOD at all during the seven-day study period. These results stand in opposition to widely held cultural expectations that young people are more likely to engage in irresponsible or counterproductive work behaviors on a regular basis. For the sake of comparison, this sample used almost 40% less ATOD than the average American worker uses alcohol alone during a twelve month period (Frone, 2008).

Supplementary Analysis

Because roughly half of the sample were under the age of 21, the legal drinking age, and because Frone (2003) found men to be significantly more likely to drink than women in a young adult sample, a supplementary analysis was performed controlling for age and sex. Partial correlation results are presented in Table 2. The analysis did not contribute any new support for the hypotheses already discussed. In other words, controlling for age and sex did not have a noticeable impact on the hypothesized relationships within this sample.

Table 2. Partial Correlations for All Main Study Variables Controlling for Age and Sex.

	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. ATOD Use	n/a	n/a												
2. Quantitative Work Load	16.41	4.79												
3. Pressure	5.06	3.56	.10	.31**										
4. Threat	4.92	3.72	.03	.19	.71**									
5. Supervisor Contact	5.16	0.97	-.15	.12	-.16	-.25**								
6. Supervisor Ability	4.88	1.54	-.22*	.13	-.08	-.20*	.27**							
7. Supervisor Willingness	5.67	1.50	-.11	-.02	-.11	-.19	.22**	.62**						
8. Conversational ATOD Presence	0.28	0.03	.34**	-.03	.24**	.17	-.08	-.28**	.02					
9. Physical ATOD Presence	0.18	0.31	.25**	-.08	.10	.14	-.07	-.37**	-.14	.70**				
10. Rebelliousness	2.81	0.59	.03	-.09	.13	.14	-.10	-.39**	-.17*	.16	.21*			
11. Impulsivity	3.07	0.61	-.19	.02	.07	.10	.01	-.20*	-.12	1.10	-.12	.38**		
12. Risk-Taking	3.43	0.72	-.12	.23**	-.06	-.07	-.14	-.12	-.07	-.09	.05	.04	.35**	

Note. *N* = 1111-175 for all daily variables, *N*=185 for baseline variables; * *p* < .05, ** *p* < .01; Female coded 1 = Female, 0 = Male; Values for ATOD Use and other dichotomous variables are Phi Correlation Coefficients; Values for one continuous and one dichotomous variables are Point Bical Correlations Coefficients.

Limitations and Future Directions

The methodological weaknesses present in this study include issues of sampling, attrition rates, and common method bias. First, participants were gathered from a convenience sample of college students from a mid-size public university. The sample is not representative of all young workers, nor is it representative of college students across all university types. The sample was from a university in the southeastern United States, a region of the country that is often characterized by high religiosity. Second, while this study attempted to avoid the limitations associated with cross-sectional data, other issues arose as a result of data collection methodology. Out of the 185 participants who completed the baseline survey, only 44% ever completed even one daily survey. The response rate dropped as low as 29% on Day 3 but email reminders brought it back up to a steady 40% for the duration of data collection. The high attrition rate in this study was a significant limitation as it was difficult to identify a trend in day-to-day responses when survey completion was sporadic. Butler et al. (2010) found that while only 31% of participants completed all daily surveys, 77% of participants completed the number they needed to get extra credit for their participation. Perhaps the daily points system was not an adequate incentive for encouraging participation in the current study; requiring that participants complete five out of the seven surveys to receive credit, as was the method in Butler et al., might have yielded lower attrition rates.

Similarly, attrition from the baseline survey to the daily surveys caused a much lower base rate than desired. Several of the correlations were approaching significance and might have only been insignificant because of the small sample size. Additionally, the low level of reported

ATOD use exacerbated the base rate issue. While it is possible that this particular sample did not use very often, it is also possible that socially desirable responses lowered the use rate.

Lastly, as discussed by Butler and colleagues (2010), this study was also limited by the self-report nature of most items. Low common method variance might have exaggerated relationships between variables. Similar to the methodology used by Butler and colleagues, this present study did include objective measures such as whether participants worked that day, and the start and end times of their work shifts. However, even non-attitudinal items such as ATOD use were susceptible to socially desirable responses.

This study provided a further examination of the relationships between workplace variables and young worker ATOD use that has been called for in previous literature (Frone, 2003; Butler et al., 2010). Because a strong relationship was found between workplace culture and young workers' use of alcohol, tobacco, and other drugs both on and off the job, support and strict drug and alcohol norms at the supervisory level might decrease overall use. However, the low levels of drug and alcohol use found in the sample suggest that the workforce ATOD problem is not as prevalent in the young adult population and that this area of study might not require further exploration.

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APPENDIX A

Institutional Review Board Approval Letter

FOR IRB USE ONLY

IRB #: _____

Date Submitted: _____

Date Approved: _____

FORM A: CERTIFICATION FOR EXEMPTION FROM IRB REVIEW FOR RESEARCH INVOLVING HUMAN SUBJECTS

Investigator's Assurance: By submitting this protocol, I attest that I am aware of the applicable principles, policies, regulations, and laws governing the protection of human subjects in research and that I will be guided by them in the conduct of this research.

This form should not be used if your research involves protected health information. Please refer to the HIPAA section for the appropriate forms.

Provide the required information in the space available. If additional space is needed, attach a separate sheet or expand that section of the form. Both scanned original signatures and typed electronic signatures are acceptable. Please submit any research instruments (including questionnaires or surveys) at the same time as the application. Incomplete submissions will be returned to the applicant without review.

All forms and research instruments should be submitted by email to instrb@utc.edu.

Title of Research:	The Importance of the Temporal Context of AOD Use when Identifying Causal Workplace Stress and Culture Factors among Young Workers
---------------------------	--

		Dept	Mail Code	UTC Email
Principal Investigator	Sara Martin	Psychology	2803	sara-martin@utc.edu
Other Investigator				
Other Investigator				

Funding Agency (if applicable) and ID Number	
Grant Submission Deadline	

Estimated Start Date: (Cannot begin until IRB approval granted).	August, 2010
Estimated Completion Date: (Include all aspects of research and final reports).	November, 2010

For Student Research

Faculty Sponsor	Dept	Mail Code	Phone
Dr. Christopher Cunningham	Psychology	2803	423-425-4264
Student Address	1400 Duncan Ave, Chattanooga, TN, 37404		
Type of Research (Dissertation, thesis, class project, other)	Thesis		

Purpose/Objectives of Research: (Briefly state, in non-technical language, the purpose of the research, with special reference to human subjects involved).

To identify workplace stress or workplace culture factors that are related to drug and/or alcohol use among young workers (UTC students between the ages of 18 and 25)

Subject Population: (List the size of population be used, and check if any of the populations listed below apply to the study. Discuss criteria for selection or exclusion, population from which they will be selected, and duration of involvement. *NOTE: Federal guidelines require selection of subjects be equitable within the exclusions, and subjects meeting the criteria cannot be discriminated against for gender, race, social or financial status, or any other reason.*)

Describe sample: Students will be recruited from introductory psychology courses at UTC and will receive class credit for their participation. All students who have jobs that require them to work 15 or more hours a week will be eligible to participate.

Approximate Number of Subjects: 180

Subjects Include (check if applicable):

- Minors (under 18)
- Involuntarily institutionalized
- Mentally handicapped
- Health Care Data/Information

IF YOU HAVE CHECKED ANY OF THE ABOVE BOXES, YOU MUST USE A FORM B AND COMPLETE AN EXPEDITED REVIEW. IF YOU HAVE CHECKED THE BOX PERTAINING TO HEALTH CARE DATA, BE SURE YOU HAVE COMPLETED ANY NECESSARY HIPAA FORMS AS WELL.

Methods/Procedures: Briefly discuss, in non-technical language, the research methods which directly involve use of human subjects. List any potential risks, or lack of such, to subjects and any protection measures. Explain how anonymity of names and confidentiality of materials with names and/or data will be obtained and maintained. List the names of individuals who will have access to names and/or data.

Participants will be given 14 identical questionnaires that they will complete daily. They will be asked to report (via the questionnaires) if anything about their work day was stressful, if they witnessed any drug or alcohol use or were involved in conversations regarding drug or alcohol use, and if they engaged in any drug or alcohol use during the course of that day. They will be ensured anonymity as their consent form will be collected before they receive their questionnaire packet and stored in a separate location, while any personal information collected from them will be collected two weeks later and will not be able to be associated with their identity. Questionnaires will not include any questions that could serve to reveal participants' identities. Consent forms with participants' names and any other identifying information will be kept in a safe, locked location for two years and then destroyed. Confidential materials will only be viewed by Sara M. Martin, Dr. Michael Biderman, and Dr. Christopher Cunningham.

Signatures:

_____	_____
Principal Investigator or Student	Date

_____	_____
Faculty Advisor (for student apps)	Date

IRB Approved:

_____	_____
-------	-------

IRB Chair or Designee

Date

APPENDIX B
SURVEY MEASURES

Baseline Survey

Informed Consent Form

Purpose of the Study:

This study is being conducted by Sara Martin, a graduate student at the University of Tennessee at Chattanooga, under the supervision of Dr. Chris Cunningham. The purpose is to study workplace culture among employed college students.

What will be done:

If you agree to participate you will be asked to complete one questionnaire every day for seven days. Each questionnaire will take no more than 15 minutes of your time. This survey includes questions about your work day and your alcohol and drug use. Some demographic questions are also included so that we can accurately describe characteristics of the final group of participants. To participate you can complete the survey as directed.

Benefits of this Study:

You will be contributing to a growing base of knowledge regarding our understanding of the effects of workplace culture on employee coping and health.

What are the risks to me?

No risks are anticipated from taking part in this study. If you feel uncomfortable with a question, you can skip that question or withdraw from the study altogether. If you decide to quit at any time before you have finished the questionnaire, your answers will NOT be recorded. We can only make use of fully complete surveys, however, so we greatly appreciate your full cooperation.

Confidentiality:

Your responses will be kept completely confidential. You will be assigned a participant identification code, and this is the only identification that will be associated with your survey responses (we will not be asking for your name). Only the researchers will see your individual survey responses and these responses will be stored in a locked storage room.

Decision to quit at any time:

Your participation is voluntary; you are free to withdraw your participation from this study at anytime. You also may choose to skip any questions that you do not wish to answer.

How the findings will be used:

The results of the study will be used for research purposes only, such as presentations at conferences and publications in professional journals.

Contact information:

If you have concerns or questions about this study, please contact Sara Martin at sara-martin@utc.edu or Dr. Chris Cunningham at Chris-Cunningham@utc.edu or 423-425-4264. You may also contact the chair of the university's Institutional Review Board, Dr. Roblyer at 423-425-5567. By completing and returning this survey, you acknowledge that you have read this information and agree to participate in this research, with the knowledge that you are free to withdraw your participation at any time without penalty. Also, by completing this survey you are indicating that you are at least 18 years of age.

Thank you in advance for you assistance and participation.

Sincerely,

Sara Martin
Chris Cunningham, Ph.D.
The University of Tennessee at Chattanooga

This project has been approved for compliance with ethical guidelines by the Institutional Review Board at The University of Tennessee at Chattanooga (FWA00004149), #10-088

1. To help us connect these responses to your past/future responses, please provide the following information:

- 1. First three letters of your mother's first name (example: MAR, if her name is Maribel):
- 2. Last two digits of your birth year (example: 79, if you were born in 1979):
- 3. Last two letters of your family's last name (example: WN, if your last name is Brown):

2. Demographic information:

	Race	Sex	Age
Please choose from both boxes.	<input type="text"/>	<input type="text"/>	<input type="text"/>

1. Please indicate the degree of your agreement with the following statements

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
Regulations trigger a sense of resistance in me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find contradicting others stimulating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When something is prohibited, I usually think, "That's exactly what I am going to do".	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The thought of being dependent on others aggravates me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider advice from others to be an intrusion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I become frustrated when I am unable to make free and independent decisions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It irritates me when someone points out things which are obvious to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I become angry when my freedom of choice is restricted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advice and recommendations usually induce me to do just the opposite.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am content only when I am acting of my own free will.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I resist the attempts of others to influence me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It makes me angry when another person is held up as a role model for me to follow.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When someone forces me to do something, I feel like doing the opposite.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It disappoints me to see others submitting to standards and rules.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

1. Please indicate the degree of your agreement with the following statements:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I often do things spontaneously	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"Just do it" describes the way I do things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often do things without thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"I think it, I do it" describes me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"Do now, think about it later" describes me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sometimes I feel like doing things on the spur-of-the-moment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do things according to how I feel at the moment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I carefully plan most of my actions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sometimes I am a bit reckless about what I do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Please indicate the degree of your agreement with the following statements.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I would like to explore strange places	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like to take off on a trip with no pre-planned routes or timetables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to do frightening things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like to try parachute-jumping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like wild parties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like new and exciting experiences, even if I have to break the rules	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get restless when I spend too much time at home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer friends who are excitingly unpredictable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

1. Choose the answer the best describes your job.

	Less than once per month or never	Once or twice per month	Once or twice per week	Once or twice per day	Several times per day
How often does your job require you to work very fast?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often does your job require you to work very hard?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often does your job leave you with little time to get things done?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often is there a great deal to be done?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have to do more work than you can do well?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Think of the three coworkers with whom you work the closest. About how many drinks do they feel are acceptable to:

Drink at lunch?

Drink after work?

3. How often do you interact with your direct supervisor?

4. Your supervisor:

	Not true at all	Usually not true	Sometimes true	Occasionally true	Often true	Usually true	Almost always true
Is not afraid to confront a worker who appears to be working under the influence of drugs or alcohol	<input type="radio"/>						
Prefers to put off dealing with problematic workers, at least until there is a crisis	<input type="radio"/>						
Would rather "cover-up" a worker's alcohol or drug problem than get involved in a lengthy disciplinary process	<input type="radio"/>						

5. Your supervisor:

	Not true at all	Usually not true	Sometimes true	Occasionally true	Often true	Usually true	Almost always true
Is very skilled at identifying workers who might have an alcohol or drug problem	<input type="radio"/>						
Is very skilled at helping workers with alcohol or drug problems who decide to seek help,	<input type="radio"/>						
Has no idea how to handle a worker who has a drug or alcohol problem.	<input type="radio"/>						

Daily Survey

To help us connect these responses to you past/future responses, please provide the following information:

1. First three letters of your mother's first name (example: MAR, if her name is Maribel):

2. Last two digits of your birth year (example: 79, if you were born in 1979):

3. Last two letters of your family's last name (example: WN, if your last name is Brown):

If you did not work today, simply mark "No" for question #1 and move on to the next page.

Did you go to work today?

Yes

No

When did you work today?

	Hour start	Hour end	Shift
Select from each of these boxes:	<input type="text"/>	<input type="text"/>	<input type="text"/>

For each of the following words or phrases, mark "Yes" if it described your job TODAY, "No" if it did not describe it TODAY, or "?" if you cannot decide.

	Yes	No	?
Demanding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pressured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hectic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relaxed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Many things stressful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pushed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Irritating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Under control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nerve-wracking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hassled	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfortable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More stressful than I'd like	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smooth-running	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overwhelming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How accurate are each of the following statements at describing how you feel right now, at this moment?

	Not at all	A little bit	Somewhat	Moderately	Pretty much	Very	Completely
I have been working so hard today that I am losing my ability to concentrate on what I am doing.	<input type="radio"/>						
I have been so busy working today that I am beginning to feel I am losing control over all the work I have to do.	<input type="radio"/>						
If my work were finished for today, I would still have trouble concentrating on other things.	<input type="radio"/>						
I have worked so long and hard today that I do not have much attention left to give to my job tasks.	<input type="radio"/>						
My work has taken so much effort today that I am having difficulty keeping my thoughts straight.	<input type="radio"/>						
Despite my work efforts so far today, I am thinking as clearly as I was when I started working today.	<input type="radio"/>						
It will be difficult for me to show interest in other people when I finish working today.	<input type="radio"/>						
When I stop my work for today I will need more than an hour to begin feeling recovered.	<input type="radio"/>						
When I stop my work for today, I hope other people will leave me alone for a little while.	<input type="radio"/>						
After working today I will be too tired to start on other activities.	<input type="radio"/>						
I need to step away from my work very soon because a break would help me function better.	<input type="radio"/>						
When work is finished today I will need some time by myself to start recovering and restoring myself before starting something else.	<input type="radio"/>						

Did anyone in your organization (boss, other employees) mention the use of drug and/or alcohol use during work today?

Please make your choices from both menus:

Did anyone (boss, other employees) in your organization engage in drug and/or alcohol use while you were at work today?

Please make your choices from both menus: